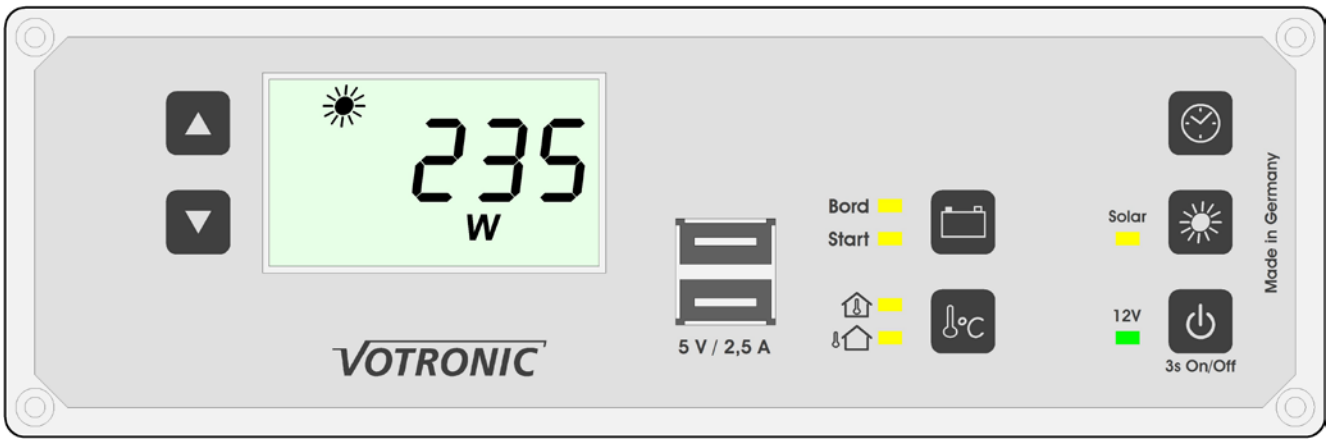
Installation and Operating Manual

VPC Merkur No. 5744



The VPC Merkur (hereinafter referred to as Merkur) is a user-friendly multi-panel system for campers combining the most important functions and information in one unit.
It is equipped with a dual USB charging socket with a maximum charging current of 2.5 A for appliances, which can be charged via USB, such as smartphones or tablets.

Clock
Time in 24 hours format

Voltage board battery and starter battery in V

Solar computer
Suitable for all VOTRONIC Solar Charging Controllers (also for VBCS Triple) from year of construction 2014.
Instantaneous solar power in W
Instantaneous solar current in A
Charged solar capacity in Ah
Charged solar power in kWh

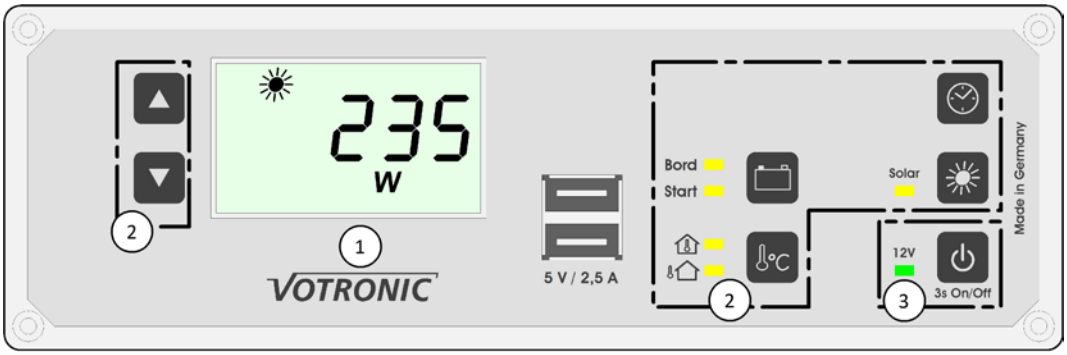
Thermometer
Inside temperature/outside temperature in °C, including 2 temperature sensors

Main Switch Function
Main switch for board supply via terminal 300 mA

Please read the operating manual and the safety regulations page 7 completely prior to start-up of the system.

Operation

Control and Display Panel



① The display shows the actual data (time, voltage...) as numerical values.
The measurement unit of the displayed value is also shown on the display.

② The desired information is shown on the display using the control keys of the voltage display, the display units for thermometer or clock and of the solar computer. The adjacent LED indicates the kind of information being currently displayed. To change the display, such as between board battery and starter battery, press the key adjacent to the corresponding LED. In the menus for the solar computer, different values can be displayed consecutively.
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 and main switch.
The LED lamps adjacent to the keys indicate the corresponding state of the main switch.

Display Illumination:

The illumination of the display is activated automatically when pressing any key. It will be turned off automatically after 3 minutes, if the main switch is switched-on. If the main switch is switched-off, the illumination will be turned off already after 20 seconds to avoid an unnecessary load of a possibly 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, also the LED lamps will be dimmed to a minimum.

Brightness Display and LED:

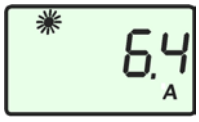
The brightness of the display illumination and of the LED lamps can be changed at any time by pressing and holding (3 seconds) the arrows keys. The settings will be kept in memory.

Main Switch:

The main switch will be switched-on or off by pressing and holding the ON/OFF key longer (>3 s). The state of the main switch is indicated by the adjacent LED "12V". Please observe, that the main switch will be switched-off automatically in case of low battery voltage (see battery protector).
If the main switch had been switched-off, the illumination will be turned off already after 20 seconds. Operation of the USB charger 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.

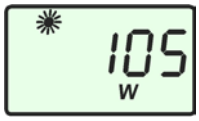
Solar Computer:

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.

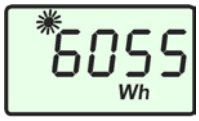


Use the arrow keys ▲ ▼ on the left side of the display to change to the next or previous page.

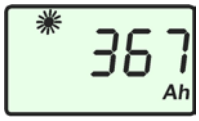
Current: The instantaneous current rate in Amperes (A) of the solar system is displayed.



Capacity: The instantaneous capacity in Watts (W) of the solar system is displayed.



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 separately reset to zero at any time. Reset can be effected, if the corresponding meter value is displayed and by pressing the key Solar ☀ for more than 3 seconds until (Set ----) is displayed.



Operating State Solar Controller:

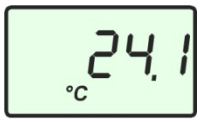
Depending on the solar controller, the operating state of the solar controller is indicated by the sun symbol.

- 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 stops limiting the current and the sun symbol stops flashing.

Thermometer/Clock:

The thermometers indicate the inside and outside temperature.

Use the key "Thermometer" to switch between the display for inside and outside temperature.



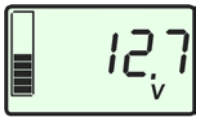
Clock:

The time is displayed in 24 hours format. Setting of the time is effected by pressing the key "Clock" for 3 seconds, until "Set" will be displayed at the upper edge of the display, and the hours of the time will be flashing. Use the arrow keys ▲ ▼ to set the hours. Shortly press the key "Clock" to set the minutes. The minutes will now be flashing and can be changed using the arrow keys. ▲ ▼

Battery Control:

The battery control indicates the voltage of board and starter battery.

The LED lamps "Board" and "Start" indicate the battery being currently displayed. Switching from board battery to starter battery and vice-versa is effected by pressing the key "Battery".

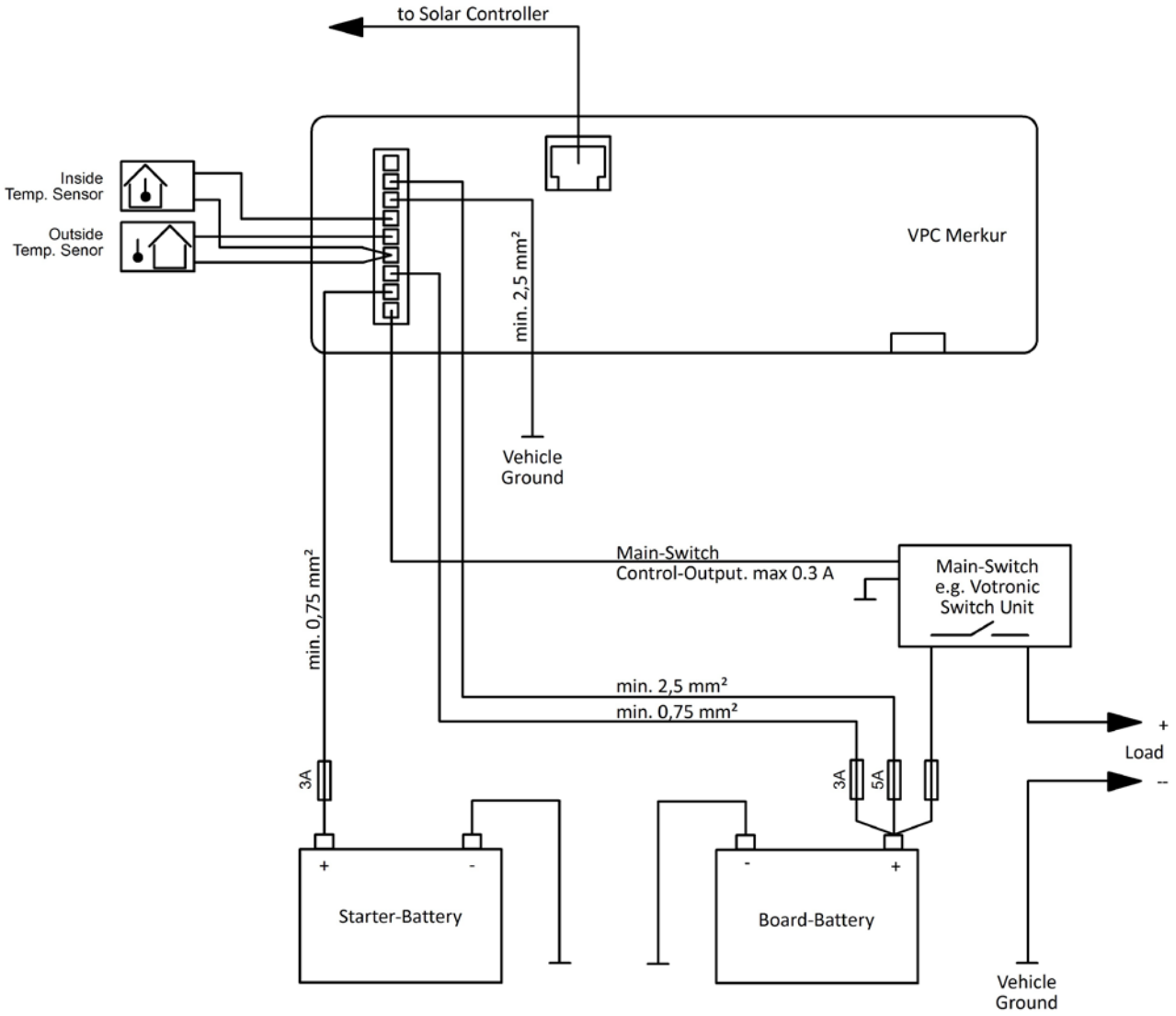


Battery Protector:
Combined with a remote-controlled main switch (such as Switch Unit 100), the VPC Merkur system has an integrated protection against deep discharge, which can be adjusted individually.
If the voltage drops below the adjusted low voltage of, for instance, 10.5 V, for 30 seconds, the main switch (terminal) will also be switched-off automatically. It can be switched-on manually at the display panel (see main switch).
If the main switch is disconnected, the USB charging socket will also be switched-off at the same time.
A short audible alarm signal will be given by the display panel.

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.

Installation and Connection:



All terminals are designed in such a way, that wire-end ferrules are not required. The 9-pole terminal at the display panel is a plug-in terminal, which can be removed for installation. The cable cross-sections can be drawn from the plan. Since fuses serve as cable protection, they must be positioned as close as possible to the battery.

The terminal supplies max. 300 mA and serves for control of a VOTRONIC Switch Unit. These units are relays for high current rates, which do not require any current for holding, thus avoiding an unnecessary load of the battery. Control of the terminal is effected from the panel. Thus, it can be switched-off and switched-on manually. Furthermore, an automatic disconnection is possible, when dropping below the adjusted battery voltage (protection against deep discharge).

Display and Control 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. Ensure the ventilation of the electronic system. Supply of the display panel including USB charging socket is effected directly from the battery.

Outside Temperature Sensor

Install the delivered temperature sensor for outside temperature at a protected location, if possible below the vehicle. Ensure that the installation place is not influenced by any source of heat

(hot exhaust, asphalt etc.). Should the length of the connection cable at the temperature sensor be not sufficient, it can be extended to the desired length by a cable of min. 0.75 mm².

The temperature sensors are protected against reverse battery and can be connected with any polarity.

Inside Temperature Sensor

For installation, remove the cap from the temperature sensor and insert the sensor with the cable from behind through the mounting hole (7.5 mm). Reinsert the cap on the sensor after that and push both into the mounting hole from the front. The temperature sensors are protected against reverse battery and can be connected with any polarity.

Solar Controller

As option, a VOTRONIC Solar Controller from model 2014 can be connected to the panel by means of a 6-pole control cable.

Initial Start-up

The system is ready for operation, as soon as all electric connections at the display panel are made. Besides, the following basic settings can be made.

Basic Setting:

- The switching-off threshold can be adapted.
- The audible alarm can be deactivated.
- The actual time must be set.

Access to the Menu

Access to the menu is only possible, if the display is switched to board battery, i. e. the LED "Board" must be lighting.

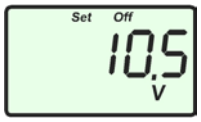
Press and hold the key "Battery" (for approx. 3 seconds), until "Set" will be flashing at the upper edge of the display. Now the menu is active.

Menu - Navigation and Exit

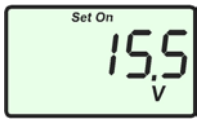
The individual settings can be scrolled consecutively using the key "Battery" . Use the arrow keys to change the settings. Quick setting of big values is effected by pressing and holding the arrow keys . When having scrolled through all menu items, the display will change to the normal operating state.

Menu Items

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

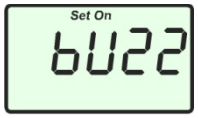


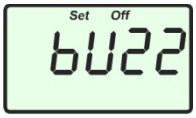
Board battery disconnection threshold low voltage in V



Board battery start threshold in V

In as-delivered state, this threshold is at 15.5 V. So, the terminal is not activated automatically under normal circumstances.





Activation / Deactivation audible alarm device

The audible alarm can be activated or deactivated generally.

"On" or "Off" will be displayed correspondingly at the upper menu margin. The displays are flashing alternately.

Safety Instructions:

Safety Regulations and Appropriate Application:

The VPC Merkur 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.

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.

Technical Data

System:	
Nominal Voltage Board Battery	12 V
Operating Voltage Range Board Battery	8...16 V
Current Draw	6...60 mA, depending on illumination
Nominal Voltage Starter Battery	12 V / 24 V
Operating Voltage Range Starter Battery	8...35 V
Switching Current Terminal Main Switch	max. 0.3 A
USB Charging Socket	5 V / 2.5 A acc. to "USB Battery Charging Specification, Rev 1.1"
Ambient Conditions, Humidity of Air	max. 95 % RH, no condensation
Display Technology	LC Display with specific segments, legible with and without illumination, Membrane keyboard with LED background illumination
Representation Surface	49 x 28 mm
Display Illumination	white LED
Dimensions	200 x 65 x 30 mm
Assembly Dimensions Opening Electronic System	approx. 185 x 57 mm
Weight	approx. 200 g

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**

Delivery Scope:
1 VPC Merkur Display and Control Panel
1 Control Cable, Length 5 m
2 Temperature Sensor
4 Fastening Screws
1 Installation and Operating Manual
1 Drilling Jig

Available Accessories:

Switch Unit 40	Order No. 2071
Switch Unit 100	Order No. 2072
Control Cable Extension, 5 m	Order No. 2005

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