

# CHARGER

## ABC SCHUTZKLASSE II

**LEAB**  
*mobile energy*



USER MANUAL  
VERSION 6  
01/09/2022

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## 1 About this Manual

Read this manual carefully and keep it in a safe place. This manual is aimed at Skilled workers in the field of automotive electrics.

Any modifications to the product or its components are prohibited and do not conform to its intended use. Only use original LEAB or LEAB-approved accessories.

Throughout the manual, you will be alerted to warnings and safety notices about potential hazards associated with handling the device. The colours and signal words indicate the severity of the hazard:



### Notice

#### Possibility of material damage

The signal word *Attention* indicates that there is a possibility of material damage. To avoid material damage, follow the instruction.



### CAUTION

#### Danger that can lead to minor injuries

Safety instructions with the signal word *CAUTION* indicate a hazard which, if not avoided, can result in minor or moderate injury. Read the safety instructions carefully and follow them to avoid the hazard.



### WARNING

#### Hazards that can lead to severe injuries or death

Safety instructions with the signal word *WARNING* indicate a hazard which, if not avoided, can result in death or severe injury. Read the safety instructions carefully and follow them to avoid the hazard.

**⚠ DANGER****Danger that will lead to severe injury or death**

Safety instructions with the signal word *Danger* indicate a hazard which, if not avoided, will result in death or severe injury. Read the safety instructions carefully and follow them to avoid the hazard.

You will find useful tips and tricks in certain parts of the manual. These appear as follows:

**TIP****Tips provides additional, useful information.**

Read the tip carefully and follow the instructions where applicable.

## 2 Safety

This user manual will help you to handle the unit safely. Use the unit solely in accordance with its intended use. Observe the safety instructions. Keep this user manual in an easily accessible place.

Any modifications to the unit or its components are prohibited and do not conform to its intended use.

### 2.1 Intended use

The ABC charger has been developed for permanent installation in vehicles for charging 12 and 24 V lead acid batteries. The unit is designed for a temperature range of -30°C to +60°C, do not charge the unit outside the this temperature range. At higher temperatures, the output power of the charger automatically decreases.

Only connect the mains plug of the charger to easily accessible sockets with 230 V mains so that you can intervene quickly in the event of a fault.

**⚠ WARNING****Risk of fire from overheated battery**

Flammable gases can escape if the battery overheats.

1. Always charge batteries in well-ventilated rooms and away from ignition sources.
- 

**⚠ WARNING****Burns from escaping acid**

Acid can leak out when handling batteries.

1. Wear acid-proof clothing when handling batteries.
- 

**⚠ WARNING****Risk of injury from damaged, frozen or deformed batteries**

Damaged, frozen or deformed batteries can cause injuries.

1. Before using the battery, make sure that the battery is undamaged and the electrolyte is not frozen.
-

## 2.2 Foreseeable misuse

The charger is designed for permanent installation in vehicles; never install the charger outside the vehicle. Do not expose the unit to strong sunlight for a long period of time. Only charge Lead-acid batteries (wet, gel, AGM) with this charger. The charger must not be used as a starting aid.

To avoid damage, do not pinch the leads of the charger. In the event of damage to the charger, unplug the charger immediately and contact your dealer.



### **Notice**

#### **Device defects from incorrect installation**

Incorrect installation can result in device defects.

1. Install the device in a dry and cool location.
-

### 3 About this product

The ABC chargers have been developed for permanent installation in vehicles for charging lead acid batteries. They cover a battery voltage range from 12 V to 48 V and provide charging currents from 15 A to 100 A. Battery charging is fully automatic and microprocessor-monitored with a selectable charging characteristic. This guarantees optimum and gentle charging. Thanks to their compact design, high performance and excellent radio interference suppression, LEAB chargers have been used for many years wherever optimum battery charging is required.

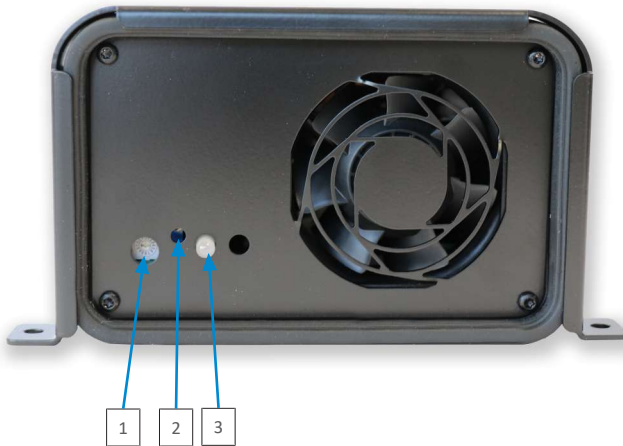


Fig. 1: ABC charger front view

- |   |   |
|---|---|
| 1 Potentiometer for setting the charging characteristic | 2 Potentiometer for fine adjustment of the output voltage |
| 3 Status display LED                                    |   |

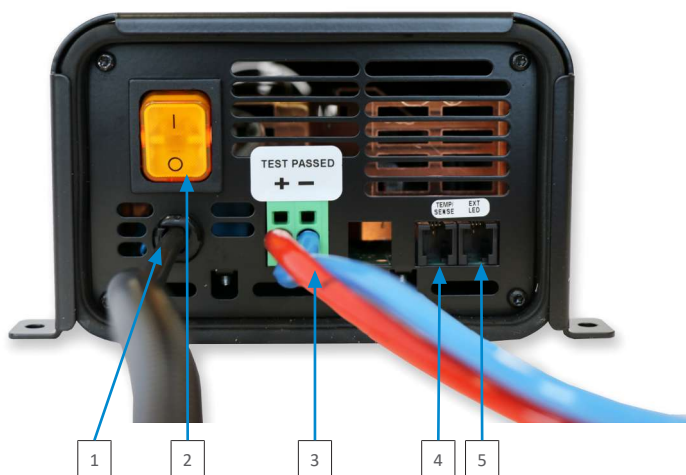


Fig. 2: ABC charger connection side

1 AC wire

2 On/off switch

3 DC wire

4 Sensor cable connection (CTS/TS)

5 Remote display connection

#### 4 Package contents

##### Package contents

##### No.

Battery charger

1x

Mounting clamp

2x

User manual

1x



## 5 Technical specifications

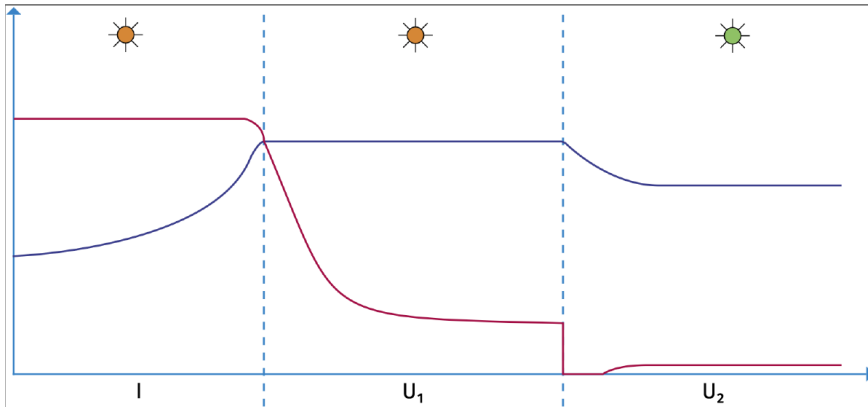
	Part no. 0101236020	Part no. 0101236030
Model	ABC 2420	ABC 2430
Battery type	Lead acid (wet, gel/AGM)	Lead acid (wet, gel/AGM)
Battery capacity	60 Ah ... 200 Ah	90 Ah ... 300 Ah
Charging characteristics	15 optional characteristics (see characteristics sheet)	15 optional characteristics (see characteristics sheet)
Charging current	20 A	30 A
Ripple	< 3%	< 3%
Main charging	28.2 V/28.8 V	28.4 V/28.8 V
Trickle charging	27.0 V/27.6 V	27.2 V/27.6 V
Input voltage (rated values)	230 V/50 Hz/4 A	230 V/50 Hz/4 A
Input voltage	230 V	230 V
Input values	90 V ... 270 V (< 200 V reduced charging current)	90 V ... 270 V (< 200 V reduced charging current)
Input frequency	47 Hz ... 400 Hz	47 Hz ... 400 Hz
Switching frequency	100 kHz	100 kHz
Mains fuse	B16 A or C16 A	B16 A or C16 A
Degree of efficiency, max.	> 88%	> 88%
Protection class	II	II
Operating temperature	-30°C ... +60°C	-30°C ... +60°C
IP rating	IP21	IP21
Dimensions (L x W x H)	240 mm x 135 mm x 85 mm	240 mm x 135 mm x 85 mm
Weight	2.0 kg	2.0 kg
AC wire	2 m, 0.75 mm <sup>2</sup>	1.5 m, 1 mm <sup>2</sup>
DC wire	2 m, 2 x 6 mm <sup>2</sup>	2 x 2 m, 6 mm <sup>2</sup>
CBL connection	No	No

	<b>Part no. 0101236020</b>	<b>Part no. 0101236030</b>
CTS/TS connection	Yes	Yes
Remote display connection	Yes	Yes
On/off switch	Yes	Yes
	<b>Part no. 0101236120</b>	<b>Part no. 0101236130</b>
Model	ABC 1220	ABC 1230
Battery type	Lead acid (wet, gel/AGM)	Lead acid (wet, gel/AGM)
Battery capacity	60 Ah ... 200 Ah	90 Ah ... 300 Ah
Charging characteristics	15 optional characteristics (see characteristics sheet)	15 optional characteristics (see characteristics sheet)
Charging current	20 A	30 A
Ripple	< 3%	< 3%
Main charging	14.2 V/14.4 V	14.2 V/14.4 V
Trickle charging	13.6 V/13.8 V	13.6 V/13.8 V
Input voltage (rated values)	230 V/50 Hz/4 A	230 V/50 Hz/4 A
Input voltage	230 V	230 V
Input values	90 V ... 270 V (< 200 V reduced charging current)	90 V ... 270 V (< 200 V reduced charging current)
Input frequency	47 Hz ... 400 Hz	47 Hz ... 400 Hz
Switching frequency	100 kHz	100 kHz
Mains fuse	B16 A or C16 A	B16 A or C16 A
Degree of efficiency, max.	> 88%	> 88%
Protection class	II	II
Operating temperature	-30°C ... +60°C	-30°C ... +60°C
IP rating	IP21	IP21
Dimensions (L x W x H)	240 mm x 135 mm x 85 mm	240 mm x 135 mm x 85 mm

	Part no. 0101236120	Part no. 0101236130
Weight	2.0 kg	2.0 kg
AC wire	2 m, 1 mm <sup>2</sup>	1.5 m, 1 mm <sup>2</sup>
DC wire	2 x 2 m, 6 mm <sup>2</sup>	2 x 2 m, 6 mm <sup>2</sup>
CBL connection	No	No
CTS/TS connection	Yes	Yes
Remote display connection	Yes	Yes
On/off switch	Yes	Yes

### 6 Charging characteristics

The ABC charger contains 15 different charging characteristics which you can select before connecting to the battery. Battery charging is fully automatic and micro-processor controlled with a 3-stage IU<sub>1</sub>U<sub>2</sub> characteristic curve for gentle and optimum charging of the batteries.



The available charging characteristics can be taken from the .

## 7 Setting charging characteristics

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### Notice

#### Battery defect due to incorrect charging

To protect the battery from damage due to incorrect charging, set a suitable charging characteristic before installation. Follow the battery manufacturer's instructions.

---

To set a charging characteristic, proceed as follows:

1. Turn the potentiometer to the desired position (see characteristics sheet in Appendix).

**NOTE!** The arrow in the middle of the potentiometer indicates the selected characteristic.

2. To prevent accidental adjustment of the charging characteristic, stick the supplied sticker on the potentiometer. **NOTE!** Ensure that the notch in the sticker is above the LED.

⇒ The charging characteristic is set.

## Adjusting the output voltage

You can adjust the output voltage with the potentiometer ( $\pm 0.75$  V).

---



### Notice

#### Battery defect due to incorrect charge voltage

If you use the fine adjustment, check the charge voltage regularly.

---

To change the output voltage, proceed as follows:

1. Turn the potentiometer for fine adjustment until the desired charge voltage is reached.

⇒ The output voltage is adjusted.

## 8 Assembly

To assemble the unit, proceed as follows:

- ✓ Choose a cool, dry and well-ventilated assembly site.
  - ✓ Do not mount the unit directly next to or above batteries.
  - ✓ Guarantee adequate cooling for an unimpeded supply of cooling air.
1. Fasten the assembly bracket to the unit using the 4 lateral holes (5 mm  $\varnothing$ ).
- ⇒ The unit is assembled.

## 9 Installation

### 9.1 Connecting the battery

To connect the battery, proceed as follows:

1. Disconnect the battery from the vehicle power circuit.

**⚠ WARNING!** Disconnect the negative cable first.

2. Secure the positive cable of the device as close as possible to the vehicle battery with a suitable fuse.
  3. Connect the positive cable of the unit to the positive terminal of the battery.
  4. Connect the negative cable of the unit to the negative terminal of the battery.
  5. Connect the vehicle battery to the vehicle power circuit again.
- ⇒ The battery is connected.

### 9.2 Connecting the unit to the 230 V mains

To connect the unit to the 230 V mains, proceed as follows:

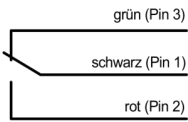
1. Connect the mains plug to a 230 V mains.
- ⇒ The charger is connected to the 230 V mains.

### 9.3 Connecting the sensor cable

The TS sensor cable measures the ambient temperature to optimally charge the battery. The CTS sensor cable measures the battery temperature and voltage to optimally charge the battery.

**NOTE!** When connecting, pay attention to the instructions and notes in the sensor cable installation instructions.

### 9.4 Connecting the CBL control relay



A potential-free changeover contact is integrated in the ABC chargers, which switches during charging. This option can be used, for example, to implement an electrical start interlock with 230 V connection or charge monitoring.

#### Switching function of the changeover contact

- Pin 1 and pin 3 are connected when the charger is switched off.
- Pin 1 and pin 2 are connected when the charger is switched on.

Technical Data (insulation)	Capacity (max. values)
-----------------------------	------------------------

Output to housing	500 V 24 V (DC): 0.5 A
Output to ground	120 V 120 V (AC): 0.5 A

To connect the CBL control relay, proceed as follows:

1. Plug the RJ plug connector into the connector for the CBL relay.
- ⇒ The CBL control relay is connected.

## 9.5 Connecting the remote display

The remote display shows the charge status of the battery via an LED.

To connect the remote display, proceed as follows:

1. Plug the connecting cable for the remote display into the connector for the remote display of the charger.

⇒ The remote display is connected.

## 10 Operation

### 10.1 Switching on the unit

To switch on the unit, proceed as follows:

1. Connect the mains plug to a 230 V mains.
2. If your unit is equipped with an on/off switch, set the switch to position I.

⇒ Charging starts automatically.

⇒ The unit is switched on.

### 10.2 Charging the battery

The ABC charger begins to charge the battery as soon as it is switched on.

### 10.3 LED status display on the charger

Status	Description	Action
Steady light, orange	Battery is charging. The charger is in the main charging phase.	
Steady light, green	Battery is fully charged, charger is in trickle charge phase.	Charger can be switched off and the battery can be used.
Steady light, red	Error, overheating	<ul style="list-style-type: none"> <li>– Check battery connection</li> <li>– Measure battery voltage</li> <li>– Disconnect the unit from the battery and allow it to cool down.</li> </ul>
Flashing, red	Timeout in the main charge phase, charging interrupted.	<ul style="list-style-type: none"> <li>– Check battery</li> <li>– Select larger charger</li> <li>– Consumer too large: Switch off consumer during charging.</li> </ul>

## 11 Maintenance

Check the charger as follows every time before you use it:

- Check the mains cable and mains plug for damage.
- Check charging cables and connections for damage.
- Check the charger for external damage.
- Ensure that the wiring between the charging cable and the charger is secure.

**NOTE!** For battery maintenance, refer to the battery manufacturer's instructions.



## 12 Disposal



Dispose of the device in accordance with the Waste Electrical and Electronic Equipment Regulations (WEEE).

The system must not be disposed of with household waste. Take it to a recycling point or return it to your point of sale.

## 13 EU Declaration of Conformity



The **ABC** charger complies with the requirements of the following directives:

- 2014/30/EU: EMV
- 2014/35/EU: NRL
- 2011/65/EU: RoHS





# We make energy mobile.

## **LEAB Automotive GmbH**

Thorshammer 6

24866 Busdorf

Tel: +49(0) 4621 9 78 60-0

Fax: +49 (0) 4621 9 78 60-260

[info@leab.eu](mailto:info@leab.eu)

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