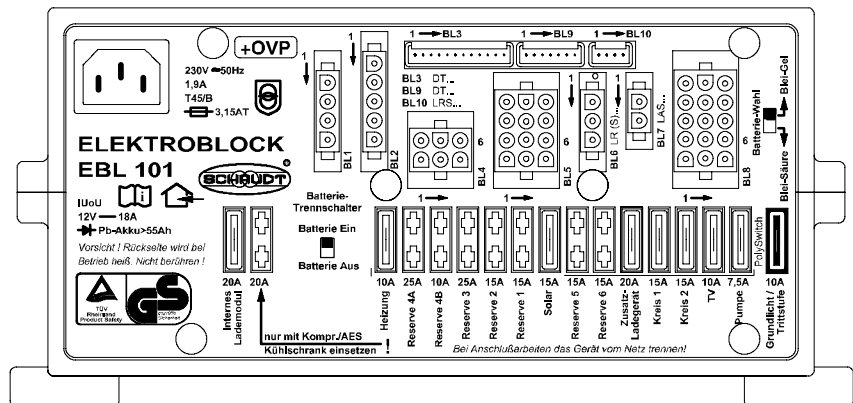


Instruction Manual



Electroblock **EBL 101 D** **EBL 101 C with OVP**

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1 Safety information

1.1 Meaning of the warning signs



▲ DANGER!

Failure to comply with this sign may result in danger to life and limb.



▲ WARNING!

Failure to comply with this sign may result in injury.



▲ ATTENTION!

Failure to comply with the sign may result in damage to equipment or other connected consumers.

1.2 General safety instructions

The design of the device is state-of-the-art and complies with approved safety technology. Failure to observe the safety instructions may nonetheless result in injury or damage to the device.

Only use the device when it is in perfect technical condition.

Faults impacting the safety of individuals or proper functioning of the device must be rectified immediately by specialists.



▲ DANGER!

Parts carrying 230V.

Risk of fatal injury due to electric shock or fire:

- Do not carry out maintenance or repair work on the device.
- If cables or the device housing are damaged, do not use the device and isolate it from the power supply.
- Ensure that no liquids enter the device.
- The mains connection line may only be replaced by an authorised customer service department or by qualified persons.



▲ WARNING!

Hot components!

Burns:

- Only change blown fuses when the device is completely de-energised.
- Blown fuses may only be replaced when the cause of the fault is known and has been rectified.
- Never bypass or repair fuses.
- Only use original fuses rated as specified on the device.
- Device parts can become hot during operation. Do not touch.
- Never store heat sensitive objects close to the device (e.g. temperature sensitive clothes if the device has been installed in a wardrobe).

2 Introduction

This instruction manual contains important information for the safe operation of equipment supplied by Schaudt. Make sure you read and follow the safety instructions provided.

The instruction manual should always be kept in the vehicle. All safety information must be passed on to other users.



- ▲ This device is not intended to be used by persons (including children) with limited physical, sensory or mental aptitude or lack of experience and/or knowledge unless they are supervised by a person responsible for their safety or have received instruction from this person on how the device is used.

Children are to be supervised so as to ensure they do not play with the device.

This device is intended for installation into a vehicle.

3 Operation

The Electrobloc is operated solely from the DT ... control and switch panel connected (apart from battery isolation).

Operation of the Electrobloc is not required for daily use.

Initial settings are only required after the type of battery (lead-acid or lead-gel) has been changed or during commissioning or when upgrading with accessories (see section 3.2 and EBL 101 D / EBL 101 C with OVP installation instructions for details).

3.1 Switching system on/off



▲ ATTENTION!

Incorrect Electrobloc settings.

Damage to connected devices. Therefore prior to starting:

- Ensure the leisure area battery is connected.
- Ensure that the battery selector switch (Fig. 1, Pos. 1) is set to the correct position for the battery inserted.
- Ensure that the AES fuse (Fig. 4, Pos. 16) is only inserted when an AES refrigerator is connected. The leisure battery may totally discharge otherwise. Damage to the battery is possible.

**12V main switch
(on LT ... control and
switch panel)**

Disable battery isolation on the Electrobloc:

- Move slide switch (see Fig. 4, Pos. 15) into position "Battery ON"
- After disabling the battery cut-off switch or after changing batteries: 12V main switch on the DT ... control and switch panel must be turned on briefly to start up the consumers.

Use the main 12V switch (see instruction manual of relevant control and switch panel) to switch on/off all the consumers and the control and switch panel.

Exceptions:

- Heater
- Step
- Frost protection valve
- AES/compressor refrigerator
- Spare 4

For more information, see the DT ... control and switch panel instruction manual. .

Step switch

The supply to the step is protected by a self-resetting fuse. This is why the step switch may only be activated briefly.



▲ ATTENTION!

Activating the step switch too long results in too high a current.

Self-resetting fuse can activate:

- Only press the step switch briefly.
- If the self-resetting fuse has triggered, it needs about one minute to reset before the step switch can be pressed again.

Operation with solar regulator



▲ ATTENTION!

No battery buffer function!

Damage to connected devices:

- Do not operate solar regulator without battery connected.



- ▲ If an original Schaudt solar regulator is used, the solar current can be displayed on the control and display panel (e.g. DT ...). For this, the control and display panel must be configured accordingly (a PIN is required).

Ask your dealer for advice.

3.2 Changing the battery



▲ ATTENTION!

Use of incorrect battery types or incorrectly rated batteries.

Damage to the battery or devices connected to the Electroblock:

- Batteries should only be changed by experts.
- Follow the battery manufacturer's instructions.
- Only connect the Electroblock to 12V power supplies with rechargeable 6-cell lead gel or lead acid batteries. Do not use any unsuitable battery types.



- ▲ Normally only batteries of the same type and capacity should be used, i.e. the same as those installed by the manufacturer.

Changing the battery

- ▲ It is possible to swap lead acid batteries with lead gel batteries. Changing from lead gel batteries to lead acid batteries is not possible without overhead. Contact the vehicle manufacturer for more information.
- Disconnect the battery from the Electroblock by activating the battery isolation on the DT ... control and switch panel (see also section 3.4).
- Remove the "+ solar cell" connector on the solar charge regulator (if available).
- Isolate the Electroblock from the mains voltage (230V AC).
- Replace the battery.
- After changing the battery, recheck which type of battery has been inserted.



▲ DANGER!
 Incorrect setting of the battery selector switch.
 Risk of explosion due to build up of explosive gases:

- Move the battery selector switch to the correct position.



▲ ATTENTION!
 Incorrect setting of the battery selector switch.
 Damage to the battery.

- Move the battery selector switch to the correct position.



▲ When using AGM batteries, moving the battery selector switch to the "Lead Gel" position is recommended. Experience tells us that AGM batteries are charged perfectly this way.

However, suitability must be checked on a case-by-case basis using the specifications from the battery manufacturer and the charging parameters of the Electroblock.

The charging parameters are specified in Appendix "Technical details" (Section E).

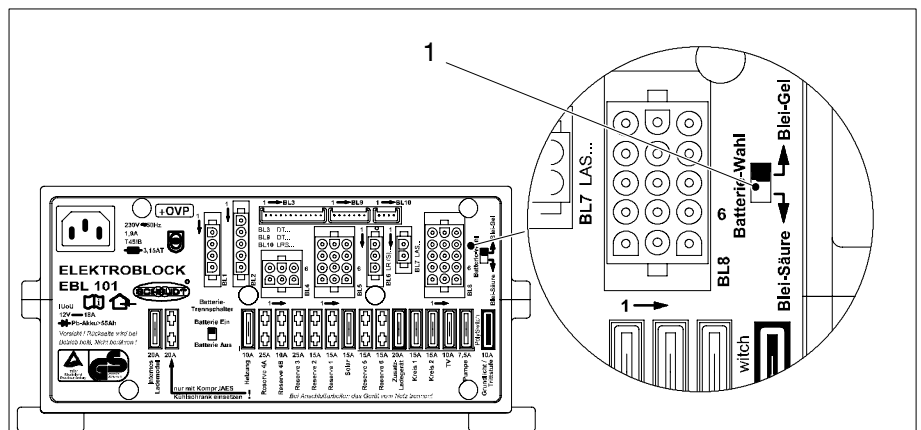


Fig. 1 Battery selector switch

Starting up the system

- Move the battery selector switch (Fig. 1, Pos. 1) to the correct position using a thin object (such as a ballpoint pen):
 - Lead gel battery: Move the battery selector switch to "Lead-gel".
 - Lead acid battery: Move the battery selector switch to "Lead-acid".
- Plug in the "+ solar cell" connector on the solar charge regulator (if available).
- Start up the system as described in section 3.1.

3.3 Faults

Flat vehicle fuses A fault in the power supply system is usually caused by a blown fuse.

Self-resetting fuses The following functions are protected by self-resetting fuses:

- Exit step
- Sensor lines to the DT ... control and switch panel

If there is a fault with the step, it must not be operated for a period of 1 minute. The fuse resets automatically during this period.

For faults with the DT ... control and switch panel, the entire system must be switched off from the battery cut-off and turned on again after about 1 minute.

Please contact our customer service department if you cannot rectify the fault using the following table.

If this is not possible, e.g. if you are abroad, you can have the Electrobloc repaired at a specialist workshop. In this case, you must ensure that the warranty is not invalidated by incorrect repairs being carried out. Schaudt GmbH shall not accept any liability for damage resulting from such repairs.

Fault	Possible cause	Remedy
Living area battery is not charged during 230V operation (battery voltage constantly below 13.3 V)	No mains voltage	Switch on the automatic fuse in the vehicle Have the mains voltage checked
	Defective Electrobloc	Call customer service
Living area battery is overcharged during 230V operation (battery voltage constantly above 14.5 V)	Defective Electrobloc	Call customer service
Starter battery is not charged during 230V operation (battery voltage constantly below 13.0 V)	No mains voltage	Switch on the automatic fuse in the vehicle Have the mains voltage checked
	Defective Electrobloc	Call customer service
Living area battery is not charged during mobile operation (battery voltage below 13.0 V)	Defective alternator	Check the alternator
	No voltage on D+ input	Check fuses and wiring
	Defective Electrobloc	Call customer service
The living area battery is overcharged during mobile operation (battery voltage constantly above 14.3 V)	Defective alternator	Check the alternator
The refrigerator does not work during mobile operation	No power supply to the refrigerator	Check fuse and wiring
	Defective Electrobloc	Call customer service
	Defective refrigerator	Check the refrigerator

Fault	Possible cause	Remedy
Solar charger does not work (power supply and engine are off)	Solar panel in (partial) shade or covered (snow or dirt)	Move solar panel out of shade or clean.
	Solar charge regulator not plugged in	Plug in solar charge regulator
	Defective fuse or wiring	Check fuse and wiring
	Solar charge regulator defective	Check solar charge regulator
12V supply does not work in the living area	12V main switch for the living area battery is switched off	12V main switch for the living area battery must be switched on
	Activate battery isolation on the DT ... control and switch panel	Activate battery isolation on the DT ... control and switch panel
	Defective fuse or wiring	Check fuse and wiring
	Defective Electroblock	Call customer service
The Electroblock cannot be operated from the DT ... control and switch panel	Defective Electroblock	Call customer service



- ▲ The charging current is reduced automatically if the device becomes too hot due to excessive ambient temperature or lack of ventilation. Always prevent the device from overheating nevertheless.
- ▲ If the automatic shutdown mechanism of the battery monitor is triggered, fully charge the living area battery.

3.4 Closing down the system



▲ ATTENTION!

Total discharge.

Damage to the living area battery:

- Fully charge the living area battery before and after closing down the system. Connect a vehicle with an 80 Ah battery and a vehicle with a 160 Ah battery to the mains for at least 12 and 24 hours respectively.



▲ ATTENTION!

Permitted input voltages exceeded.

Damage to connected consumers:

- Do not operate any connected Schaudt solar charge regulator without battery.
- When the battery is changed or removed, first unplug the "+ solar cell" connector on the solar charge regulator.

Shutdown of system up to 6 months

- Fully charge the living area battery before closing down the system.

The living area battery is then protected against total discharge. This only applies if the battery is intact. Follow the battery manufacturer's instructions. Once shut down, the system requires approx. 4 Ah per month.

Disconnect the living area battery from the 12V on-board supply

Disconnect the living area battery from the 12V power supply if the motorhome is not used for a longer period (during the winter for example). For this, the system has a battery cut-off mechanism that isolates the living area battery from the vehicle. Battery isolation is activated from the DT ... control and switch panel (see DT ... control and switch panel instruction manual).

- 12V main switch on the DT ... control and switch panel must be switched off.
- Move battery cut-off switch (sliding switch, see Fig. 4, Pos. 15) to position "Battery OFF".

The battery cut-off switch isolates the following connections from the living area battery:

- 12V consumers
- Frost protection valve
- Control and switch panel



- ▲ The living area battery can also be charged using the internal charger module, an auxiliary battery charging unit, the solar charge regulator and the alternator when the battery cut-off switch is switched off.

Shutdown period longer than 6 months

- Fully charge the living area battery before closing down the system.
- Remove the "+ solar cell" connector on the solar charge regulator.
- Remove the clamps from the battery terminals.



- ▲ The battery alarm is no longer active.



- ▲ The frost protection valve opens for certain heater systems when the living area battery is isolated from the Electrobloc via the battery cut-off. The boiler and water tank empty when the frost protection valve is open. See the instruction manual for the heater system for further information.

4 Application and functions in detail



- ▲ This device is intended solely for installation in a vehicle.

The Electrobloc is the central energy supply device for all 12 V consumers in the electrical system on board the motorhome/caravan. It is normally located inside a cupboard or storage area and is accessible from the front for fuse changes.

**Only EBL 101 C with OVP:
Overvoltage protection
OVP**

Electrobloc EBL 101 C with OVP is suitable for all applications posing a particular risk of overvoltage, such as lightning strikes hitting the national grid, generator operation, poor electronic installations or trips to distance countries.

For this, an overvoltage protection unit is fitted in Electrobloc EBL 101 C with OVP between the mains connection and the charge module.

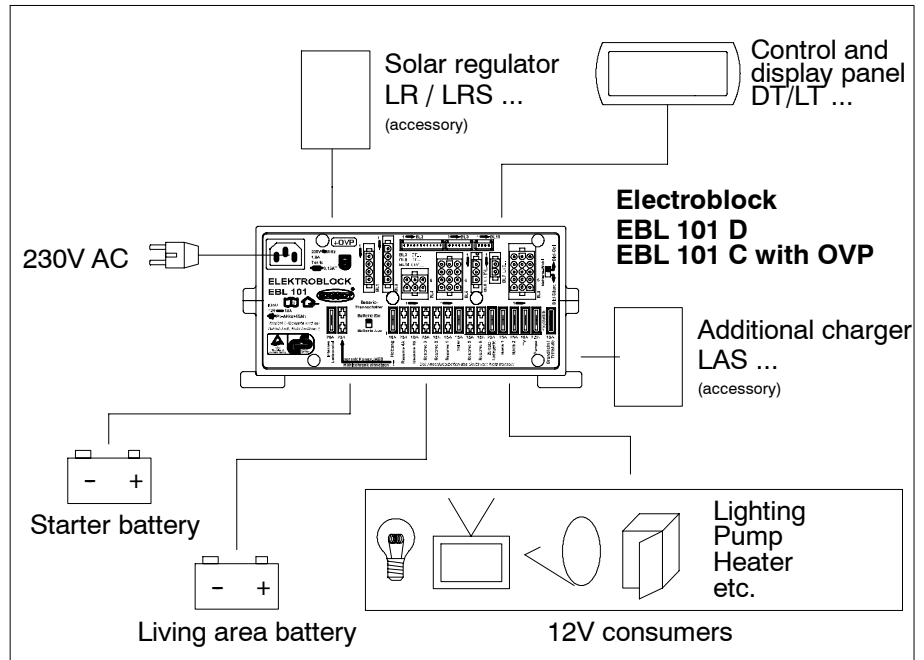


Fig. 2 On-board power supply system

Modules Electroblock EBL 101 D contains:

- a charge module for charging all connected batteries
- the entire 12 V distribution system
- fuses for the 12V circuits
- a main switch module
- other control and monitoring functions

Electroblock EBL 101 C with OVP contains in addition:

- overvoltage protection OVP

System devices A DT ... control and switch panel must be connected for operation. This device controls the electrical functions in the motorhome's living area as well as the accessories.

There are connections for an additional battery charger and a solar charge regulator.

Flat vehicle fuses protect the various circuits. Exceptions here are the step and the frost protection valve.

- Protective circuits**
- Excess temperature
 - Overload
 - Short circuit
 - Overvoltage in the 230 V supply (only EBL 101 C with OVP)

Mains connection 230 V AC \pm 10 %, 47 to 63 Hz sinusoidal, protection class I

Current-carrying capacity 12V outputs may be loaded with max. 90% of the rated current of the respective fuse (see also installation instructions or front panel).

4.1 Battery functions

Suitable batteries 6-cell lead acid or lead gel batteries, 55 Ah and above

Battery charging whilst moving Simultaneous charging of the starter battery and the living area battery via the alternator, parallel connection of the batteries via a cut-off relay

Battery isolation The battery cut-off (at the battery cut-off switch of the Electrobloc, see Fig. 4, Pos. 15, see also section 3.4) isolates the following connections from the living area battery:

- all 12 V consumers
- the frost protection valve

This prevents slow discharge of the living area battery by the standby current during shutdown of the vehicle (discharge with approx. 4 Ah in month).

The batteries can still be charged using the Electrobloc, the alternator, an auxiliary charging unit or the solar charge regulator, even when the battery cut-off switch is switched off.

Battery selector switch The switching option provided by the battery selector switch ensures optimum charging of the two battery types, lead gel and lead acid.

Battery monitor with automatic disconnect The battery monitor of the DT ... control and switch panel constantly monitors the living area battery with dynamic voltage threshold. The cut-off point is "earlier" for lower discharge currents than for larger currents. This provides improved total discharge protection. Monitoring is also performed in the switched-off state. A warning message is displayed below 12.0 V (dependent on current drain).

If the voltage of the living area battery sinks further, falling below 10.5V, the battery monitor immediately switches off all 12V consumers. The control and display panel also switches itself off. Only the frost protection valve continues to be powered (so it stays closed). Before switch-off, all switch states and the value of the battery capacity are stored and restored after power-on.

If an overload or an insufficiently charged living area battery causes the voltage to fall so low that the automatic disconnecter is triggered, any non-essential consumers should be switched off.

If need be, the 12V supply can begin operation for a short time. In this case the 12 V main switch on the DT ... control and switch panel must be switched on.

However, if the battery voltage remains below 11.0 V, the 12 V power supply can not be turned back on.

Fully charge the living area battery as soon as possible. For more information, see the "Battery voltages" description in the relevant DT ... control and switch panel instruction manual.

4.2 Additional functions

Automatic switch function for AES/compressor refrigerator This relay supplies the AES/compressor refrigerator with power from the starter battery when the vehicle engine is running and the D+ connection is live. An AES/compressor refrigerator is powered by the living area battery when the vehicle engine is not running.

Step fuse The step output is protected by a self-resetting 15A fuse.

If a fault occurs, such as overcurrent, the self-resetting fuse interrupts the relevant circuit.

After rectification of the fault, the fuse automatically resets after approx. 1 minute.

Battery charging with solar charging regulator Maximum permitted charge current 14 A, protected with 15 A
Depending on the solar charge regulator used, either only the living area battery is charged or the living area battery and the starter battery.

4.3 Use as an exchange device

Electroblocks EBL 101 D and EBL 101 C with OVP can be used as exchange devices for the EBL 100. The plug-and-socket connections of the old device can all be used.

Some additional functions and plug connections of the EBL101 will however remain without a function.

5 Maintenance

The Electroblock requires no maintenance.

Cleaning Clean the Electroblock with a soft, slightly damp cloth and mild detergent. Never use spirit, thinners or similar substances. Do not allow liquids to enter the Electroblock.

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Appendix

A EC declaration of conformity

Schaudt GmbH hereby confirms that the design of Electroblocks EBL 101 D and EBL 101 C with OVP complies with the following relevant regulations:

- DIRECTIVE 2006/95/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL from 12.12.2006 for the harmonisation of the legal provisions of member states in regard to electrical equipment for use within particular voltage limits
- DIRECTIVE 2004/108/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL from 15.12.2004 for the harmonisation of the legal provisions of member states in regard to electromagnetic compatibility and for the annulment of directive 89/336/EEC
- Law on the electromagnetic compatibility of equipment from February 26th 2008

Manufacturer Schaudt GmbH, Elektrotechnik & Apparatebau

Address Daimlerstrasse 5
88677 Markdorf
Germany

B Special fittings/accessories

Switch panel Schaudt DT ... switch panel (required for operation)

Additional charger Schaudt battery charger LAS ... with max. 18 A charge current, including suitable connection cable (MNL).

Solar charge regulator Schaudt Solar charge regulator, type LR ... (or LRS ... ; required if the solar current is to be displayed) for solar modules with an overall current of 14 A with 3-pin connector and connector cable (LRS ... with 2 connectors)

C Customer service

Customer service address Schaudt GmbH, Elektrotechnik & Apparatebau
Daimlerstrasse 5
D-88677 Markdorf

Phone: +49 7544 9577-16 Email: kundendienst@schaudt-gmbh.de

Office hours Mon to Thurs 08.00 – 12.00, 13.00 – 16.00
 Fri 08.00 – 12.00

Send in device Returning a faulty device:

- Complete and enclose the fault report, see Appendix D.
- Send it to the addressee (delivery free).

D Fault report

In the event of damage, please complete the fault report and send it together with the faulty device to the manufacturer.

Device type: _____
Item no.: _____
Vehicle: _____ Manufacturer: _____
Model: _____
Own installation? Yes No
Upgrade? Yes No

Following fault has occurred (please tick):

- Electrical consumers do not work - which?
(please specify below)
- Switching on and off not possible
- Persistent fault
- Intermittent fault/loose contact

Other remarks:

E Technical details

Mains connection	230 V AC \pm 10 %, 47 to 63 Hz sinusoidal, protection class I
Current consumption	1.9 A
Standby current from Living area battery	Depending on the control and switch panel: approx. 5 - 20 mA, plus consumption of controller electronics of refrigerator Measurement approx. 10 minutes after disconnection from the mains: <ul style="list-style-type: none">● not connected to mains● 12.6 V battery voltage● Battery isolation not enabled● Control and switch panel lighting off● 12V main switch off
D+ loading	Loading of D+ output of the alternator by the Electrobloc approx. 200 mA without current consumption on D+ point
Current-carrying capacity	12V outputs A maximum of 90% of the nominal current of the relevant fuse may be drawn.

	Frost protection valve output	max. 0.1 A
	D+ point	max 1 A
Battery charging, living area battery with mains connection	Characteristic charging curve	IUoU
	Final charging voltage	14.3 V
	Charge current	18 A in the entire mains voltage range, electronically limited, minus the charge current into the vehicle battery
	Voltage for float charge	13.8 V with automatic switchover
	New charge cycle, Switchover to main charging	with battery voltage below 13.8 V with a few seconds delay

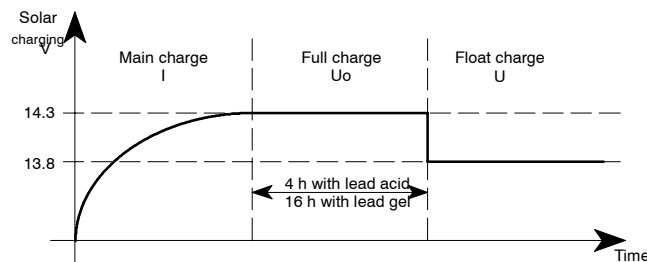


Fig. 3 Example of the charging voltage curve with the Electrobloc

- I Main charge with maximum 18 A charging current, electronically limited, up to final charging voltage. Start of charge also for totally discharged batteries.
- Uo Automatic changeover to full charge with constant 14.3 V. The duration of the fully charge phase depends on the type of battery and can be adjusted at the device:
- U Automatic changeover to trickle charge with constant 13.8V. In the trickle charge phase, the voltage at the output of the charging module is constant.

Start of a new charging cycle by switching over to main charge, if the battery voltage falls below 13.8 V for more than 5 seconds when loaded. Start of charge also for totally discharged batteries. The internal charge module can also be operated without living area battery.

Battery charging, starter battery with mains connection	For mains operation, the starter battery is also charged (with maximum charge current of 6 A).	
Battery charging via solar charge regulator	Maximum permitted charge current 14 A, protected with 15 A; Depending on the solar charge regulator used, either only the living area battery is charged or the living area battery and the starter battery.	
Battery charging whilst moving	Simultaneous loading of living area battery by alternator Batteries connected in parallel via a cut-off relay	
Battery monitor	Switch-off voltage:	dynamic, controlled by control and switch panel
	Minimum battery voltage for Switch-on via the 12 V main switch on the control and switch panel:	approx. 11.0 V

F Layout

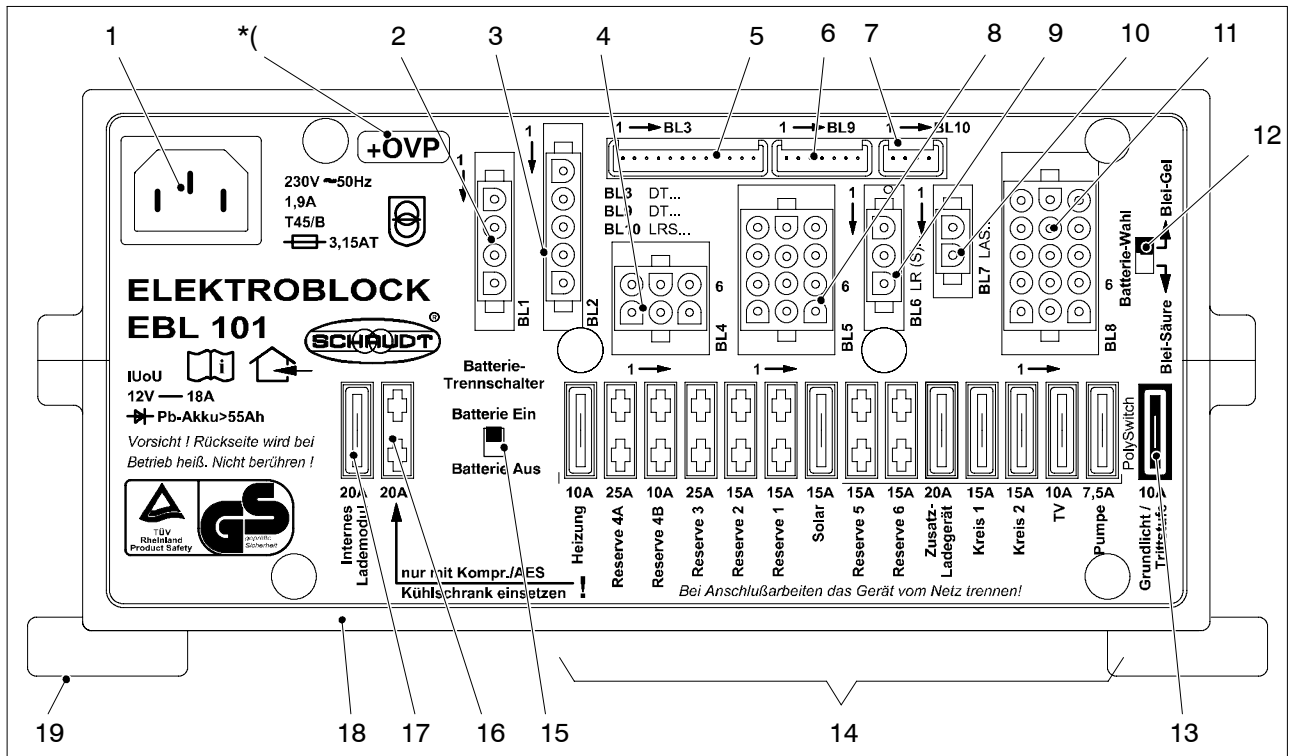


Fig. 4 Layout of Electroblock EBL 101 D / EBL 101 C with OVP (front); *(+OVP label only for EBL 101 C with OVP)

- | | |
|---|---|
| 1 Mains connector | 10 Connection block, additional charger |
| 2 Connection block, refrigerator supply | 11 Connection block TV, pump, consumers |
| 3 Connector block, refrigerator supply D+, Battery sensor/control lines | 12 Selector switch acid/gel battery |
| 4 Connector block, heating, floor light, step | 13 Self resetting step fuse (internal) |
| 5 Connector, DT ... control and switch panel | 14 Flat vehicle fuses, consumers |
| 6 Connector, DT ... control and switch panel | 15 Battery cut-off switch |
| 7 Connection block, solar regulator (measurement signal) | 16 AES refrigerator fuse |
| 8 Connection block, reserve | 17 Flat vehicle fuse, internal charger module |
| 9 Connection block, solar regulator (supply) | 18 Housing |
| | 19 Assembly flaps |

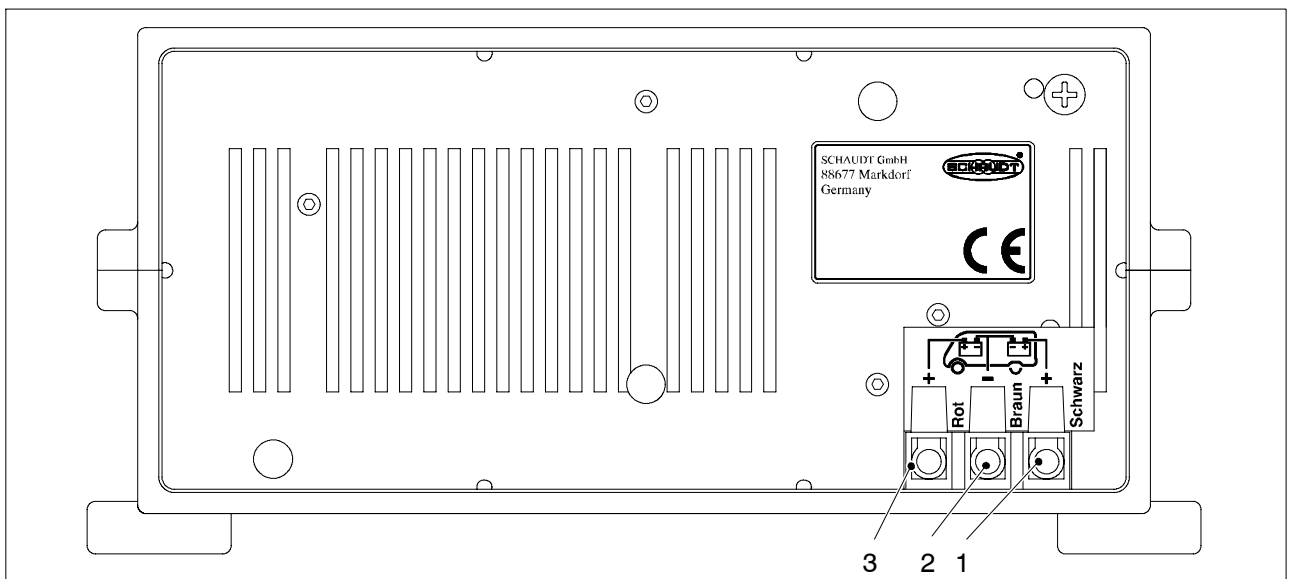


Fig. 5 Layout of Electroblock EBL 101 D / EBL 101 C with OVP (rear)

- | | |
|-----------------------------------|-------------------------------|
| 1 Connection, living area battery | 3 Connection, starter battery |
| 2 Connection, earth | |

G Block diagram/wiring diagram

