

BATTERY ISOLATOR CDR 12/24 V

LEAB
mobile energy



USER MANUAL
VERSION 3
14/04/2021

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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

A safety instruction with the signal word *CAUTION* denotes a hazard with a low degree of risk which, if not avoided, can result in minor or moderate injury. Read the safety information carefully and follow the instructions to avoid it.



WARNING

Hazards that can lead to severe injuries or death

A safety instruction with the signal word *WARNING* indicates a hazard with a high degree of risk which, if not avoided, will result in death or severe injury. Read the safety information carefully and follow the instructions to avoid it.

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

A safety instruction with the signal word *Danger* indicates a hazard with a high degree of risk which, if not avoided, will result in death or severe injury. Read the safety information carefully and follow the instructions to avoid it.

You will find notes at some points in the manual. These appear as follows:

**TIP****A note provides useful tips and information about the product.**

Read the note carefully and follow the instructions where applicable.

2 General Safety

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

**⚠ 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.

**⚠ 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****Danger from short circuits**

Contact of the screw terminals with metallic and/or conductive vehicle parts can cause short circuits that can lead to serious injuries.

1. Avoid contact of the screw terminals with metallic and/or conductive vehicle parts.

2.1 Intended Use

The CDR 12/24 V can be installed between the starter and auxiliary battery as an electronic charging current distributor. The charging current can be distributed both bi-directionally and unidirectionally. The batteries are charged almost loss-free and the plastic housing protects against short circuits.

Thanks to a switch-off function, it can also be used as an automatic cut-off relay to switch a consumer or an on-board supply system on or off.

The device is designed for an operating temperature of -40 °C ... +60 °C.

2.2 Foreseeable Misuse

Use the insulating caps supplied.

Protect supply lines with a suitable fuse.

Only use appropriate electrical cables with a suitable cross-section.

Only use suitable ring cable lugs and tools intended for this purpose.

Install the CDR in such a way that cooling is made possible by air supply.

3 Package Contents

Item	No.
CDR	x 1
User manual	x 1
Insulating caps	x 2
Hex. nuts, M8	x 2
Washers, M8	x 2

4 Technical Specifications

	Part no.: 1072001001
Modell	CDR 12/24 V
Current limit	200 A 100 A
Input voltage	universal 12 V or 24 V
Typical switch-on voltage	13.5 V 27.5 V
Typical switch-off voltage	12.8 V 25.6 V
Quiescent current switched off	< 1 mA
Quiescent current switched on	< 25 mA
Operating temperature	-40 °C ... +60 °C
International Protection (IP class)	IP67
Dimensions (L x W x H)	134 mm x 95 mm x 31 mm (with screw terminal height 58 mm)
Weight	700 g

5 About this Product

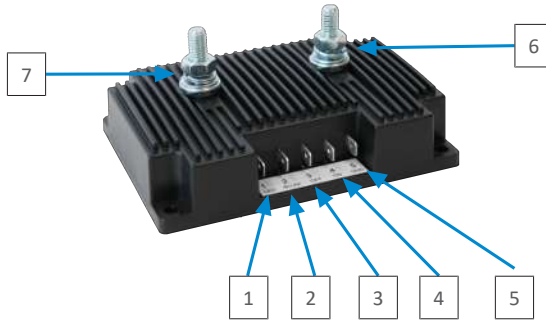


Fig. 1: CDR 12/24 V

1 PIN 1 LED (connection for external LED)	2 PIN 2 BI/UNI (connection for changing the charging current distribution)
3 PIN 3 OFF (connection for activating the switch-off function)	4 PIN 4 ON (connection for the bypass function)
5 PIN 5 GND (connection for GND)	6 Screw terminal 2 (output)
7 Screw terminal 1 (input)	

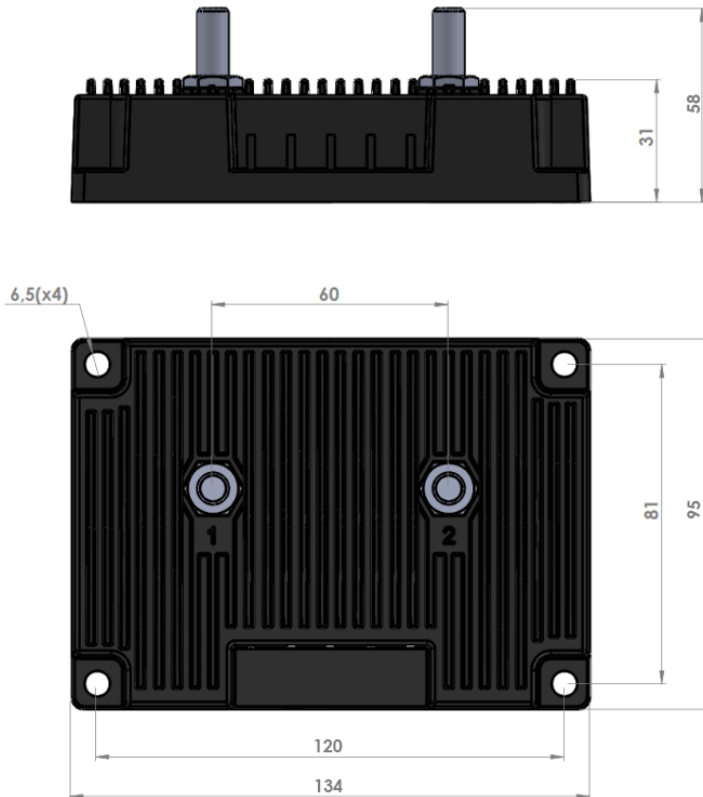


Fig. 2: Dimensioned drawing CDR 12/24 V

6 Assembly

NOTE! Maximum torque: 10 Nm

To assemble the device, perform the following steps:

- ✓ Choose a cool, dry and well-ventilated assembly site.
- ✓ Do not mount the device directly next to or above batteries.
- ✓ Guarantee adequate cooling for an unimpeded supply of cooling air.

1 Fasten the device to the 4 holes on the side (\varnothing 6 mm).

⇒ The device is assembled.

7 Installation



TIP

In vehicles with generator management, auxiliary batteries are not sufficiently charged by conventional cut-off relays or current distributors.

LEAB recommends installing the charge booster BPC 12-12/40 (part no.: 1041003001).

To install the device, perform the following steps:

NOTE! Maximum screw terminal torque: 20 Nm

- 1 Connect the positive terminal of the starter battery to screw terminal 1 (input).
 - 2 Connect the positive terminal of the auxiliary battery to screw terminal 2 (output).
 - 3 Connect the plug contact PIN 5 (connection for GND) to a ground.
 - 4 Connect the negative terminal of the starter battery and the negative terminal of the auxiliary battery to a common ground.
- ⇒ The device is installed.
-



TIP

Various optional functions can be installed via the plug contacts PIN 1-5.

Use 6.3 mm flat plugs.

7.1 Optional: Activate bypass function

The bypass function (permanently ON) is used to charge the starter battery with the auxiliary battery if the voltage of the starter battery is too low. The voltage detection through PIN 5 (GND) is deactivated so that the CDR distributes charging current at any voltage.

To use the function, carry out the following step:

- 1 Switch the plug contact PIN 4 to ground.

⇒ The function is activated.

7.2 Optional: Connect remote LED display

An external LED can be connected and used as a remote display to detect whether the device is conducting current.

To install the function, perform the following step:

NOTE! External LED: Output 5 V, max. 5 mA. Not included in the scope of delivery.

- 1 Connect the plug contact PIN 1 to the input of an external LED.
- 2 Connect the other terminal of the external LED to ground.

⇒ The function is installed.

7.3 Optional: Change the charging current distribution

The CDR can distribute the charging current both bidirectionally and unidirectionally. The factory default setting is bidirectional charging current distribution in two directions.

To change the direction of the charging current distribution to unidirectional, carry out the following step:

- 1 Switch the plug contact PIN 2 to ground.

⇒ The charging current distribution is unidirectional from screw terminal 1 to screw terminal 2.

To change the direction of the charging current distribution to bidirectional, carry out the following step:

- 2 Disconnect the connection cable from plug contact PIN 2.
- ⇒ The charging current distribution is bidirectional from screw terminal 1 to screw terminal 2 or vice versa, depending on where a higher voltage is present.

7.4 Optional: Activate switch-off function

The CDR can be switched off manually (permanently OFF) to prevent overcharging of a fully charged lithium-ion battery. The device can therefore be used as an automatic cut-off relay to connect/disconnect a consumer or an on-board supply system.

NOTE! The disconnection is independent of the direction of the charging current selected.

To activate the function, perform the following step:

- 1 Switch the plug contact PIN 3 to ground.
- ⇒ The function is activated. The device is switched off.

8 Operation

- Should the battery connected to the alternator or charger exceed a voltage of 13.5 V or 27.5 V, the CDR will switch on the auxiliary battery for charging.
- Should the voltage drop below 12.8 V or 25.6 V, the CDR will disconnect the batteries to prevent mutual discharge.

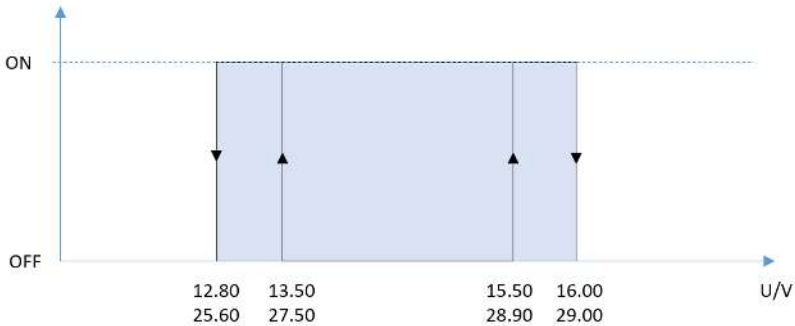


Fig. 3: Switch-on / off voltage CDR 12/24 V

8.1 Operating status

The external LED connected to the unit functions as a remote LED display and indicates the operating status.

External LED status	Function CDR output	Description/cause
Off	Inactive	Input voltage below the switch-on voltage; PIN 3 connected to ground.
Steady light	Active	Input voltage within the switch-on voltage; PIN 4 connected to ground.
Flashing, x 3	Inactive	Input voltage out of voltage range
Flashing, 0.5 Hz	Active/inactive 0.5 Hz	Electrical voltage $U > 29.5\text{ V}$

9 Maintenance

Check the device as follows before using it each time:

- Check the cables and connections for damage.
- Check the tightness of the wiring between the device and the batteries.
- Check the device for external damage.

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

10 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.

11 EU Declaration of Conformity



The CDR 12/24 V complies with the requirements of the following directives:

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





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