

ABC Charger

1215, 1220, 1230, 1240, 1250, 2415, 2420, 2430,
3620, 4815

Microprocessor-controlled battery charger



User Manual




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1 About this Manual

Read this manual carefully and keep it in a safe place. This manual is intended for professionals in the automotive electrical field.

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:

Signal word	Meaning
 DANGER	Warns of imminent danger resulting in death or serious injury.
 WARNING	Warns of a potentially dangerous situation that can result in death or serious injury.
 CAUTION	Warns of a potentially dangerous situation that can result in moderate or minor injuries.
NOTICE	Warns of a potentially dangerous situation that can result in material and environmental damage.

In this manual you will find the following symbols:



Shows you useful tips and information about the device.



Indicates a mandatory requirement for the following instruction.



Shows the result of an instruction.

2 General Safety

This manual supports safe handling of the device. Use the device solely in accordance with its intended use:

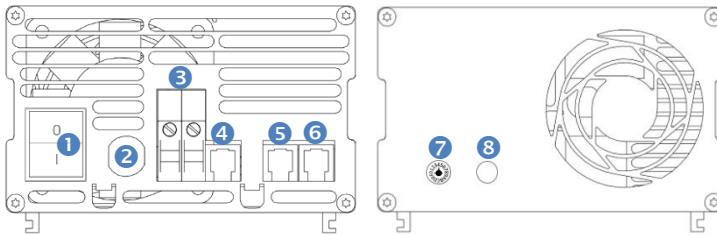
The ABC charger from LEAB has been developed for permanent installation in vehicles for charging lead acid batteries. Thanks to their compact design, high performance and excellent radio interference suppression, LEAB battery chargers have been used for many years wherever optimum battery charging is required.

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

Observe the following safety instructions:

- Danger from damaged, frozen or deformed batteries: Before charging, make sure that the battery is undamaged and the electrolyte is not frozen.
- Only charge batteries in well-ventilated rooms and away from ignition sources.
- When handling batteries, wear acid-proof clothing.
- Device defect due to incorrect installation: Install the device in a dry and cool location.

3 About the Battery Charger



Number	Details
1	On/Off switch (optional)
2	AC cable
3	DC cable
4	CBL* connection
5	Connecting the sensor cable (CTS/TS)*
6	Connecting the remote display*
7	Potentiometer
8	LED (status display)

* Only two connections per device (see Technical Data).

4 Package Contents

Package Contents	No.
Battery charger	x1
User Manual	x1
Charging characteristic data sheet	x1

5 Technical Specifications

Model	ABC 1215	ABC 1220
Part number	0101036115	0101036120
Battery		
Battery type	Lead acid (wet, gel, AGM)	
Charging characteristics	15 optional characteristics (see characteristics sheet)	
rec. battery capacity	50 Ah ...150 Ah	60 Ah ...200 Ah
Charging current		
Charging current, max.	15 A	20 A
Charging current, duration	15 A	20 A
Ripple	< 3%	
Charge voltage		
Main charging	14.2 V / 14.4 V	
Trickle charging	13.6 V / 13.8 V	
Supply voltage (AC)		
Input voltage (rated values)	230 V / 50 Hz / 4 A	
Input voltage	90 V... 270 V (< 200 V reduced charging current)	
Input frequency	0 Hz ... 400 Hz	
Quiescent current	< 2 mA	
Switching frequency	100 kHz	
recommended mains fuse	B16 A or C16 A	
Degree of efficiency, max.	> 88%	
Protection class	I	
Operating temperature	-30°C ... +60°C	
IP rating	IP21	
Dimension, housing (L x W x H)	220 mm x 112 mm x 73 mm	
Weight (without cable)	1.5 kg	
Connections		
AC cable	1.5 m; 0.75 mm ²	2 m; 0.75 mm ²
Mains plug	Two-pin earthed plug	Two-pin earthed plug
DC cable	2 x 2 m, 6 mm ²	2 x 2 m, 6 mm ²
CBL	no	no
CTS/TS	yes	yes
Remote display	yes	yes
On/off switch	yes	yes

Model	ABC 1230	ABC 1230
Part number	0101036134	0101036130
Battery		
Battery type	Lead acid (wet, gel, AGM)	
Charging characteristics	15 optional characteristics (see characteristics sheet)	
rec. battery capacity	90 Ah ...300 Ah	90 Ah ...300 Ah
Charging current		
Charging current, max.	30 A	30 A
Charging current, duration	30 A	30 A
Ripple	< 3%	
Charge voltage		
Main charging	14.2 V / 14.4 V	
Trickle charging	13.6 V / 13.8 V	
Supply voltage (AC)		
Input voltage (rated values)	230 V / 50 Hz / 4 A	
Input voltage	90 V... 270 V (< 200 V reduced charging current)	
Input frequency	0 Hz ... 400 Hz	
Quiescent current	< 2 mA	
Switching frequency	100 kHz	
recommended mains fuse	B16 A or C16 A	
Degree of efficiency, max.	> 88%	
Protection class	I	
Operating temperature	-30°C ... +60°C	
IP rating	IP21	
Dimension, housing (L x W x H)	220 mm x 112 mm x 73 mm	
Weight (without cable)	1.5 kg	
Connections		
AC cable	2 m, 0.75 mm ²	1.5 m, 0.75 mm ²
Mains plug	Two-pin earthed plug	Two-pin earthed plug
DC cable	2 x 1.5 m, 6 mm ²	2 x 2 m, 6 mm ²
CBL	yes	no
CTS/TS	yes	yes
Remote display	yes	yes
On/off switch	yes	yes

Model	ABC 1230	ABC 1240
Part number	0101036131	0101036140
Battery		
Battery type	Lead acid (wet, gel, AGM)	
Charging characteristics	15 optional characteristics (see characteristics sheet)	
rec. battery capacity	90 Ah ...300 Ah	120 Ah ...400 Ah
Charging current		
Charging current, max.	30 A	40 A
Charging current, duration	30 A	40 A
Ripple	< 3%	
Charge voltage		
Main charging	14.2 V / 14.4 V	
Trickle charging	13.6 V / 13.8 V	
Supply voltage (AC)		
Input voltage (rated values)	230 V / 50 Hz / 4 A	
Input voltage	90 V... 270 V (< 200 V reduced charging current)	
Input frequency	0 Hz ... 400 Hz	
Quiescent current	< 2 mA	
Switching frequency	100 kHz	
recommended mains fuse	B16 A or C16 A	
Degree of efficiency, max.	> 88%	
Protection class	I	
Operating temperature	-30°C ... +60°C	
IP rating	IP21	
Dimension, housing (L x W x H)	220 mm x 112 mm x 73 mm	
Weight (without cable)	1.5 kg	
Connections		
AC cable	1.5 m, 0.75 mm ²	1.5 m, 0.1 mm ²
Mains plug	Neutrik plug	Two-pin earthed plug
DC cable	2 x 2 m, 6 mm ²	2 x 2 m, 10 mm ²
CBL	no	yes
CTS/TS	yes	yes
Remote display	yes	yes
On/off switch	yes	yes

Model	ABC 1250	ABC 2415
Part number	0101036160	0101036015
Battery		
Battery type	Lead acid (wet, gel, AGM)	
Charging characteristics	15 optional characteristics (see characteristics sheet)	
rec. battery capacity	140 Ah ...500 Ah	50 Ah ...150 Ah
Charging current		
Charging current, max.	50 A	15 A
Charging current, duration	50 A	15 A
Ripple	< 3%	
Charge voltage		
Main charging	14.2 V / 14.4 V	
Trickle charging	13.6 V / 13.8 V	
Supply voltage (AC)		
Input voltage (rated values)	230 V / 50 Hz / 4 A	
Input voltage	90 V... 270 V (< 200 V reduced charging current)	
Input frequency	0 Hz ... 400 Hz	
Quiescent current	< 2 mA	
Switching frequency	100 kHz	
recommended mains fuse	B16 A or C16 A	
Degree of efficiency, max.	> 88%	
Protection class	I	
Operating temperature	-30°C ... +60°C	
IP rating	IP21	
Dimension, housing (L x W x H)	220 mm x 112 mm x 73 mm	
Weight (without cable)	1.5 kg	
Connections		
AC cable	1.5 m, 1 mm ²	1.5 m, 0.75 mm ²
Mains plug	Two-pin earthed plug	Two-pin earthed plug
DC cable	2 x 2 m, 10 mm ²	2 x 2 m, 6 mm ²
CBL	yes	no
CTS/TS	yes	yes
Remote display	yes	yes
On/off switch	yes	yes

Model	ABC 2420	ABC 2420
Part number	0101036024	0101036020
Battery		
Battery type	Lead acid (wet, gel, AGM)	
Charging characteristics	15 optional characteristics (see characteristics sheet)	
rec. battery capacity	60 Ah ...200 Ah	60 Ah ...200 Ah
Charging current		
Charging current, max.	20 A	20 A
Charging current, duration	20 A	20 A
Ripple	< 3%	
Charge voltage		
Main charging	28.4 V / 28.8 V	
Trickle charging	27.2 V / 27.6 V	
Supply voltage (AC)		
Input voltage (rated values)	230 V / 50 Hz / 4 A	
Input voltage	90 V... 270 V (< 200 V reduced charging current)	
Input frequency	0 Hz ... 400 Hz	
Quiescent current (out of the battery)	< 2 mA	
Switching frequency	100 kHz	
recommended mains fuse	B16 A or C16 A	
Degree of efficiency, max.	> 88%	
Protection class	I	
Operating temperature	-30°C ... +60°C	
IP rating	IP21	
Dimension, housing (L x W x H)	220 mm x 112 mm x 73 mm	
Weight (without cable)	1.5 kg	
Connections		
AC cable	1.5 m, 0.75 mm ²	1.5 m, 0.75 mm ²
Mains plug	Two-pin earthed plug	Two-pin earthed plug
DC cable	2 x 2 m, 6 mm ²	2 x 2 m, 6 mm ²
CBL	yes	no
CTS/TS	yes	yes
Remote display	yes	yes
On/off switch	yes	yes

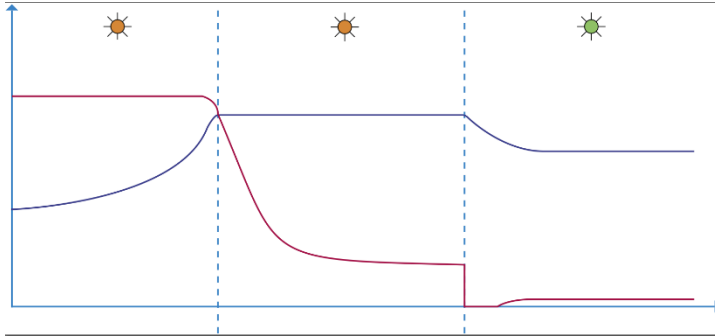
Model	ABC 2430	ABC 2430
Part number	0101036034	0101036030
Battery		
Battery type	Lead acid (wet, gel, AGM)	
Charging characteristics	15 optional characteristics (see characteristics sheet)	
rec. battery capacity	90 Ah ...300 Ah	
Charging current		
Charging current, max.	30 A	
Charging current, duration	30 A	
Ripple	< 3%	
Charge voltage		
Main charging	28.4 V / 28.8 V	
Equalisation charging	---	
Trickle charging	27.2 V / 27.6 V	
Supply voltage (AC)		
Input voltage (rated values)	230 V / 50 Hz / 4 A	
Input voltage	90 V... 270 V (< 200 V reduced charging current)	
Input frequency	0 Hz ... 400 Hz	
Quiescent current (out of the battery)	< 2 mA	
Switching frequency	100 kHz	
recommended mains fuse	B16 A or C16 A	
Degree of efficiency, max.	> 88%	
Protection class	I	
Operating temperature	-30°C ... +60°C	
IP rating	IP21	
Dimension, housing (L x W x H)	220 mm x 112 mm x 73 mm	
Weight (without cable)	1.5 kg	
Connections		
AC cable	1.5 m, 0.75 mm ²	1.5 m, 0.75 mm ²
Mains plug	Two-pin earthed plug	Two-pin earthed plug
DC cable	2 x 2 m, 6 mm ²	2 x 2 m, 6 mm ²
CBL	yes	no
CTS/TS	yes	yes
Remote display	yes	yes
On/off switch	yes	yes

Model	ABC 2430
Part number	0101036032
Battery	
Battery type	Lead acid (wet, gel, AGM)
Charging characteristics	15 optional characteristics (see characteristics sheet)
rec. battery capacity	90 Ah ...300 Ah
Charging current	
Charging current, max.	30 A
Charging current, duration	30 A
Ripple	< 3%
Charge voltage	
Main charging	28.4 V / 28.8 V
Equalisation charging	---
Trickle charging	27.2 V / 27.6 V
Supply voltage (AC)	
Input voltage (rated values)	230 V / 50 Hz / 4 A
Input voltage	90 V... 270 V (< 200 V reduced charging current)
Input frequency	0 Hz ... 400 Hz
Quiescent current (out of the battery)	< 2 mA
Switching frequency	100 kHz
recommended mains fuse	B16 A or C16 A
Degree of efficiency, max.	> 88%
Protection class	I
Operating temperature	-30°C ... +60°C
IP rating	IP21
Dimension, housing (L x W x H)	220 mm x 112 mm x 73 mm
Weight (without cable)	1.5 kg
Connections	
AC cable	1.5 m, 6 mm ²
Mains plug	Two-pin earthed plug
DC cable	2 x 4 m, 6 mm ² , open
CBL	no
CTS/TS	yes
Remote display	yes
On/off switch	yes

Model	ABC 3620	ABC 4815
Part number	010103620	0101036415
Battery		
Battery type	Lead acid (wet, gel, AGM)	
Charging characteristics	15 optional characteristics (see characteristics sheet)	
rec. battery capacity	60 Ah ...200 Ah	
Charging current		
Charging current, max.	20 A	
Charging current, duration	20 A	
Ripple	< 3%	
Charge voltage		
Main charging	40.5 V / 43.2 V	
Equalisation charging	50.4 V	
Trickle charging	40.5 V	
Supply voltage (AC)		
Input voltage (rated values)	230 V / 50 Hz / 4 A	
Input voltage	90 V... 270 V (< 200 V reduced charging current)	
Input frequency	0 Hz ... 400 Hz	
Quiescent current (out of the battery)	< 2 mA	
Switching frequency	100 kHz	
recommended mains fuse	B16 A or C16 A	
Degree of efficiency, max.	> 88%	
Protection class	I	
Operating temperature	-30°C ... +60°C	
IP rating	IP21	
Dimension, housing (L x W x H)	220 mm x 112 mm x 73 mm	
Weight (without cable)	1.5 kg	
Connections		
AC cable	1.5 m, 0.75 mm ²	1.5 m, 0.75 mm ²
Mains plug	Two-pin earthed plug	Two-pin earthed plug
DC cable	2 x 2 m, 6 mm ²	2 x 2 m, 6 mm ²
CBL	no	no
CTS/TS	yes	yes
Remote display	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 IU₁U₂ characteristic curve for gentle and optimum charging of the batteries.



The available charging characteristics can be found on the characteristics sheet.

7 Setting Charging Characteristics

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, perform the following steps:

1. Turn the potentiometer to the desired position (see characteristics sheet).
2. To prevent accidental adjustment of the charging characteristic, stick the supplied sticker on the potentiometer.



The arrow in the middle of the potentiometer indicates the selected characteristic.




Ensure that the notch in the sticker is above the LED.



The charging characteristic is set.

8 Mounting

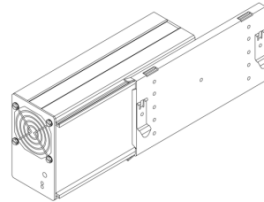
To mount the device, perform the following steps:

-  • Choose a cool, dry and well-ventilated mounting site.
- Do not mount the device directly next to or above batteries.
- To allow adequate cooling, ensure an unimpeded supply of cooling air.

1. Fasten the mounting plate to the 4 lateral holes (5 mm \varnothing).
2. Push the device onto the mounting plate.



The device is mounted.



9 Installation

Connecting the Battery

To install the battery, perform the following steps:

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 (60 A).
3. Connect the positive cable of the device to the positive terminal of the battery.
4. Connect the negative cable of the device to the negative terminal of the battery.
5. Connect the vehicle battery to the vehicle power circuit again.



The battery is connected.

Connect the Device to the 230-V Mains

To install the device to the 230-V mains, perform the following step:

1. Connect the mains plug to a 230-V mains supply.



- The charger is only suitable for connection to fused, earthed 230-V networks.
- For devices without an on/off switch, the device switches on as soon as a voltage is applied.



The charger is connected to the 230-V mains supply.

Connect Remote Display (Optional)

The remote display shows the charging status of the battery with an LED.

To connect the remote display, perform the following steps:

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



The remote display is connected.

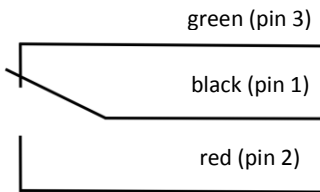
Connect Sensor Cable (Optional)

The sensor cable measures the battery temperature (sensor cable TS) or the battery temperature and voltage (sensor cable CTS) in order to charge the battery optimally.

When connecting, pay attention to the instructions and notes in the installation instructions for the sensor cable.

Connect CBL Control Relay (Optional)

A potential-free changeover contact is integrated in the ABC chargers, which switches during charging operation. For easier connection, a corresponding adapter cable set with plug and three open cables is available. 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 connected when charger is switched off.

Pin 1 and Pin 2 connected when

Technical Data (Insulation):

Output to housing: 500 V

Output to ground: 120 V

Capacity (max. values):

24 V (DC): 0.5 A

120 V (AC): 0.5 A

To connect the CBL control relay, perform the following steps:

1. Plug the Western plug into the CBL relay connector on the back of the device.



The CBL control relay is connected.

10 Normal Operation

Switching on the Device



For devices without an on/off switch, the device switches on and starts charging as soon as the mains plug is plugged into the 230-V mains.

To switch on the device, perform the following steps:

1. To turn on the unit, press the on/off switch in position I.
 - The device is switched on.
 - After establishing the mains connection, the LED flashes red for 2 seconds (device test).
 - If the battery is charging, the LED illuminates orange.
 - If the battery is fully charged, the LED illuminates green.



Charging the Battery

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

Switching off the Device

To switch off the charger, perform the following step:



For devices without an on/off switch, the device switches off as soon as the mains plug is disconnected from the 230-V mains.

1. To turn off the device, press the on/off switch in position 0.



The device is switched off.

11 LED Display on the Charger

Status	Description	Measure
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	Check battery connection Measure battery voltage Disconnect the device from the battery and allow it to cool down
Flashing red	Timeout in the main charge phase, charging interrupted.	Check battery Select larger charger Consumer too large: Switch off consumer when charging

12 Maintenance

Check the charger as follows before using it each time:

- 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.



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

13 Disposal

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



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

14 EU Declaration of Conformity

The **LEAB ABC**

with the models **1215, 1220, 1230, 1240, 1250, 2415, 2420, 2430, 3620** and **4815**

complies with the requirements of the following directives:

2014/30/EU:	EMC
2014/35/EU:	NRL
2011/65/EU:	RoHS



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