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1. Description

The Elektroblock EBL 263-5 is an energy management system for motor homes. It is a combination of a battery charger, a 12V distribution box and a control and switch panel.

It contains the charging module LA 204, a battery monitor, the complete 12V distribution, fuse-protected 12V circuits and additional control and monitoring devices.

The controls and switches on the front panel, control the living-area functions of the motor home and indicate certain values like voltages or filling levels.

Tank sensors are necessary to measure the filling levels of the water tanks. Please do order separately.

Note: The EBL 263-5 is not suitable for filling level measurement of metal water tanks.

1.1 Suitable Accessories

rod tank sensors	2 rod tank sensors, 2 sensor cables 4 x 0.5 2 seal rings art no 126.007, 2 check nuts art no 102.106
or tank sensors	8 tank sensors, art no 933.662, 2 sensor cables 4 x 0.5

1.2 Technical Data**1.2.1 General Data**

sizes	front panel: 290 x 155 cabinet: 275 x 130 x 173 (W x H x D in mm)
weight	4.4 kg
cabinet	PA (Polyamide), Gentian blue RAL 5010
front panel	aluminium, powder painted, white aluminium RAL 9006

1.2.2 Electrical Data

mains supply	* 230V (+ 6 / - 10%), 50Hz, safety class 1
current draw	* 230VA
suitable batteries	* 6 cell lead-acid or lead-gel batteries, from 35Ah
quiescent current off living-area battery	* max 0.6mA
load current of alternator's D+ output by EBL	* approx 0.3A
permissible load on 12V outputs	* maximum current draw up to the fuse rating of each output; see enclosed block diagram.

Note: this operating instruction manual is intended for the customer and has to be supplied with the device

1.2.2.1 Battery charging ...

... on mains supply

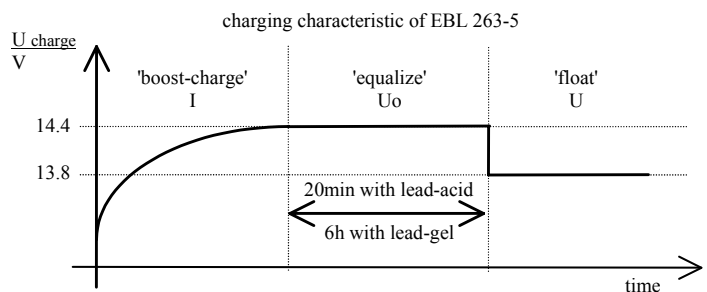
living-area battery:

- control system * thyristor controller
- charging characteristic * IWUoU
- charging current * 10A arithmetic mean or 15A eff at 230V mains supply and 12.0V charging voltage. The charging current is mains supply dependent.
- maximum charging voltage * 14.4V
- float voltage * 13.8V, automatic change-over

new charging cycle,
change-over to boost-charge * when battery voltage is about < 13.8V

- IW** boost-charge at max 10A arithmetic mean, electronically limited, up to maximum charging voltage
- Uo** then equalize-charge at constant 14.4V selectable: 20 minutes duration for lead-acid, 6h duration for lead-gel batteries
- U** then automatic change-over to float-charge at 13.8V

If due to high loads the float voltage of 13.8V cannot be provided, the battery charger switches over from float to boost-charge.



- safety circuits * short-circuit and reverse-polarity protected, charger needs a connected battery with a voltage of > 2.5V
- * safety fuse in mains circuit, 1.6A slow
- * over-temperature switch in transformer

starter battery:

- charging current * trickle-charge to starter battery with max 2A

... while driving

- charging current * simultaneous charging of starter and living-area battery by alternator, batteries in parallel by cut-off relay, maximum charging current into the living-area battery must not exceed 30A, see block diagram.

1.2.2.2 Battery Monitor Module

- switch-off voltage * approx 10.5V
- minimum reset voltage for 12V main-switch on instrument panel * approx 11.0V

2. Safety Information

- * The electrical installation of the motor home has to be in accordance with current DIN-, VDE- and ISO-regulations. Alterations will endanger the safety of persons and the vehicle. Due to the above mentioned regulations and safety rules, alterations are, therefore, prohibited.
- * The connection of the EBL to the mains supply has to be in accordance to national installation rules.
- * The Elektroblock EBL 263-5 must not be modified.
- * The connection of the Elektroblock should be carried out by qualified personnel only and must be conform to specifications mentioned in this operating instruction manual:

see instruction manual section 4.2 'Installation'
 section 5 'Electrical Installation'
and in enclosure schematic diagram of EBL 263-5

- * In the following text special notice should be paid to the signs shown below:



Caution !

Electrical current hazard warning.



Caution !

General hazard warning.

3. Operating Instructions

3.1 Controls and Indicators

To turn on and off 12V supply of living-area

Actuate switch with **12V** symbol ...

... up → 12V supply of living area is turned on. Green indicator lamp is on.

... down → 12V supply of living area is turned off. Green indicator lamp is off.

Note: The circuit 'automatic step' is not switched by the 12V main switch.



Caution !

To avoid unnecessary discharge of the living-area battery the 12V supply should be switched off when leaving the vehicle.

Inquiry of battery voltage

LED indication of battery voltage in three levels.

Actuate switch in direction of  → Living-area battery condition is indicated.

Actuate switch in direction of  → Starter battery condition is indicated.

Evaluation of 'LED battery indicator'

LED Indicators	Battery Voltage	Vehicle ...		
		... is parked. Without mains supply Runs on battery	... is driving or engine idles.	... is connected to mains supply. Runs on 230V.
red 	<10.9V	<u>Battery discharged</u>  Caution: total discharge	<u>No charging</u> Or <u>12V system overloaded</u>  Caution: total discharge	<u>No charging</u> Or <u>12V system overloaded</u>  Caution: total discharge
yellow 	10.9V to 12.3V	<u>Weakly charged battery or on load</u>	<u>Low charging current</u> if continuous (for several hours): <u>Low charging current or 12V system overloaded</u>	<u>Low charging current</u> if continuous (for several hours): <u>Low charging current or 12V system overloaded</u>
green 	>12.3V	Battery properly charged	Standard charge	Standard charge

Low voltage warning indicator



Optical warning of a alarming low living-area battery charge.

As soon as the living-area battery voltage drops below 10.8V the red warning light starts blinking. Any load must now be switched off immediately and the living-area battery should be recharged.

Recharging can be done by running the engine or connecting the EBL to mains supply.

See section 1.2.2.1 'Battery charging ...'



Caution !

Total discharge or overcharging might permanently damage the battery.

To switch on and off the water pump's power supply

Actuate switch with  symbol ...

... up → The water pump may be switched on. Yellow indicator lamp is on.

... down → The water pump can not be switched on. Yellow indicator lamp is off.

Note: The power supply of the water pump should be turned off during long disuse, eg at night, as the pump relay has a current consumption of approx 160mA. This adds up to about 4Ah battery drain per day.



Caution !

Creepage current discharge of living-area battery with pump switch on.

To switch on and off the power supply of the waste water heater (optional)

Actuate switch with  symbol ...

... up → The waste water heater may be switched on. Yellow indicator lamp is on.

... down → The waste water heater cannot be switched on. Yellow indicator lamp is off.

Note: The waste water heater needs a considerable amount of power.
 When used for long periods, the motor home should be on mains supply.



Caution !

Discharge of living-area battery with waste water heater switched on.

Inquiry of water tank filling levels

LED indication of water tank filling levels in three levels.

Actuate switch in direction of  → Filling level of fresh water tank is shown

Actuate switch in direction of  → Filling level of waste water tank is shown

LED with symbol  is on → water tank full

LED with symbol  is on → water tank approx half full

LED with symbol  is on → water tank approx a quarter full

No LED indication → water tank empty

Note: Inquiry of water tank filling levels is for temporary use only. The used method of measurement is not suitable for continuous operation or long inquiries.



Caution !

Continuous operation or long inquiries will damage rod sensors or tank sensors.

Mains supply indicator

230V~



The yellow LED indicates that the EBL is connected to 230V

3.2 Additional Features

Battery-type selector switch The mains supply of the EBL has to be disconnected **prior** to actuating the battery-type selector switch which is situated on the back of the EBL. This switch has to be set according to the types of batteries used (lead-acid or lead-gel) before the EBL is put into operation. The switch ensures an optimum charge of the connected battery type. To actuate use a thin tool like a ball point pen.



Caution !

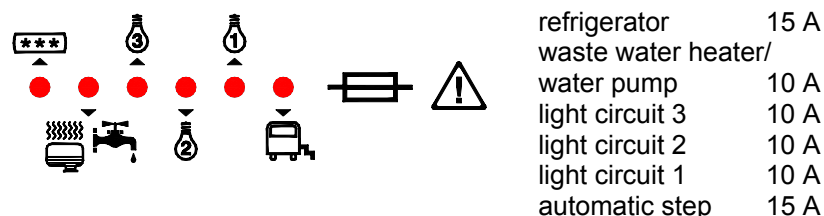
An incorrectly set battery-type switch may damage the batteries and there may be an explosion-hazard caused by detonating gas.

Note: this operating instruction manual is intended for the customer and has to be supplied with the device

12V fuses

The Elektroblock is equipped with so called PolySwitch fuses. In case of failure, eg overload, such fuses break the relevant circuit, thus protecting the device. PolySwitch fuses automatically reset themselves after the fault has been removed. In case of failure the corresponding LED lights and indicates the faulty circuit.

The electrical circuits are from left to right:



- * In some cases of short circuit, the main fuse of the starter or the living-area battery might blow instead of the respective PolySwitch fuse. In this instance please disconnect the mains supply of the motor home and take off all battery terminals of the positive poles. After that insert a new main fuse of the same value. Before power is put back on, it is advisable to rectify the reason for the short circuit. Please see section 5 'Electrical Installation' and in enclosure 'Schematic Diagram'.
- * Troubleshooting hints when main fuses are blown (qualified personnel only):
 - A minimum of two main fuses are required; for the value refer to schematic diagram.
 - Undo the four screws at each corner of the front panel and pull out the device.
 - Disconnect all positive poles of each of the seven consumer circuits, label each one well.
 - Insert a new main fuse. Caution, danger of burning. Better disconnect the positive battery terminal first. If the fuse blows again, the main circuit of the battery is at fault, otherwise:
 - Actuate 12V-switch on front panel of EBL 263-5: the green LED must light.
 - Connect one consumer circuit after the other by reconnecting the appropriate positive poles. Wait for at least 10sec after each connection is made and observe the green LED.
 - The consumer circuit with the green LED going off is at fault.
 - Disconnect the appropriate positive pole of the faulty circuit and rubber-tape it against accidental contact.
 - Insert a new main fuse and reconnect all other remaining consumer circuits.
 - All other circuits should function now. The faulty circuit should be repaired without delay.



CAUTION !

Danger of burning. Change defective fuses only at zero-current.

3.3 Relay Functions

main-switch relay
bistable

This relay is controlled by the push-button switch **12V** on front panel. It switches all 12V load off, except the circuit 'automatic step'. See section 3.1 'Controls and Indicators'.

battery cut-off relay

This relay separates the starter and living-area battery when the engine is not running and if there is no voltage on terminal 'D+'. Both batteries are connected in parallel and therefore simultaneously charged while engine is running.

water pump relay

This relay activates the water pump and is controlled by the 'water pump' switch on the front panel. In 'ON' position the 'water pump' output is active. See section 3.1 'Controls and Indicators'
 Battery drain of relay: 160mA in 'ON' position

Note: this operating instruction manual is intended for the customer and has to be supplied with the device

refrigerator relay	This relay controls the power supply of the absorption-type refrigerator. The refrigerator is powered by the starter battery but only, when the engine is running and when there is a voltage on terminal 'D+'.
charging relay	This relay automatically provides a 2A trickle-charge to the starter battery
starter battery	when the EBL is connected to mains supply.

3.4 Battery Monitor

The battery monitor compares the voltage of the living-area battery with a reference voltage.

As soon as the battery voltage falls below 10.5 V, all 12V load is switched off (except the automatic step). Short falls (< 2 sec) below the threshold voltage, due to high inrush currents of connected load, do not affect the automatic cut-off function.

If the automatic shut-down has been triggered due to overload or an insufficiently charged battery, all non-essential load should be switched off.

By actuating the **12V** push-button switch on the front panel it may be possible to reactivate the 12V-system for a short period of time.

However, the 12 V system cannot be switched on if the battery voltage stays under 11.0V.

In any case, the living-area battery should be fully recharged as soon as possible.

4. Transport, Storage, Installation

4.1 Transport, Storage

- * The EBL should be stored and transported in a suitable packing and in a dry environment only.
- * Storage temperature range : - 20°C to + 70°C.

4.2 Installation

- * The EBL has been designed for use in a dry and sufficiently ventilated environment within a temperature range of - 10°C to + 40°C.
- * The EBL is designed to be fitted in a cabinet front . A minimum distance of 5 cm to the surrounding equipment has to be maintained above and to all sides.
In operation a temperature of max. + 40°C in a distance of 2.5 cm has to be maintained.



Caution !

Danger of overheating if distances to equipment are too short or if ventilation is blocked.

- * The EBL has to be fitted on a solid and level surface by use of the four provided fixing holes. It has to be seated on its bottom side without blocking the ventilation.
Please refer to the enclosed table of measures EBL 263-5 for permitted seating details.

5. Electrical Installation

- * Electrical installation has to be executed by qualified personnel only.
- * The device must be used only with a connected living-area battery.



Caution !

The Elektroblock must not be used without a connected living-area battery, otherwise connected appliances might be damaged in unfavourable conditions.

- * The electrical connection is made on the back according to the enclosed schematic diagram.

Note: this operating instruction manual is intended for the customer and has to be supplied with the device

- * For installation purposes, the mains plug or the mains supply of the vehicle must be disconnected.



Caution !

Danger of life due to electrical shock or danger of burning with a defective mains cable, incorrect connection or service with mains supply on.

- * Please note: all installation must be carried out with disconnected batteries.
- * The electrical connection has to be in accordance to the following sequence:
 1. 12V consumers, D+ (alternator) and water-tank connections
 2. battery cables at EBL
 3. battery cables at battery terminals
 4. 230V mains connection
- * Disconnection has to be executed vice versa.

5.1 230V Mains Supply

- * The mains cable on the back of the device is strain-relieved. Its ends are push-on contacts 6.3 x 0,8.
- * Mains supply has to be connected to a insulated earthing-contact junction box.
- * The device must be used exclusively in vehicles equipped with an easily accessible cut-out, eg a circuit breaker in the wardrobe.

5.2 Batteries and D+ (Alternator)

- * The battery is connected by a 3-pole EURO terminal.
 The alternator control signal D+, is connected to terminal 6 of the 6-pole plug-in screw terminal ('water tank 2, waste water').
- * Cable size dimensions have to be in accordance with European norm EN 1648-1 or –2.
- * Leads have to be fused according to their cross-sections.

Maximum allowed fuse ratings:	Batteries	D+ (Alternator)
	30A	2A

- * The fuses need to be installed close the battery terminals for short circuit protection of the leads and alternator.
- * The negative pole of the living-area battery has to be connected to the negative pole of the starter battery externally.



Caution !

Danger of burning with incorrect connection and fusing.

- * The EBL has to be used exclusively on 12V power systems with rechargeable 6-cell lead-acid or lead-gel batteries.



Caution !

Unsuitable batteries will be damaged.

- * Batteries have to be installed in sufficiently ventilated areas or must have integrated venting. Please refer to installation instructions of the battery manufacturer.



Caution !

Exploding hazard by detonating gas with defective batteries, defective Elektroblock or at too high battery temperature (> 30°C).

Note: this operating instruction manual is intended for the customer and has to be supplied with the device

5.3 12V Consumers

- * 12V consumers are connected by 6,3 x 0,8 push-on plug connectors with insulated housing. Appropriate insulated counterparts have to be used.
- * The choice of cable cross-sections has to comply with EN 1648-1 or –2. Maximum current drain must not exceed the respective fuse rating.

5.4 Water Tank Connection

- * The fresh water and waste water tank are connected by 5-pole and 6-pole plug-in screw terminals.
- * Tank cables are sensor leads and do not have to be protected by fuses.

6. To Put Into Operation, Shut-Down, Maintenance

6.1 To Put Into Operation

- * The Elektroblock is only fully operational when used with the filling level measurement equipment. This equipment has to be ordered separately, see section 1.1 'Suitable Accessories'.
- * **Prior** to power-up, special attention must be paid to:
 1. living-area battery properly connected
 2. correctly selected battery-type selector switch. See section 3.1 'Controls'.

6.2 Shut-Down

- * Before and after shut-down (eg winter recess), the battery should be fully recharged. Connect the motor home to mains supply and charge the battery for a minimum of 16 hours (80Ah battery) or 24 hours (160Ah battery).
- * Before long periods of disuse, the motor home battery should be disconnected from the 12V system. Take off terminals at battery poles.



Caution !

To prevent battery damage the battery should be fully charged before shut-down of the vehicle.

6.3 Maintenance

- * The Elektroblock EBL 263-5 is maintenance-free.
- * For cleaning use a soft moisturized cloth with a mild detergent. Do not use methylated spirit, paint thinner, etc. Liquids must not be allowed to get into the cabinet.

7. Malfunction

- * When being on mains supply the charging module is able to charge flat batteries. For that start the engine of the motor home for a short while until the battery voltage comes up. Please see section 3.1 'Evaluation of LED battery indicator'. All connected devices must kept switched off until the battery is at least partly charged.



Caution !

When charging a flat battery, sensitive devices being switched on may get damaged.

- * In some cases of short circuit, the main fuse of the living-area battery might blow instead of the respective PolySwitch fuse. Please see section 3.2 '12V Fuses'.



Caution !

Danger of burning. Change defective fuses only at zero-current.

Note: this operating instruction manual is intended for the customer and has to be supplied with the device

- * If due to overload the device gets too hot, eg charging an almost empty battery while all load is switched on, battery charging will automatically be stopped. After cooling down the charging module activates itself again. However, overheating should in any case be prevented.
- * Should repairs be necessary, please contact the service department of Schaudt GmbH, ph. +49 (0)7544 9577-16, e-mail: kundendienst@schaudt-gmbh.de
- * If it is not possible to see the manufacturer for service (eg being overseas), necessary repairs can be carried out by a qualified workshop.
- * Unqualified repairs enforce expiration of warranty. The manufacturer Schaudt GmbH disclaims its liability and is, therefore, not liable to resulting damages.

8. Enclosure

To this operating instruction manual belongs the enclosed schematic diagram, the table of measurement and front and back view drawings of the Elektroblock EBL 263-5, art no 911.056.

This operating instruction manual with all its enclosures must be delivered together with the energy management system Elektroblock EBL 263-5, art no 911.056.

It has to be part of the instruction manual if it is part of a system installed in a motor home.

8.1 EC declaration of conformity

We hereby certify that the type of construction of Elektroblock EBL 263-5 complies with appropriate regulations:

EC low-voltage guide line

73/23/EWG amendment of 22.07.93

Electromagnetic compatibility guide line

89/336/EWG amended to 92/31/EWG

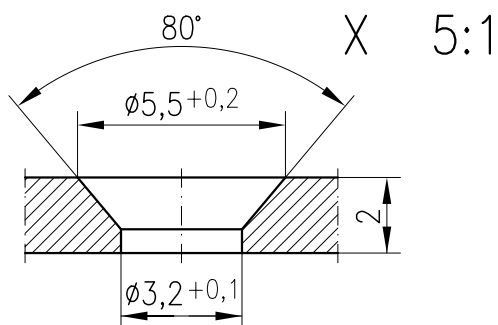
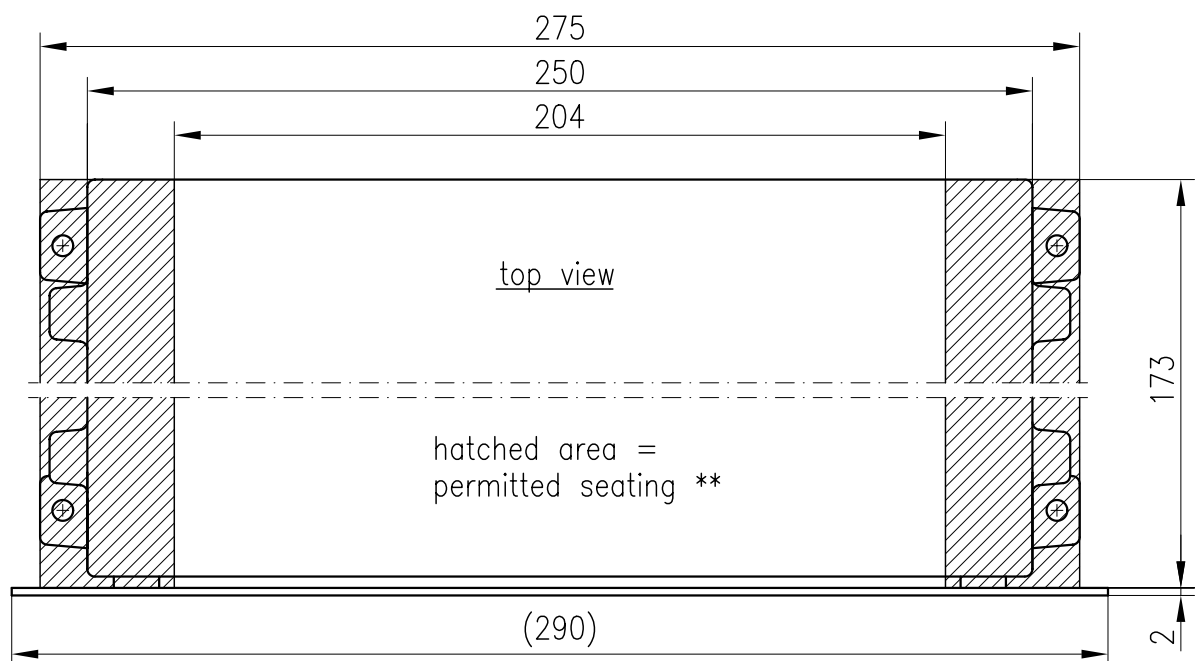
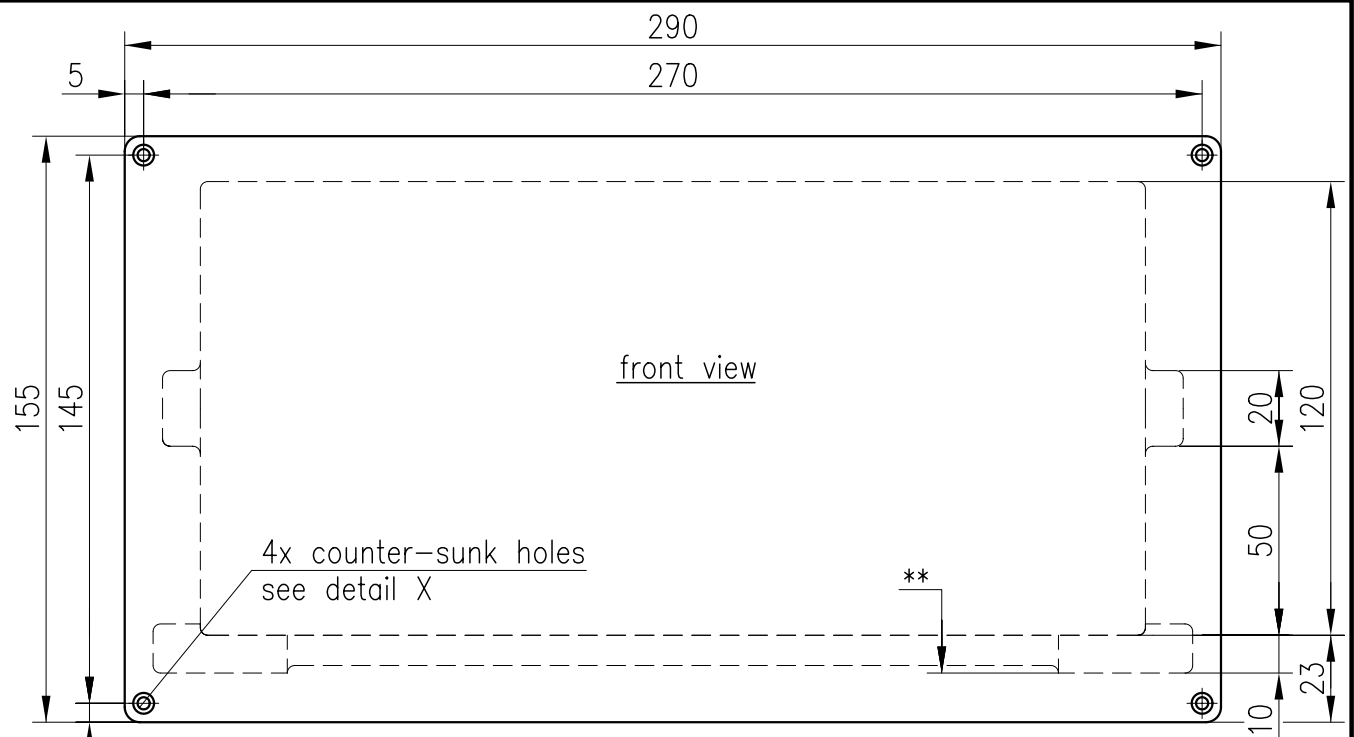
Applied standards and technical specifications,
particularly:

DIN VDE 0700 part 1 /11.90 (EN 60335-1:1988)
DIN VDE 0700 part 29 /03.92 (EN 60335-2-29:1991)
DIN VDE 0551 T1 /09.89 (EN 60742:1989)
DIN EN 50081-1:3.1993
DIN EN 50082-1:3.1993
DIN EN 61000-3-2:2000

The EC declaration of conformity in original is available and can be looked at any time.

Manufacturer: Schaudt GmbH, Elektrotechnik & Apparatebau

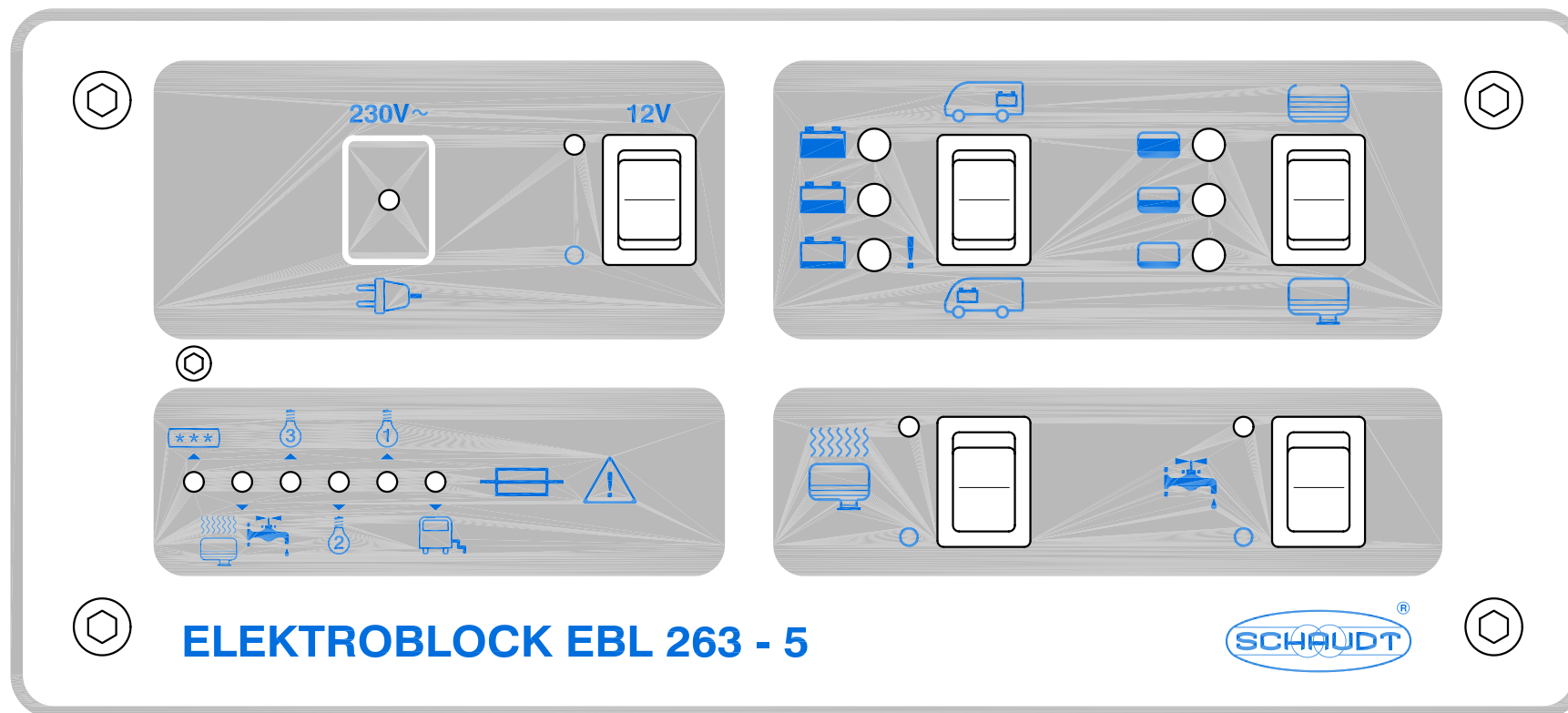
Address: Daimlerstraße 5
88677 Markdorf
Germany



size 1:2

Änderungen nur über A-CAD!

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				Gepr.	11.12.2003 Hüttner			
				Gepr.				
				Schaudt GmbH Daimlerstraße 5 88677 Markdorf/Bodensee Postfach 1150 Telefon (07544) 9577-0		Art-Nr	911.056	Blatt 1
						Ablage	911056V3 Engl.	von 1
Zust.	Aenderung	Datum	Name					



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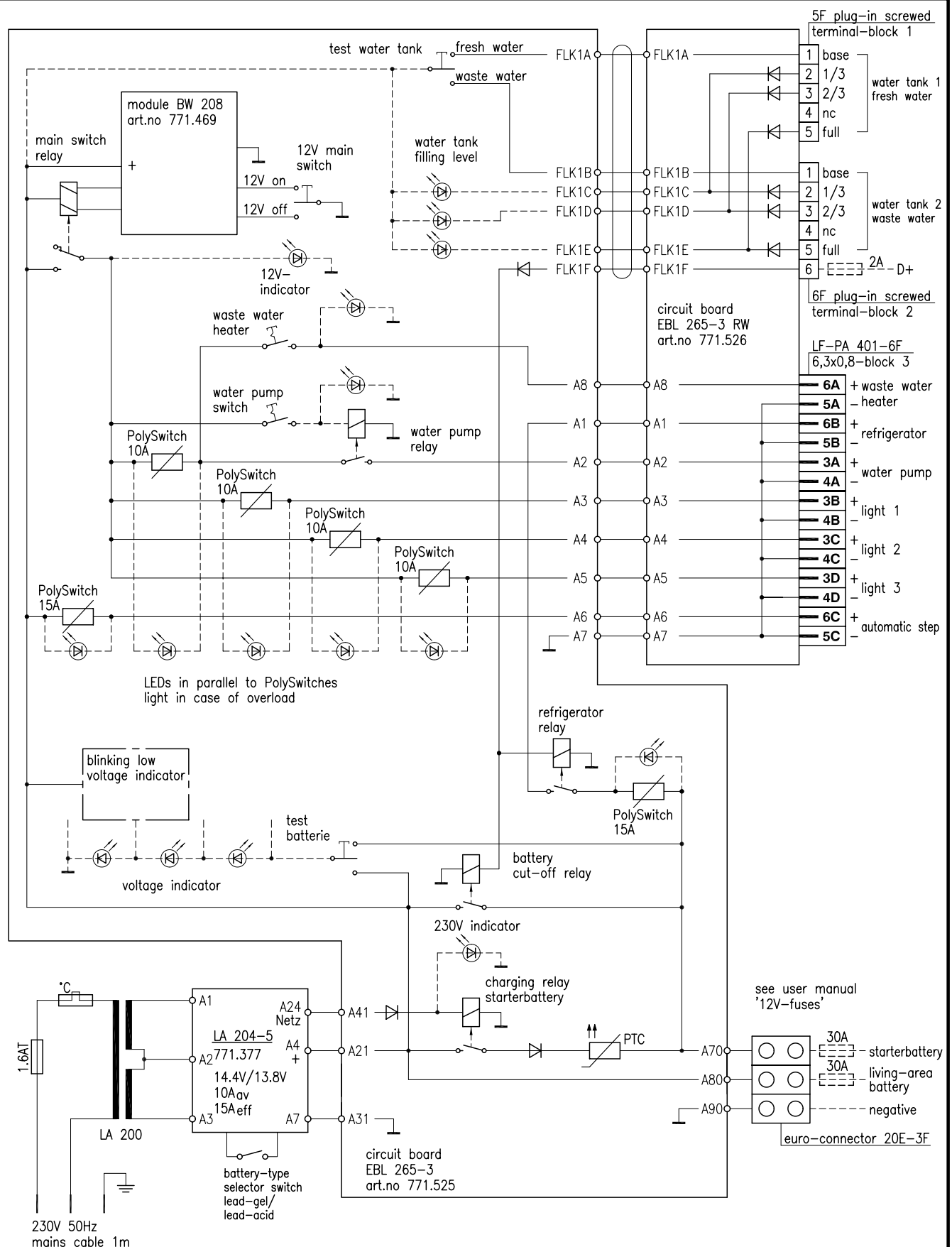
Schaudt GmbH

Daimlerstraße 5
88677 Markdorf/Bodensee
Postfach 1150
Telefon (07544) 9577-0

	Datum	Name
Gez.	01.12.2003	Schliecker
Gepr.	11.12.2003	Hüttner
Gepr.		

front view – Energy
Management System EBL 263-5

Art-Nr	911.056	Blatt	1
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				Gepr.	16.12.2003	Hüttner			
				Gepr.					
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