

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 impact personal safety or the safety of the device must be rectified immediately by qualified personnel.



▲ DANGER!

230V 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 change 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 device is intended solely for use in vehicles.

This instruction manual contains important information for safe operation of the device. Ensure you read and follow the safety instructions provided.

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



- ▲ 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 as to how the device is used.
Children are to be supervised so as to ensure they do not play with the device.

3 Operation

The electrobloc is operated solely via the IT ... / LT ... control and switch panel connected. .

No operation of the EBL 99 K or EBL 99K with OVP electrobloc is required for daily use (exception: the battery cut-off switch should be disabled when the vehicle is not in use, see Section 3.4).

One-off settings only have to be configured when the battery type is changed (lead-acid or lead-gel), during initial start-up or when retrofitting accessories (see Section 3.2 and the assembly instructions).

Overvoltage protection OVP

The EBL 99 K with OVP electrobloc is suitable for all applications in which the danger of overvoltage is especially large. For example, lightning strikes to the national grid, generator operation, poor electronic installations or trips to distance countries.

For this, an overvoltage protection unit is fitted in the electrobloc between the mains connection and the charge module.

3.1 Starting up the system



▲ 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. 3, Pos. 10) is set to the correct position for the battery installed.
- Turn the battery cut-off switch (see Fig. 3, Pos. 12) to "On".
- 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.

Outputs are exceptions:

- Floor light/step
- Heater
- Frost protection valve
- AES/compressor refrigerator
- Spare 4

These outputs are not disabled via the main switch of the IT ... /LT control and display panel.

Please refer to the operating instructions of the IT ... /LT... control and switch panel for further information. .

3.2 Changing the battery



▲ ATTENTION!

Use of incorrect battery types or incorrectly rated batteries.

Damage to the battery or devices connected to the electrobloc:

- Batteries should only be changed by qualified personnel.
- Follow the battery manufacturer's instructions.
- Only connect the electrobloc 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. same as those installed by the manufacturer.

▲ It is possible to swap lead acid batteries with lead gel batteries. However, swapping from lead-gel-batteries to lead-acid-batteries is only possible in certain cases. Contact the vehicle manufacturer for more information.

Changing the battery

➤ Electrically isolate the battery from the electrobloc by disabling the battery cut-off switch on the electrobloc (also see Section 3.4).

➤ 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.

➤ Disconnect the electrobloc from the mains before adjusting the battery selector switch.

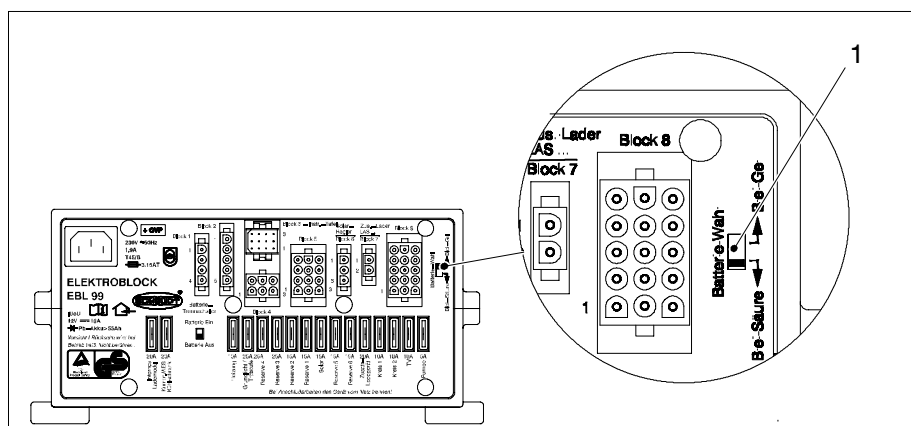


Fig. 1 Battery selector switch

Starting up the system

- Set the battery selector switch (Fig. 1, Pos. 1) to the correct position using a thin object (e.g. a ballpoint pen):
 - Lead gel battery: Set the battery selector switch to "Lead-gel".
 - Lead acid battery: Set the battery selector switch to "Lead-acid".
- Start up the system as described in Section 3.1.

3.3 System faults

Flat vehicle fuses

In most cases of a fault in the energy supply system, a flat battery or a faulty fuse is the cause.

Discharged battery - start motor

If the battery is discharged, consumers can always be supplied by starting the motor of the base vehicle.

Please contact our customer service department if you can not 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. Please note that the warranty becomes void if incorrect repair work is carried out. Schaudt GmbH can not accept liability for any damages 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 circuit breaker in the vehicle; check the mains voltage
	Too many consumers are switched on	Switch off any consumers not required
	Defective electrobloc	Contact the customer service department
Living area battery is overcharged during 230V operation (battery voltage constantly above 14.5 V)	Defective electrobloc	Contact the customer service department
Starter battery is not charged during 230V operation (battery voltage constantly below 13.0 V)	No mains voltage	Switch on the automatic circuit breaker in the vehicle; check the mains voltage
	Too many consumers are switched on	Switch off any consumers not required
	Defective electrobloc	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 the fuse and wiring
	Defective electrobloc	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 the fuse (20A of the supply; possibly 2A of the D+ signal) and wiring
	Defective electrobloc	Contact the customer service department
	Defective refrigerator	Check the refrigerator

Fault	Possible cause	Remedy
Solar charging does not work	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
	Not all plugs or fuses are plugged into the electrobloc	plug in all plugs and fuses (correct values!) to the electrobloc
	Defective fuse or wiring	Check fuse and wiring
	Defective electrobloc	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. 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

The battery is isolated by switching off the battery cut-off switch.



▲ ATTENTION!

Total discharge.

Damage to the living area battery:

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

Closing down

Disconnect the living area battery from the 12V power supply if the motor-home is not used for a longer period (during the winter for example).

- Fully charge the living area battery before closing down the system.
- Switch off from the main switch of the IT ... /LT... control and switch panel.
- Turn the battery cut-off switch (see Fig. 3, Pos. 12) to "Off". The following connections are isolated from the living area battery:
 - All 12V consumers
 - Frost protection valve
 - Control and switch panel

The living area battery is then protected against total discharge. This only applies if the battery is intact. Follow the battery manufacturer's instructions.



- ▲ If the living area battery is isolated from the electrobloc with the battery cut-off, the frost protection valve of the combination heating opens. A loss of water is possible (see operating instructions of the combination heating).

4 Application and functions in detail

The electrobloc is the central power supply unit for all 12V consumers in the vehicle's electrical system. It is usually located in a cupboard or storage area and is accessible from the front in order to change fuses.

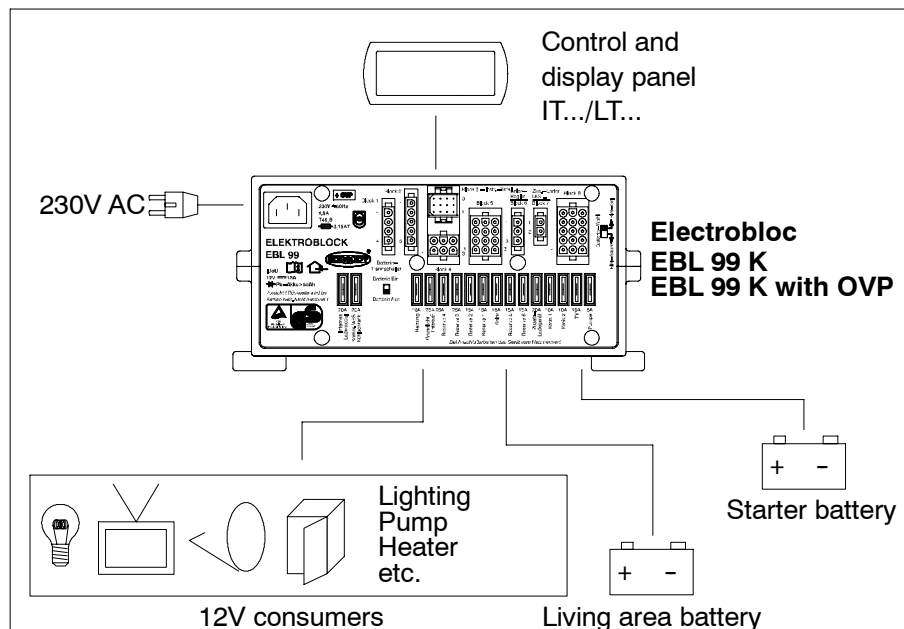


Fig. 2 On-board power supply system

Modules

The EBL 99 K electrobloc contains:

- a charge module for charging all connected batteries
- the complete 12 V distribution
- the fuses for the 12V circuits
- a battery monitoring module
- Control and monitoring functions

The EBL 99 K with OVP electrobloc contains in addition:

- overvoltage protection OVP which isolates the electrobloc from the mains in the event of sudden voltage peaks in the 230V supply.

System devices

An IT ... 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 is also an option to connect an additional charger and a solar loading regulator.

Flat vehicle fuses protect the various circuits. The D+ output is an exception.

Protective circuits of the charging module

- Excess temperature
- Overload
- Short circuit

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 (also see 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	<p>The battery is isolated with the battery cut-off switch.</p> <p>This prevents the living area battery from slowly discharging due to closed circuit current while the vehicle is not in use.</p>		
Battery selector switch	With the switching option with the battery selector switch, the optimal charging of the two types of batteries, lead-gel and lead -acid, is guaranteed (approx. 5 – 20mA)		
Standby current from living area battery (without consumer currents)	<p>With control and switch panel: approx. 5 – 20mA (depending on the control and switch panel used) under the following conditions:</p> <ul style="list-style-type: none"> ● No mains connection ● Living area battery voltage 12.6V ● 12V main switch "OFF" 		
Battery charging via Mains connector	Living area battery		
	Characteristic charging curve	IUoU	
	End of charge voltage	14.3V	
	Charging current	18A	
	Voltage for float charge	13.8V with automatic switch function	
	Starter battery		
	Charging current float charge	max. 2A	
Automatic disconnecter	<p>The battery monitor compares the current of the living area battery to a reference current. As soon as the battery current drops below 10.5V, all 12V consumers are switched off via main switch relays 1 and 2.</p> <p>Only the frost protection valve continues to be powered.</p> <p>The automatic disconnecter is not triggered by short-term low voltage (shorter than 2 seconds), caused by high current when switching on consumers. 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.</p> <p>If need be, the 12V supply can begin operation for a short time. For this, switch on the 12V main switch on the control and switch panel.</p> <p>However, if the battery current remains below 11.0V, the 12V supply can not be switched on again. Fully charge the living area battery as soon as possible. For more information, see the description of "battery voltages".</p>		

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 refrigerator is powered by the living area battery when the vehicle engine is not running.

Mains charging of the Starter battery

This feature provides an automatic max. 2 A float charge for the starter battery when the 230V mains is connected to the electrobloc.

5 Maintenance

The EBL 99 electrobloc is maintenance free.

Cleaning

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

Appendix

A EC Declaration of Conformity

Schaudt GmbH hereby confirms that the design of EBL 99 electrobloc complies with the following relevant regulations:

- DIRECTIVE 2006/95/EC OF THE EUROPEAN PARLIAMENT AND COUNCIL from 12.12.2006 for the harmonization of 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 harmonization of legal provisions of member states in regard to electromagnetic compatibility and for the annulment of directive 89/336/EEC

The original EC Declaration of Conformity is available for reference at any time.

Manufacturer Schaudt GmbH, Elektrotechnik & Apparatebau

Address Planckstraße 8
88677 Markdorf
Germany

B Special fittings/accessories

Switch panel Schaudt IT ... / LT ... 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 ... for solar modules with a total current of 14A with 3-pole connection plug and connection cable

C Customer service

Customer service address Schaudt GmbH, Elektrotechnik & Apparatebau
Planckstraße 8
D-88677 Markdorf

tel.: +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 the device Returning a defective device:

- Fill in and enclose the fault report, see Appendix D.
- Send it to the addressee (free of charge).

D Fault report

In the event of damage, please return the defective device together with the completed fault report 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 Design

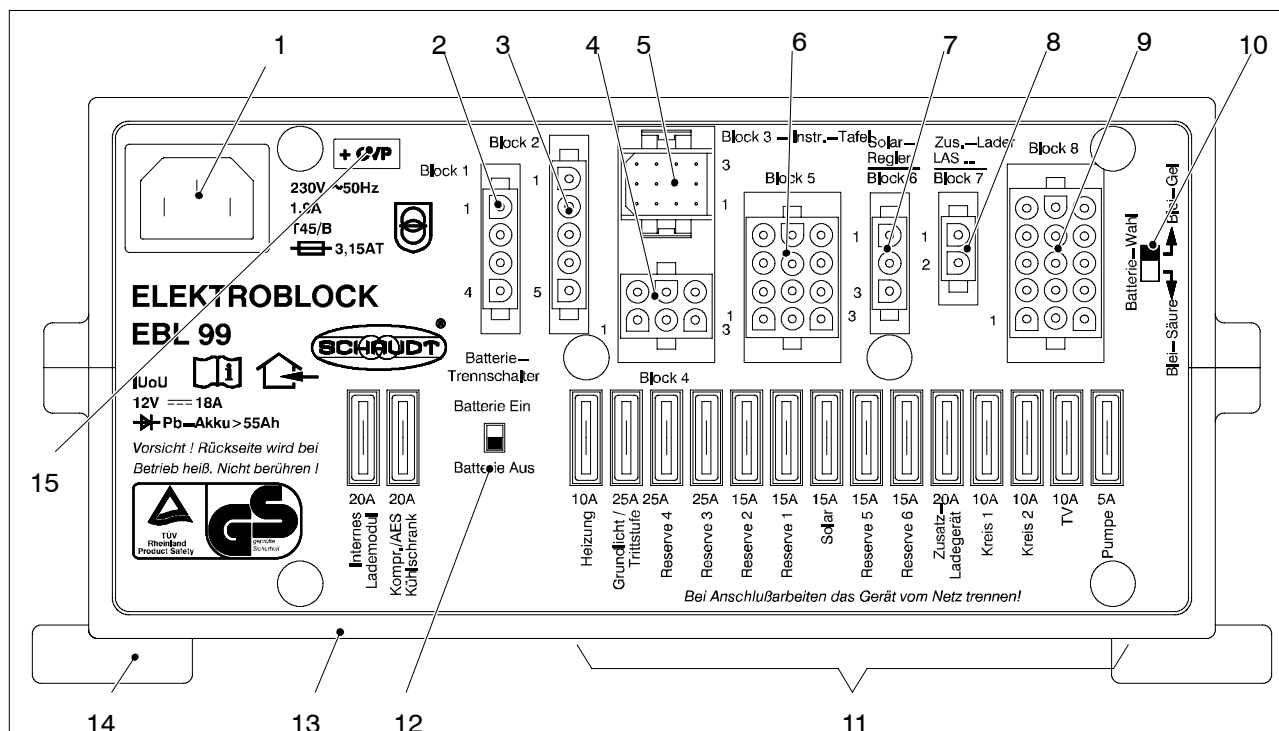


Fig. 3 Layout of EBL 99 electroblock (front)

- | | |
|---|--|
| 1 Mains connector | 8 Connection block, additional charger |
| 2 Connection block, refrigerator | 9 Connection block TV, pump, consumers |
| 3 Connection block, refrigerator supply D+, battery sensor/control lines | 10 Selector switch acid/gel battery |
| 4 Connection block, frost protection valve, heating and floor light/steps | 11 Flat vehicle fuses |
| 5 Connection, IT ... / LT ... control and switch panel | 12 Battery cut-off switch |
| 6 Connection block, reserve | 13 Housing |
| 7 Connection block, solar regulator | 14 Assembly flaps |
| | 15 Sticker, + OVP (only for EBL 99 K with OVP) |

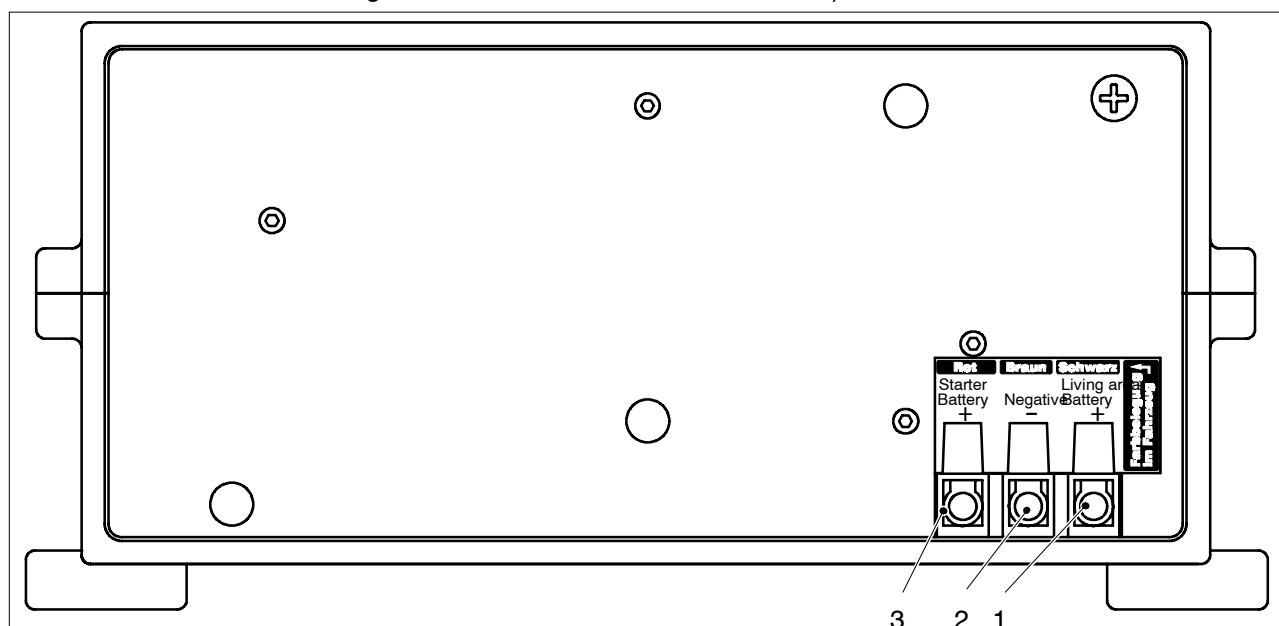
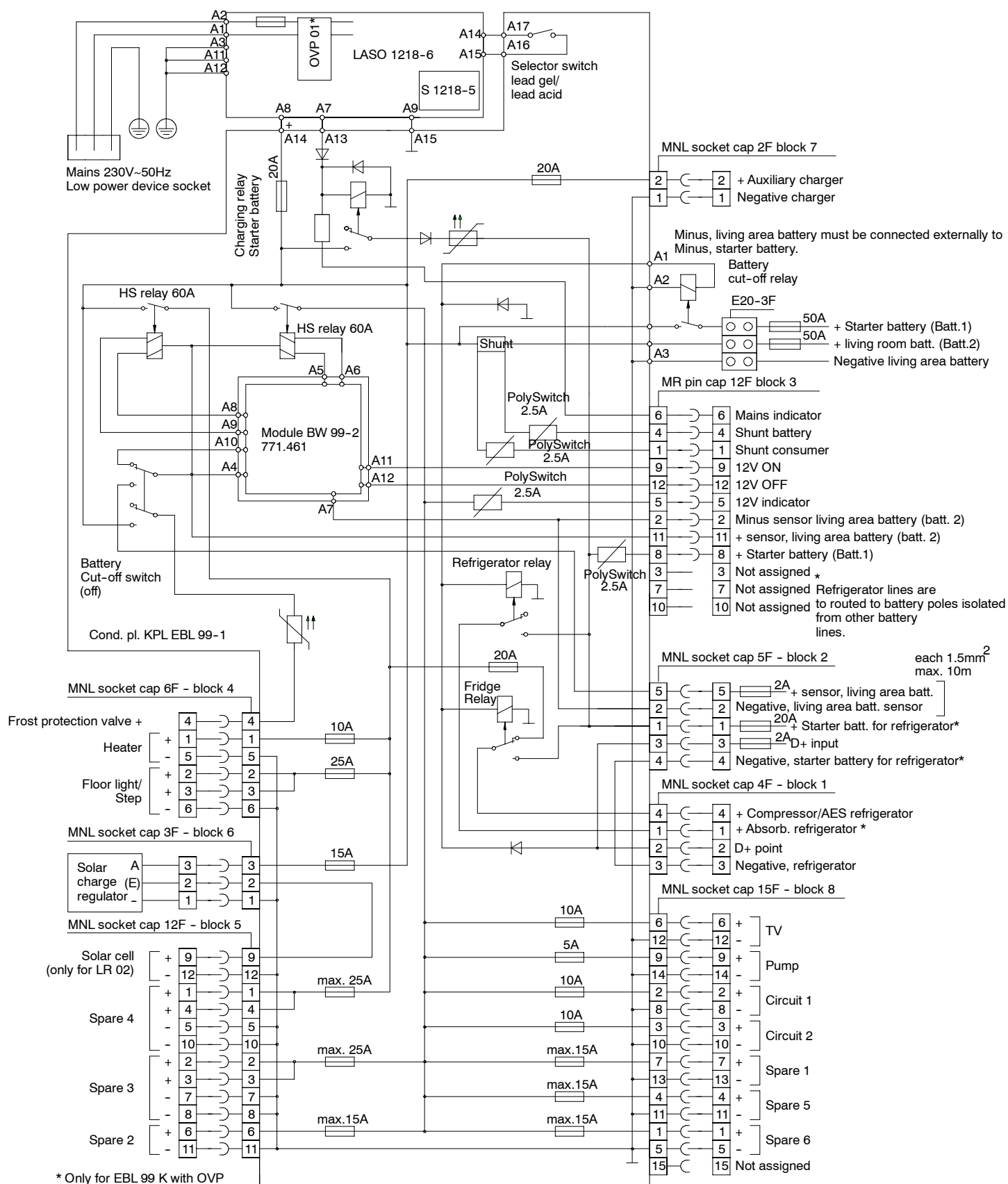


Fig. 4 Layout of EBL 99 electroblock (rear)

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



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