## THE GAUGE FOR YOUR BATTERY PLANT - BCM

The digital battery monitors BCM with monochrome display stand out due to their very low power consumption and their easy readability even without switched-on illumination. The monitors are available in following versions:

- Battery monitor BCM I for the measuring of the capacity of one battery group and the voltage reading of two further batteries.
- Battery monitor BCM II for the measuring of the capacity of two battery groups and the voltage reading of two further batteries.
- Battery monitor BCM R for the measuring of the capacity of one battery group and the voltage reading of two further batteries and additionally operating of a genset.
- Battery monitor BCM I-48V for nominal voltage of 36V or 48V.

- applicable for all nominal battery voltages (12 V/24 V/36 V/48 V), even if single battery groups have different voltages.
- well readable energy saving illuminated LCD-display
- very low power consumption (2,5 mA at 12 V) allows continuous operation
- possibility of extension of the data line (up to 100 m).
- reliable data transfer via RS485

If the main battery reaches the configured capacity threshold or one of the further batteries the voltage threshold, an acoustic alarm comes on and an appropriated symbol appears on the display

**Indication of charge and discharge current**
The dynamic indicator is matched for the measurement range (0,01 A, 14,0 A, 123 A) to the corresponding current.

**Voltage indicator of the additional batteries**

**Voltage indicator of the main battery**


Picture in original size

**Indication of remaining battery capacity**
The bar level represents the charge level of the battery in %.
Alternatively, by pressing a key (mode), the remaining time for the momentary discharge current will be retrieved.

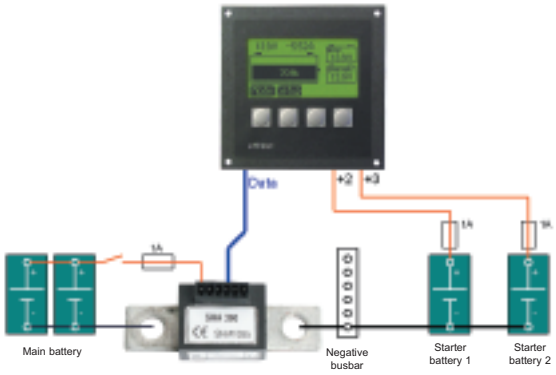
**Easy reading**
All important data is shown on the display. You don't need to switch between different sub menus.

**Setup**
In the set-up the battery capacity and voltage thresholds for the alarm function will be configured as needed. More information can be retrieved from the battery. Measuring configurations and values are saved even if the power supply is turned off.

**Time and mode genset**
the model BCM R can operate a genset depending on the battery charge level. For the operation of the genset a time window can be defined.

**Electrical connection of the battery monitor BCM 1**

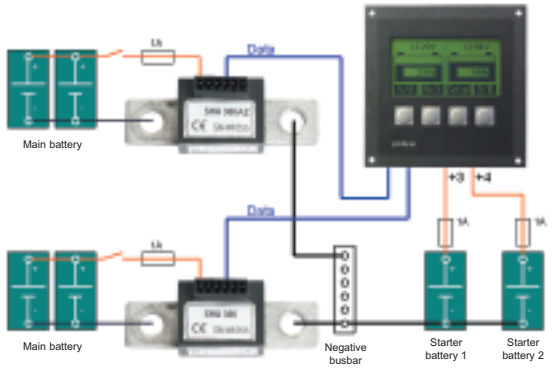
The battery monitor BCM I and the shunt SHA are connected through the data line. For the voltage measurement of the main battery, the protected measuring cable of the shunt will be connected to the positive pole of the main battery. For the voltage measurement of the additional battery groups the measurement cables must be connected from the monitor to the positive poles with separate lines.




The active shunt SHA has to be connected between the negative line of the service battery and the negative busbar. No other connection to the negative pole has to be made!
All other wires to other groups of batteries, consumers and charging sources have to be connected at the negative busbar or at the consumer side of the shunt SHA (V-). If installed like that it's guarantueed that all currents are measured and the BCM can work properly.

**Electrical connection of the battery monitor BCM 2**

The battery monitor BCM II and the shunts SHA are connected through the data lines. For the voltage measurement of the main battery, the protected measuring cable of the shunt will be connected to the positive pole of the main battery. For the voltage measurement of the additional battery groups the measurement cables must be connected from the monitor to the positive poles with separate lines.




The BCM 2 has to be connected to 2 active shunts SHA with different identification. When ordering please take care that you order a shunt SHA xxx and a shunt SHA xxx-A2. You can install two different shunt sizes SHA (300 A, 600 A) at the BCM 2.


## The heart of the battery monitor: the digital shunt SHA

A 16 bit A/D micro-controller measures consumers and charging currents with a very high accuracy over an active high-precision shunt unit. On the large LCD display, the precise charge amount of the service battery can be read at any time.

- very high accuracy (10mA) and large capacity range (10 mA - 600 A)
- automatic identification of battery full and correction of the charging efficiency factor
- continues adjustments of effective battery capacity
- indication of the number of load cycles and deep discharging
- for all nominal battery voltages (12 V/24 V/36 V/48 V)
  Attention: 36 V/48 V version on special request
- very low power consumption (5 mA / 12 V) allows continuous operation

**Battery capacity** Nominal capacity of the battery in Ah
**Charge voltage** Charge voltage of the battery 1 for battery full recognition
**Alarm %** Warning for capacity alarm of battery 1 in % (ext. switch contact"on", for "genset on" used by BCM R
**Generator off*** Threshold where the external contact will be switched off (genset off)
* (Generator on/off only possible at BCM relay.)
**Alarm U2** Alarm for battery voltage 2
**Alarm U3** Alarm for battery voltage 3

**Available settings and information in the setup menu**


Information can be requested from the battery.
Useful history of your battery:

- **CEF** Charging efficiency factor
- **Language** (DE, GB, FR, ES, DK, NL)
- **Peukert** Peukert coefficient
- **Cycles** Number of cycles
- **Deep discharge** Number of deep discharges

## BATTERY MONITOR

The battery monitor BCM 1 can supervise the capacity of a service battery and the voltage of two further batteries (starter). The BCM 1 is available as built-in unit or with built-on housing. For supervision of 2 battery groups the type BCM 2 has to be used. The electrical connection is by plug-in screw terminals. For the BCM 2 you need a shunt SHA xxx and a second shunt SHA xxx -A2.


- **BCM 1** Order-No.: **0 7000 1000**
- **BCM 1 -48V** Order-No.: **0 7000 1048**

Battery monitor for a consumer battery capacity and voltage supervision of two starter batteries. For combination with the shunt SHA. Connection cable to the active shunt SHA included, length 5 m.

| | |
|---|---|
| **Dimensions** | L 105 x W 105 x D 40 mm |
| **Cut out** | 88 x 88 mm |


- **BCM 1A (Aufbau)** Order-No.: **0 7000 1001**

Battery monitor (built-on housing). For combination with the shunt SHA. Connection cable to the active shunt SHA included, length 5 m.

| | |
|---|---|
| **Dimensions** | L 100 x W 100 x H 30 mm |


- **BCM 2** Order-No.: **0 7000 2000**

Battery monitor (built-in housing) for connection of two active shunts SHA xxx and SHA xxx-A2. Connection cable to both of the active shunts SHA included, length 5 m.

| | |
|---|---|
| **Dimensions** | L 105 x W 105 x D 40 mm |
| **Cut out** | 88 x 88 mm |

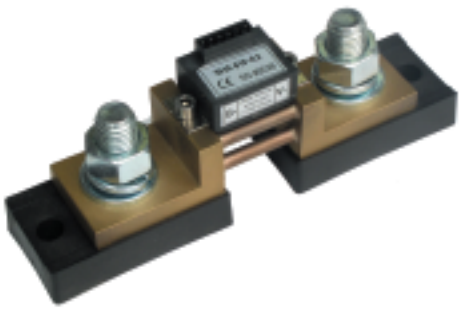
## ACTIVE SHUNT

For the measuring of the currents of a battery group a shunt SHA 300 or SHA 610 is required. For the battery monitor BCM 2 you need a shunt SHA 300 or SHA 610 and additionally for the second group of batteries a shunt SHA 300-A2 or SHA 610-A2.

- **SHA 300** Order-No.: **0 7000 0300**
- **SHA 300-A2** Order-No.: **0 7000 0302**

Active shunt for 300A. Suitable for consumers / charging sources of max. 3600 W / 12 V or 7200 W / 24 V. The shunt SHA 300 is for installation in the negative line between battery and negative terminal.

| | |
|---|---|
| **Current rating** | 300 A, 600 A 1 min, 1500 A 0,5 s |
| **Rated voltage** | 12 V , 24 V, 36 V, 48 V |
| **Consumption** | 6 mA/12 V, 4 mA/24 V |
| **Voltage range** | 8-60 V |
| **Current range** | 10 mA - 300 A |
| **Dimensions** | L 118 x B 40 x H 52 mm |
| **Connection** | M 10 bolts |



- **SHA 610** Order-No.: **0 7000 0610**
- **SHA 610-A2** Order-No.: **0 7000 0612**

Active shunt for 600A. Suitable for consumers / charging sources of max. 7200 W / 12 V or 14400 W / 24 V. The shunt SHA 610 is for installation in the negative line between battery and negative terminal.

| | |
|---|---|
| **Current rating** | 600 A, 800 A 1 min, 2500 A 0,5 s |
| **Rated voltage** | 12 V , 24 V, 36 V, 48 V |
| **Consumption** | 6 mA/12 V, 4 mA/24 V |
| **Voltage range** | 8-60 V |
| **Current range** | 10 mA - 600 A |
| **Dimensions** | L 185 x W 44 x H 68 mm |
| **Connection** | M 16 bolts |

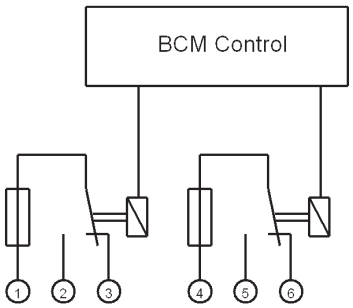
## BATTERY MONITOR


- **BCM R 12V** Order-No.: **0 7000 1112**
- **BCM R 24V** Order-No.: **0 7000 1124**

Battery monitor with 2 internal potential free contacts to activate a genset.
For combination with the shunt SHA. Connection cable to the active shunt SHA included, length 5 m.

**Dimensions** L 105 x W 105 x D 70 mm
**Cut out** 88 x 88 mm

The BCM R can be used to control an external genset to assure an operational readyness of the battery system by an integrated relay with potential free contacts . The relay activation /deactivation capacity threshold is freely configurable. When the battery is recognised empty the genset will be activated.
Due to the built-in watch the operation time of the genset can be defined. This avoids e.g. an unwished starting of the genset at night.
In addition there is a switch inlet for the start enabling of the genset for instance to avoid starting while shore power is available.
Both gensets with automatic start (switching function ON/OFF) as well as gensets with start / stop (turn on pulse for start and stop) buttons can be triggered.
Both potential free relay contacts are fused on the rear side of the unit by pluggable blade fuses.




## TEMPERATURE MONITOR

The temperature monitor TPM shows up to 5 temperatures. The lettering of the single temperature values will be done customer-specific before delivery.
For measuring the temperature sensor Temp has to be used. Temperature range is between -20°C and + 60°C.


- **TPM** Order-No.: **0 7000 1010**

Temperature monitor for up to 5 temperature sensors (built-in housing).

**Dimensions** L 105 x W 105 x D 40 mm
**Cut out** 88 x 88 mm

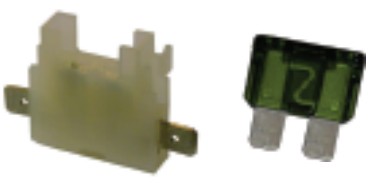
## ACCESSORIES FOR THE BATTERY MONITOR BCM

- **SHA Kabel 10m** Order-No.: **0 7000 1091**

Longer ready-made cable for the connection of the battery monitor BCM and the active shunt SHA..
Cable length 10 m.

- **Temp-BT** Order-No.: **0 5900 3000**

Temperature sensor for battery management shunt SHC and temperature monitor TPM.
Cable length 2,8 m.



- **ASH 1-1A** Order-No.: **6 0030 3411**

Fuse holder for blade fuse to protect voltage measurement lines e.g. of the BCM.
Blade fuse (1A). included. Flat terminals 6,3mm.

- **SAS 4** Order-No.: **0 8000 9014**

This bus bar will be attached directly on the shunt SHA 610 or SHC 600 to connect smaller lugs / lines (M12, 2x M10, M8).

**Dimensions** L 140 x W 30 x H 30 mm