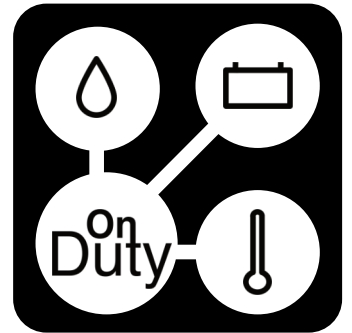# OnDuty
Instruction manual

OnDutySystem Rev3

OnDutyDisplay and OnDutyCore

OnDutyCore Compact Edition

OnDutyPower and OnDutyLight

OnDutyTemperature and OnDutyAir

The purpose of these operating instructions is to familiarize you with all the functions and handling of the OnDuty system. It is an integral part of the device. Read these operating instructions completely before installing and operating the OnDuty system!
Be sure to follow all instructions in this operating manual!

Table of contents

Safety guidelines and intended use:

The OnDuty system was built on the basis of the valid safety guidelines.

The device must never be used in locations where there is a risk of gas or dust explosion!
Do not operate the unit outdoors.

Lay the cables in such a way that they cannot be damaged. Make sure that the cable is well fastened.

Never lay 12 V (24 V) cables together with 230 V mains cables in the same cable duct (empty conduit).

Regularly inspect live cables or lines for insulation defects, breaks or loose connections. Any defects must be rectified immediately.
During electrical welding work and work on the electrical system, the device must be disconnected from all connections.
If it is not clear to the user from this description which characteristic values apply to the device or which regulations must be observed, a specialist must be consulted.

Compliance with building and safety regulations of all kinds is the responsibility of the user / purchaser. Only carry out commissioning if all instructions and regulations for installation have been correctly observed.
Keep children away from batteries and measuring shunts.
Observe the safety instructions of the battery manufacturer.
Ventilate battery room.
In case of replacement, always use identical TCS fuses!
The device does not contain any parts that can be replaced by the user.
Non-observance may result in personal injury and material damage.
Do not use solvents or harsh household cleaners to clean the display!
The warranty period is 24 months from the date of purchase (on presentation of the sales slip or invoice).

The warranty becomes void if the device is not used for its intended purpose, if it is operated outside the technical specifications, if it is operated improperly, or if it is tampered with by third parties. No liability will be assumed for any resulting damage. The exclusion of liability also extends to any service work carried out by third parties and not commissioned by us in writing. S
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The device may only be used:

1. in a technically perfect condition.
2. in a well-ventilated room, protected against rain, humidity, dust and aggressive battery gases and in a non-condensing environment.
3. with a rear insulating cover for the display unit.

Deviations from this are generally not permitted. If there are any questions about the intended use or the application limits, contact the manufacturer.

Description

The OnDuty system is a comprehensive display and control unit for the motorhome.

The system consists of a display and control unit, as well as the central unit. Depending on the requirements of the installation, the system can be expanded to include switch units, light control units, temperature sensors and air quality sensors.

The modules include the following functions:

OnDutyCore

Central acquisition and control of all components

Sensor connections for temperature and tank level

OnDutyDisplay

Display and operation of the complete system

includes an adapter for power supply and an installed SD card

OnDutyPower

Switching unit with 4 relays which are designed as changeover contacts. (maximum load 20A up to 24V DC, maximum load 10A at 30V DC)

4 electronic switching outputs (maximum load 2W per switching output)

4 digital inputs for pushbuttons

up to 8 can be used in one system

OnDutyLight

Light control with 8 outputs for 8 LED lines (maximum load 10W per line)

8 digital inputs for push buttons

up to 8 can be used in one system

OnDutyTemperature

Indoor temperature sensor as installation variant

OnDutyAir

Air quality sensor with temperature, air pressure and humidity measurement as indoor sensor

Furthermore, the control system includes visual warnings for certain operating states or battery charge levels and automatic, as well as manual switching operations.

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Warranty

In no event shall Digitalisiere Jetzt 42 GmbH be liable for any special, incidental or consequential damages related to or caused by the purchase or use of this product. Digitalisiere Jetzt 42 GmbH's sole and exclusive liability, in any form whatsoever, shall be limited to the amount of the purchase price of the product described herein.

Digitalisiere Jetzt 42 GmbH reserves the right to review and improve its products as it deems appropriate. This manual describes the condition of the product at the time of its publication. It may not reflect future changes made to the product.

Transport

Only transport the device in the original packaging. The warranty for transport damage expires if the device is transported in packaging other than the original packaging.

Disposal
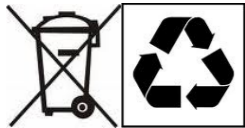
We recommend recycling. Many countries prohibit the disposal of electronic equipment in the household waste, dispose of the device in the electronic waste.
To do so, hand it in at the respective collection points.

Warnings

Read all related product information carefully and familiarize yourself with the safety information and instructions before using the product.
This product has been developed and tested in accordance with relevant international norms and standards. Use the device only for its intended application.

All conductors used with conductor cross-sections of 0.5 mm² or larger must be approved in accordance with test methods IEC 60332-1-2 and IEC 60332-1-3.
All supply cables must additionally not be lighter than light PVC sheathed flexible cables according to IEC 60227-1 (designation 60227 IEC 52). Other cables may also be used if they have similar electromechanical and fire protection properties as required above.
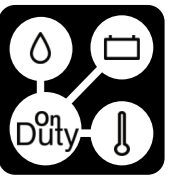
WARNING: THERE IS A RISK OF ELECTRIC SHOCK The device is used in conjunction with a permanent voltage source (battery). This is true even when the unit is turned off. The device does not contain any user-serviceable components. Therefore, never remove the cover, operate it without it, and make sure all covers are in place.

Always contact specialized personnel or the manufacturer for maintenance. Never use the device in rooms where there is a risk of gas or dust (risk of explosion). Follow the manufacturer's instructions to ensure that products to be connected are suitable for use with this product. If you have any questions about use, contact the manufacturer before installation and use.

Installation

Read the installation instructions carefully before starting the installation.

Make sure that all connecting lines are provided with the specified fuses and switches. Replace damaged fuse elements only with identical spare parts. Refer to the manual for the correct replacement parts.

Before switching on, check that the voltage source corresponds to the settings according to the manual on the device.
Make sure that the device is used according to the intended operating conditions.
Never operate the device in wet or dusty environments.
Ensure that there is sufficient free ventilation space around the device at all times and that the ventilation openings are not blocked. Install the device in a fire-safe environment.
Make sure that there are no flammable chemicals, plastic parts, curtains or other textiles, etc. in the immediate vicinity of the unit.
OnDutyAir and OnDutyTemperature must be fixed by 2 screws with a diameter not less than 3mm and a length of at least 12mm.
The devices must be connected to the mounting surface with suitable fasteners.

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System:	OnDuty Core
Rated voltage:	12 V DC, 24 V DC
Operating voltage range:	9,5…32 V DC
Current consumption:	350 mA, 175 mA

System:	OnDuty Core Compact Edition
Rated voltage:	12 V DC, 24 V DC
Operating voltage range:	9,5…32 V DC
Current consumption:	depending on the number and type of consumers up to 10 A

System:	OnDuty Display 5"
Rated voltage:	12 V DC, 24 V DC
Operating voltage range:	9,5…32 V DC
Current consumption:	200 mA, 100mA

System:	OnDuty Display 7"
Rated voltage:	12 V DC, 24 V DC
Operating voltage range:	9,5…32 V DC
Current consumption:	400 mA, 200 mA

System:	OnDuty Power
Rated voltage:	12 V DC, 24 V DC
Operating voltage range:	9,5…32 V DC
Current consumption:	depending on the number and type of consumers up to 2 A

System:	OnDuty Light
Rated voltage:	12 V DC, 24 V DC
Operating voltage range:	9,5…32 V DC
Current consumption:	depending on number and type of LEDs up to 10 A

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Supply + (plus) 12 or 24 V DC:
To supply the OnDuty system, the connections marked DC on the left side of the respective device are connected to the positive pole and the ground pole of the on-board battery. The connecting cable must be fused directly at the battery with an appropriate fuse. The cable cross-section should be at least 1.5 mm².

OnDutyCore

The power supply of OnDutyCore must be ensured.

Optionally, devices from the manufacturer VICTRON ENERGY can be connected via the VE.Direct connections if they have a VE.Direct connection. When using a VICTRON BMV, it should be connected to the first connector from the left (FAST) to obtain the best possible haptics.

The OnDutyBus is designed for tree wiring. Individual chains of modules should not exceed 2 modules. Additional chains must be connected in parallel before the first module.

If the system is to control a VICTRON ENERGY Multiplus, this must be connected to the socket marked MK using the separately available adapter.

Up to 6 temperature sensors can be connected to the system. The function is only given with the sensors supplied by us.

Only Votronik 15-50k sensors may be connected as tank sensors to the 4 sensor inputs marked with Liquid: The level measurement is designed for measurement in the range 0-2.3V DC.

The measurement of the level of a gas tank is designed for measurement in the range 0-90 Ohm. The S0 output of an AC meter can be connected to the S0 input of OnDutyCore.

Additionally LIN-BUS, CI-BUS, RS-485 and CAN-BUS capable devices can be integrated.

OnDutyCore has internal sensors for position detection and for measuring air pressure and humidity. Due to the measurement inside the housing and thus a different ambient temperature, the value of the displayed humidity may differ from the conditions in your motorhome.

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OnDutyCore Compact Edition

Unlike OnDutyCore, the Compact Edition also has 2 relay outputs that are designed as changeover contacts.

In addition, 4 electronic switching outputs (Voltage Outputs), 4 voltage inputs, 4 digital button inputs (Button Inputs) and 8 LED dimming outputs are available.

The voltage inputs can process the voltage in the DC input range. The maximum power of the voltage outputs is 1 Watt per channel.

The maximum power of the outputs per LED line is 10 watts.

Alternatively, LED strips can also be connected, which then use several outputs simultaneously. For example, 2 RGBW strips occupy all 8 channels of a box.
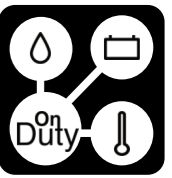
OnDutyDisplay

OnDutyDisplay is connected to OnDutyCore via the adapter supplied. The RJ12 cable required for this is not included in the scope of delivery. In addition, the power supply of the adapter must be established (see connection diagram on page 23).

If possible, OnDutyDisplay should be installed in the living area so that the display can be easily reached and operated.

The clear width of the cut-out is min. 125 x 80 mm for OnDutyDisplay 5" and min. 168 x 102 mm for OnDutyDisplay 7".

If you do not use the supplied rear cover, you must cover the rear cutout opening with an electrically non-conductive material to effectively protect the electronics.
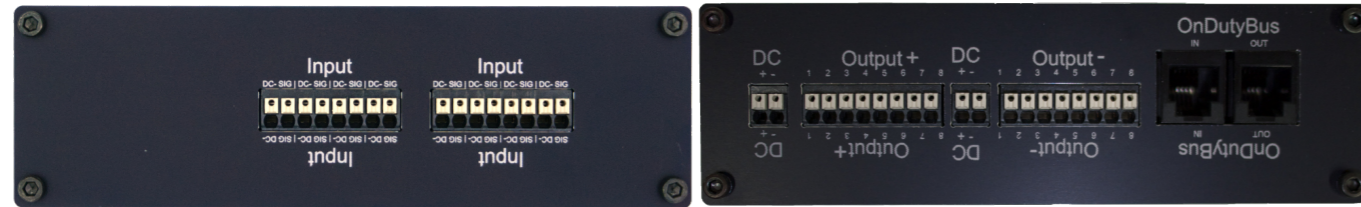
OnDutyPower
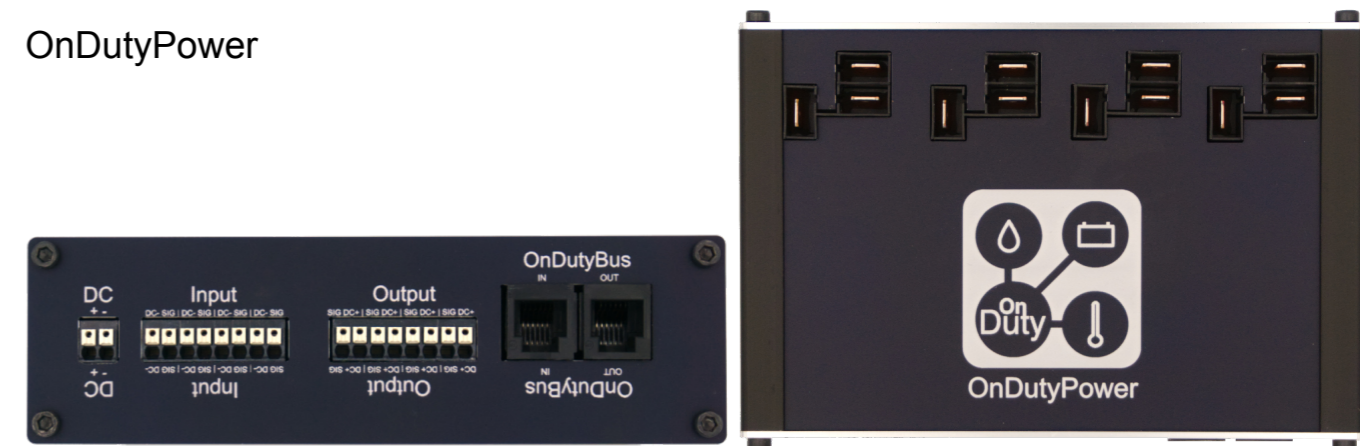
The power supply of OnDutyPower must be ensured. OnDutyPower must under no circumstances be connected to the OnDutyBus if the power supply on the module is not connected!

OnDutyPower is connected to the previous bus device via the OnDutyBus (IN) socket. The following device is connected via the OnDutyBus (OUT) socket. The RJ12 cable required for this is not included in the scope of delivery. The maximum length of the connection cable between two OnDutyBus devices is 5m.

OnDutyPower has 4 relay outputs which are designed as changeover contacts. Additionally there are 4 electronic switching outputs (Output) and 4 digital push button inputs (Input).

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OnDutyLight

The power supply to OnDutyLight must be ensured. OnDutyLight must not be connected to the OnDutyBus under any circumstances if the power supply on the module is not connected.

The DC power supply socket positioned in the middle is used to supply the loads and must be fused accordingly.

OnDutyLight is connected to the previous bus device via the OnDutyBus (IN) socket. The following device is connected via the OnDutyBus (OUT) socket. The RJ12 cable required for this is not included in the scope of delivery. The maximum length of the connection cable between two OnDutyBus devices is 5m.

OnDutyLight has 8 PWM outputs for controlling LEDs (Output 1-8). The maximum power of the outputs per LED line is 10 Watt. Alternatively, LED strips can be connected, which then use several outputs simultaneously. For example, 2 RGBW strips occupy all 8 channels of a box.

In addition, there are 8 digital button inputs (Input).

OnDutyAir

OnDutyAir is supplied with voltage via the OnDutyBus. OnDutyAir is the end sensor in the OnDutyBus and therefore has only one input. A subsequent device can no longer be connected.

See also the drawings at the end of these operating instructions for connecting OnDutyAir.
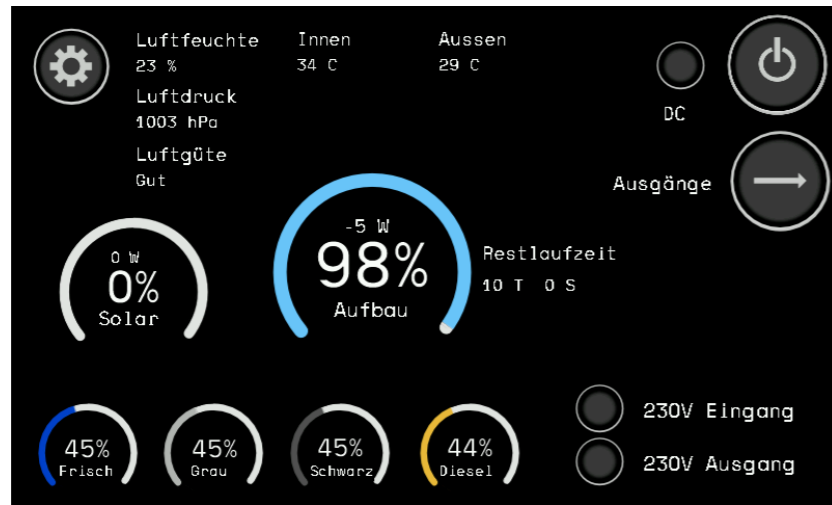
First commissioning

When all electrical connections to the OnDutyCore and the OnDutyDisplay have been made, and the connections between the OnDutyDisplay (adapter) and the OnDutyCore have been established, the OnDutySystem is ready for operation.

Basic setting:

-        The capacity of the on-board battery must be set.

-        The type of batteries must be set.

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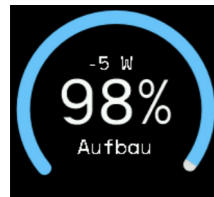Misprints, errors and technical changes reserved.

Main screen (modern)

Shift key to enter the settings page

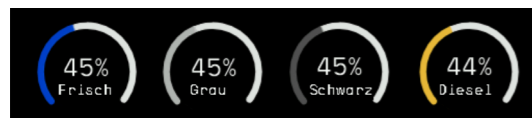Function key for switching on/off. The respective key indicates the current status.

Battery condition display
Clicking on the icon takes you to the detail page for the battery.The minimum of 0% refers to the recommended maximum depth of discharge for the set battery type when "Real SOC" is set. Thus, the useful capacity is displayed.
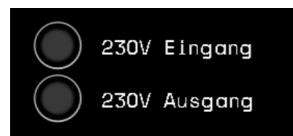

Solar status indicator
Clicking on the icon will take you to the solar charge detail page. The maximum value of the scale refers to the maximum power ever delivered by the solar controller. The value can be reset in the settings.
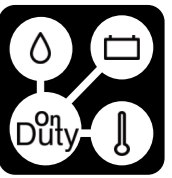

Temperature displays, if a sensor such as OnDutyTemperature is connected. Clicking on the display takes you to the climate zones.
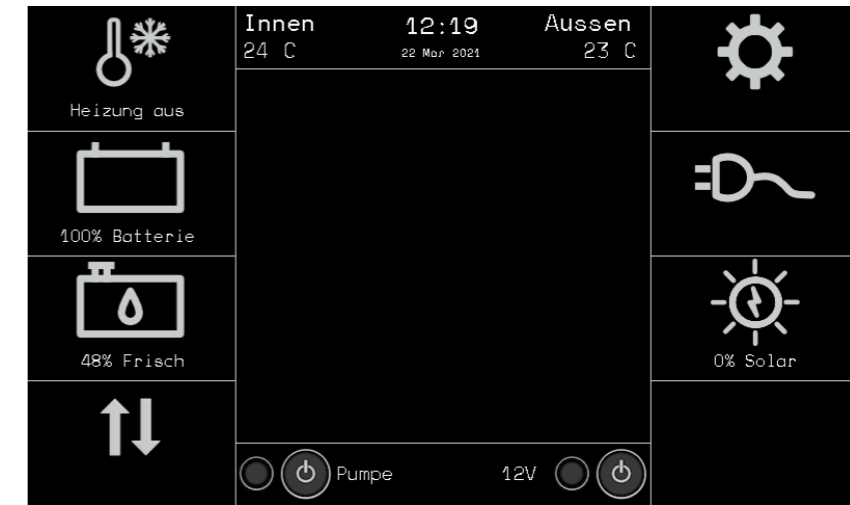

Tank indicators, provided the tank sensors are connected.

Status display of the AC states when a Multiplus is connected. Clicking on the icon takes you to the detailed view of the Multiplus controller.

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## Main screen (classic)

Shift key to enter the settings page.

Function key for switching on/off. The respective key indicates the current status.

Battery condition display
Clicking on the icon takes you to the detail page for the battery.The minimum of 0% refers to the recommended maximum depth of discharge for the set battery type when "Real SOC" is set. Thus, the useful capacity is displayed.

Solar- Status display

Clicking on the icon will take you to the solar charge detail page. The maximum value of the scale refers to the maximum power ever delivered by the solar controller. The value can be reset in the settings.
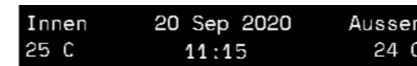
Temperature displays, if a sensor such as OnDutyTemperature is connected. The time can only be displayed if OnDutyCore has access to the Internet.

Tank displays, provided that the tank sensors are connected. To see all tanks in an overview, you can click on the corresponding icon.
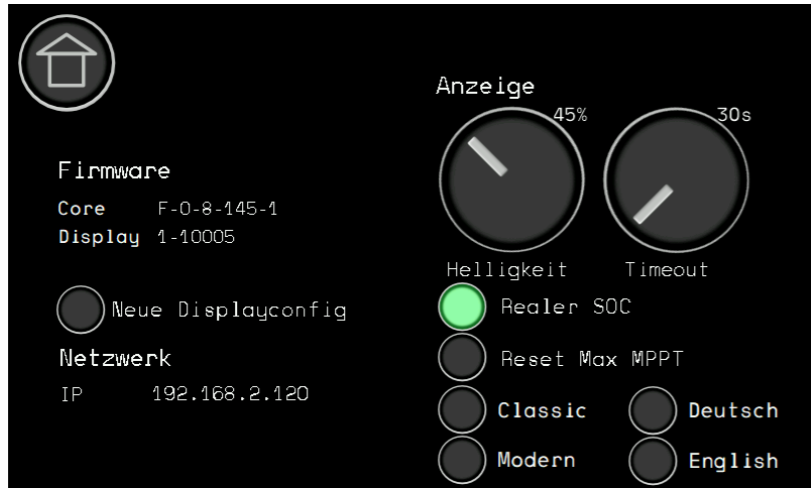

Status display of the AC states if a Multiplus is connected. Clicking on the icon will take you to detail view of Multiplus control.

Clicking on this icon will take you to the control page of the climate zones/rooms.

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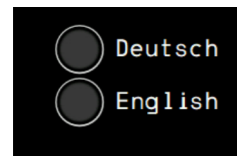Misprints, errors and technical changes reserved.

Settings

Setting of the display brightness and the time until the display changes to the screen saver.
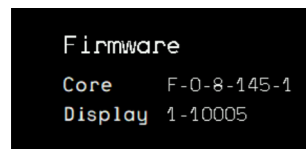
The screen saver will only display a time if OnDutyCore has been able to obtain an Internet time since the last restart.

Switching the display language.
After switching the language, there may still be artifacts of the previously set language on the display.

Selection of the display of the start screen.

Display of the current firmware version. If a new version is available, a corresponding message appears as well as a button for updating the version. The update is error resistant and the control will not become unusable in case of voltage loss.

Buttons for switching between useful capacity display and battery capacity display, and button for resetting the highest solar value.

Multiplus detail page
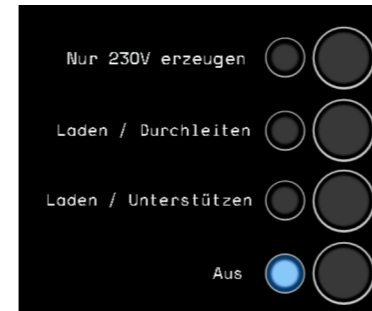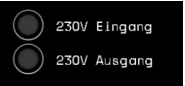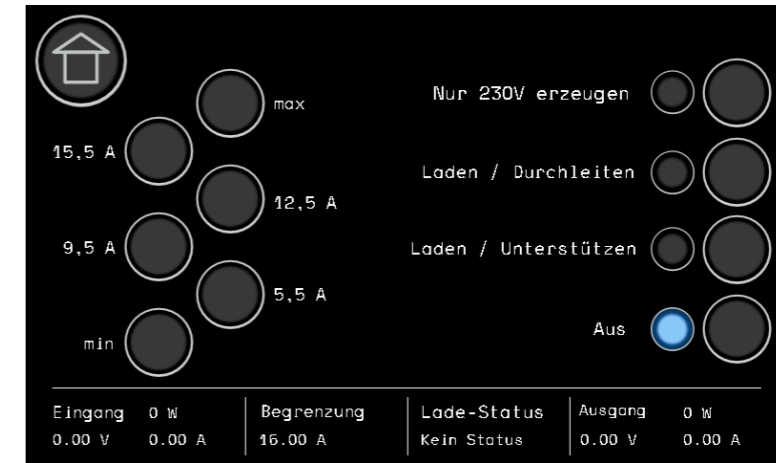
Mode switching of the Multiplus with status display
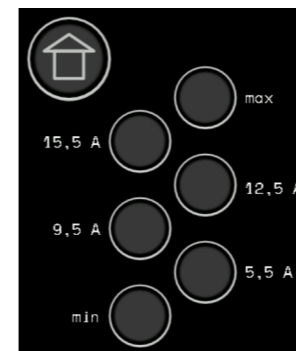
Setting the shore power limitation

Status of the device and operating data of the inputs and outputs

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Solar

Display of the status and operating data of the solar system
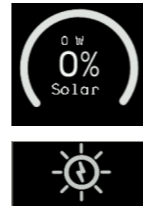
Battery

Display and status of the body battery and if available voltage display of the starter battery
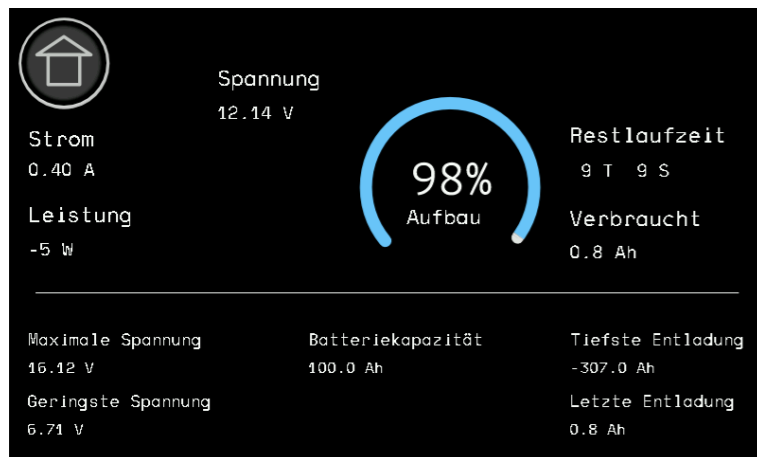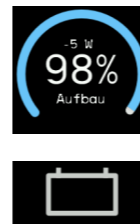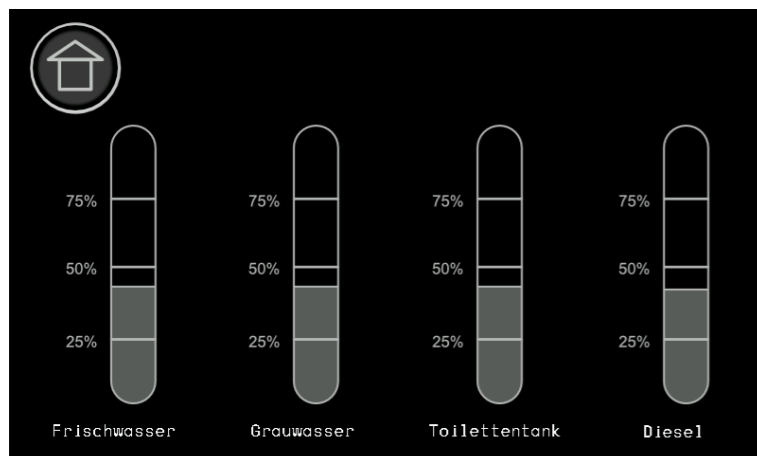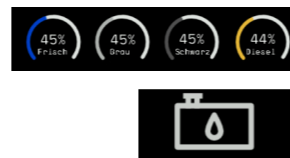

Fuel gauge

Here you have an overview of all tanks.

More displays
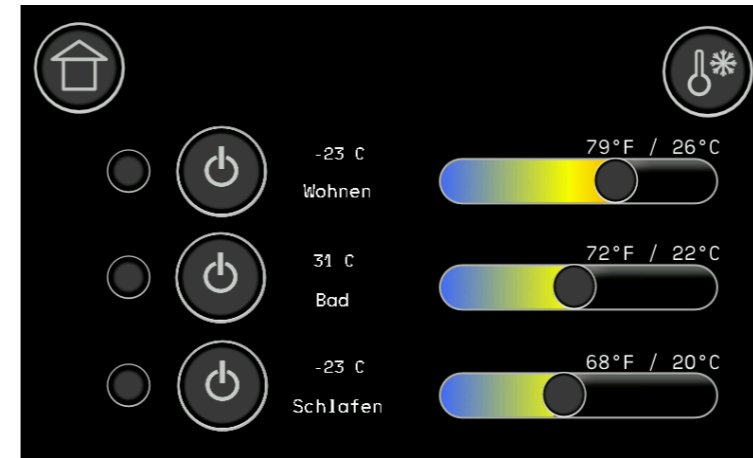
Climate zones

Depending on the layout of the living area, up to 3 climate zones may be available.
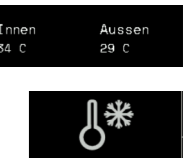
The slider is used to select the set temperature starting with 10°C. Lower temperatures are not supported.

The actual temperature is displayed next to the key for the operating status of the zone.

 This key is used to access the device and energy selection.

Devices and energy selection
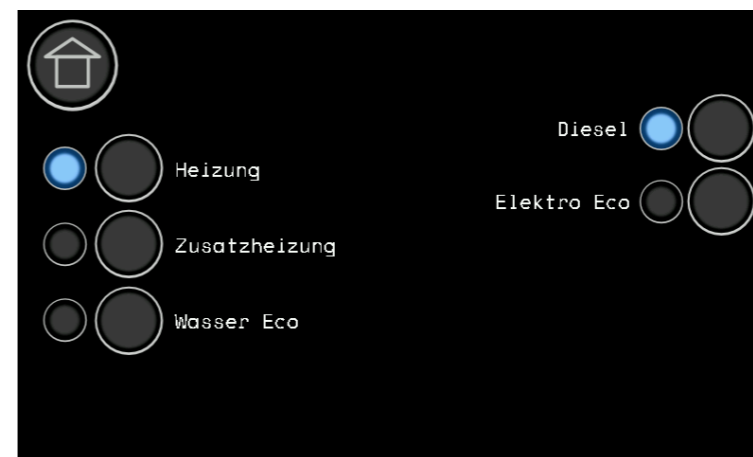
In this view you can select the devices to be used.

On the right side you can select the desired energy sources.

When using Truma devices in conjunction with a CP Plus: Automatic mode is not supported.

Rooms
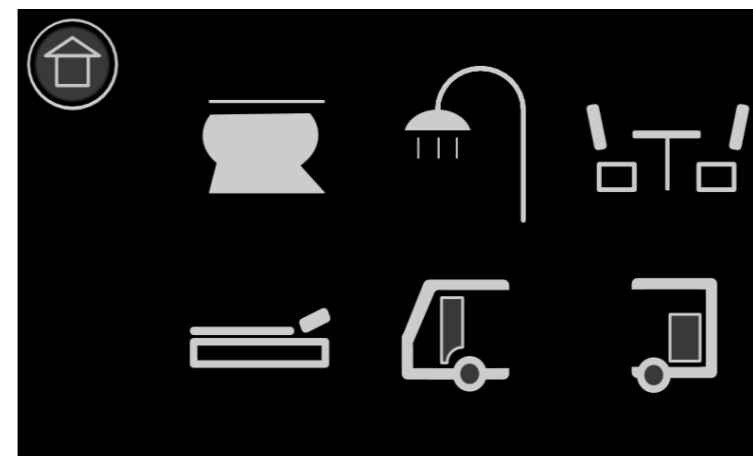
Depending on the configuration, you can generate up to 6 rooms.

The rooms are a collection of different switching functions (e.g. light, water pump) in one view.

Each room has three rows of input elements, each of which can be max. two switch buttons or a single light control.

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Examples views/possibilities/rooms
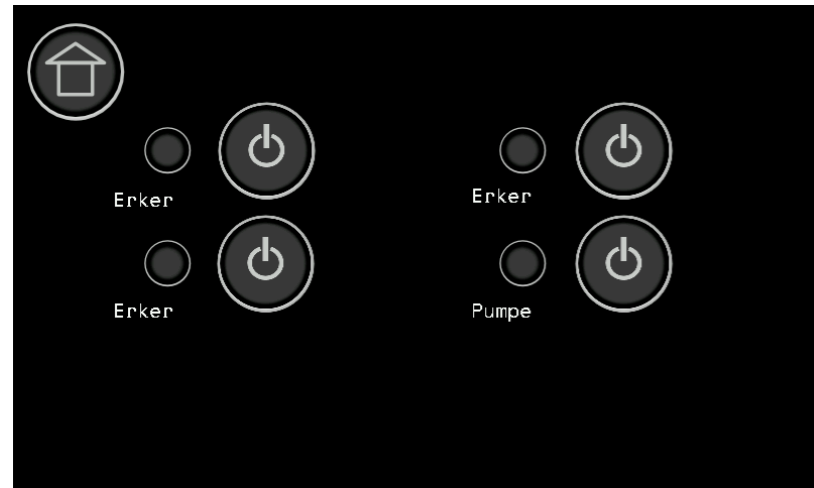
Here you can see an example with 4 switching functions within a room (6 are possible per side).
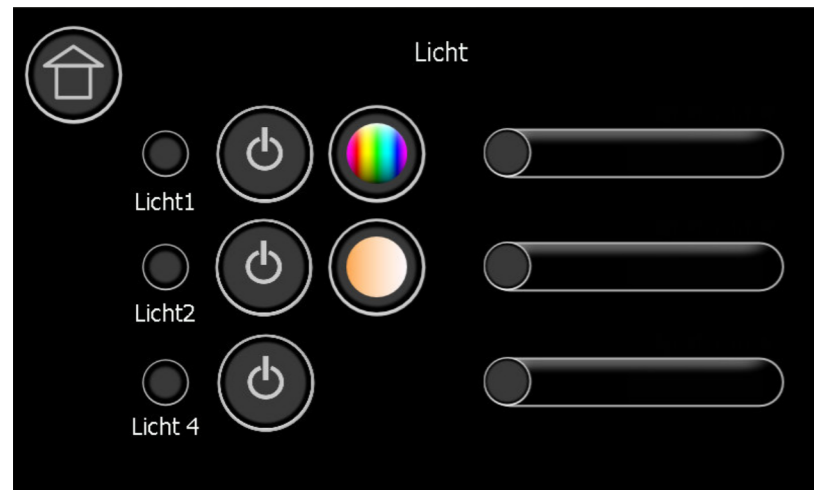
Here you can see an example with 3 light control functions within one room.

This button toggles the light state (On/Off).

You can use these buttons to adjust the light color or warm/cold light.

The slider controls the light intensity.
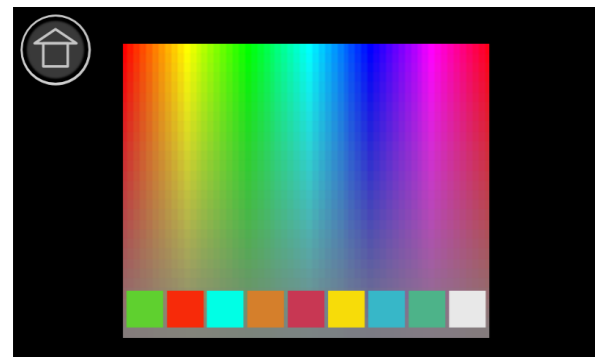
General notes:

Once a year:

• Check connection cable for good contact and damage

Aged batteries:

Lead-acid batteries are subject to wear which increases with the age of the battery, with the number of charge/discharge cycles, with the depth of discharge and some other factors such as extreme temperatures, vibrations, etc., i.e. the removable capacity becomes smaller.
We therefore recommend that you adjust the entered nominal capacity downwards by e.g. 5% once a year.

⚠️ Cleaning:
For cleaning, we recommend a damp microfiber cloth with pure water or, if necessary, a weak soap solution. No liquid should run down the edges of the front panel/front screen.

The front panel and especially the display itself must not be cleaned with solvents or harsh household cleaners, or abrasive or scratching agents or objects.

Error

Display does not appear at all:

a)   Reverse battery polarity: Check!
b)   Battery voltage below 7 volts (deep discharge): Charge immediately!
c)   Connection cable interrupted, damaged or not plugged in: Check!

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In each case the corresponding device cables can be purchased as accessories.

- RJ12 cable as connection between OnDutyCore and OnDutyDisplay
- RJ12 cable as connection between OnDutyCore and OnDutyPower or OnDutyLight
- Non-Inverting cable to operate a VICTRON Battery-Protect as main switch
- Waterproof outdoor temperature sensors

Declaration of Conformity

In accordance with the provisions of Directives 2006/95/EC, 2004/108/EC, 95/54/EC, this product complies with the following standards or normative documents:

EN55016-2-1; EN55016-2-2; EN60730-1; EN50498; EN61000-4-2; EN61000-4-3; EN 61000-4-4; EN 61000-4-5; EN 61000-4-6; EN 61000-4-7; EN 61000-4-8; EN 61000-4-11

EN 62368-1:2014 + AC:2015 + A11:2017; (IEC 62368-1:2014, mod. + Cor.:2015)

RoHS COMPLIANT

The product is RoHS compliant. It therefore complies with Directive 2011/65/EU on the restriction of hazardous substances in electrical and electronic equipment.

The product must not be disposed of with household waste.

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Connection diagrams

Core and Core Compact

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Core Compact Edition - upper Level

LOAD
switch high loads
Rel5

OnDutyCoreCompact upper Level

Voltage Outputs
4 - 3 - 2 - 1 -

Voltage Inputs
- 4 - 3 - 2 - 1

To max +24V DC Voltage Source fused max 1A

Button Inputs
- 8 - 7 - 6 - 5

Light OUTPUTS +
8 7 6 5 4 3 2 1

D3 LED

DC Load
+ -

NC   NC
CO   NO   CO   NO
Relais 2

Light OUTPUTS -
8 7 6 5 4 3 2 1

NC
CO   NO   CO   NO
Relais 1

SW5

F6
4A@24V
10A@12V

Bat1
max 24V

Bezeichnung:	OnDutyCore Compact Top
Zeichnungs-Nr.:	
Name	
Datum	
Änderungen Datum Name	gez.: gepr.:
Blattzahl:	
Blatt-Nr.:	

OnDutyLight and OnDutyPower

OnDutyPower

NC   NO
Relais 4
CO

NC   NO
Relais 3
CO

NC   NO
Relais 2
CO

NC   NO
Relais 1
CO

OnDutyPower

OnDutyBus
IN   OUT

OUT
1 + 2 + 3 + 4 +

LOAD
switch high loads
Rel2

IN
1 - 2 - 3 - 4 -

SW2

SIG (+12V)
Rel1
GND

measure 12V

DC
+ -

F3
max 1A

OnDutyLight

SW1
INPUT
4 - 3 - 2 - 1

INPUT
8 - 7 - 6 - 5

OnDutyBus
IN   OUT

OUTPUTS -
1 2 3 4 5 6 7 8

D1 LED

OUTPUTS + DC Load
1 2 3 4 5 6 7 8

F2
3A@24V
7,5A@12V

DC
+ -

F1
max 1A

Bat1
max 24V

To OnDutyCore

Bezeichnung:	OnDutyLight & OnDutyPower general connection
Zeichnungs-Nr.:	
Name	
Datum	
Änderungen Datum Name	gez.: gepr.:
Blattzahl:	
Blatt-Nr.:	

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