LPS II
REMOTE DISPLAY

LEAB
mobile energy

USER MANUAL
VERSION 5

LEAB Automotive GmbH // Thorshammer 6 // 24866 Busdorf

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1 About this Manual

Read this manual carefully and keep it in a safe place. This manual is aimed at Users.

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 is designed to help you handle the unit safely. Use the unit solely in accordance with its intended use. Observe the safety instructions:

⚠ WARNING

Risk of injury due to cable fire

Using the unit at too high a voltage can cause a cable fire.

1. Only use the unit within the specified voltage limits.

2.1 Intended use

The LPS II remote display is an optional accessory for displaying operating and service data of the LPS II.

The remote display can be used to switch the LPS II on or off and to activate the emergency start function of the LPS II.

2.2 Foreseeable misuse

The unit has protection class IP21 and is designed exclusively for indoor use. Do not mount the unit outside the vehicle.

The unit is designed for an operating temperature of -20°C ... +70°C. Only use the unit within the specified temperature range.

The voltage limits of the unit are 9.8 V ... 32 V. Only use the unit within the specified voltage limits.

3 Technical specifications

LPS II Remote Display	Part number
Excluding connection cable	1051009008
Including connection cable	1051009020

	LPS II Remote Display
Input voltage	9.8 V … 32.0 V
Operating temperature	-20 °C … +70 °C
Installation depth (from contact surface to connections)	Approx. 20 mm
Connections	Molex 8-pin
IP rating	IP21
Current consumption (active)	42 mA (12 V)
Current consumption (standby)	27 mA (display inactive)
Current consumption (off)	26 µA
Weight	0.16 kg
Dimensions (L x W x H)	142 mm x 72 mm x 51 mm

Connection cable	Part no.: 1051009019
Cable length	6 m
Connections	Molex 8-PIN to M12

4 Package contents

No.	Name
x 1	LPS II Remote Display
x 1	Connection cable for LPS II remote display*
x 4	Mounting screws, flat head (Ø 2.9 mm x 19 mm)
x 1	User manual (incl. mounting template)

*only included with LPS II remote indicator part no. 1051009020

5 About this product

The LPS II remote display provides an overview of all relevant operating data of the LPS II. It shows the charge status of the LPS II as well as the operating data of the individual 12 V and 230 V outputs and inputs.

In addition, the LPS II remote display allows you to activate or deactivate the individual 12 V and 230 V outputs simply by pressing a button.

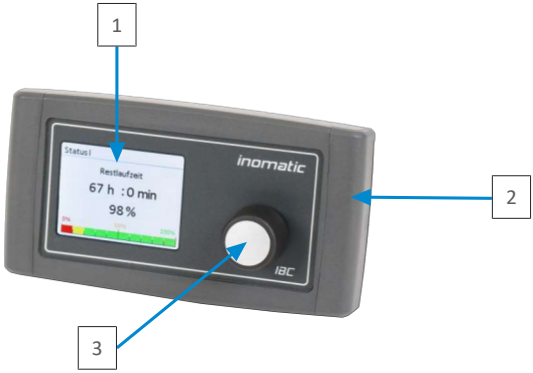

Fig. 1: LPS II remote display front

1 Display	2 Housing panel
3 Rotary knob	

Fig. 2: LPS II remote display back

4 Connector for Molex plug (8-PIN)

5.1 PIN assignment

Molex connector (8-PIN)

The Molex connector (8-PIN) is used to connect the LPS II remote display to the LPS II.

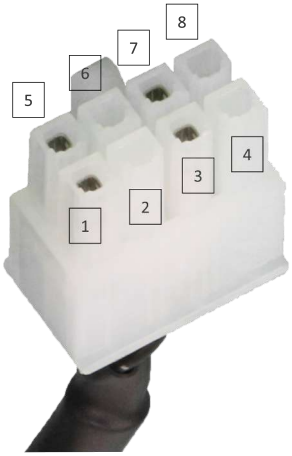

Fig. 3: Molex connector PIN assignment

PIN	Item	Description
1	Terminal 30	Battery positive
2	NC	Not assigned
3	CAN Bus High	
4	Output 1	Signal transmission: The output is active when the remote display is active.
5	Terminal 31	Ground
6	NC	Not assigned
7	CAN Bus Low	
8	Output 2	

M12 connector

The M12 connector enables external devices or signals to be connected to the LPS II remote display.

Fig. 4: M12 connector PIN assignment

PIN	Assignment
1	Battery positive
2	Battery positive
3	Ground
4	Can Bus High
5	Can Bus Low

6 Installation

To install the unit, proceed as follows:

1. Insert the supplied Molex connector of the connection cable into the connection for the Molex connector on the back of the LPS II remote display.
   ⇨ The Molex connector audibly clicks into place.
2. Insert the M12 plug of the connection cable into the marked M12 connection on the back of the LPS II.

⇨ The unit is installed.

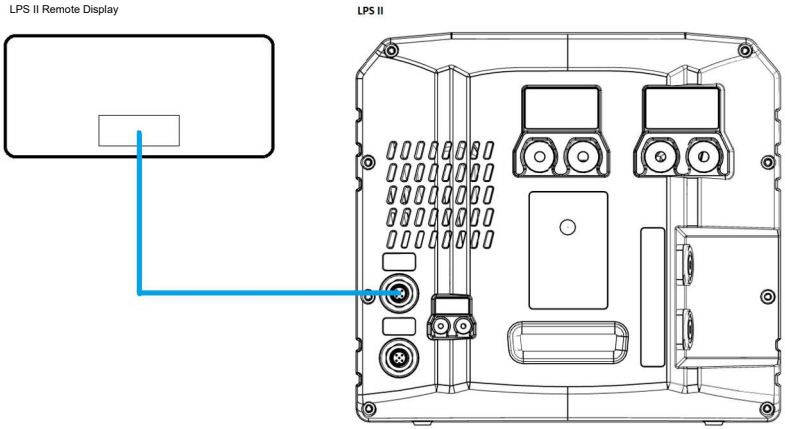

Fig. 5: LPS II remote display wiring diagram

7 Assembly

⚠ WARNING

Risk of injury due to improper work

The use of unsuitable tools to cut out the mounting area and not wearing the necessary protective clothing can lead to injuries.

1. Use suitable tools, such as a jigsaw.
2. Wear protective gloves during assembly work.

Notice

Unit defects from welding work on the vehicle

The electronics of the unit can be damaged by high currents.

1. Disconnect the unit from the vehicle's electrical circuit before performing welding on the vehicle.

To mount the unit, proceed as follows:

1. Use the enclosed mounting template to transfer the dimensions for cutting out the unit to the desired mounting location.
2. Cut out the marked area at the mounting location.

⚠ **WARNING!** Risk of injury from improper work. Use suitable tools, such as a jigsaw, and wear appropriate protective clothing.

3. To remove the covers from the mounting holes of the unit, slide the left and right housing panels to the side.
4. Insert the unit into the mounting cut-out.
5. Mark the position of the fastening holes with a pin.
6. Disconnect the connecting cable from the unit by removing the Molex connector on the back of the LPS II remote display.
7. Guide the connecting cable through the mounting cut-out.
8. Insert the Molex connector of the connection cable into the connection for the Molex connector on the back of the unit.
9. Secure the unit with the screws supplied (Ø 2.9 mm x 19 mm). Pre-drill the screw holes if necessary.
10. Place the housing panels back on the unit.

⇨ The unit is assembled.

8 Operation

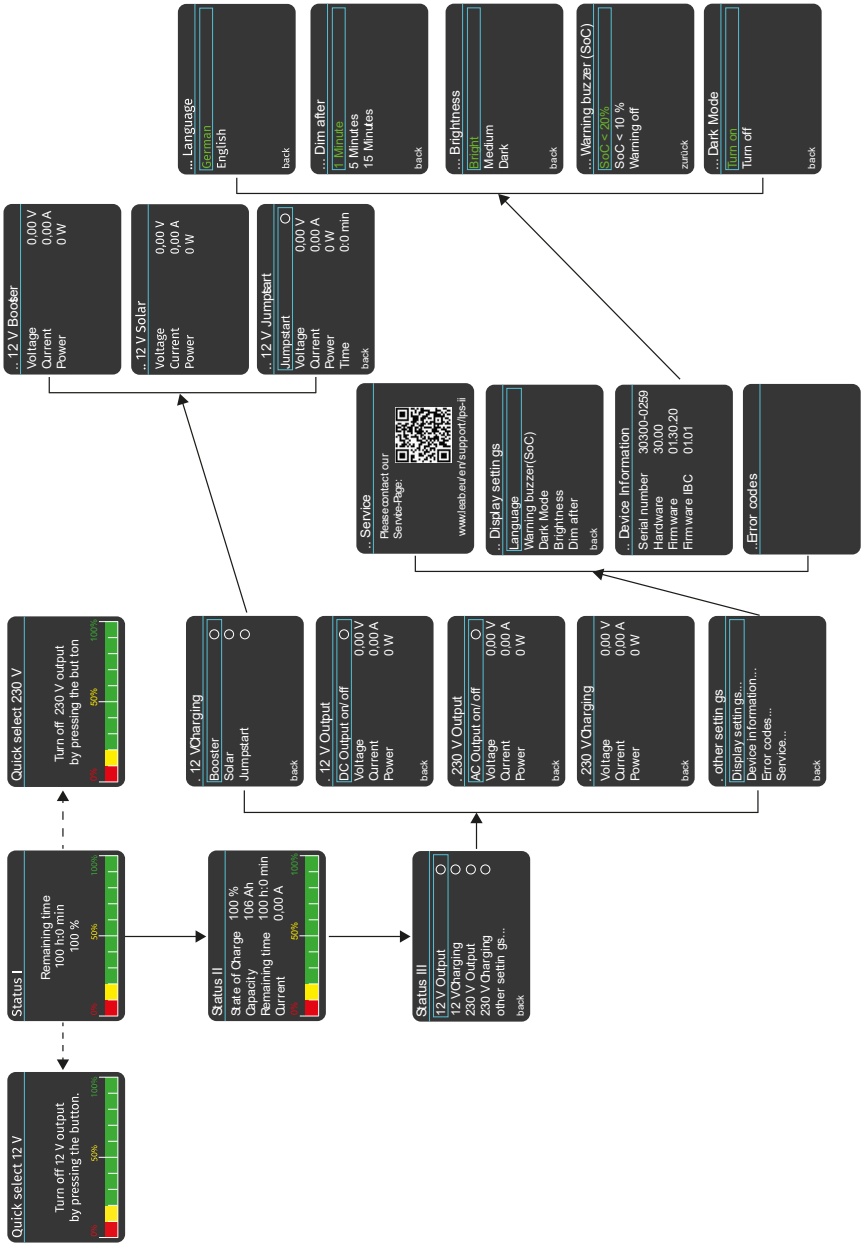

Fig. 6: LPS II remote display menu structure

8.1 Switching on the unit

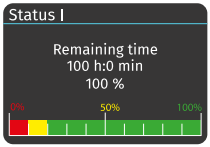

Fig. 7: Status I

To switch on the unit, proceed as follows:

1. Press and hold the rotary knob for at least 4 seconds.

⇨ The unit is switched on. The start screen (Status I) is shown on the display.

The start screen shows the remaining running time (hh:mm) and the charge status of the LPS II (%).

In addition, the bars indicate the current charge status of the LPS II, one bar = 10%.

A more detailed overview of the charge status of the LPS II is provided by the Status II display.

NOTE! If the rotary knob of the LPS II remote display is not pressed for 30 s, the display automatically switches back to the start screen (status I).

8.2 Switching off the unit

To switch off the unit, proceed as follows:

1. Press and hold the rotary knob for at least 4 seconds.

⇨ A message appears on the display asking if you really wish to switch off the unit.

2. Turn the rotary knob to select the “Yes” menu item.

NOTE! If you do not wish to switch off the unit, turn the rotary knob to select the “No” menu item.

3. Press the rotary knob to confirm your menu item selection.

⇨ The unit is switched off.

8.3 Quick selection

The outputs for 12 V and 230 V can be selected and switched on directly via the quick selection.

Quick selection 12 V

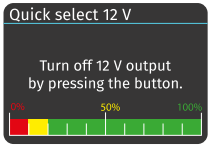

Fig. 8: Quick selection 12 V

To activate or deactivate the 12 V output, proceed as follows:

✓ The LPS II remote display is switched on.

✓ The start screen (Status I) is shown on the display of the unit.

1. Turn the rotary knob to the left.

   ⇨ The quick selection 12 V is shown on the display of the unit.

2. Switch on the 12 V output by pressing the rotary knob.

⇨ The 12 V output is switched on via the quick selection.

Quick selection 230 V

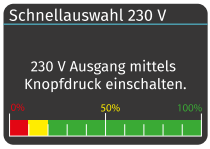

Fig. 9: Quick selection 230 V

To activated or deactivate the 230 V output, proceed as follows:

✓ The LPS II remote display is switched on.

✓ The start screen (Status I) is shown on the display of the unit.

3. Turn the rotary knob to the right.

   ⇨ The quick selection 230 V is shown on the display of the unit.

4. Switch on the 230 V output by pressing the rotary knob.

⇨ The 230 V output is switched on via the quick selection.

NOTE! If the rotary knob of the LPS II remote display is not pressed for 5 s, the display automatically switches back to the start screen (status I).

8.4 Charge status (Status II)

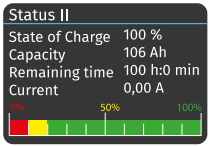

Fig. 10: Status II

The Status II display gives a detailed overview of the charge status of the LPS II, including information about the capacity, remaining runtime and current.

To access the Status II display, proceed as follows:

✓ The LPS II remote display is switched on.

1. Briefly press the rotary knob 1 x.

⇨ Status II is shown on the display of the unit.

NOTE! If the rotary knob of the LPS II remote display is not pressed for 30 s, the display automatically switches back to the start screen (status I).

8.5 Operating data (Status III)

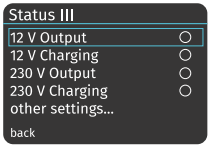

Fig. 11: Status III

The "Status III" menu allows you to view and activate the operating data of the AC and DC outputs and the charging processes for 12 V and 230 V. Activated outputs and charging processes are indicated by a green-coloured selection field next to the respective menu item.

To get to the Status III display, carry out the following step:

✓ The LPS II remote display is switched on.

1. Press the rotary knob 2 x in succession.

⇨ Status III is shown on the display of the unit. You can now select a menu item by turning the rotary knob.

NOTE! To return to the previous display, turn the rotary knob to select the “back” menu item and press the rotary knob to confirm your menu item selection.

8.5.1 12 V output

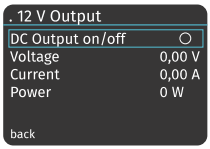

Fig. 12: .12 V output

The “.12 V output” menu display allows you to view and switch on and off the operating data of the DC output.

To switch on the DC output or to view the operating data, proceed as follows:

✓ The LPS II remote display is switched on.

✓ Status III is shown on the display of the unit.

1. Turn the rotary knob to select the “12 V output” menu item.
2. Press the rotary knob to confirm your menu item selection.
   ⇨ “12 V output” is shown on the display of the unit.
3. Turn the rotary knob to select the “DC output on/off” menu item.
4. Press the rotary knob to confirm your menu item selection.
   ⇨ The selection field next to “DC output on/off” turns green when activated and goes out when deactivated.

⇨ The operating data of the DC output is displayed.

NOTE! To return to the previous display, turn the rotary knob to select the “back” menu item and press the rotary knob to confirm your menu item selection.

8.5.2 12 V charging

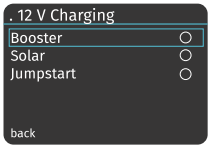

Fig. 13: .12 V charging

The operating data of the booster and the solar charge controller can be viewed and the emergency start function of the LPS II can be activated via the “..12 V charging” menu.

To display the menu, proceed as follows:

✓ The LPS II remote display is switched on.

✓ Status III is shown on the display of the unit.

1. Turn the rotary knob to select the “12 V charging” menu item.
2. Press the rotary knob to confirm your menu item selection.

⇨ The “..12 V charging” menu is shown on the display of the unit.

NOTE! To return to the previous display, turn the rotary knob to select the “back” menu item and press the rotary knob to confirm your menu item selection.

8.5.2.1 Booster

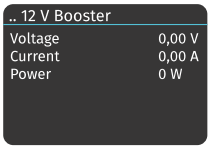

Fig. 14: ..12 V booster

To display the operating data of the booster, proceed as follows:

1. Turn the rotary knob to select the “Booster” menu item.
2. Press the rotary knob to confirm your menu item selection.

⇨ “.12 V Booster” is shown on the display of the unit. Information on the voltage applied, the charging current and the power of the booster is displayed.

NOTE! The booster cannot be activated via the display, the display only provides insight into whether the booster is active or inactive. Active inputs are indicated by a green coloured selection field next to the respective menu item of the “12 V charging” menu.

NOTE! If the rotary knob of the LPS II remote display is not pressed for 30 s, the display automatically switches back to the start screen (status I).

8.5.2.2 Solar

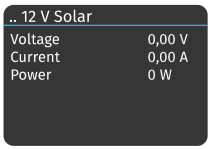

Fig. 15: ..12 V solar

If a solar panel is connected and there is sufficient power at the solar charge controller, the LPS II remote display shows via the ".12 Solar" menu display with which voltage and which charging current the LPS II is charged via the connected solar panel.

TIP

The "Solar" selection field in the previous "..12 V Charging" menu only turns green if the solar charge controller is active and the LPS II is being charged via the connected solar panel.

NOTE! Press the rotary knob to return to the previous "...12 V charging" menu.

8.5.2.3 Emergency start

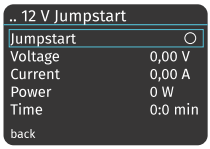

Fig. 16: .. 12 V emergency start

Via the emergency start function, a discharged starter battery can be recharged by the LPS II to such an extent that a starting process is possible again.

To activate the emergency start function of the LPS II, proceed as follows:

✓ The menu display ".12 V charging" is shown on the display of the unit.

1. Turn the rotary knob to select the "Emergency start" menu item.
2. Press the rotary knob to confirm your menu item selection.
   ⇨ ".12 V Emergency Start" is shown on the display of the unit.
3. Turn the rotary knob to select the "Emergency start" menu item.
4. Press the rotary knob to confirm your menu item selection.
   ⇨ The selection field next to "Emergency start" turns green.

⇨ The emergency start function is activated. A charging current of 40 A is provided for 5 minutes.

⇨ Meanwhile, information on the applied voltage, the output current and the power of the emergency start function is displayed. After the 5 minutes, the vehicle can be started as usual.

NOTE! To return to the previous display, turn the rotary knob to select the “back” menu item and press the rotary knob to confirm your menu item selection.

8.5.3 230 V output

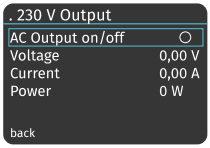

Fig. 17: .230 V output

The "..230 V output” menu allows you to view the operating data of the inverter (AC output).

To display the operating data of the inverter, proceed as follows:

✓ The LPS II remote display is switched on.

✓ Status III is shown on the display of the unit.

1. Turn the rotary knob to select the "230 V output" menu item.
2. Press the rotary knob to confirm your menu item selection.
   ⇨ “..230 V output” is shown on the display of the unit.
3. Turn the rotary knob to select the “AC output on/off” menu item.
4. Press the rotary knob to confirm your menu item selection.
   ⇨ The selection field next to “AC output on/off” turns green when activated and goes out when deactivated.

⇨ The operating data of the inverter (AC output) is displayed.

NOTE! To return to the previous display, turn the rotary knob to select the “back” menu item and press the rotary knob to confirm your menu item selection.

8.5.4 230 V Charging

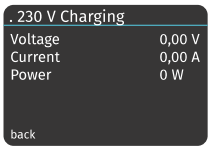

Fig. 18: .230 V charging

The “..230 V Charging” menu allows you to view the operating data of the charger.

To display the operating data, proceed as follows:

✓ The LPS II remote display is switched on.

✓ Status III is shown on the display of the unit.

1. Turn the rotary knob to select the “..230 V charging” menu item.
2. Press the rotary knob to confirm your menu item selection.

⇨ The operating data of the charger is shown on the unit's display.

NOTE! To return to the previous display, turn the rotary knob to select the “back” menu item and press the rotary knob to confirm your menu item selection.

8.5.5 Other settings

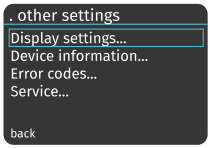

Fig. 19: .Other settings

The “...Other settings” menu allows you to view the display settings, unit information, error codes and service information and adjust certain settings accordingly.

To display the “...Other Settings” menu, proceed as follows:

✓ The LPS II remote display is switched on.

✓ Status III is shown on the display of the unit.

1. Turn the rotary knob to select the “...Other settings” menu item.
2. Press the rotary knob to confirm your menu item selection.

⇨ The “... Other Settings” menu is shown on the display of the unit. You can now select a menu item by turning the rotary knob.

NOTE! To return to the previous display, turn the rotary knob to select the “back” menu item and press the rotary knob to confirm your menu item selection.

8.5.5.1 Display settings

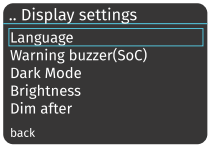

Fig. 20: ..Display settings

The “...Display Settings” menu allows you to adjust the language settings, the warning buzzer when the LPS II charge status is too low, dark mode and brightness levels and the time until the display dims.

To display the “...Display Settings” menu, proceed as follows:

✓ The LPS II remote display is switched on.

✓ The “... Other Settings” menu is shown on the display of the unit.

1. Turn the rotary knob to select the “...Display Settings” menu item.
2. Press the rotary knob to confirm your menu item selection.

⇨ The “... Display Settings” menu is shown on the display of the unit. You can now select a menu item by turning the rotary knob.

NOTE! To return to the previous display, turn the rotary knob to select the “back” menu item and press the rotary knob to confirm your menu item selection.

8.5.5.1.1 Language

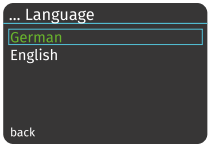

Fig. 21: ...Language

You can choose between German and English for the readings of the LPS II remote display.

To set the language of your LPS II remote display, proceed as follows:

✓ The LPS II remote display is switched on.

✓ The “..Display Settings” menu is shown on the display of the unit.

1. Turn the rotary knob to select the “Language” menu item.
2. Press the rotary knob to confirm your menu item selection.

⇨ The "... Language" menu is shown on the display of the unit.

3. Turn the rotary knob to select one of the displayed languages.
4. Press the rotary knob to confirm your menu item selection.

⇨ The selected menu item turns green. The language is now set.

NOTE! To return to the previous display, turn the rotary knob to select the "back" menu item and press the rotary knob to confirm your menu item selection.

8.5.5.1.2 Warning buzzer (SoC)

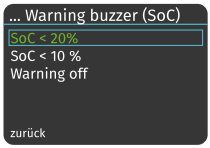

Fig. 22: ... Warning buzzer (SoC)

The "Warning buzzer (SoC)" menu allows you to set when and if the warning buzzer of the LPS II remote display should inform you about a low charge status of the LPS II.

To set the warning buzzer, proceed as follows:

✓ The LPS II remote display is switched on.

✓ The "..Display Settings" menu is shown on the display of the unit.

1. Turn the rotary knob to select the "Warning buzzer (SoC)" menu item.
2. Press the rotary knob to confirm your menu item selection.

⇨ The "... Warning buzzer (SoC)" menu is shown on the display of the unit.

3. Turn the rotary knob to select one of the displayed menu items.

NOTE! With the menu items SoC < 20% or SoC< 10%, the warning buzzer of the LPS II remote display sounds for the period of one minute as soon as the charge status of the LPS II falls either below 20% or below 10%. You can also completely deactivate a warning via the warning buzzer.

4. Press the rotary knob to confirm your menu item selection.

⇨ The selected menu item turns green. The warning buzzer is now set.

NOTE! To return to the previous display, turn the rotary knob to select the “back” menu item and press the rotary knob to confirm your menu item selection.

8.5.5.1.3 Dark Mode

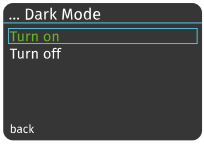

Fig. 23: ...Dark Mode

The “...Dark Mode” menu allows you to set the background colour of your display. If dark mode is switched on, the display shows white text on a dark background. If the dark mode is switched off, the display shows black text on a white background. Dark mode is particularly suitable when the unit is operated in the dark.

To set the background colour, proceed as follows:

✓ The LPS II remote display is switched on.

✓ The “..Display Settings” menu is shown on the display of the unit.

1. Turn the rotary knob to select the “Dark Mode” menu item.
2. Press the rotary knob to confirm your menu item selection.

   ⇨ The “... Dark Mode” menu is shown on the display of the unit.
3. Turn the rotary knob to select one of the displayed menu items.
4. Press the rotary knob to confirm your menu item selection.

⇨ The selected menu item turns green. The background colour is now set.

NOTE! To return to the previous display, turn the rotary knob to select the “back” menu item and press the rotary knob to confirm your menu item selection.

8.5.5.1.4 Brightness

Fig. 24: ...Brightness

The "...Brightness" menu allows you to adjust the brightness of your display. You can choose between three brightness levels: Bright, Medium and Dark.

To set the display brightness, proceed as follows:

✓ The LPS II remote display is switched on.

✓ The "..Display Settings" menu is shown on the display of the unit.

1. Turn the rotary knob to select the "Brightness" menu item.
2. Press the rotary knob to confirm your menu item selection.

   ⇨ The "... Brightness" menu is shown on the display of the unit.
3. Turn the rotary knob to select one of the displayed menu items.
4. Press the rotary knob to confirm your menu item selection.

⇨ The selected menu item turns green. The brightness of the display is now set.

NOTE! To return to the previous display, turn the rotary knob to select the "back" menu item and press the rotary knob to confirm your menu item selection.

8.5.5.1.5 Dim after

Fig. 25: ...Dim after

The "...Dim after" menu allows you to set the time of inactivity after which the display dims. You can choose between 1 minute, 5 minutes and 15 minutes.

To set the dim time, proceed as follows:

✓ The LPS II remote display is switched on.

✓ The "..Display Settings" menu is shown on the display of the unit.

1. Turn the rotary knob to select the "...Dim after" menu item.

2. Press the rotary knob to confirm your menu item selection.

   ⇨ The "... Dim after" menu is shown on the display of the unit.

3. Turn the rotary knob to select one of the displayed menu items.

4. Press the rotary knob to confirm your menu item selection.

⇨ The selected menu item turns green. The dim time is now set.

NOTE! To return to the previous display, turn the rotary knob to select the "back" menu item and press the rotary knob to confirm your menu item selection.

8.5.5.2 Unit Information

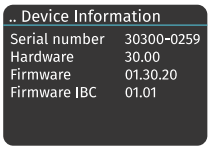

Fig. 26: ..Unit Information

The "..Unit Information" display shows the information on the serial number and the version numbers of the hardware and firmware of the LPS II, as well as the version number of the firmware of the LPS II remote display (IBC).

To display the "...Unit Information" menu, proceed as follows:

✓ The LPS II remote display is switched on.

✓ The ".. Other Settings" menu is shown on the display of the unit.

1. Turn the rotary knob to select the "…Unit Information" menu item.

2. Press the rotary knob to confirm your menu item selection.

⇨ The "… Unit Information" menu is shown on the display of the unit. You can now read the information on the units.

8.5.5.3 Error Codes

Fig. 27: ...Error Codes

In the event of an error, the "..Error codes" menu display allows you to view the error code present.

To display error codes, proceed as follows:

✓ The LPS II remote display is switched on.

✓ The ".. Other Settings" menu is shown on the display of the unit.

1. Turn the rotary knob to select the "Error Codes" menu item.
2. Press the rotary knob to confirm your menu item selection.

⇨ "... Error Codes" is shown on the display of the unit. You can now read the current error codes.

⇨ Look in the LPS II user manual for the current error code and follow the instructions.

TIP

You can also find error codes and FAQs on the Internet on our LPS II support website

To do this, either follow the QR code of the "..Service" menu display on the LPS II remote display directly or in the "...Service" chapter of this user manual.

Alternatively, you can also find the information at the following web address: www.leab.eu/support/lps-ii.

8.5.5.4 Service

Fig. 28: QR code to the support website of the LPS II

The “..Service” menu display shows the web address of our support website. You can access the support website directly via the QR code using a smartphone.

To display the “..Service” menu, proceed as follows:

✓ The LPS II remote display is switched on.

✓ The “. Other Settings” menu is shown on the display of the unit.

1. Turn the rotary knob to select the “Service” menu item.
2. Press the rotary knob to confirm your menu item selection.

⇨ “..Service” is shown on the display of the unit. Visit the support website via the QR code or the web address www.leab.eu/support/lps-ii.

9 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.

10 EU Declaration of Conformity

The **LPS II Remote Display** complies with the requirements of the following directives:

– 2014/30/EU: EMV

– 2014/35/EU: NRL

– 2011/65/EU: RoHS

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