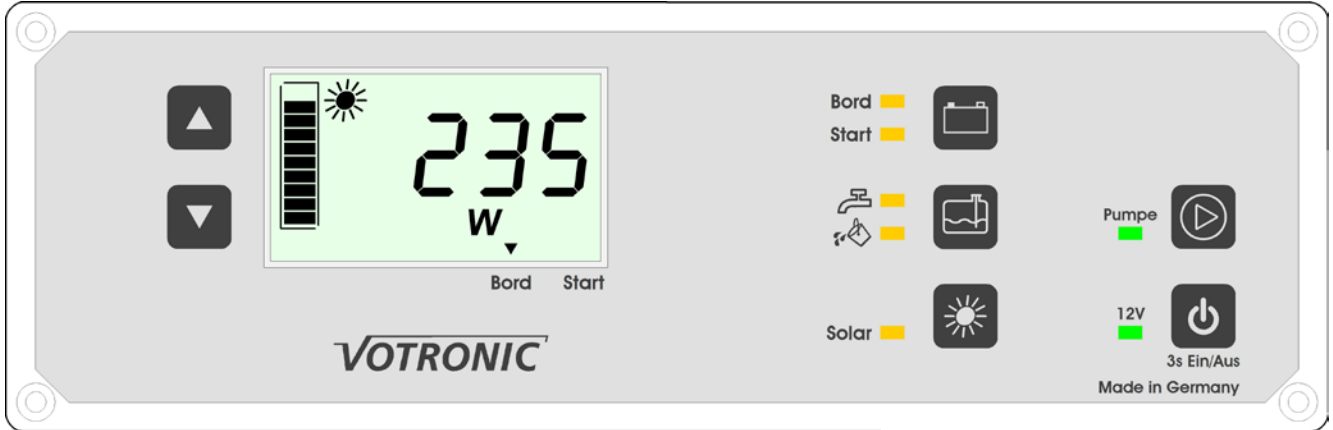


# VOTRONIC

## Installation and Operating Manual

VPC Terra

No. 5741



### VOTRONIC Power Control (VPC)

Multi-Panel System for campers, collating the most important functions and information in a user-friendly manner in one unit.



Voltage board- and starter battery in V



Level indicator  
Level fresh- and sewage water tank in %



Solar Computer  
Suitable for all VOTRONIC solar charging controllers since year of production 2014.  
Instantaneous solar power in W  
Instantaneous solar current in A  
Charged solar capacity in Ah  
Charged solar power in kWh



Main Switch Function  
Main switch for board supply via terminal 1A



Main switch for pump  
Main switch for fresh water pump  
max. 16 A (potential-free output)

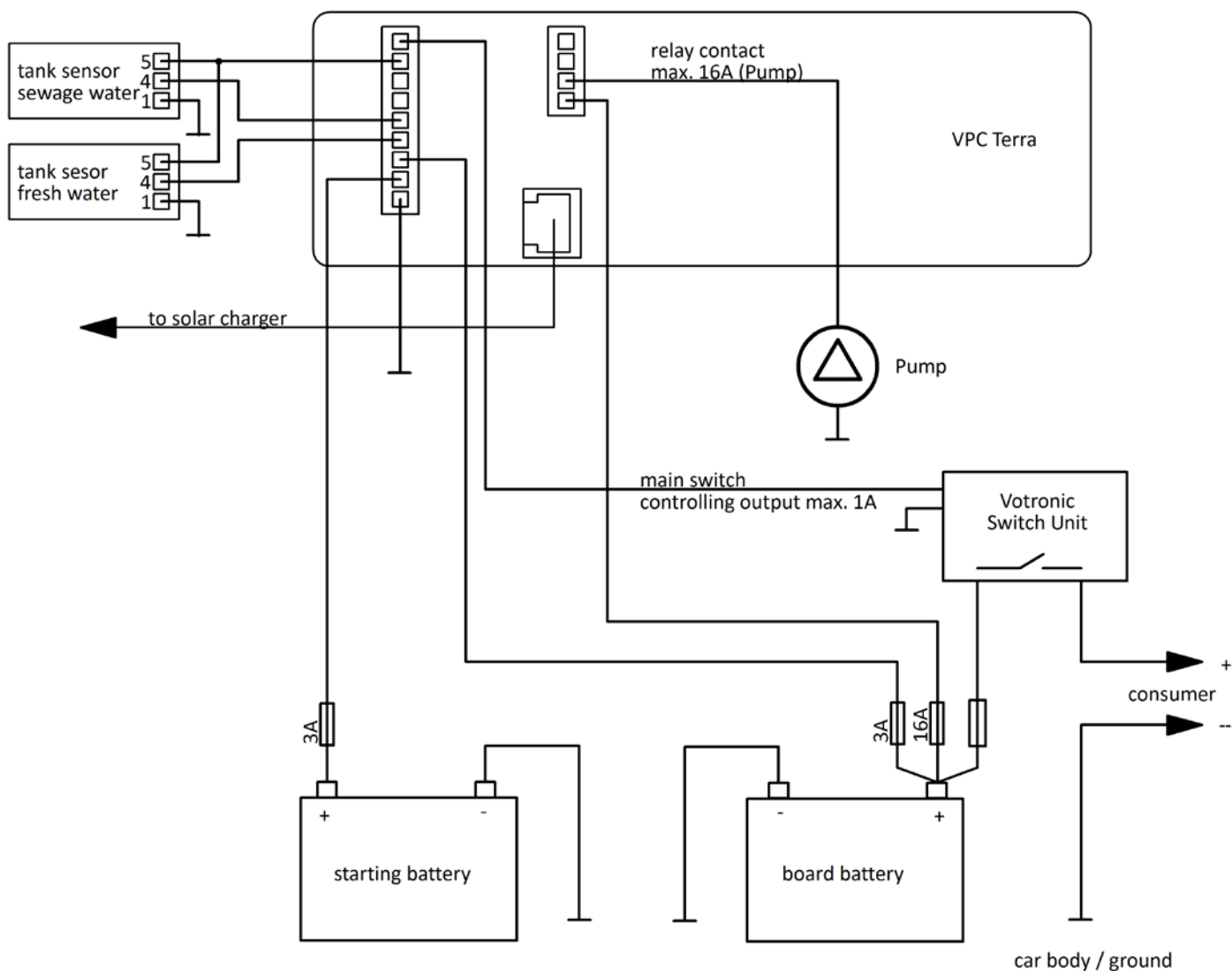


Please read the installation instructions, operating manual, and safety instructions page 7 completely prior to starting connection and placing the unit into operation.



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.

## System Overview:



## Installation and Connection:

### Display and Control Panel (Display Panel)

Choose a central and easily accessible location in the living area for installation of the display panel. This will facilitate the legibility of the information and the operation of the functions. The clear width of the cutout is at least 184 x 57 mm.

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.

### Solar Controller:

The VOTRONIC Solar Controller is connected directly at the display panel by a plug-and-go 6-pole data cable (see available accessories).

### Tank Sensors

A VOTRONIC tank sensor with continuous output signal is to be installed at the corresponding tank according to the installation instructions. The connections of the tank sensor are to be coupled with the VPC Terra, as indicated in the connection plan. The cross-section of the cables should be min. 0.75 mm<sup>2</sup>. The current supply for the tank sensors by the VPC is restricted to the time, in which the levels are interrogated at the display.

**Sensor + Starter Battery:**

The cable allows the voltage measurement at the starter battery and is connected to the positive pole of that battery. The connection cable is to be protected directly at the battery by a 1 to 5 A fuse. The cable cross-section should be 0.75 mm<sup>2</sup>, at least.

**System Supply and Sensor + Board Battery:**

This cable is provided for the VPC supply and exact voltage measurement of the board battery. Therefore, it must be connected directly to the positive pole of the board battery to ensure the delivery of precise values. The connection cable is to be protected directly at the battery by a 3 to 5 A fuse. The cable cross-section should be 1.5 mm<sup>2</sup>, at least.

**Switching Output + max. 1 A:**

The output serves as control signal for an external, controllable main switch (Switch Unit).

The main switch can be operated from the display panel. In addition, the system provides an automatic disconnection in case of overvoltage or low voltage (Battery Protector Function).

In active condition (ON), the battery voltage (+12 V or +24 V) is at disposal, here. The output is protected from overload by a self-resetting fuse 1 A.

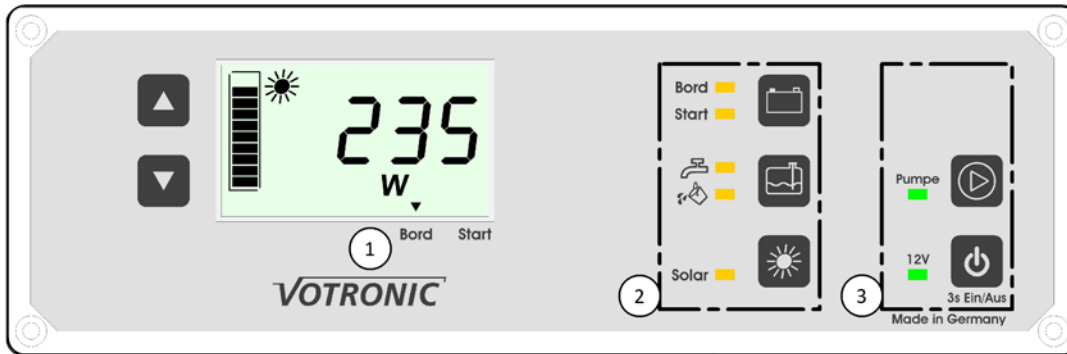
The consumer disconnection via the switching output does not replace the battery management system (BMS) or the safety disconnection for lithium iron-phosphate battery systems, planned by the battery manufacturer.

**Relay Contact Water Pump:**

The potential-free relay contact for the water pump is switched by a key at the display. The maximum admissible load of the relay contact is 16 A. The water pump is to be protected by means of a fuse 16 A in the supply line!

# Operation

## Control and Display Panel



- ① The display shows the actual data (level, voltage...) as numerical values. The menu level and the displays of the board battery additionally show a bar graph on the left side. The measurement unit of the displayed value is also shown on the display.  
Marks (arrows) on the lower side of the display point to Board or Start, depending on the displayed menu.
- ② The desired information is displayed using the control keys of the battery control, the tank displays and of the solar computer. The adjacent LED indicates what kind of information is currently being displayed. To change the display, such as between board battery and starter battery, press the key adjacent to the corresponding LED. Use the arrow keys ▲ ▼ on the left side of the display to change to the next or previous page.
- ③ Control keys and remote control keys for display ON/OFF, main switch and pump relay. The LED lamps adjacent to the keys indicate the corresponding state.

### Display Illumination:



The illumination of the display is activated when pressing any key. It will be deactivated automatically after 3 minutes, if the main switch is switched-on. If the main switch is switched-off, the illumination will be deactivated already after 30 seconds to avoid an unnecessary load of a potentially empty battery.

The illumination can also be switched-off manually by shortly pressing the main switch (see figure on the left side).

The brightness of the LED lamps is coupled with the illumination of the display. If the display is dark, the LED lamps will also be dimmed to a minimum.

### Brightness Display and LED:



The brightness of the display illumination and the LED lamps can be changed at any time by pressing and holding (3 seconds) the arrows keys. The settings will be stored.

### Main Switch:



The main switch will be switched-on or off by pressing and holding the ON/OFF key (>3 s). The state of the main switch is indicated by the adjacent LED "12V". Please observe, that the main switch might be switched-off automatically in case of low voltage (see battery protector).

If the main switch has been switched-off, the illumination will be deactivated already after 30 seconds.

Operation of the pump is only possible, if the main switch is switched-on. It will be switched-off automatically, as soon as the main switch had been switched-off.

### Water Pump:

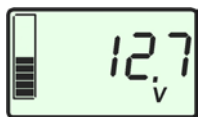


The pump key switches the pump relay on or off. The state of the relay is indicated by the adjacent LED "Pumpe". Operation of the pump is only possible, if the main switch had been switched-on. It will be switched-off automatically, as soon as the main switch had been switched-off. The pump cannot be switched-on, if the main switch had been switched-off. Should this be attempted nevertheless, the LED "12 V" will be flashing for a short moment to indicate that the main switch is still switched-off.

### Battery Control:



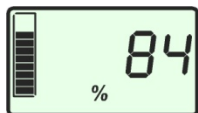
The battery control indicates the voltage of board and starter battery. The arrows at the lower screen margin, as well as the LED lamps "Board" and "Start" indicate the battery currently being displayed. Switching from board battery to starter battery and vice-versa is effected by pressing the key "Battery".



### Tank Displays:



The tank displays indicate the levels (level height) of the fresh water and sewage water tank as a percentage. Use the key "Tank" to switch between the display for fresh water tank and sewage water tank.

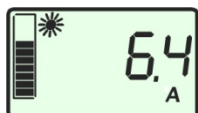


Current will only be supplied to the tank sensors, if the levels are interrogated by a keystroke. If the illumination of the display is switched-off manually, or if it switches-off automatically after a certain time, the display changes automatically to the board battery. Thus, an unintended operation of the sensors and current consumption is avoided.

### Solar Computer:



The Solar Computer indicates the current operating state, the solar current, as well as the solar power of the connected VOTRONIC Solar Controller. In addition, it is equipped with a solar power meter. Use the arrow keys on the right side of the display to change to the next or previous page.



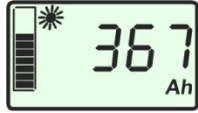
**Current:** The instantaneous current rate in Amperes (A) is displayed.



**Capacity:** The instantaneous capacity in Watts (W) of the solar system is displayed as a numerical value, as well as a bar graph in steps of 10 % on the left side of the display.



After initial start-up, the nominal capacity of the system must be adjusted at the solar computer to ensure correct display of the capacity. Set the display manually to 100 %, when the sun is shining and the full charging current is flowing. Adjustment is effected by setting the display to current (A) and by pressing the key "Solar" for more than 3 seconds until (Set 100 %) is displayed. This procedure can be repeated at discretion and as required.



**Solar Power Meter:** The power being generated by the solar system is measured 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 automatically to kWh. The meter readings can be reset to zero separately at any time. Reset can take place, if the corresponding meter value is displayed and by pressing the key Solar for more than 3 seconds until (Set ----) is displayed.

### Alarm and Battery Protector:

The VPC Terra is equipped with an audible alarm device (beeper), which will be activated in case of board battery alarm. An activated alarm is acknowledged by simply pressing any key.

The alarm indicates a drop below the disconnection threshold (protection against total discharge).

This alarm signals the user, that the main switch will be switched-off automatically after some seconds, because the board battery is almost empty. Apart from the audible alarm, the symbol "CHARGE" will be displayed.

After the automatic disconnection, the main switch can be switched-on manually by the user as usual.

Additionally, a restart threshold can be set. As soon as this threshold is exceeded, the main switch will be switched-on automatically.


# Settings

## Start-up






The following settings are to be made for start-up:

- Board battery disconnection threshold low voltage in V
- Board battery start threshold in V
- Activation / Deactivation audible alarm device
- Solar power (see operation Solar Computer)

## Access to the Menu

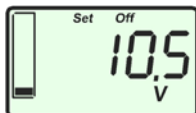
The menu for the switching thresholds and alarm device settings is activated by pressing and holding the key "Battery" . The first menu item will be displayed.

## Menu - Navigation and Exit

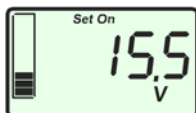
The individual settings can be run through consecutively using the key "Battery" . Use the arrow keys  to change the settings. Quick setting of large values is done by pressing and holding the arrow keys . After the last menu item, the display returns to normal operating mode.

## Menu Items

At each menu item, the symbol "Set" will be displayed at the upper edge of the menu.



Board battery disconnection threshold in V



Board battery start threshold in V



Activation / deactivation audible alarm device

The audible alarm can generally be activated or deactivated.

"On" or "Off" will be displayed correspondingly at the upper menu margin.

## General Information:

### Cleaning:

We recommend to use a damp microfibre cloth with pure water or, if necessary, with a little soap. Make sure, that no liquid flows along the display screen or the edges of the front panel.



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

## Safety Instructions:



### Safety Regulations and Appropriate Application:

The VPC Terra has been designed according to the valid safety regulations.

Appropriate application is restricted to:

- Control of commercial types of lead storage batteries (acid, gel, AGM), as well as LiFePo4, of the indicated nominal voltage and of connected consumers in fixed installed systems.
- Technically faultless condition.
- Installation in a well-ventilated room, protected from rain, humidity, dust, aggressive battery gases, as well as in an environment being free from condensation water.
- With a rear insulating cover of the display unit.
- Never use the unit in 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 responsible for the observation of construction and safety regulations of any kind.
- Keep children away from the batteries.
- Observe the safety regulations of the battery manufacturer.
- The consumer disconnection via the terminal does not replace the BMS (battery management system) or the safety disconnection for lithium iron-phosphate battery systems planned by the battery manufacturer.
- Ventilate the battery room.
- 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 36 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, 36341Lauterbach.

## Technical Data:

Nominal Voltage:	12 V, 24 V
Operating Voltage Range:	8...32 V
Current Consumption:	6...60 mA, depending on illumination
Display Unit (LC Display):	
Technology:	LC Display with specific segments, legible with and without illumination, Membrane Keyboard with LED Background Illumination
Presentation Surface:	49 x 28 mm
Illumination:	white LED
Dimensions (mm):	200 x 65 x 28
Assembly Dimensions Opening Electronic System (mm):	approx. 185 x 57
Weight:	approx. 175 g
Ambient Conditions, Humidity of Air:	max. 95 % RH, no condensation



### 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.

**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](http://www.votronic.de/recycling)

### Delivery Scope:

1 VPC Terra Display and Control Panel  
4 Fastening Screws  
1 6-pole Modular Cable, 5 m length  
2 Connecting Terminal  
1 Drilling Jig  
1 Installation and Operating Manual

### Available Accessories:

Switch Unit 40  
Switch Unit 100  
Various VOTRONIC Tank Measuring Sensors

Order No. 2071  
Order No. 2072

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