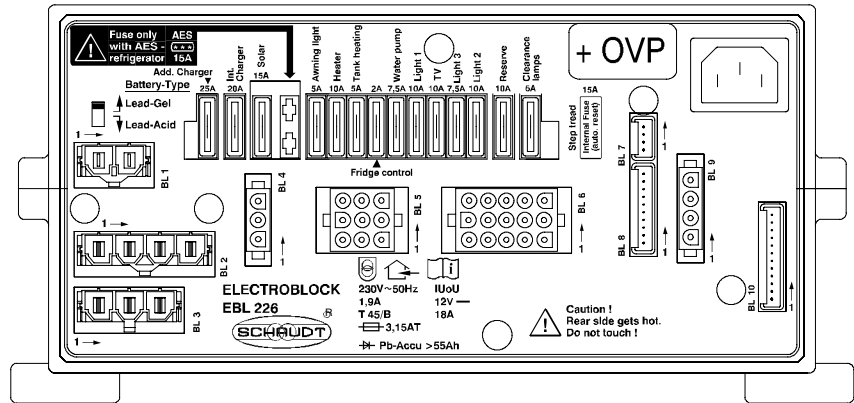


Instruction Manual



Electroblock EBL 226 C +OVP

Table of contents

1	Safety Information	2
1.1	Meaning of safety symbols	2
1.2	General safety information	2
2	Introduction	3
3	Operation	3
3.1	Switching System on/off	3
3.2	Changing the Battery	4
3.3	System Faults	5
3.4	Closing down the System	7
4	Application and Functions in Detail	8
4.1	Battery Functions	9
4.2	Additional Functions	10
5	Maintenance	10
	Appendix	11

1 Safety Information

1.1 Meaning of safety symbols



▲ DANGER!

Failure to heed this warning may result in death or serious injury.



▲ WARNING!

Failure to heed this warning may result in personal injuries.



▲ ATTENTION!

Failure to heed this warning may result in damage to the device or connected consumers.

1.2 General safety information

The device is state-of-the-art and complies with approved safety regulations. Nonetheless, personal injuries or damage to the device may occur if the safety instructions contained herein are not followed.

Ensure that the device is in perfect working order before use.

Any technical faults which may have an adverse effect on personal safety or device safety must be rectified immediately by qualified personnel.



▲ DANGER!

230 V mains voltage carrying parts.

Danger of death 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, no longer use the device and isolate from the power supply.
- Ensure that no liquids enter the device.



▲ WARNING!

Hot components!

Burns:

- Only replace blown fuses when the device is completely de-energised.
- Only replace blown fuses once the cause of the fault has been identified and 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 on the safe operation of equipment supplied by Schaudt. Read and always follow the safety instructions.

The instruction manual should be kept in the vehicle at all times. Ensure that other users are made aware of the safety regulations.

3 Operation

The electronic block is operated exclusively through the connected control and switching board IT ... / LT

Operation of the Electrobloc EBL 226 C +OVP is not required for daily use.

Settings only have to be configured once if the battery type is changed (lead acid or lead gel), during initial start-up or when retrofitting accessories (see chapt. 3.2 and assembly instructions EBL 226 C +OVP).

3.1 Switching system on/off



▲ ATTENTION!

Incorrect settings on the electronic block!

Connected devices may be damaged. Therefore, prior to initial start-up:

- Ensure the living area battery is connected.
- Ensure that the battery selector switch (Fig. 1, Pos. 1) is set to the correct position for the inserted battery.
- Make sure the AES fuse (Fig. 4, Pos. 2) is only used when the AES refrigerator is connected. Otherwise, the living area battery may be totally discharged. Damage to the battery is possible.

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

- Disable battery isolator on the DT/LT ... control and switch panel (see operating instructions of the relevant control and switch panel).
- After enabling the battery cut-off switch or after changing batteries:
12-Briefly turn on the 12V main switch on the DT/LT ... control and switch panel to start up the consumers.

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

Excluded are:

- Side marking lights
- Heater
- Step
- Frost protection valve
- AES/compressor refrigerator

- Refrigerator control
- Wastewater tank heating
- Awning light

For further information, see the instruction manual of the DT/LT ... control and switch panel .

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.

3.2 Changing the battery



▲ ATTENTION!

Use of incorrect battery types or incorrectly rated batteries.
Damage to the battery or devices connected to the electronic block:

- Batteries should only be changed by qualified personnel.
- Follow the instructions of the battery manufacturer.
- Only connect the electronic block to 12 V power supplies with rechargeable 6-cell lead gel or lead acid batteries. Do not use any unintended battery types.



- ▲ Only batteries of the same type and capacity as those installed by the manufacturer should normally be used.
- ▲ 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.

Changing the battery

- Electrically disconnect the battery from the Electrobloc. To do this, enable the battery isolation on the DT/LT ... control and switch panel (see also section 3.4).
- Remove "+ solar cell" connector on the solar charge regulator.
- Isolate Electrobloc from the mains voltage (230V AC).
- Replace 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:

- Set the battery selector switch to the correct position.



▲ ATTENTION!

Incorrect setting of the battery selector switch.
Damage to the battery.

- Set the battery selector switch to the correct position.
- Disconnect the electronic block from the mains before adjusting the battery selector switch.

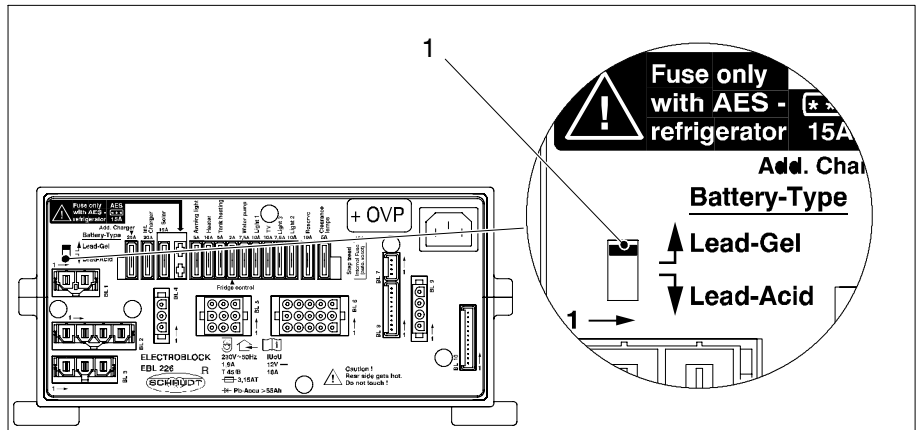


Fig. 1 Battery selector switch

- Set the battery selector switch (Fig. 1, Pos. 1) to the correct position using a thin object (such as a ballpoint pen):
- Lead gel battery: Set the battery selector switch to "Lead gel".
 - Lead acid battery: Set battery selector switch to "Lead gel".

Starting up the System

- Insert "+ solar cell" connector on the solar charge regulator.
➤ Start up the system as described in section 3.1.

3.3 System Faults

Flat vehicle fuses

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

Self-resetting fuses

The following is protected with a self-resetting fuse:

- Exit step

If a fault has occurred here, the step switch must not be pressed for about one minute. This fuse resets automatically during this period.

Please contact our customer service department if you are unable to rectify the fault using the following table.

If this is not possible, e.g. if you are abroad, you can have the electronic bloc repaired at a specialist workshop. Please note that the warranty will become void if incorrect repair work is carried out. Schaudt GmbH shall not accept liability for any damages resulting from such repairs.

Fault	Possible cause	Remedy
Living area battery is not charged during 230 V 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 electronic block	Contact the customer service department
Living area battery is overcharged during 230 V operation (battery voltage constantly above 14.5 V)	Defective electronic block	Contact the customer service department
Starter battery is not charged during 230 V 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 electronic block	Contact the customer service department
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 electronic block	Contact the customer service department
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 electronic block	Contact the customer service department
	Defective refrigerator	Check the refrigerator
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
	Enable battery isolator on the DT/LT ... control and switch panel	Disable battery isolator on the DT/LT ... control and switch panel
	Defective fuse or wiring	Check fuse and wiring
	Defective electronic block	Contact the customer service department
Operation of the Electrobloc not possible via DT/LT ... control and switch panel	Defective electronic block	Contact the customer service department



- ▲ If the device becomes too hot due to excessive ambient temperature or lack of ventilation, the charging current is automatically reduced. Nevertheless, always prevent the device from overheating.
- ▲ 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.
- If the battery is going to be changed or removed, first remove " + 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 instructions of the battery manufacturer. The shut down system requires approx. 4 Ah per month.

Disconnect the living area battery from the 12 V power supply

Disconnect the living area battery from the 12 V power supply if you are not going to use the motorhome 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. The battery cut-off is enabled on the DT/LT ... control and switch panel (see operating manual of DT/LT ... control and switch panel).

- Switch off the main switch on the DT/LT ... control and switch panel.
- Enable the battery cut-off on the DT/LT ... control and switch panel (see operating manual of DT/LT ... 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 poles.



- ▲ 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. For more information, see the instruction manual of the heater system.

4 Application and Functions in Detail



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

The EBL 226 C +OVP 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.

Overvoltage protection OVP

The electronic block is suitable for applications in which the risk of overvoltage is especially high. For example, lightning strikes in the public mains network, generator operation, poor electronic installations or trips to foreign countries.

For this, overvoltage protection is fitted in the electronic block between the mains connection and the charge module.

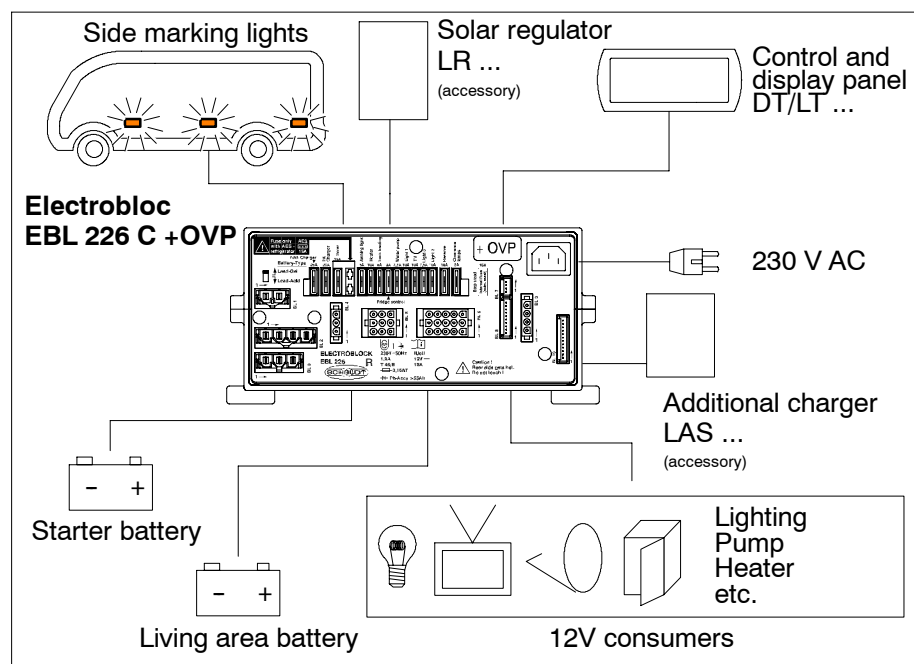


Fig. 2 On-board power supply system

Modules The EBL 226 C +OVP Electrobloc contains:

- Overvoltage protection OVP
- a charge module for charging all connected batteries
- the complete 12 V distribution
- the fuses for the 12 V circuits
- A battery monitor module
- Other control and monitoring functions

System devices A DT or LT ... control and switch panel must be connected for operation. These devices control the electrical functions in the vehicle's living area, including 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

Mains connection

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

Current-carrying capacity

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

4.1 Battery functions

Suitable batteries

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

Battery charging during mobile operation

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 (enabled on the DT/LT ... control and switch panel) 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/LT ... control and switch panel constantly monitors the living area battery with dynamic voltage threshold. Lower discharge currents cut off "earlier" than with 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 (,depending on current drain).

If the voltage of the living area battery sinks further, falling below 10.5 V, the battery monitor immediately switches off all 12 V consumers. The control and switch panel also switches itself off. Only the frost protection valve continues to be powered (so it stays closed). Before switch-off, all switch states are 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 12 V supply can begin operation for a short time. To do this, switch on the 12 V main switch on the DT/LT ... control and switch panel.

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 further information, see "Battery voltages" in the instruction manual of the relevant DT/LT ... control and switch panel .

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.

Awning light

The power supply to the awning light is automatically interrupted as soon as the engine is started and the D+ connection is live. The awning light can still be used even if the 12 V power supply is switched off.

Tank heater

The tank heater is enabled via the DT/LT ... control and switch panel. The tank heater can still be used even if the 12 V power supply is switched off.

Side marking lights

The side marking lights are switch on via the integrated relay. They are powered from the start battery. The relay is activated via terminal 58.

5 Maintenance

The Electrobloc requires no maintenance.

Cleaning

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

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	Frost ventilation 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

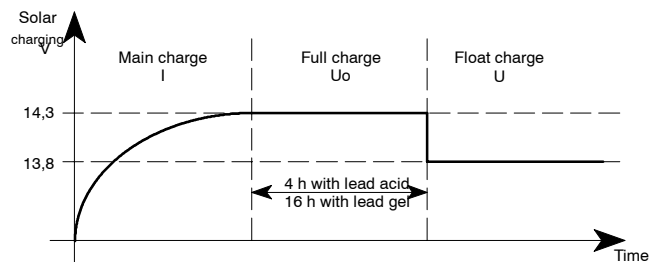


Fig. 3 Example of the charge voltage curve with Electrobloc EBL 226 C +OVP

- 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

Battery charging during mobile operation Simultaneous loading of living area battery by alternator
Batteries connected in parallel via a cut-off relay

Battery monitor Cut-off voltage approx. 10.5 V

Minimum battery voltage for switch-on via the 12 V main switch on the control and switch panel: approx. 11.0 V

F Design

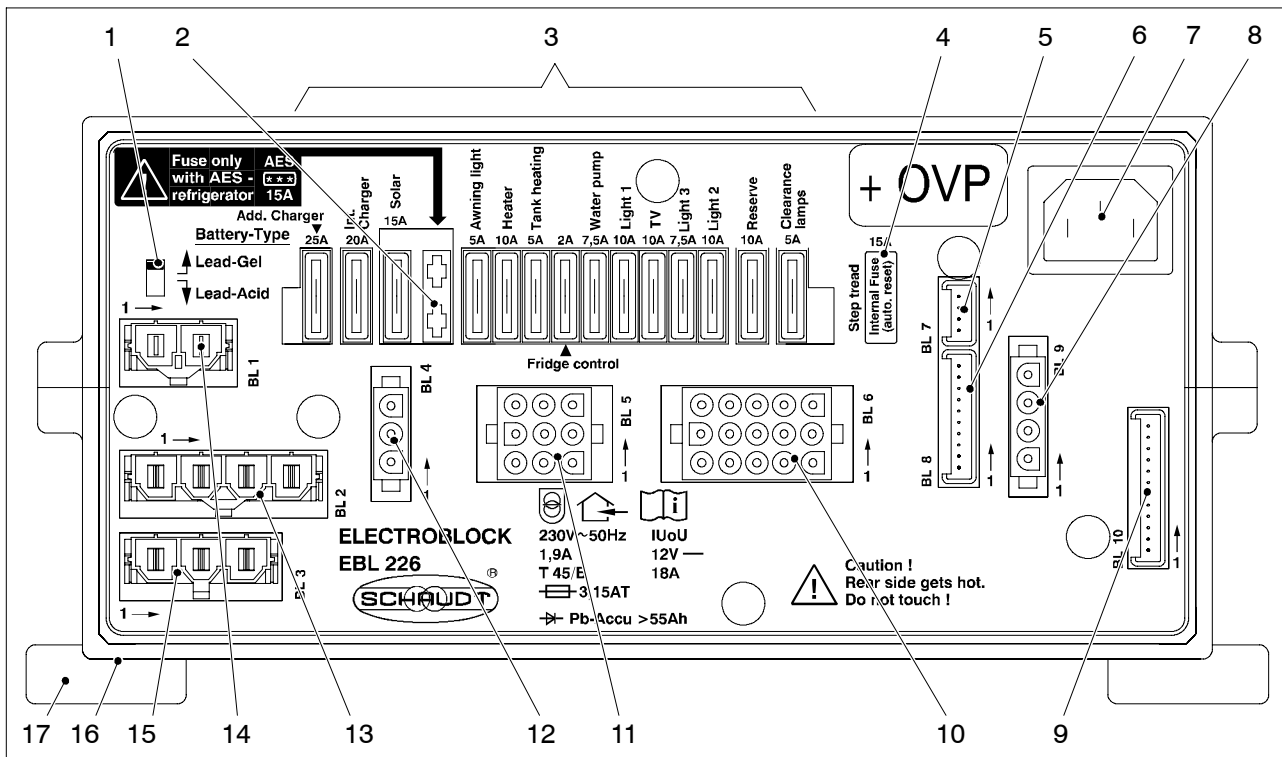


Fig. 4 Design, Electrobloc EBL 226 C +OVP (front)

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

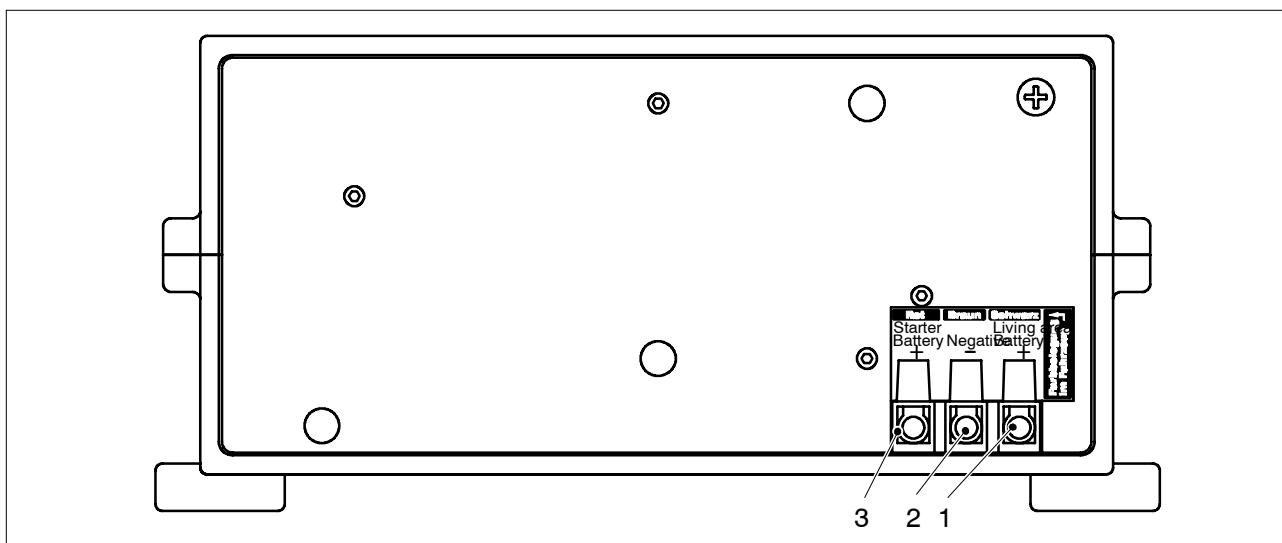
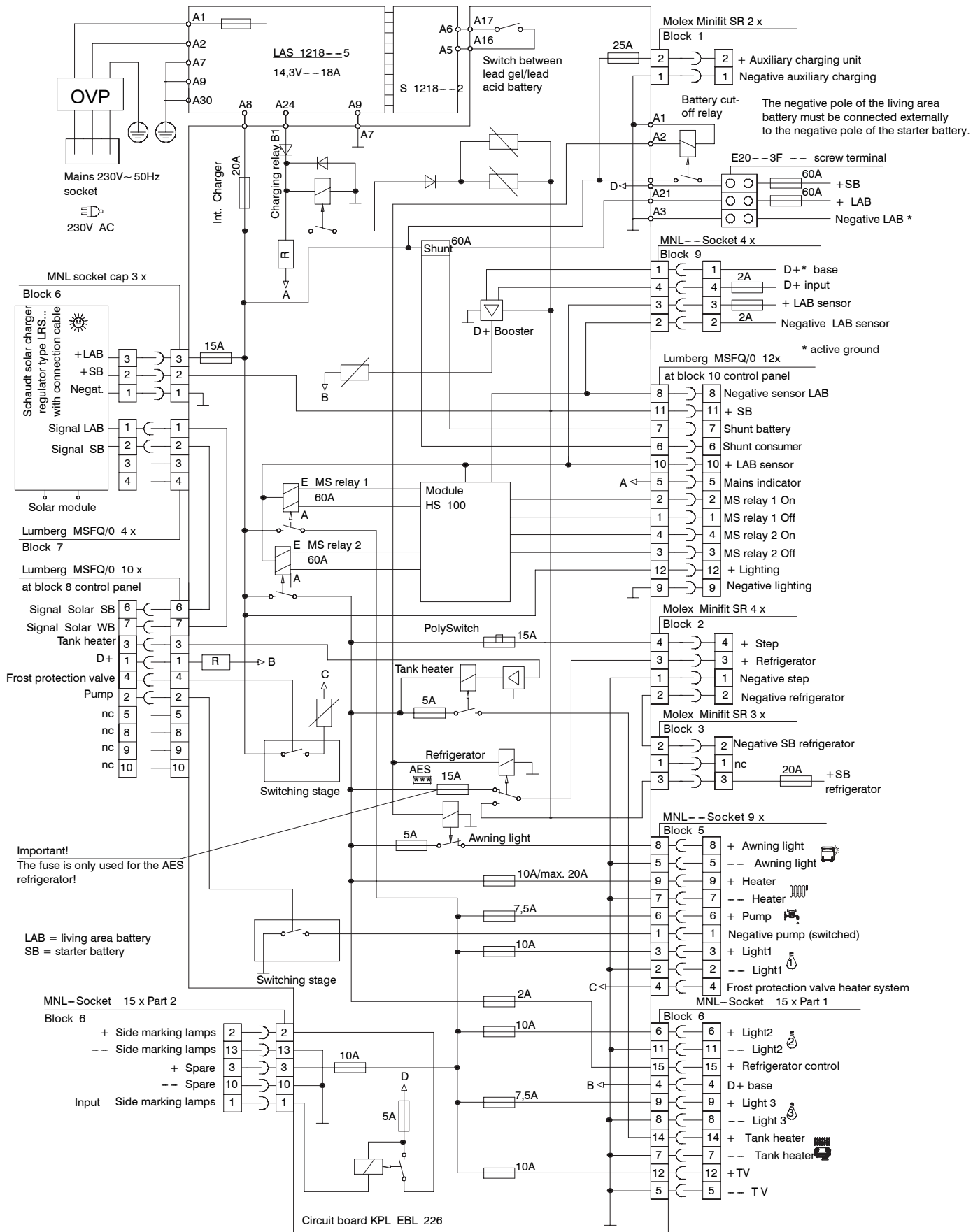


Fig. 5 Design, electronic block EBL 226 C +OVP (rear)

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

G Block diagram/connection diagram



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