

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 live 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, disconnect the device completely from the power supply and secure against reconnection.
- Ensure that no liquid enters 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 for safe operation of the device. Be sure to read and follow the given safety information.

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 electrobloc is operated exclusively through the connected control and switching board IT ... / LT

For the daily operation, no operation is needed on the electrobloc EBL 99 (exception: with a stoppage of the vehicle the battery separation switch should be switched off, see chapt. 3.4).

Settings only have to be carried out 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 99).

Overvoltage protection OVP

The electrobloc EBL 99 I with OVP is suitable for all cases of application in which the danger of overvoltage is especially large. This can e. g. be lightning strikes in the public mains, generator operation, bad electronic installations or trips to foreign countries.

For this in the electrobloc an overvoltage protection is fitted in internally between the mains connection and the loading module.

3.1 Starting up the system



▲ ATTENTION!

Incorrect settings at the electrobloc!

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

- Make sure that the living area battery is connected.
- Make sure that the battery selector switch (Fig. 3, Pos. 10) is set to the correct position for the inserted battery.
- ▶ Set the battery disconnecter (see Fig. 3, Pos. 12) to position "on".
- ▶ Use the 12 V main switch (see the instruction manual of the respective control and switch panel) to switch all the consumers and the control and switch panel on and off.

The exceptions are the outputs:

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

These outputs are not shut off through the main switch of the control and display panel IT ... /LT.

For further information see operating instructions of the control and switch panel IT ... /LT...

3.2 Changing the battery



▲ ATTENTION!

Utilisation of wrong battery types or incorrectly rated batteries!

Damage to the battery or devices connected to the electroblock:

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



▲ Generally speaking, only use batteries of the same type and capacity as those installed by the manufacturer.

▲ It is possible to swap from lead acid batteries to 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 separate the battery from the electroblock, for this switch off the battery separation switch on the electroblock EBL 99 (also see chapt. 3.4).
- ▶ Replacing the battery.
- ▶ After changing the battery, once again check which type of battery has been inserted.



▲ DANGER!

Incorrect setting of the battery selector switch!

Risk of explosion due to a build up of explosive gases:

- Set the battery-selector switch to the correct position.
- ▶ Disconnect the electroblock from the mains before adjusting the battery selector switch.

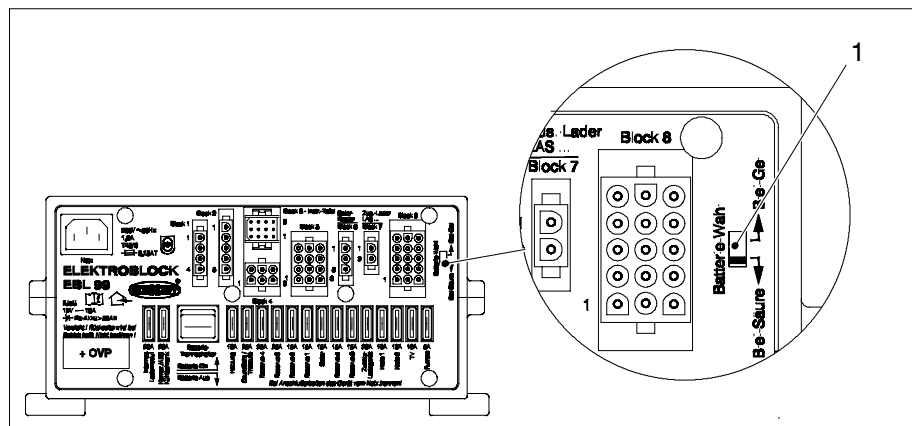


Fig. 1 Battery selector switch

▶ Set the battery selector switch (Fig. 1, Pos. 1) to the correct position using a thin object (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".

Starting up the System

▶ Start up the system as described in chapt. 3.1.

3.3 System Faults

Flat vehicle fuses In most cases of a fault in the energy supply system, an empty battery or a faulty fuse is the cause.

Empty battery - start motor If the battery is empty, the consumers can always be supplied by starting the motor of the basis vehicle.

If you cannot correct a fault based on the following table, please contact our customer service.

If this is not possible, e.g. if you are abroad, you can have the electroblock repaired at a specialist workshop. Please note that the warranty will be void if incorrect repair work is carried out. Schaudt GmbH does 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 circuit breaker in the vehicle; check the mains voltage
	Too many consumers are switched on	Switch off the consumers which are not required
	Defective electrobloc	Contact the customer service department
Living area battery is overcharged during 230 V operation (battery voltage constantly above 14.5 V)	Defective electrobloc	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 circuit breaker in the vehicle; check the mains voltage
	Too many consumers are switched on	Switch off the consumers which are 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 at 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 (20 A of the supply; possibly 2A of the D+ signal) and wiring
	Defective electrobloc	Contact the customer service department
	Defective refrigerator	Check the refrigerator
Solar loading does not work	Solar loading regulator not plugged in	Plug in solar loading regulator
	Defective fuse or wiring	Check the fuse and wiring
	Solar loading regulator faulty	Check solar loading regulator

Fault	Possible cause	Remedy
12 V supply does not work in the living area	12 V main switch for the living area battery is switched off	12 V main switch for the living area battery must be switched on
	Not all plugs or fuses are plugged in the electrobloc	plug in all plugs and fuses (correct values!) in the electrobloc
	Defective fuse or wiring	Check the 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. 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

The battery is separated by switching off the battery separation 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 80 Ah battery at least 12 hours and with a 160 Ah battery at least 24 hours).

Closing down

Disconnect the living area battery from the 12 V power supply if you are not going to use the motorhome for a longer period (for example, during the winter).

- ▶ Fully charge the living area battery before closing down the system.
- ▶ Switch off the main switch at the control and switch panel IT ... /LT... .
- ▶ Set the battery disconnecter (see Fig. 3, Pos. 12) to the position "off". The following connections are separated from the living area battery:
 - All 12 V 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 instructions of the battery manufacturer.



- ▲ If the living area battery is separated from the electrobloc with the battery separation switch, 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

EBL 99 electroblock is the central power supply unit for all 12 V consumers in the vehicle's electrical system. It is usually located in a cupboard or storage space and is accessible from the front in order to change fuses.

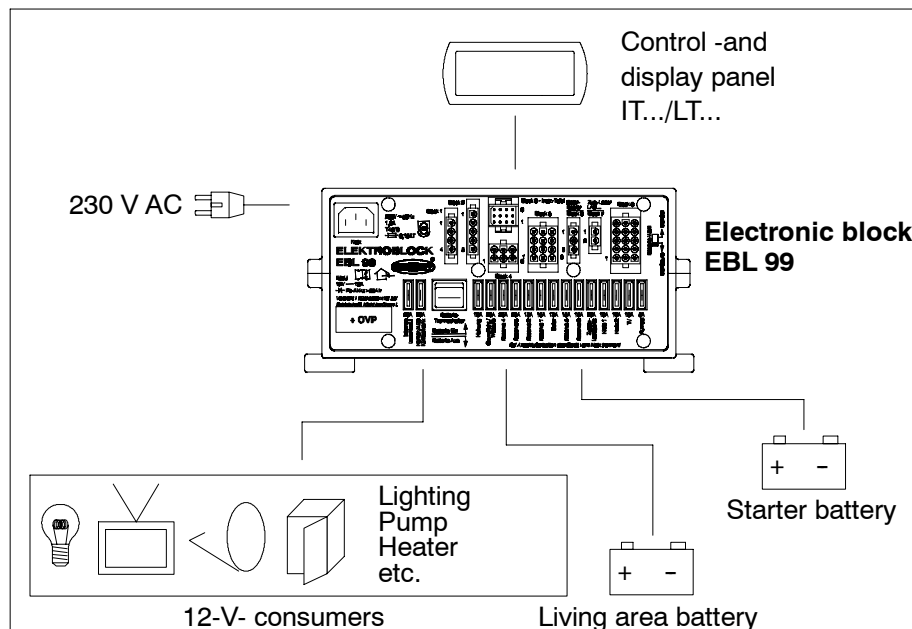


Fig. 2 On-board power supply system

Modules EBL 99 electroblock contains:

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

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

There is also a connection possibility for an additional loading device and a solar loading regulator.

The flat vehicle fuses protect the various circuits. Except for the D+ output.

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 12 V 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 disconnection	<p>The battery is separated through switching off the battery separation 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	<p>Through the switching possibility with the battery select switch, the optimal charging of the two types of batteries, lead gel or lead acid, is secured.</p> <p>approx. 5 – 20 mA</p>	
Standby current from living area battery (without consumer currents)	<p>With control and switch panel: approx. 5 – 20 mA (depending on the control and switch panel being used) under the following conditions:</p> <ul style="list-style-type: none"> ● No mains connection ● Living area battery voltage 12.6 V ● 12 V main switch "OFF" 	
Battery charging via mains connections	Living area battery	
	Characteristic charging curve	IUoU
	End of charging voltage	14.3 V
	Charging current	18 A
	Voltage for float charge	13.8 V with automatic switch function
	starter battery	
	Charging current float charge	max. 2 A
Automatic disconnecter	<p>The battery monitor compares the current of the living area battery with a reference current. As soon as the battery current goes below 10.5 V, all 12 V consumers are switched off through the main switch relay 1 and 2.</p> <p>Only the frost protection valve is still powered.</p> <p>The automatic disconnecter is not triggered by short-term low voltage (less 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 consumers which are not essential should be switched off.</p> <p>If need be, the 12 V supply can begin operation for a short time. For this switch on the 12 V main switch on the control and switch panel.</p> <p>If the battery current however remains below 11.0 V, the 12 V supply cannot 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 230 V mains is connected to the electrobloc.

5 Maintenance

Electrobloc EBL 99 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.
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Appendix

A EC Declaration of Conformity

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

EC Low Voltage Directive

2006/95/EC dated 12.12.2006

Directive on electromagnetic compatibility

2004/108/EC dated 15.12.04
and
2006/28/EC dated 06.03.06

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

Manufacturer Schaudt GmbH, Elektrotechnik & Apparatebau

Address Daimlerstrasse 5
88677 Markdorf
Germany

B Special fittings/accessories

Switch panel Schaudt switch pannel IT ... / LT ... (required for operation)

Accessory charging device	Schaudt battery charging device LAS ... with max. 18 A charging currency, including fitting connection cable (MNL).
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Solar charging regulator Schaudt Solar charging regulator type LR ... for solar modules with an overall current of 14 A with 3 pole connection plug and connection cable

C Customer service

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

Tel.: +49 7544 9577-16 E-mail: kundendienst@schaudt-gmbh.de

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

Sending 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: _____
Article no.: _____
Vehicle: Manufacturer: _____
 Model: _____
 Own installation? Yes ☐ No ☐
 Upgrade? Yes ☐ No ☐

The following fault has occurred (please tick):

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

Other remarks:

Operating instructions electroblock EBL 99 I with OVP

E Design

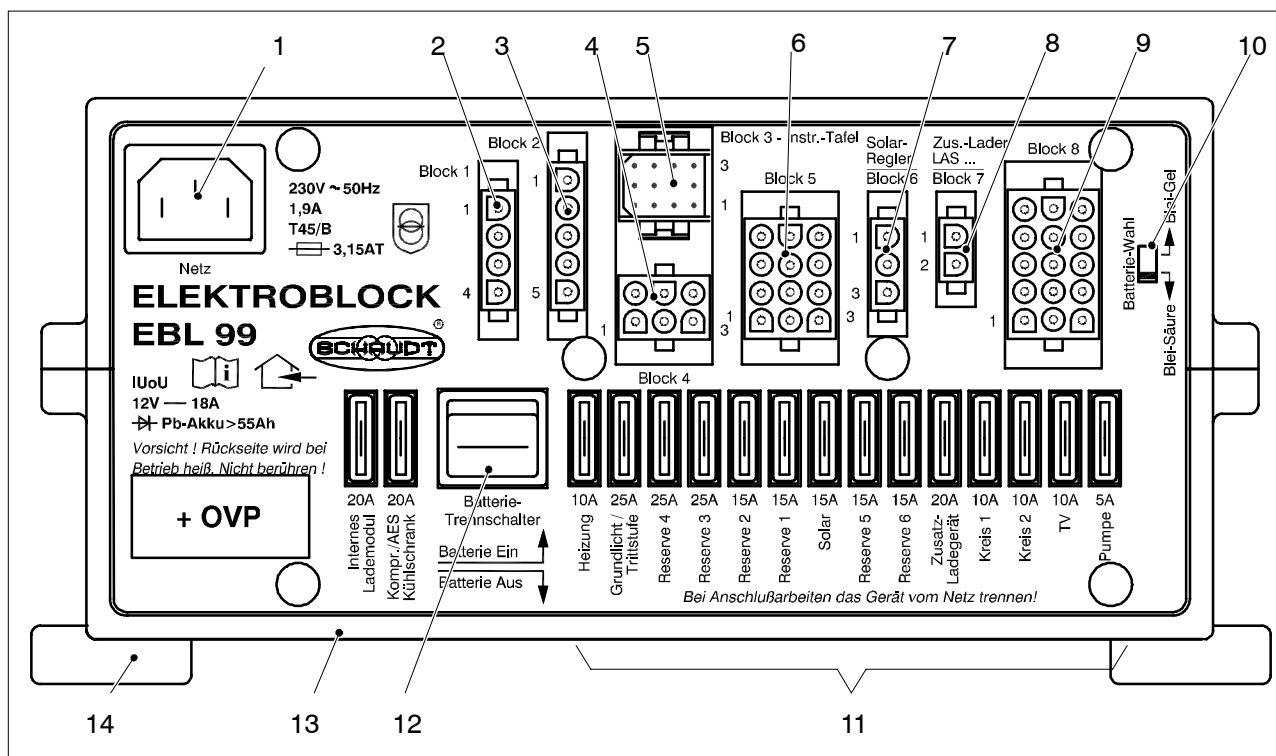


Fig. 3 Design electrobloc EBL 99 (front)

- | | | | |
|---|---|----|-------------------------------------|
| 1 | mains connections | 7 | Connection block solar regulator |
| 2 | Connection block refrigerator | 8 | Connection block accessory charger |
| 3 | Connection block refrigerator supply D+, battery sensor / control lines | 9 | Connection block TV, pump, consumer |
| 4 | Connection block frost protection valve, heating and basic lights / steps | 10 | Selector switch acid/gel battery |
| 5 | Connection control and switch panel IT ... / LT ... | 11 | Flat vehicle fuses |
| 6 | Connection block reserve | 12 | Battery disconnection |
| | | 13 | Housing |
| | | 14 | Assembly flaps |

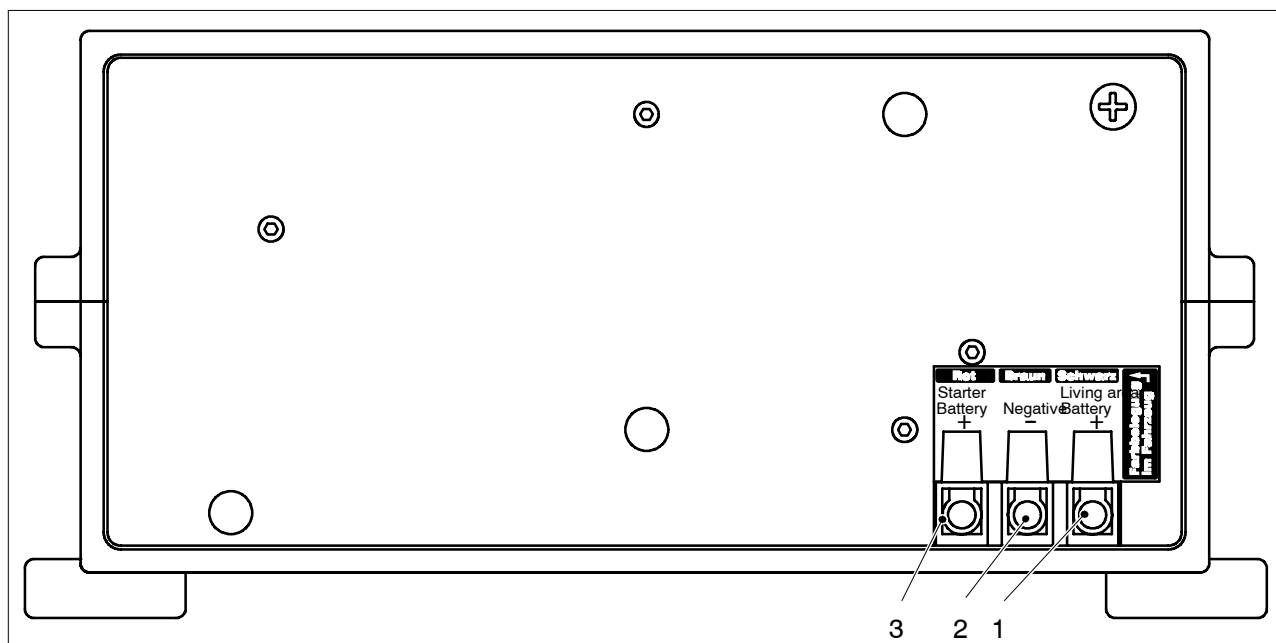
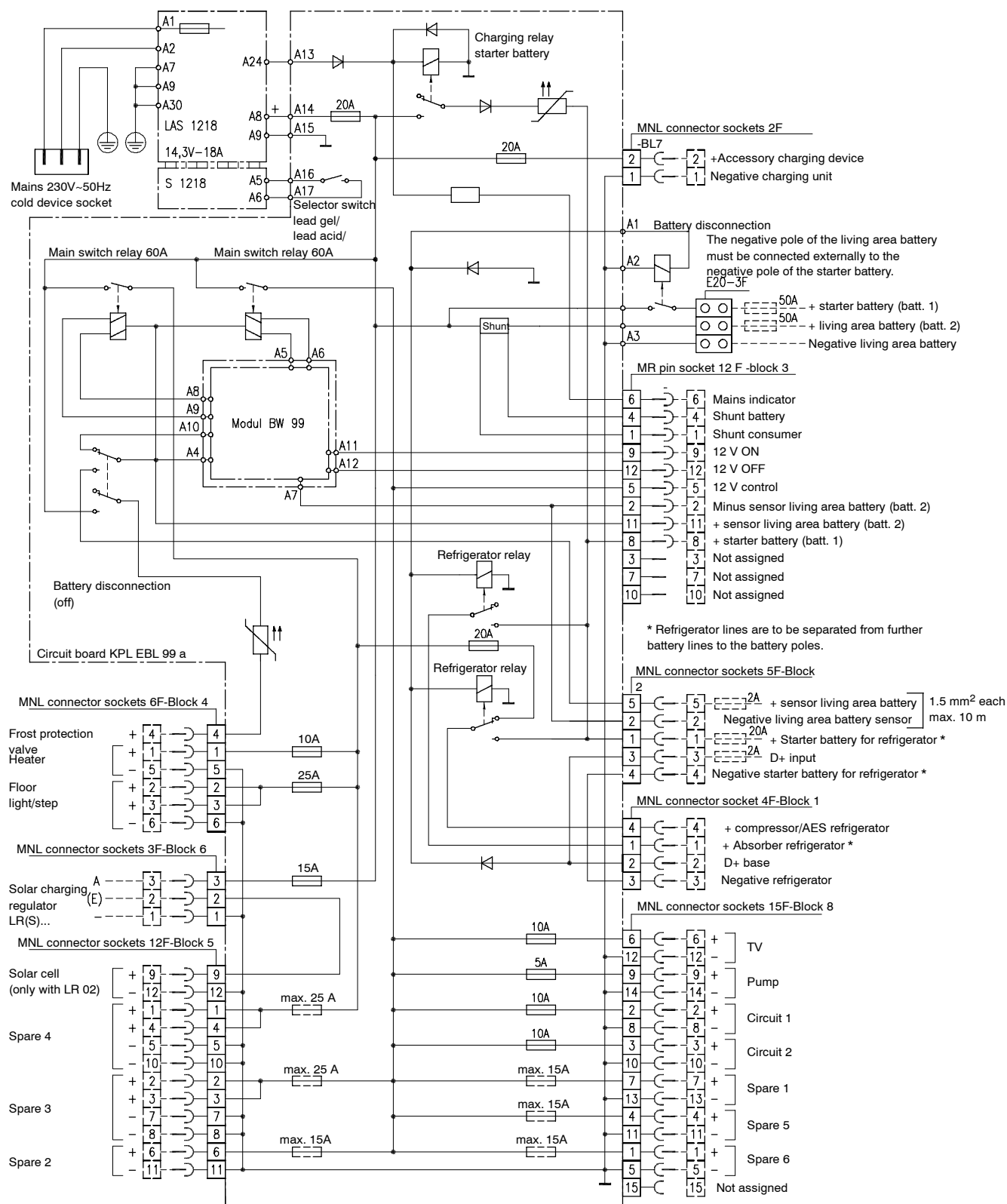


Fig. 4 Design electrobloc EBL 99 (back side)

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



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