Operating and assembly instructions

Relay module CMR x

and for CMR4 as of software version V30

Introduction / Use

The relay modules CMR 411, 811, 431 for single-pole fuse protection and CMR 412, 232 for double-pole fuse protection are part of the PBUS system and are intended for operation on a battery voltage DC 12V and 24V. Depending on the model, 2 to 8 functions / loads can be switched with the CMR relay modules.

Each of the relays allows individual switching of loads and external devices by means of events reported by other PBUS components. These are:

- Switching of loads with dimmer control signal (max. 4 channels) for LED luminaires via PWM control (suitable luminaires required)
- Energy management, control of high-current relays
- Control of an AC generator
- Visualisation of alarm messages by means of external buzzer or indicator lights
- Pump control for tank alarm
- Thermoswitch: temperature-dependent control
- Bilge monitoring

Each of the relays has a potential-free contact. Two PWM control outputs (dimmers) and a control input are assigned to each relay.

The PWM control outputs are available as open-collector outputs (e.g. for Prebit LED luminaires) and as voltage signals (level 5V).

Content

1 Safety instructions

- No changes may be made to the unit, otherwise the CE mark will be invalidated.
- The CMR may only be connected by qualified electricians.
- Before connecting the CMR, disconnect the battery leads.
  Pay attention to the correct polarity of the batteries!
- The supply line of the power supply of the CMR 4 must be fused

These installation and operating instructions are part of the component delivery. It must be kept in a safe place - important for later maintenance work - and passed on to any subsequent owners of the meter.

1.1 Disclaimer

Both compliance with the operating instructions and the conditions and methods during installation, operation, use and maintenance of the CMR cannot be monitored by philippi elektrische systeme. We therefore accept no responsibility or liability whatsoever for losses, damage or costs arising from incorrect installation and improper operation.

1.2 Warranty

We provide a guarantee for the appliances supplied on the basis of our "General Terms and Conditions of Business - Paragraph 7". These terms and conditions are the basis of all sales and delivery offers, they are printed in our catalogues and attached to all offers and order confirmations.

1.3 CE mark

This appliance complies with the requirements of the EU directives:

CE 2014/30/EC "Electromagnetic Compatibility

The conformity of the unit with the above-mentioned directives is confirmed by the CE mark.

2 Scope of delivery

- Relay module CMR and an M12 T-cable
- These operating instructions

3 Technical data

Operating voltage	DC 8-32 V
Basic current consumption (all models) all relays off:	14mA@13V / 7mA@26V
Current consumption CMR 411 / CMR 811 per relay switched on:	16mA@13V/ 8mA@26V
Current consumption CMR 431 per relay switched on:	42mA@13V/ 20mA@26V
Current carrying capacity relays:	15 A, fuse protection 10 A resp. 30A, fuse protection 25A (ATO fuse / circuit breaker E-T-A 1610)
Dimmer output PWM OpenCollector (oC):	1 kHz, max. 40 mA (serial 1kOhm)
Dimmer output PWM S (PushPull):	1 kHz, 0-5 V, max. 8 mA (serial 1kOhm)
Control input:	Input impedance 50 kOhm, DC 0-32 V
Dimensions CMR 411	W 140 x L 120 x H 50 mm
Dimensions CMR 811, 431, 412, 232B	140 x L 180 x H 50 mm
Weight CMR 411	300 g

4 Installation

4.1 Required equipment

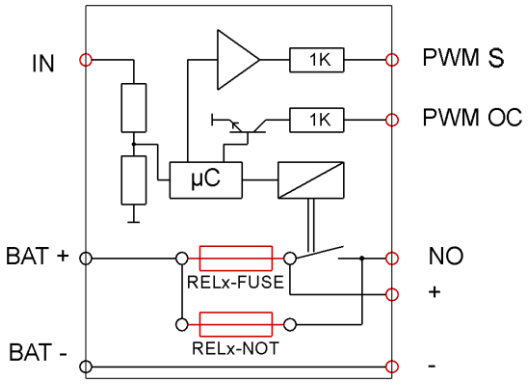
The following parts are required to install the CMR:
M12 network cable for connection to other P-BUS components.

4.2 Installation location

Mount the relay module CMR in a protected, dry and accessible place so that the fuses/circuit breakers can be changed at any time.

4.3 Basic function of the individual relays

The relay modules CMR x contain 2-8 relays, each with a potential-free switching contact. The internal circuit per relay is shown in the adjacent picture.

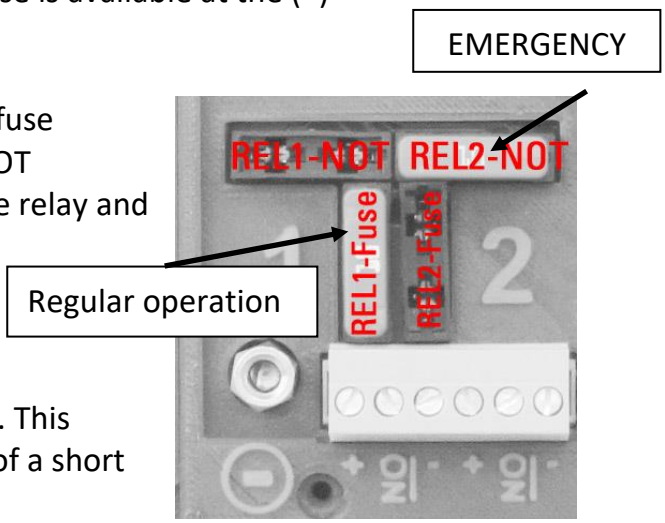


There are 2 basic types of use:

a) If the relay is used as a *potential-free control contact,* the RELx-FUSE fuse associated with the relay is not used.

b) If the relay is used for *consumer control,* the fuse RELx-FUSE associated with the relay is plugged in and the relay input (+) is connected to the power supply connection BAT+ via the fuse. The consumer is then connected to the terminal "NO" and minus (-). The circuit switched via the relay is thus protected by the fuse. A continuous plus fused via the RELx-FUSE fuse is available at the (+) connection.

c) **EMERGENCY function**: In the event of a fault, the fuse associated with the relay is switched to the REL-NOT position instead of REL-FUSE in order to bypass the relay and activate the circuit. The fuse protection is maintained via the REL-NOT fuse.



Optionally, the fuse can be upgraded with a thermal circuit breaker of the 1610 series from E-T-A. This eliminates the need to replace the fuse in the event of a short circuit.

A control input (IN) is assigned to each of the relays.

The first 4 channels each have a PWM signal (PWM dimmer) available as an open-collector output (oC) (e.g. for prebit LED lights) and as a voltage signal 0-5V (S).
Voltages up to DC 32V can be applied to the control inputs (IN).

4.4 Connection

The power supply of the CMR is connected to the two (on CMR 811 and 431 double (top and bottom)) connection bolts **(+) and (-)**. Ring cable lugs M5 or M6 (CMR 431, 232) must be used for this.

The wire cross-section of the power supply lines (+ and -) must correspond to the sum of the 4 output fuses. 4 x 10 A correspond to a total current of 40 A and therefore the supply line must have a minimum cross-section of 6 mm². This supply line must be fused at the battery according to the line cross-section.

At the plug-in terminals, the battery minus is available to each channel (-), but does not have to be used if the loads are connected to the battery minus elsewhere. With the 2-pole switching models CRM232 and CMR412, the negative connection is made on the second side.

The control inputs (IN) and PWM outputs are connected to the middle terminals.

The relay module CMR is connected to the **P-bus** via the centrally located M12 connector using the enclosed T-cable.

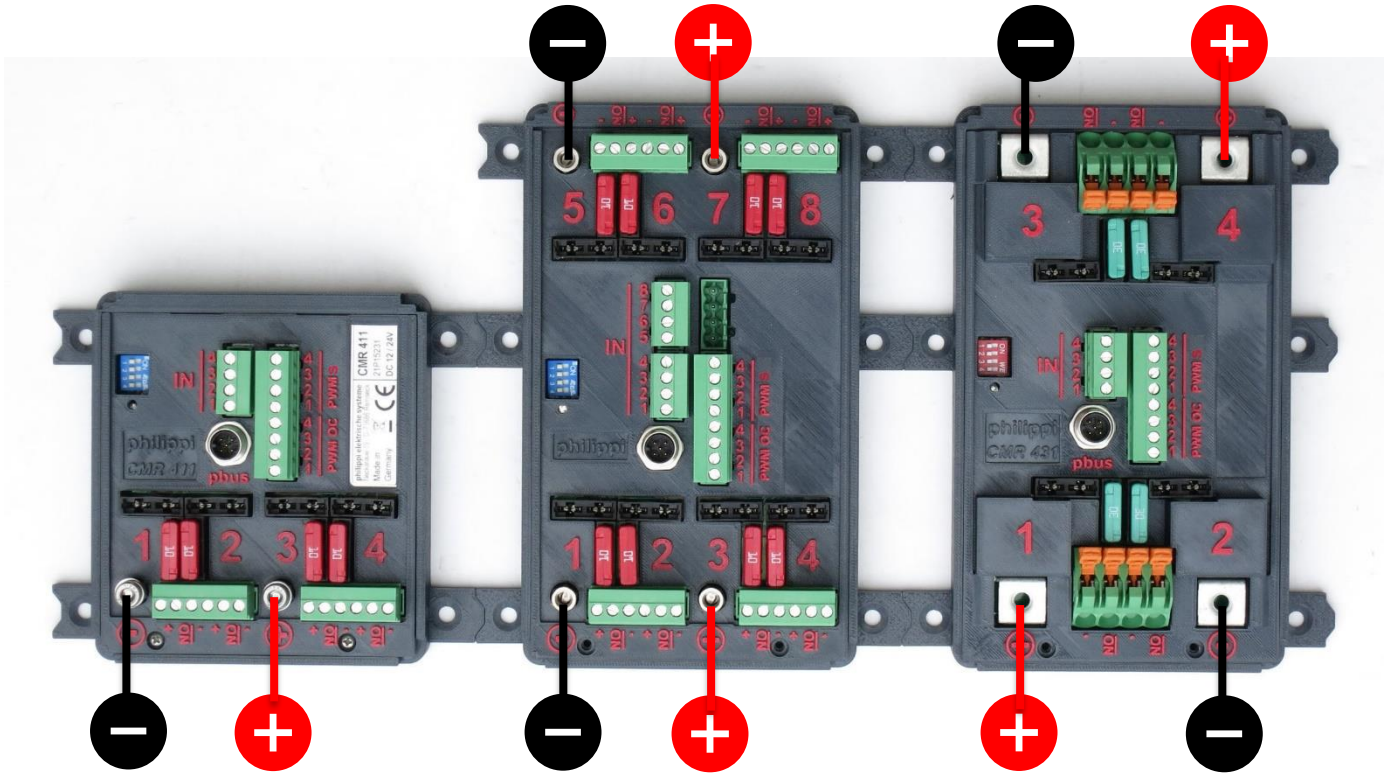
Each CMR relay module must be assigned a different address! A maximum of 16 CMR modules can be connected to the PBUS.

The device address of the relay module CMR must be set at the 4-fold DIP switch (1234) and is binary coded as follows (1234, ON=1):

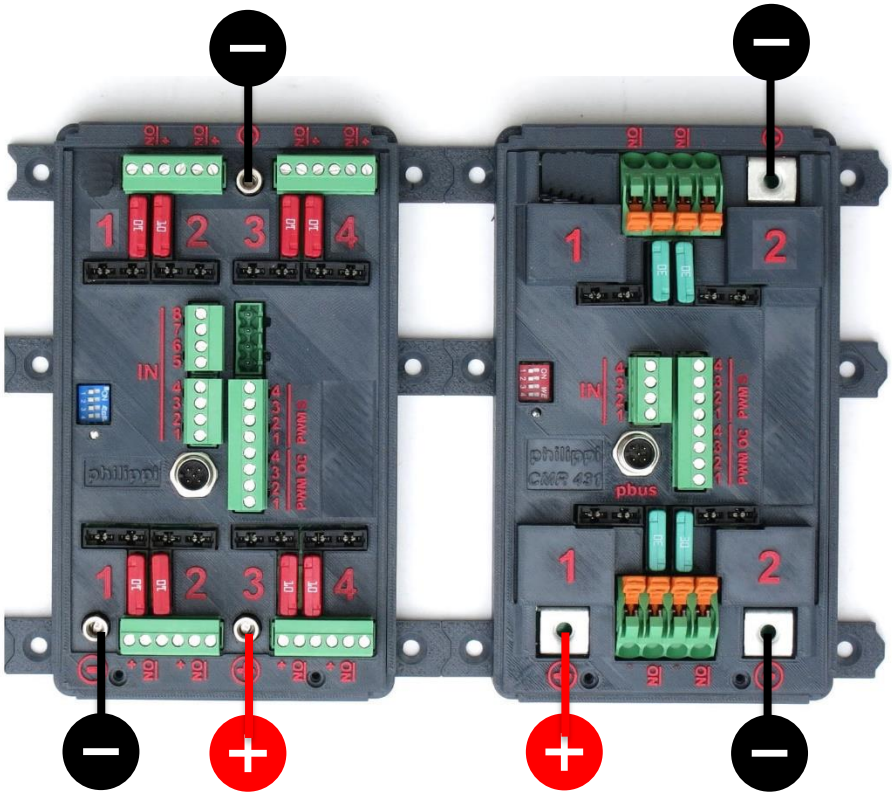
0000= address 0	0010= address 4	0001= Address	80011= Address 12
1000= address 1	1010= address 5	1001= Address	91011= Address 13
0100= address 2	0110= address 6	0101= Address	100111= Address 14
1100= address 3	1110= address 7	1101= address 11	1111= address 15

The status LED is located next to the DIP switch.
After switching on, the LED flashes several times. It then flashes every second to indicate that the unit is ready for operation.

Connection power supply 1-pole versions CMR 411, 811, 431:



Power supply connection 2-pole versions CMR 412, 232:



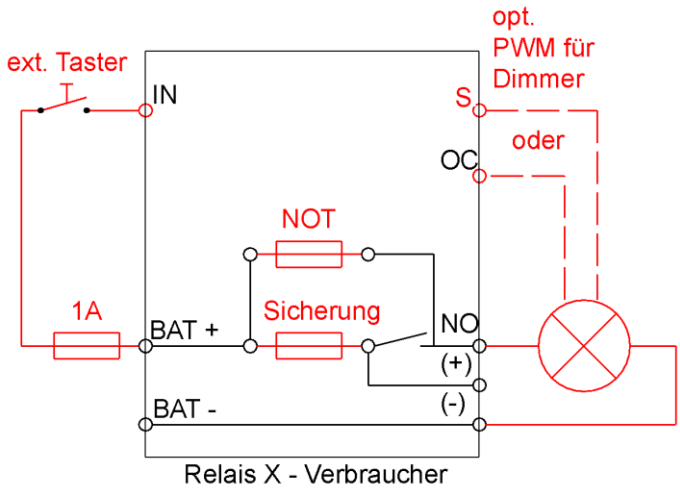
5 Configuration of the relay channels

The individual functions of the relays of the relay module CMR are configured via the system monitors PSM and PSL.
The menu item Settings/Devices/Relay module lists all relay modules CMR connected and logged on to the PBUS.
The modules are numbered according to their set address number; the serial number is also displayed for precise identification.
After selecting a relay module CMR, a list of the individual relays and their set function is displayed.
Each of the relays can be configured individually.
The "consumer" function is preset at the factory.

5.1 Consumer function

Switching consumers ON and OFF via the system monitor and via the control input (IN). The relay is configured for use as a consumer (factory setting).

The consumer (e.g. luminaire) is connected to the terminals (-) and NO and the fuse is equipped according to the current carrying capacity of the line (max. 10A). This can be done with a car flat fuse or a circuit breaker of the E-T-A 1610 series.



Dimming of LED luminaires is possible via PWM control (S or OC signal). For this purpose, the control line of the dimmable LED luminaire is connected to the PWM signal (S) or (OC) to adjust the brightness. The OC signal is used for Prebit luminaires (secondary version).

A push-button can be connected to the (IN) input to obtain another switching option independent of the PSM monitor for the circuit. This can be used to switch the consumer on or off, but not to change the dimmer value (brightness).

EMERGENCY FUNCTION
By changing the fuse, the relay is bridged in order to switch on the circuit in an emergency. By pulling the fuse, the circuit can be switched off.

5.1.1 Digital switching of consumers

Each (relay) channel can be switched via two paths:
Digitally via the monitor (P-bus) or directly on the relay module via a button ((IN), (plus-switching)).
There are 4 basic switching options:

Mode:	**Switching function**	**Application**
Normal mode:	Monitor switches On/Off **or** Button switches on/off	Normal, direct switching: Each channel has its icon on the monitor
Requires release mode: (Master)	Monitor only releases **and** Button switches on/off	The circuits are activated at the monitor and switched locally via push-buttons. (Switching on the room lighting locally and at the monitor all lamps are switched off centrally).
Linked mode and (own) switch is visible:	Monitor switches On/Off **or** Button switches on/off **or** Linked channel (monitor or button) switches on/off	Direct switching: Each channel has its icon on the monitor and can also be switched via a second channel (panic switch switches all lamps on or mode switch).
Linked mode and (own) switch is not visible:	Button switches on/off and Linked channel (monitor or button) switches on/off (The own channel (icon) is invisible on the monitor)	Several channels are to be switched simultaneously on the monitor via an icon. E.g. due to current carrying capacity or separate fusing

Example of a "Requires release" function:
The main switch for the lighting in the ship/vehicle. Central release of the lighting. Switching is done in each room by means of push-buttons. The main switch switches off all lamps.
Example of linked switch:
The cabin lighting can be switched individually. An additional switch turns on all lamps at once (panic switch). Any number of channels can be assigned to a master.

5.1.2 Save / Load Configuration

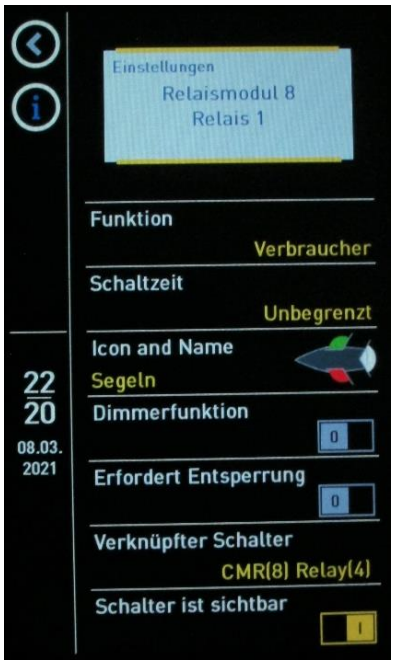
The created configuration can be saved or an existing configuration can be loaded on the system monitor. When loading a configuration, make sure that the addresses set on the DIP switches match those of the configuration.

5.1.3 Configuration at Monitor PSM

On the PSM system monitor, the consumer relays are assigned to the screen buttons via the menu item Settings - Consumers.
This must be done individually for each monitor as each monitor can be configured differently.
After calling up the consumer page, the buttons appear according to the programming. Pressing the screen button switches the consumer ON or OFF. The switched-on consumer is marked by a green tick.
If the button is pressed for a long time, a new window appears in which the brightness of the luminaire can be set, provided that dimmable LED luminaires with a corresponding control input have been connected.

5.1.3 Configuration at Monitor PSL

On the system monitor PSL, the configuration of the consumer relays is carried out via the menu item Settings - Devices - CMR.
An ICON is permanently assigned to each relay. The desired arrangement can be configured on the PSL screen by moving the ICONs.

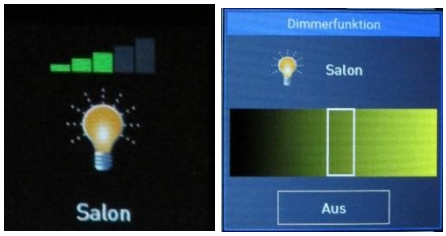


Settings:

The switching time can be used to set the time after which the relay switches off again (0=no switching off).

Icon and Name selects the corresponding icon that will be visible on the switch page of the PSL monitor.

Dimmer function activates the setting option of the PWM dimmer. There are 4 channels available, which are assigned to channels 1-4. A short press on the switch icon opens the dimmer setting to change the brightness.



Requires release (master switch function) The relay only switches by a push-button signal at the digital input (IN) if the relay was previously released via the monitor.

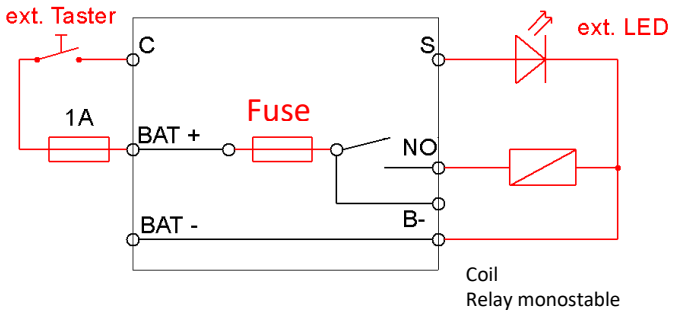
Linked switch (Primary / Secondary function)
The channel can be switched by its own switch on the display or digital input or by a second assigned channel and its digital input.

Switch is visible
If the channel cannot be switched directly (by its own icon) but only by an external (linked primary/secondary) switch, the icon on the switch side of the monitor can be deactivated.

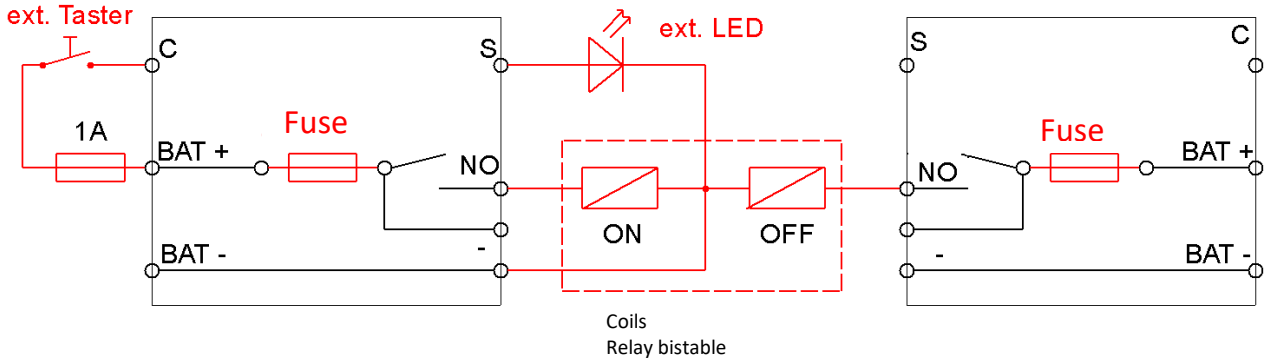
5.2 Energy management function

This function is selected to control high-current relays to implement energy management or to switch loads directly. In this way, consumer groups are switched off to protect the battery from deep discharge. Consumers are also switched on automatically if the state of charge permits this.

The information for switching the relay off and on is supplied by the shunt SHC. Bi-stable relays with a switch-on and a switch-off coil as well as monostable relays (ON/OFF) can be controlled.



The picture opposite shows the connection of a monostable relay. If a bistable relay with a switch-on and a switch-off coil is used, two relays must be programmed, one for switching on, the other for switching off.



The control coil of the high current relay is connected to the terminals B- and NO and the fuse is equipped accordingly (typ. 8A). This can be done with an automotive flat fuse or a circuit breaker of the 1170 series. Alternatively, the control relay can also be used potential-free, for which the fuse must be removed.
A light-emitting diode can be connected to the (S) connection for switching status feedback. Any push-button can be connected to the (C) input to obtain an external switching option.
ATTENTION: If the setting with pulse function is selected, the button and the LED are connected to the on-pulse relay!
Each time the button is pressed, the switching state of the high-current relay changes and the LED connected to C shows the switching state of the relay:
OFF = (automatic) switch-off ON = normal operating state

5.2.1 Configuration Energy Management On/Off

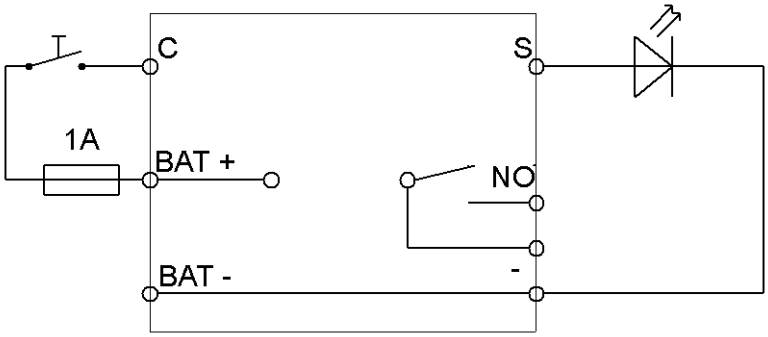
Energy management, control of monostable high-current relays **with ON/OFF contact**
Battery setting:
A battery connected to the PBUS with SHC
Alarm setting:
Alarm capacity, *reserve* and *empty alarm* are available for selection.

5.2.2 Configuration Energy Management On-pulse / Off-pulse

Energy management, pulse control of bistable high-current relays **(corresponds to push-button function)**
Battery setting:
A battery connected to the PBUS with SHC
Alarm setting:
Alarm capacity, *reserve* and *empty* **setting Pulse duration** can be selected:
Pulse duration in seconds. Adjustable 1s to 10s

5.3 Generator control function

This function is selected to control AC generators. AC generators with an ON and an OFF button as well as AC generators with automatic start (ON/OFF) can be controlled.
If a generator with an ON and an OFF button is used, two relays must be programmed, one for switching ON, the other for switching OFF.
The information for switching the generator on and off is supplied by the SHC shunts (generator ON/OFF setting). One or more shunts can provide the start signal.



ATTENTION:
It is started as soon as one shunt generator reports ON and stopped as soon as all shunts report OFF. See also the PSM manual, section SHC.
A control signal can be connected to the (C) input (plus switching) to block generator operation, e.g. when the shore connection is active. For switching status feedback, a light emitting diode can be connected to the (S) connection.

PLEASE NOTE:
If the setting with pulse function is selected, the control signal and the LED are connected to the on-pulse relay!

5.3.1 Configuration Generator On/Off

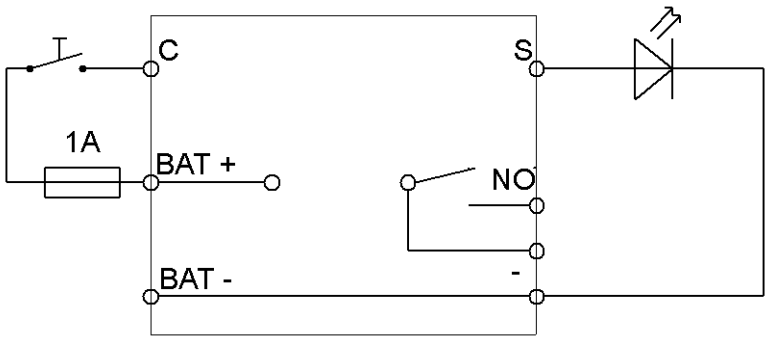
Control of an AC generator
Setting start and stop time:
Operating time of the generator. Adjustable 00:00 h to 23:59 h

5.3.2 Configuration Generator On/Off Pulse

Pulse control of an AC generator (switch-on pulse)
Pulse control of an AC generator (switch-off pulse)
Setting start and stop time:
Operating time of the generator. Adjustable 00:00 h to 23:59 h
Pulse duration setting:
Pulse duration in seconds. Adjustable 1s to 10s

5.4 Alarm signal function

For visualising alarm messages by means of external buzzers or indicator lights.
The relay can be used as a potential-free switch or, if the fuse corresponding to the relay is used, also positive switching.
For manual operation of the relay, a control signal can be connected to the (C) input (plus switching). For switching status feedback, a light emitting diode can be connected to the (S) terminal.



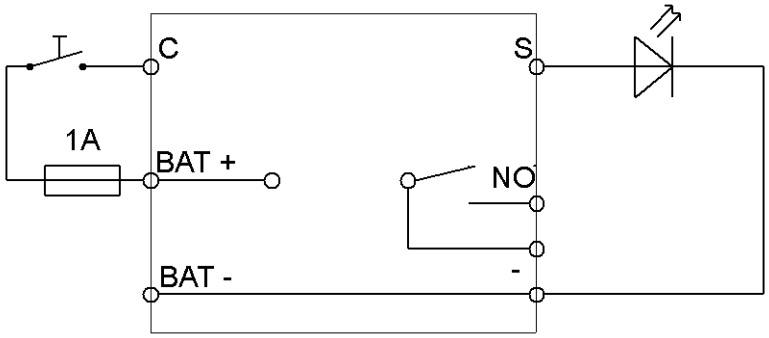
5.4.1 Configuration alarm signal

Alarm duration setting:
Max. Duration of the alarm signal until automatic switch-off.
Adjustable from 1 second to 127 minutes.
Values from 1 to 59 are interpreted as seconds
Values from 60 Are rounded to full minutes
(e.g. 197 = 197/60 = 3 min.)

Setting tank alarms:
Visualisation of tank alarms. Adjustable *Yes* or **No**
Setting battery alarms:
Visualisation of battery alarms. Adjustable *Yes* or **No**
Setting EM-box alarms:
Visualisation of EM-box alarms. Adjustable *Yes* or **No**
Setting main switch alarms:
Visualisation of main switch alarms. Adjustable *Yes* or **No**
Setting AC alarms:
Visualisation of AC alarms. Adjustable *Yes* or **No**

5.5 Tank pump function

Pump control in case of tank alarm. When a tank alarm occurs, the relay switches on. If the alarm is cancelled or the max. operating time is reached, the relay switches off.



The relay can be used as a potential-free switch or, if the fuse corresponding to the relay is used, also positive switching. For manual operation of the relay, a control signal can be connected to the (C) input (plus switching).
For switching status feedback, a light emitting diode can be connected to the (S) terminal.

5.5.1 Tank pump configuration

Switching time setting:
Limiting operating time of the pump when a tank alarm occurs:
Adjustable from 1 second to 127 minutes.
Values from 1 to 59 are interpreted as seconds
Values from 60 Are rounded to full minutes
(e.g. 134 = 134/60 = 2 min.)

Tank setting:
A tank connected to the PBUS that is to be monitored. In the Tank submenu, the "Alarm On" and "Alarm Off" thresholds must be activated for the corresponding tank.

5.6 Thermo switch function

This function is used to switch consumers on and off depending on the temperature.

5.6.1 Configuration thermal switch

Temperature

This sets the link to an existing temperature sensor.
which is connected to a TPC4 module. The link is indicated by the device address and the assigned name of the sensor.
The designation must be set in the configuration of the TPC4 module.

Alarm low temp.

On = Low temperature alarm treatment activated
Off = Low temperature alarm handling disabled

Alarm high temp.

On = High temperature alarm treatment activated
Off = High temperature alarm handling disabled

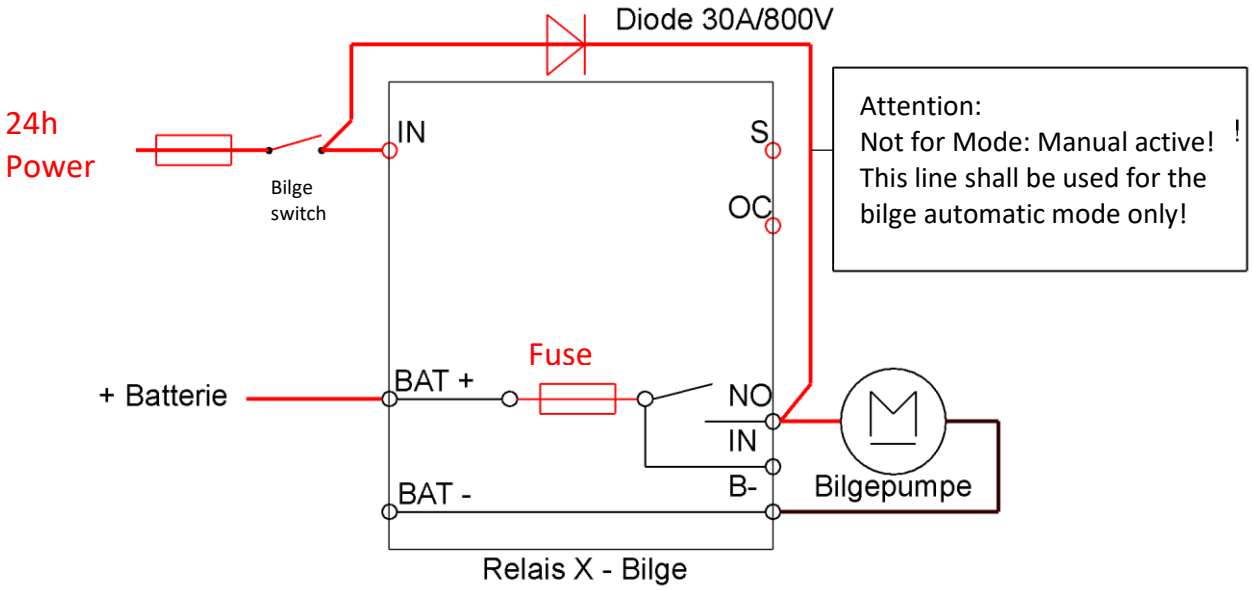
The temperature thresholds must be set in the configuration of the TPC4 module. To do this, you must select the temperature in Setup/Settings/Devices.

Alarm duration

Max. Duration of the alarm signal until automatic switch-off.
Adjustable 1 second to 127 minutes.
Values from 1 to 59 are interpreted as seconds
Values from 60 are rounded to full minutes
(e.g. 197 = 197/60 = 3 min.)
The value 0 corresponds to: Unlimited

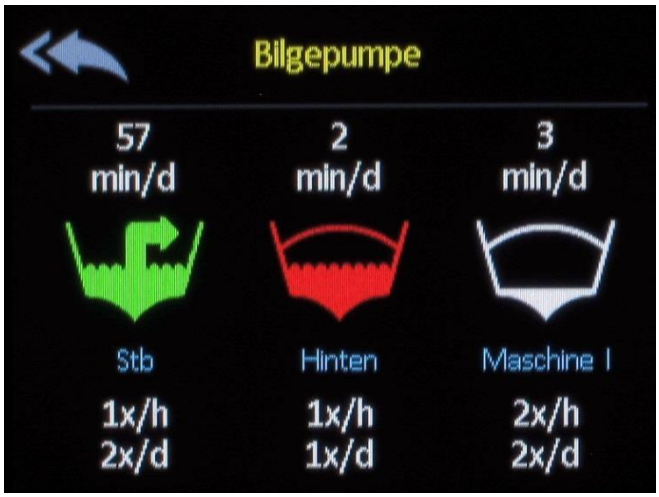
5.7 Bilge pump function

This function is used to time the bilge function and to manually switch on the bilge pump. The signal from the bilge switch, which controls the bilge pump, is detected at the "IN" input. Depending on the settings and wiring, the bilge pump is switched on automatically when an alarm is detected by the bilge switch or only after manual operation via the system monitor.



The connection example shows the connection to an existing combination of bilge pump with separate bilge switch. A relay channel of the CMR is connected in parallel and takes over the recording of the running times and the manual switching on from the monitor. In the event of a fault in the CMR module, the function of the bilge pump is maintained.

On the display of the system monitor PSM2, the symbol for the bilge pump is shown as follows:



Symbol white means: Bilge pump is switched off, no alarm present

Symbol flashing red means: Bilge pump is switched off, an alarm is present.

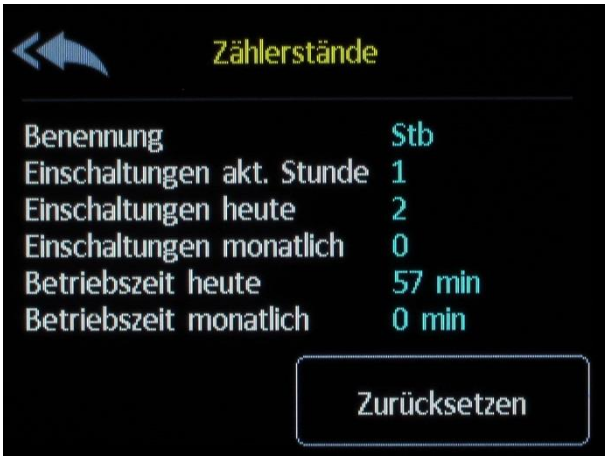
ATTENTION:
This is only functional if the bypass diode is not installed! (see connection diagram)

Green symbol means: Bilge pump is switched on

Above the symbol, the operating time in minutes of the current day is displayed.

Below the symbol, the number of switch-on operations in the current hour and those of the current day. These counters are set to 0 as soon as a new day or a new hour begins. The symbol also serves as a button. A long press of approx. 2 sec. switches the bilge pump on or off.

A quick tap opens a page with a statistical evaluation of the use of the bilge pump.
Here, the monthly average values of the switch-on processes and the operating times are also displayed.
The "Reset" button can be used to reset the system after successfully entering the system PIN,
immediately set all displayed values to 0.



5.7.1 Bilge pump configuration

Naming

Name of the bilge pump to be shown on the display. Possible names are: *Stb, Bb, Rear, Machine I, Machine II, Middle, Room I, Room II, Room III*

Switch on

This sets how the bilge pump is switched on. Possible values are: *Automatic* or *manual*

Switch-off delay

This can be used to set a pump run-on time. After the bilge switch has been switched off, the bilge pump continues to run for the set time.
A time from 0 to 255 minutes can be set.
If you enter the value "0" (Off), the delay is switched off.

Input signal INV

Here you can determine whether the picture switch is to send a plus signal or a
The bilge switch usually provides a positive signal that also switches on the bilge pump.
Usually, the bilge switch provides a positive signal that also switches on the bilge pump.

5.8 Digital input

Digital input (For alarm messages (fire / tank overflow...))
With this function, a positive input signal at the switching input C of the CMR is reported to the monitor. A corresponding icon must be selected from the list (see appendix from index 69) which then appears in the alarm list on the monitor.

Possible settings:

Output active:
Selection of whether the associated relay is to be switched or not.

Alarm message only:
The alarm message appears only as alarm text and no icon is displayed on the switch page.

5.9 Function None

Relay without function

6 Important notes on operation

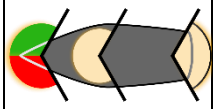
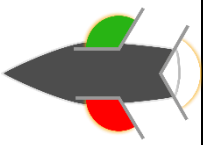
All components connected to the PBUS go into stand-by mode as soon as all P-Bus monitors are switched off or in stand-by mode.
If the alarm switching functions of the relay module CMR are to be used, the alarm message must be activated for a PSM. The system is woken up for 1 second every 60 seconds to exchange information and alarm messages. This increases the average current consumption of the system only slightly (1-2 mA).
If the relay module CMR is to switch alarm functions in an inactive boat, the CMR and all components that supply the switching information must be in constant operation to ensure that it is ready to switch. For this purpose, it is advisable to connect it to the continuous positive of the battery. Therefore, in such cases, a permanent charge via e.g. solar cells or regular recharging should be ensured to keep the system in operation and to protect the batteries from deep discharge.
A continuous current consumption of 42 mA corresponds to a discharge of 1 Ah per day.
For a PSM with 2 shunts SHC, 2 main switches FBC and a relay module, a daily capacity requirement in stand-by mode of 29 mA = 0.7 Ah must be calculated for an on-board voltage of 12V.

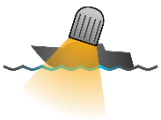
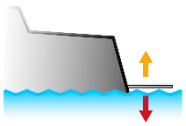
The stand-by and active power consumption of the individual components are listed below for calculating the energy requirement:

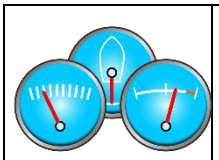
	Stand-by	**Active**
Device12	**V / 24 V**	**12 V / 24 V**
PSM4	.6 mA / 4.8 mA120 mA	/ 60 mA
SHC/SHL5	.6 mA / 3.8 mA6	.4 mA / 4.2 mA
FBC/TSC2	.0 mA / 3.0 mA7	.3 mA / 8.3 mA
CMT (without encoder)	7.5 mA / 7.9 mA10 mA	/ 10.3 mA
CMR	9 mA / 10 mA	13 mA / 14 mA

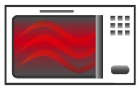
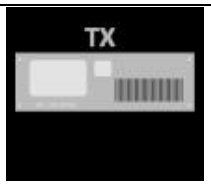
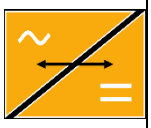
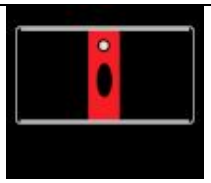
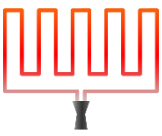
7 Appendix Symbol Library for PSM / PSL (Status APR21)

The PSM / PSL provides a library of consumer icons. All currently available icons are listed below:

	Index 1 Anchor light		Index 9 Bel. aft		Index 17 Fan
	Index 2 Three-colour lantern		Index 10 Bel. bug		Index 18 0: Comfort 1: Alarm system
	Index 3 0: Navigation 1: Navigation1 2: Navigation2		Index 11 Bel. Salon		Index 19 Socket 0: DC12V 1: DC 24V
	Index 4 Sailbel.		Index 12 Bel. Deck		Index 20 0: Heating 1: Tail 2: Salon
	Index 5 Compass		Index 13 Underwater bel.		Index 21 0: Hifi 1: Wifi 2: Radio main
	Index 6 0: Instrumentbel 1: Band G1 2: Band G2		Index 14 Refrigerator		Index 22 0: TV 1: PC 2: Raise
	Index 7 0: Night 1: Red light 2: Indirect light		Index 15 Icebox		Index 23 0: AIS 1: GPS

	Index 8 0: Bow, 1: Stern, 2: Salon, 3: BB, 4: STB, 5: cabin, 7. toilet, 8: corridor 9: Lighting 10: Indirect light 11: White light 12: Blue light 13: Red light 14: Green light 15: Consumer 1 16: Consumer 2 17: Consumer 3		Index 16 Cooler box		Index 24 Autopilot
	Index 25 0: Echo sounder 1: Sonar		Index 33 Searchlight		Index 41 0: Bilge pump 1: Bow 2: middle
	Index 26 Radar		Index 34 0: Grey water 1: Pump Stb 2: Pump Bb		Index 42 Tailgate
	Index 27 Plotter		Index 35 Pump Fecal matter		Index 43 0: Bow thrust 1: Control
	Index 28 Wind		Index 36 0: Water 1: Pump Bb 2: Pump Stb		Index 44 0: Winch 1: Stb 2: Bb
	Index 29 Weather		Index 37 0: Diesel 1: Petroleum 2: Day tank		Index 45 Docking
	Index 30 0: VHF 1: KW 2: Wifi		Index 38 0: Pressurised water 1: Cleaning		Index 46 Flaps

	Index 31 0: Instruments 1: Band G1 2: Band G2		Index 39 0: Shower 1: Water pump		Index 47 Reset
	Index 32 0: Wiper 1: Stb 2: Middle 3: Bb		Index 40 0: Toilet 1: Bug 2: Middle 3: Tail		Index 48 0: AC socket 1: Consumer 1 2: Consumer 2 3: Consumer 3

	Index 49 Boiler		Index 57 Microwave		Index 65 Transmitter
	Index 50 Charger		Index 58 Air conditioning		Index 66 Receiver
	Index 51 Desalination		Index 59 0: Inverter 1: Combi inverter		Index 67 Tracer
	Index 52 0: Grill 1: Plancha		Index 60 0: Flash 1: Alarm system2: SMS		Index 68 0: SNK 1: Mast System

	Index 53 Cooker		Index 61 0: Working light 1: Engine 2: Sail compartment 3: Ambient lighting left 4: Ambient lighting right 5: Working lighting 6: Cockpit		Index 69 Fire
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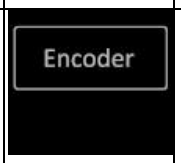
	Index 55 Dishwasher		Index 63 Decoder		Index 71 Stairs
	Index 56 Washing machine		Index 64 Encoder		Index 72 Tank overflow

	Index 73 Electric motor
	Index 74 Folding table
	Index 75 Kiel