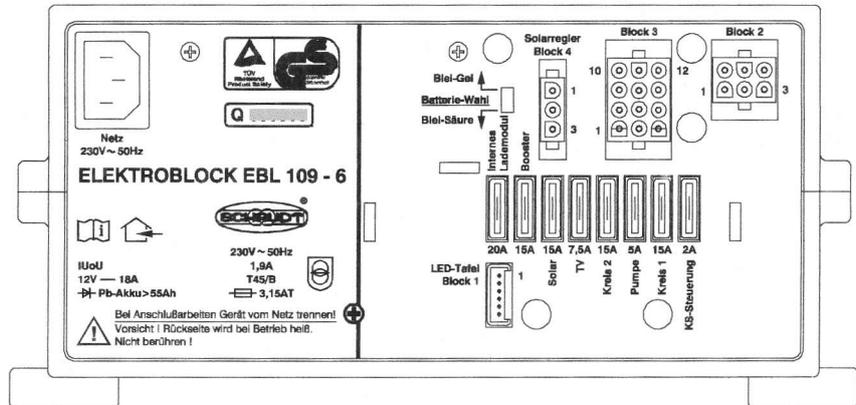


Instruction manual



Electroblock EBL 109-6

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1 Introduction

This instruction manual contains important information for the safe operation of equipment supplied by Schaudt. It is imperative that you read and follow this safety information.

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

2 Safety information

2.1 Significance 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 somebody being injured.



▲ ATTENTION!

Failure to comply with this sign may damage the device or the connected consumers.



▲ This sign indicates recommendations or special features.

2.2 General safety instructions

The design of the device is state-of-the-art and complies with the approved safety technology. Nevertheless, somebody might be injured or the device might be damaged if you do not abide by the safety information given in this instruction manual.

Do not use the device if it is not in a perfect technical condition.

Any technical faults affecting the personal safety or the device must be dealt with immediately by qualified personnel.



▲ DANGER!

230 V unit carrying mains voltage.

Risk of fatal injury due to electric shock or fire:

- The motorhome or caravan's electrical system must comply with DIN, VDE and ISO regulations.
- Never try to modify the electrical system.
- Never try to modify the device.
- Only qualified electricians are permitted to make the electrical connections in accordance with the installation instructions supplied by Schaudt.
- The connection work must only be undertaken after the power has been disconnected.
- Never try to start the device using a defective mains cable or a faulty connection.
- Never undertake maintenance on the device when it is live.



▲ DANGER!

Incorrect installation!

Electrical shock or damage to the connected device:

- The device must be installed in accordance with the installation instructions.
- The mains connection line may only be replaced by an authorised customer service department or by qualified persons.



▲ WARNING!

Hot components!

Burns:

- Blown fuses may only be changed after the power to the system has been disconnected.
- Blown fuses may only be replaced when the cause of the fault is known and eliminated.
- Never bypass or repair fuses.
- The back of the device can get hot during operation. Do not touch.
- Only use original fuses rated as specified on the device.

3 Application and function



- ▲ 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.
This device is exclusively designed for installation into a vehicle.

The Electrobloc EBL 109-6 is the central power supply unit for all 12 V consumers connected to the electrical system of the caravan. It is normally fitted inside a cabinet or a stowage space and can be accessed from the front to change a fuse.

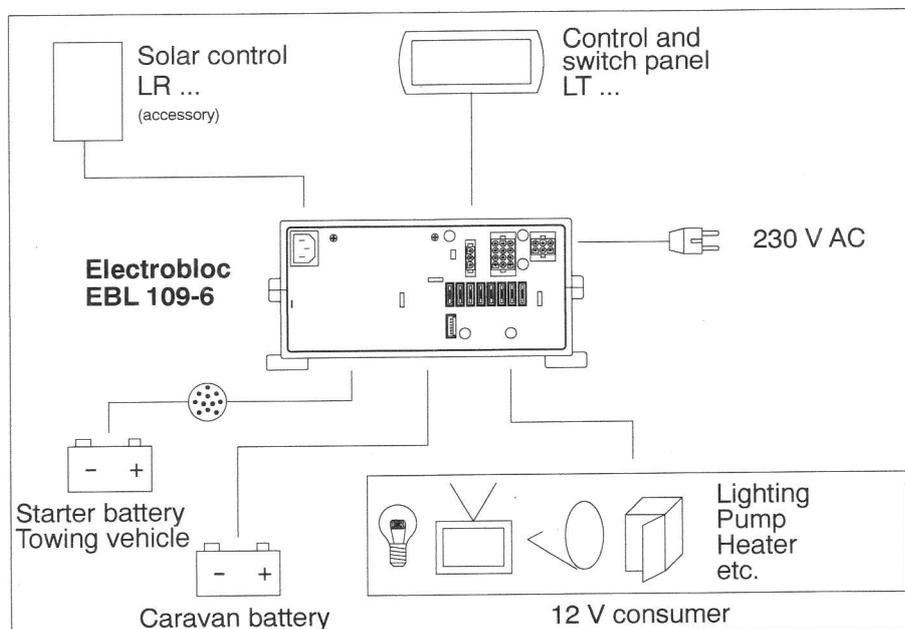


Fig. 1 Onboard power supply system

The Electrobloc has been designed solely for connecting up to a 12 V onboard supply.

Restricted operation is also possible without a battery being connected.

Connected units can be supplied from the caravan battery or the towing vehicle's battery if a mains supply is not available.

Modules The Electrobloc EBL 109-6 consists of:

- A charging module for recharging all of the connected batteries
- The complete 12 V distribution system
- The fuses for the 12 V power circuits
- A low voltage battery monitor
- A battery booster

System units An LT ... control and switch panel must be connected up to run it. These devices control the electrical functions in the caravan's living area as well as the accessories.

Connection options for a solar charger and a solar-cell module have been provided.

Flat vehicle fuses are used to protect the various circuits.

Protective circuits

- Overtemperature
- Overload
- Short circuit

Mains connection 230 V AC voltage $\pm 10\%$, 47 - 63 Hz sinewave, protection class I

Current-carrying capacity 12 V outputs shall only be loaded up to a maximum of 90 % of the rated current of the associated fuse (see installation instructions or front plate).

Maximum total current All of the consumers must not exceed the following loads when combined:

- Mains operation:
 - With battery 20 A
 - Without battery 18 A
- Operation with towing vehicle, ignition ON
 - 8 A

3.1 Battery functions

Suitable batteries	6-cell lead-acid or lead-gel batteries from 55 Ah upwards	
Battery-charging whilst driving	Charging the caravan battery whilst driving; increasing the supply voltage coming from the towing vehicle via the battery booster	
Main battery switch	<p>The main battery switch (on the LT ... control and switch panel) disconnects all of the 12 V consumers from the caravan battery (exception: a fridge's control electronics).</p> <p>This prevents the caravan battery from being slowly discharged by closed-circuit current.</p> <p>The batteries can still be charged using the Electrobloc, the towing vehicle or the solar charger, even when the main battery switch is switched off.</p>	
Battery selector switch	The switching option provided by the battery selector switch ensures optimum charging of the two different types of battery, lead-acid and lead-gel.	
Automatic disconnecter	All consumers will be automatically switched off when the ignition is turned on if the caravan is connected to the towing vehicle.	
Battery monitor	<p>A red LED on the LT ... control and switch panel will start to flash if the battery voltage drops below 11.0 V.</p> <p>The caravan battery will be fully recharged as quickly as possible. For more information, see the "Battery voltages" description in the associated LT ... control and switch panel instruction manual.</p>	
Closed-circuit current coming from towing vehicle battery	No closed-circuit current; additional current consumption by the fridge's control electronics (see documentation supplied by the fridge manufacturer); measured when all of the consumers inside the caravan are switched off	
Battery charging from mains connection	Caravan battery Charging curve Final charging voltage Charging current Trickle charge voltage	IUoU 14.3 V 18 A 13.8 V with automatic switching
	Towing vehicle battery Maximum charging current	8 A

3.2 Additional functions

Fridge controller This output supplies the control electronics in a fridge:

- From the caravan battery
- From the towing vehicle's battery when the ignition is switched on
- From the mains supply when it is connected up.



▲ ATTENTION!

Total discharge!

Damages the caravan battery/towing vehicle battery:

- Avoid continuous 12 V operation.

Battery charging via solar charger

Maximum permitted charging current 14 A, protected by a 15 A fuse

4 Design

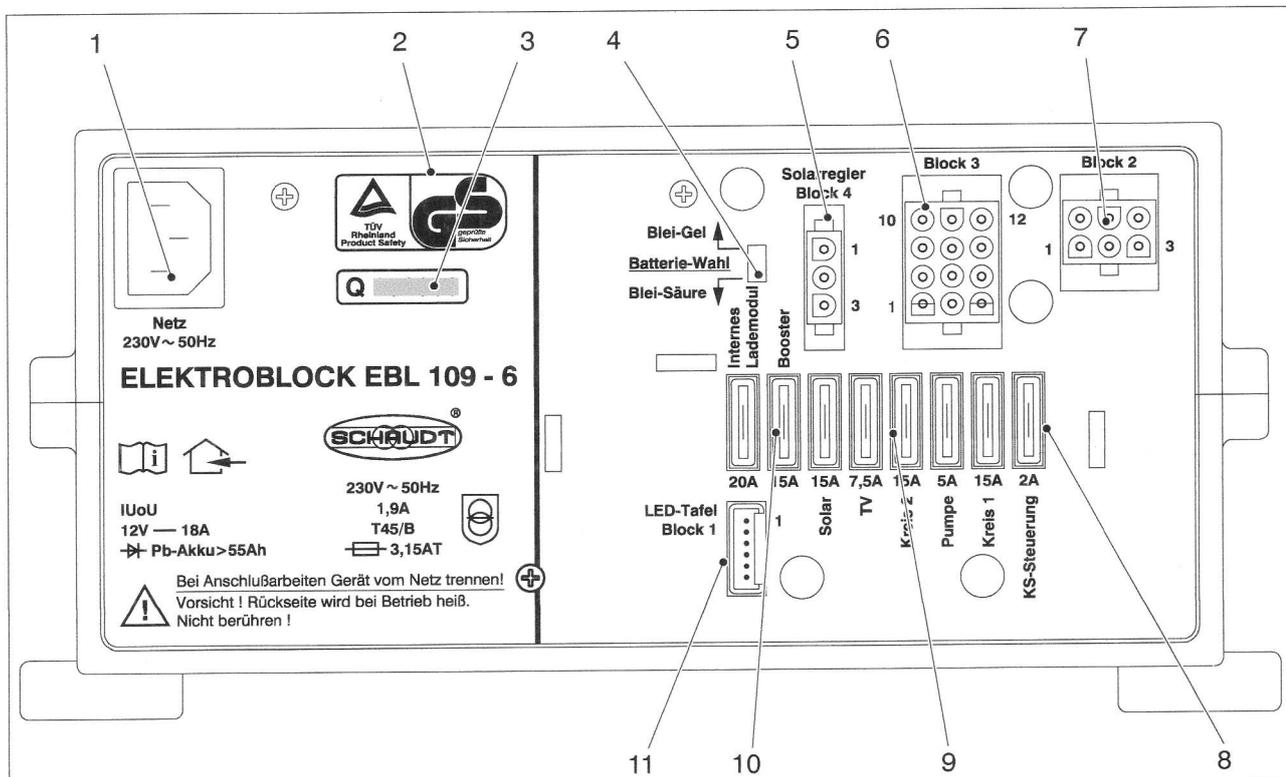


Fig. 2 Electrobloc EBL 109-6 front view

- 1 Mains connection
- 2 GS sign
- 3 Test sign
- 4 Battery selector switch for lead-gel/lead-acid
- 5 BL. 4 connections, solar charger LR ...
- 6 BL. 3 connections, consumers
- 7 BL. 2 connections, batteries, vehicle
- 8 Flat vehicle fuse for fridge controller
- 9 Flat vehicle fuses for consumers
- 10 Flat vehicle fuses for internal modules
- 11 BL.1 connections for LT ... control and switch panel

5 Operation

The Electrobloc is operated solely from the LT ... control and switch panel connected to it.

The EBL 109-6 Electrobloc does not require daily operation.

Initial setting is only needed after the type of battery (lead-acid or lead-gel) has been changed or during commissioning or when upgrading with accessories (see Chapter 5.2 and EBL 109-6 installation instructions for details).

5.1 Starting the system



▲ ATTENTION!

Electrobloc can be set up incorrectly!

The connected devices will be damaged. Therefore prior to starting:

- You must ensure that the battery selector switch (Fig. 2, Pos. 4) is set to the correct position for the type of battery being used.

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

- ▶ Switch on the main battery switch on the LT ... control and switch panel (see instruction manual for the associated control and switch panel).

The 12 V main switch (see the instruction manual for the associated control and switch panel) switches all consumers and the control and switch panel on and off (exception: a fridge's control electronics).

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

**Generator operation and
car ferries**



▲ ATTENTION!

Violation of 230 V mains voltage limit!

Will damage the Electrobloc, 12 V consumers or other connected devices:

- The generator must not be switched in until it is running smoothly.
- It is essential that the generator complies with the mains supply specifications.
- Do not connect the Electrobloc to the onboard mains voltage on car ferries (a non-problematic mains voltage cannot always be guaranteed on car ferries).

Solar charger operation



▲ ATTENTION!

Battery buffer function missing!

The connected devices will be damaged:

- Never run the solar charger without a battery being connected.

Towing vehicle operation



▲ ATTENTION!

Battery discharge!

Towing vehicle cannot be started:

- Switch off the ignition when the towing vehicle is at a standstill.

5.2 Changing the battery



▲ ATTENTION!

Wrong battery type or incorrectly connected battery!

Will damage the battery or the devices connected up to the Electrobloc:

- Batteries shall only be changed by qualified personnel.
- Follow the instructions of the battery manufacturer.
- The Electrobloc is to be used solely for connecting the 12 V power supply to 6-cell lead-gel or lead-acid batteries. Never use unapproved types of battery (e.g. NiMH batteries).



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

▲ You can change over from lead-acid to lead-gel batteries. You cannot change over from lead-gel to lead-acid batteries! Your vehicle manufacturer will provide you with information about this.

Changing the battery

- Disconnect the battery from the Electrobloc by activating the main battery switch on the LT ... control and switch panel off (see Chapter 5.5 as well).
- Unhitch the caravan from the towing vehicle.
- Replace the battery.
- Check once more to ensure that you have fitted the correct type of battery afterwards.



▲ DANGER!

Battery selector switch set incorrectly!

Danger of explosion caused by the build up of oxyhydrogen gas.

- Set the battery selector switch to the correct position.



▲ ATTENTION!

Battery selector switch set incorrectly!

The battery will be damaged.

- Set the battery selector switch to the correct position.

➤ Disconnect the Electrobloc from the mains before resetting the battery selector switch.

- Move the battery selector switch (Fig. 2, Pos. 4) into the relevant position using a thin object (e. g. ball-point pen):
 - Lead-gel battery: Set the battery selector switch to “Lead-gel” (Gel).
 - Lead-acid battery: Set the battery selector switch to “Lead-acid” (Säure).

Starting up the system

- Start the system in accordance with Chapter 5.1.

5.3 Operating faults

Flat vehicle fuses The majority of power supply system faults are caused by blown fuses.

Please contact our customer service address if you cannot eliminate 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 and Schaudt GmbH will not accept any liability for damage resulting from such repairs.

Fault	Possible causes	Remedy
Caravan battery is not charged during 230 V operation (battery voltage permanently below 13.3 V)	No mains voltage	Switch the cut-out in the vehicle back on; check the mains voltage
	Defective Electrobloc	Call customer service
Caravan battery overloaded during 230 V operation	Defective Electrobloc	Call customer service
Caravan battery is not charged whilst driving	Defective alternator	Have the alternator checked
	No voltage supplied to “Ignition ON” input or permanent plus	Have the fuse and wiring checked Check the towing vehicle plug connection
	Defective Electrobloc	Call customer service
Caravan battery is overloaded whilst driving	Defective Electrobloc (booster)	Call customer service
Solar charger does not work (power supply off)	Solar charger not plugged in	Plug the solar charger in
	Defective fuse or wiring	Have the fuse and wiring checked
	Defective solar charger	Have the solar charger checked
12 V power supply in the living area does not work	12 V main switch for caravan battery is switched off	12 V main switch for caravan battery must be switched on
	Defective fuse or wiring	Have the fuse and wiring checked
	Voltage present at “Ignition ON” input	Switch ignition off
	Defective Electrobloc	Call customer service

Fault	Possible causes	Remedy
The Electrobloc cannot be operated from the LT ... control and switch panel	Defective Electrobloc	Call customer service
	Defective LT ... control and switch panel	Call customer service



- ▲ If the device becomes too hot due to excessive ambient temperature or lack of ventilation, the charging current is automatically reduced. However, always prevent the device from overheating.
- ▲ The caravan battery must be fully recharged when the battery monitor indicates that this is required (LED on the associated control and switch panel flashes).

5.4 Shutting down the system

- Switch off the main battery switch on the LT ... control and switch panel (see instruction manual for the associated control and switch panel).

5.5 Closing down the system



▲ ATTENTION!

Total discharge!

Damages the caravan battery:

- The caravan battery must be fully charged before closing down and before restarting the system. (Vehicle with an 80 Ah battery must be connected to the mains supply for at least 12 hours and a 160 Ah battery for up to 24 hours.)



▲ ATTENTION!

Permitted input voltage exceeded!

Will damage the consumers connected to the system:

- Never run a solar charger supplied by Schaudt without a battery being connected to the system.
- Unplug the “+ solar-cell” connector on the solar charger first if the battery is going to be changed or removed.

Closing down for up to 6 months

- The caravan battery must be fully charged before closing the system down.

The caravan battery is then protected against total discharge. This applies only if the battery is intact. Follow the instructions of the battery manufacturer.

Closing down for more than 6 months

- The caravan battery must be fully charged before closing the system down.
- Remove the clamps from the battery terminals.
- Remove the “+ solar-cell” connector on the solar charger.

6 Maintenance

The EBL 109-6 Electrobloc requires no maintenance.

Cleaning Clean the Electrobloc using a soft, moist cloth and mild detergent. Never use spirit, thinners or similar substances. Do not allow fluid to ingress the Electrobloc.

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Appendix

A EU Conformity Declaration

Schaudt GmbH hereby confirms that the Electrobloc EBL 109-6 design complies with the following relevant regulations:

EU low voltage directive

73/23/EEC edition with amendments issued on 22.07.93

Directive on electromagnetic compatibility

89/336/EEC with amendments 92/31/EEC

The original EU conformity declaration is available and can be referred to at any time.

Manufacturer Schaudt GmbH, Elektrotechnik & Apparatebau

Address Daimlerstraße 5
88677 Markdorf
Germany

B Special fittings/Accessories

Solar charger Schaudt solar charger LR ... model for solar modules with a total current of 14 A, including 0.5 m connection cable and connector plug

Cover The fuses are behind the blue cover marked FUSE. This can be ordered separately using Art. no. 106.120.

C Customer service

Customer service address Schaudt GmbH, Elektrotechnik & Apparatebau
Daimlerstraße 5
88677 Markdorf, Germany

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

Opening hours Mon to Thur 08:00 – 12:00, 13:00 – 16:00 hours
Fri 08:00 – 12:00 hours

Sending in the device Returning a defective device:

- Always use well-padded packaging.
- Fill in and enclose the fault report, see Appendix D.
- Send it to the addressee delivered free.

D Fault report

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

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

There is the following defect:
 (please tick)

No battery charging from mains					
No battery charging whilst driving		Tank		Voltage	
The following electrical consumers do not work:					
Control and switch panel does not work correctly					
Permanent fault					
Temporary fault/loose contact					

Other remarks:

E Block diagram/Connection diagram

* ⑨ ⑩

Connections 9 and 10 must be fused externally in the vehicle up to a maximum of 15 A.

* ⋯

Trailer hitch towing vehicle/ caravan connecting plug assignment as per EN 1648-1

