

# POWAIRBOX

12 V, 24 V, 230 V  
TYPE A+B

**LEAB**  
*mobile energy*



USER MANUAL  
VERSION 9

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## 1 About this Manual

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

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 manual will help you to handle the unit safely. Use the unit solely in accordance with its intended use. Observe the safety instructions.

**⚠ WARNING****Danger from short circuits**

Open and damaged cables can cause short circuits that can lead to serious injuries.

1. Before operating, make sure there are no open or damaged cables.
2. Replace defective parts or damaged cables immediately.

**⚠ WARNING****Danger of 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.

**Notice****Unit defect and faulty ejection due to incorrect connection of the control modules**

Connecting the control modules directly to the unit may result in faulty ejection of the control modules and unit defect.

1. Do not connect the control modules directly to the unit.
2. Always use an additional relay.

**Notice****Reverse polarity can damage the equipment**

Errors when connecting the cables can cause equipment damage.

1. Before operating, make sure that all cables are connected correctly.

## 2.1 Intended use

The PowAirBox is a system for supplying electricity and compressed air to emergency vehicles. With protection class II and protection class IP55, the PowAirBox is protected against dust and water jets and is therefore suitable for outdoor use.

## 2.2 Foreseeable misuse

The supply units and couplings of different voltages (12 V, 24 V, 230 V, 400 V) each have their own coding and cannot be interchanged. However, with the same voltage, both types A and B of the PowAirBox are compatible and can be plugged together to supply a vehicle with power. There is no compressed air supply, but also no compressed air loss.

### 3 About this product

With the PowAirBox, power is fed in via a special plug-in device. The PowAir-Box type A combines the supply of electricity and compressed air in a single line. When the vehicle engine is started, the coupling is automatically disconnected from the vehicle and the protective cover closes automatically. The status display provides reliable information about the current charge status of the connected battery and the charging process. Two auxiliary contacts installed in the PowAirBox serve to establish a start locking mechanism.

The supply unit and coupling are supplied with prefabricated connecting cables. The connection in the vehicle is made via lockable plug-in connectors.

#### 3.1 The PowAirBox System



1 Ceiling bracket

2 Supply unit

When installing the PowAirBox system in the vehicle depot, LEAB recommends direct connection to the electricity and compressed air distribution with the LEAB PowAirBox ceiling bracket (1). The combination cable (electricity and compressed air) leads from the ceiling bracket to the supply unit installed in the vehicle (2). LEAB also recommends the use of LEAB ABC, LEAB CPC or LEAB Champ Pro built-in chargers.

For vehicle depots without a complete PowAirBox system, LEAB also offers supply adapters with different plug connections (e.g. CEE).

### 3.2 Supply Unit Structure



Fig. 1: PowAirBox feed front view

1 Protective cover

2 Operating display

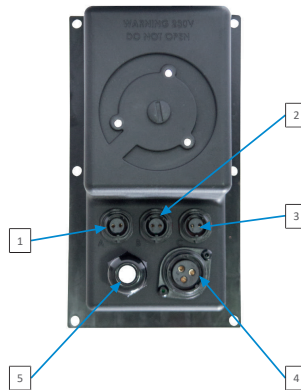


Fig. 2: PowAirBox feed rear view

1 Socket A: Ejection connection

2 Socket B: Connection for the battery

3 Socket C: Start locking mechanism

4 Load output connection

5 For type A only: Compressed air hose connection

### 3.3 Coupling structure



Fig. 3: PowAirBox coupling

1 Combination cable	2 Coupling socket
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### 4 Technical specifications

PowAirBox nominal voltage	Part number	
- 12 V	- Type A: -	- Type B: 1549012200
- 24 V	- Type A: 1549024100	- Type B: 1549024200
- 230 V	- Type A: 1549230100	- Type B: 1549230200

	PowAirBox type B	PowAirBox type A
Nominal voltage, supply unit	12 V, 24 V, 230 V (depending on variant)	24 V or 230 V (depending on variant)
Supply current, max.	16 A (AC), 20 A (DC)	16 A (AC), 20 A (DC)
Voltage, vehicle battery	12 V or 24 V (universal)	12 V or 24 V (universal)
Compressed air (type A), max.	-	13 bar
International Protection (IP class)	IP55	IP55
Protection class	II	II
Cable length, supply	4 m	4 m
Auxiliary contacts	2	2
Operating display	LED	LED



	<b>PowAirBox type B</b>	<b>PowAirBox type A</b>
Low voltage alarm	LED + acoustic (interval: 6 s)	LED + acoustic (interval: 6 s)
Material	Polyamide, glass fibre reinforced (PA6 GF30)	Polyamide, glass fibre reinforced (PA6 GF30)
Weight	1.2 kg	1.2 kg
Installation depth, supply	121 mm	121 mm
Dimensions (L x W x H)	193 mm x 110 mm x 145 mm	193 mm x 110 mm x 145 mm

## 5 Package contents

### Scope of delivery of the supply unit

	<b>Total type A</b>	<b>Total type B</b>
PowAirBox supply unit	x 1	x 1
Connection cable for connector A, B, C	x 3	x 3
Connection cable for load output	x 1	x 1
Compressed air hose	x 1	-
Connector, compressed air (IQS)	x 1	-
Mounting frame with seal	x 1	x 1
Body seal	x 1	x 1
Threaded pin	x 6	x 6
M4 screw (Allen 2.5 mm)	x 6	x 6
Adhesive tapes for mounting frame	x 2	x 2
User manual	x 1	x 1

### Scope of delivery of the coupling

	<b>No.</b>
PowAirBox coupling	1x
User manual	1x

## 6 Preparation

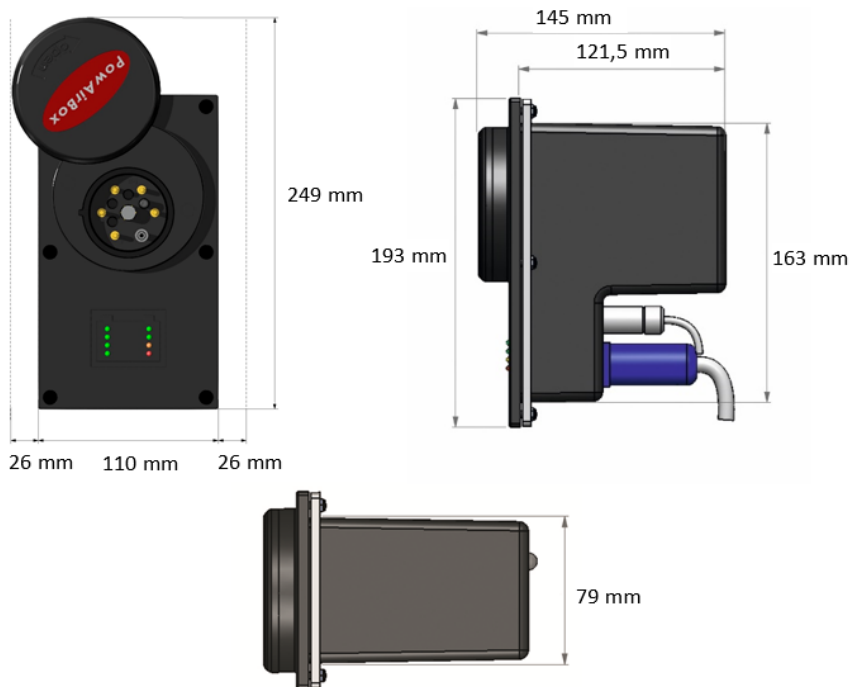
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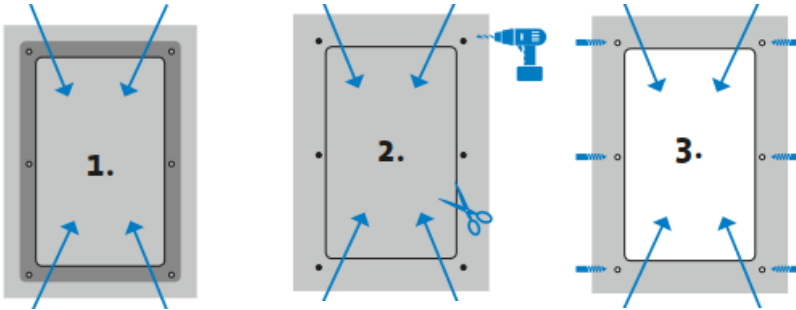
### TIP

#### Requirements for the assembly site:

1. Choose a vertical surface.
  2. Choose a site with minimum dust and which is protected from jet water.
  3. Make sure that there is sufficient space at the assembly site.
- 



## 6.1 Creating a body cutout



1. Undo the 6 M4 screws (Allen 2.5 mm) from the power supply.
  2. Remove the mounting frame.
  3. Place the mounting frame at the assembly site.
  4. Mark the inside contour of the frame and the 6 screw holes.
  5. Cut out the marked area.
  6. Drill the marked holes ( $\varnothing$  4,5 mm – 5 mm).
  7. Screw the 6 threaded pins by hand into the smooth side of the mounting frame.
  8. Glue the 2 adhesive strips to the smooth side of the mounting frame.
  9. Check that the threaded pins fit through the holes from the inside.
  10. To prevent corrosion, seal the cut surfaces and boreholes.
  11. Remove the protective film from the adhesive strips.
  12. Glue the mounting frame to the cutout from the inside.
- ⇒ The body cutout is now created. You can connect the supply unit.

## 7 Installation

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### **WARNING**

#### **Warning against loss of pressure in the compressed air tank**

A loss of pressure in the compressed air tank during assembly and installation can lead to serious injuries.

1. Never heat the compressed air hose.
  2. Make sure that a non-return valve is installed on the vehicle side.
- 

Before installing the unit, proceed as follows:

1. Lay the connecting cables supplied and the compressed air hose in the vehicle.
2. Install suitable fuses for the connection cables A and B (see connection diagram).
3. Attach the connection cables to the vehicle installation.
4. Connect the compressed air hose to the vehicle's compressed air tank.

**NOTE!** A detailed connection diagram can be found in the appendix of this user manual.

#### Connection socket A: Ejection

**NOTE!** A detailed overview of the connections can be found in section *Supply Unit Structure* [▶ 7].

To connect socket A, proceed as follows:

5. Connect the red positive lead with terminal 50 (starter control) or terminal 15 (switched ignition plus) to socket A (1) for the transmission of the start signal.

**NOTE!** The pulse duration of the start signal must be at least 2 s (for the delayed ejection).

6. Install a fuse in the positive lead (according to ISO 8820-3) as close to the starter battery as possible: 12 V= 3 A; 24 V= 6 A.
7. Connect the black negative lead to the negative terminal of the starter battery.

⇒ Socket A is connected.



## Notice

### Reverse polarity can damage the equipment

Errors when connecting the cables can cause equipment damage.

1. Before operating, make sure that all cables are connected correctly.

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### Correct polarity of the connections at the load output:

- 2-pin for direct current (12 V and 24 V)
- 3-pin for alternating current (230 V).

### Connection socket B: Battery

**NOTE!** A detailed overview of the connections can be found in section *Supply Unit Structure* [► 7].

To connect socket B, proceed as follows:

8. Connect the red positive lead to the positive terminal of the starter battery for the supply voltage of the PowAirBox with socket B (2).
9. Install a fuse in the positive lead as close to the starter battery as possible (according to ISO 8820-3): 12 V= 1 A; 24 V= 1 A.
10. Connect the black negative lead to the negative terminal of the starter battery.
  - ⇒ Socket B is connected.
11. Optional: Use the two bridged auxiliary contacts at socket C (3) to create a start locking mechanism.

**⚠ CAUTION!** Max. voltage: 24 V (5 A)

12. Connect the consumers (e.g. charger) to the load output (4).

**NOTE!** Only use the IQS connector supplied to connect the compressed air hoses.

13. Connect the enclosed compressed air hose (5) to the compressed air hose already installed in the vehicle.

⇒ The supply unit is installed. You can now mount the supply unit.

## 8 Assembly

### 8.1 Mounting the Supply Unit.

✓ All wires on the back of the PowAirBox are correctly connected.

1. Push the supply unit into the body cutout.
2. Remove the 6 threaded pins.
3. Insert the 6 M4 screws (Allen 2.5 mm) and tighten the screws until the body seal is flat.
4. To prevent accidental loosening of the screws, apply a threadlocker, e.g. Loctite 243.

⇒ The PowAirBox supply unit is mounted and ready to use.

### 8.2 Connecting the Coupling

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#### TIP

#### Device defect due to faulty ejection

Incorrect ejection of the coupling due to a tensioned combination cable can lead to equipment failure.

1. Do not use cable winders or similar in the vehicle depot.
2. When plugging in, make sure that the combination cable hangs loosely and is not taut.

---

To connect the coupling, proceed as follows:

**NOTE!** The auxiliary contacts of the coupling are bridged at the factory in order to establish a start locking mechanism.

1. Connect the connection lines of the combination cable to the power and compressed air distribution in the vehicle hall. The wires in the combination cable are numbered accordingly.
2. Connect the connecting leads of the electric cable to the power distribution in the vehicle depot.

⇒ The coupling is connected.

**⚠ CAUTION!** To ensure smooth operation, ensure that the coupling does not touch the depot floor when unplugged. LEAB recommends a distance of approx. 70 cm from the depot floor.

### 8.3 Optional: Mounting the Ceiling Bracket



1 Mounting frame

2 Cover

3 Assembled mounting frame and cover

1. Select a mounting location with a lateral distance of approx. 30 cm from the vehicle.
2. Install the mounting frame (1) on the depot ceiling.
3. Guide the cover (2) onto the coupling's combination cable.
4. Insert the combination cable through the bracket opening on the mounting frame.

**NOTE!** If necessary, remove individual sealing rings from the bracket opening.

5. Connect the coupling lines with the power and compressed air distribution at the vehicle depot. (see connection diagram).
  6. Slide the cover over the mounting frame and fasten it with the screw cap.
- ⇒ The ceiling bracket is mounted.

## 9 Operation



### Notice

#### Contact erosion when pulling under load

Contact burnout may occur when pulling under load.

1. Do not pull the coupling out of the supply unit when under load.
2. LEAB recommends using only automatic ejection.



Fig. 4: PowAirBox supply unit commissioning

To commission the unit, proceed as follows:

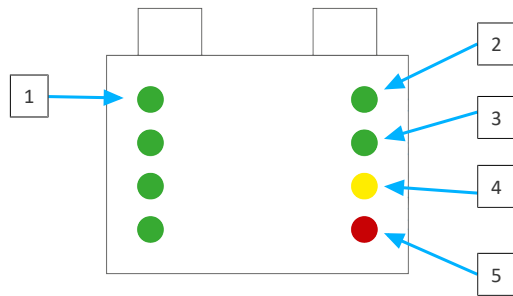
1. Turn the protective cover sideways pointing upwards.

**⚠ CAUTION!** Observe the direction arrow and do not use the protective cover as a bracket for jackets or similar.

**NOTE!** When plugging in, make sure that the nose of the coupling is facing to the blue dot on the PowAirBox.

2. Plug the coupling into the supply unit.

⇒ The voltage input is provided at the load output of the supply unit. Connected consumers are supplied. The status display indicates the status of the PowAirBox and the connected battery.



No.	Function	Battery voltage	
		12 V battery	24 V battery
1	<b>Chaser:</b> Battery is fully charged.	13.3 V	26.5 V
2	<b>Operating display:</b> Current voltage of the battery.	12.6 V... 13.2 V	25.2 V... 26.4 V
3		12.2 V... 12.5 V	24.4 V... 25.1 V
4		12.1 V... 11.6 V	23.1 V... 24.3 V
5	<b>Low voltage alarm</b>	< 11.5 V	< 23.0 V



## 9.1 Ejecting the coupling

To reject the coupling automatically, proceed as follows:

1. Start the vehicle engine.
- ⇒ The clutch is automatically ejected. The power and compressed air supply is interrupted.

**NOTE!** The automatic ejection has a minimal delay to protect the contacts, but this does not lead to any disturbance of the driving operation.

## 10 Maintenance

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### **⚠ WARNING**

#### **Danger from electric shock**

Cleaning and maintenance work on a live unit can lead to serious injury from electric shock.

1. Make sure that the device is de-energised before carrying out any work.
- 



### **Notice**

#### **Strong jet water can damage the device**

Cleaning with strong jets of water can cause the device to become damaged.

1. Do not aim pressure washers or other devices directly at the device.
- 

## Regular Activities

- Check the unit for external damage each time before you use it.
- Clean the coupling, supply unit and the combination cable regularly.
- Protect the coupling and the combination cable from damp and other liquids.
- Protect the coupling and the combination cable from being run over.
- Regularly check the screw connections of the supply unit to the vehicle body.

## 11 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.

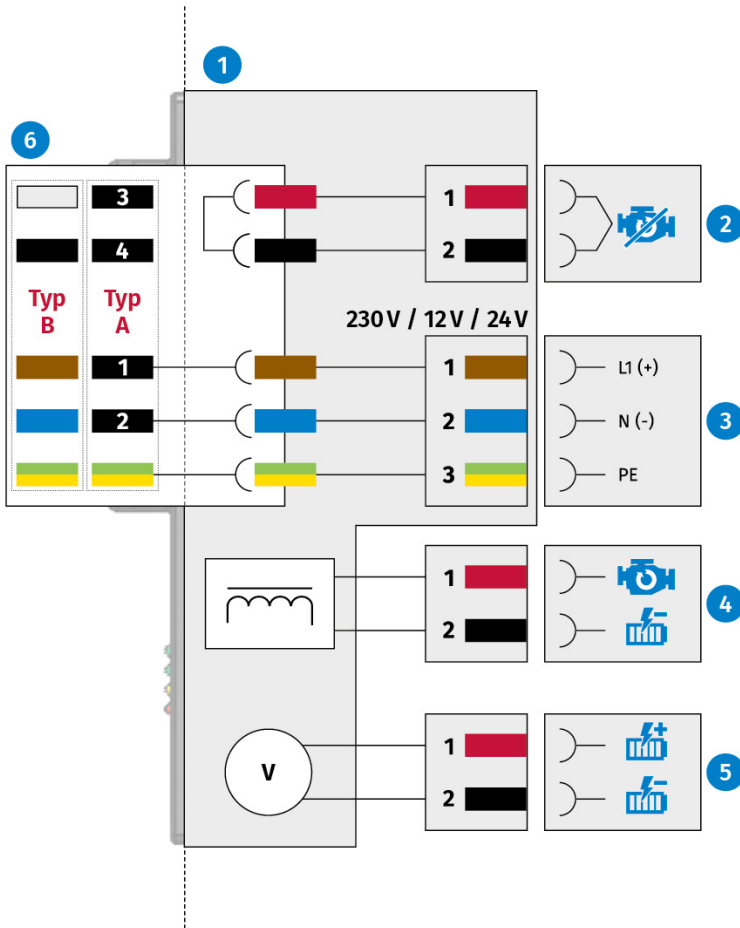
## 12 EU Declaration of Conformity



The LEAB PowAirBox types A and B complies with the requirements of the following directives:

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

13 Connection Diagram



1 PowAirBox supply unit

2 Socket C: Start locking mechanism

3 Load output connection

4 Socket A: Ejection connection

5 Socket B: Connection for the battery

6 PowAirBox coupling

# We make energy mobile.

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