

# 48 V Central Drive System Battery Care Instructions



# Table of contents

<b>1</b>	<b>Safety instructions</b>	<b>3</b>
<b>2</b>	<b>Technical data</b>	<b>4</b>
<b>3</b>	<b>Charging the battery</b>	<b>4</b>
<b>4</b>	<b>Range</b>	<b>4</b>
<b>5</b>	<b>Service life</b>	<b>5</b>
<b>6</b>	<b>Tips &amp; tricks</b>	<b>5</b>

# 1 Safety instructions

**Always make sure that your battery is fully functional. Should you have any questions, please contact the vehicle manufacturer or vehicle dealer.**

**Read all safety information and instructions.** If you do not observe the safety information, fire and/or severe injuries can occur.

**Do not open the battery.** This poses the risk of a short-circuit. An opened battery voids all warranty claims.

**Protect the battery against heat (e.g. including prolonged exposure to sunlight) and fire. Do not operate or store the battery near hot or combustible objects.** This poses the risk of an explosion.

**Do not immerse the battery in water.**

**When it is not being used, please keep the battery away from paper clips, coins, keys, nails, screws or other small metal objects that could create a short-circuit between the contacts.** A short-circuit between the battery contacts can result in combustion or a fire. All warranty claims against Bosch for short-circuit-related damage arising in such circumstances shall be deemed null and void.

**Do not place the charger and the battery near combustible material. Charge batteries only when they are dry and at a location where fires cannot occur.** The battery and the charger become warm during charging. This poses a risk of fire.

**If used improperly, liquid can emerge from the battery. Avoid contact with it. If you inadvertently come into contact with this liquid, rinse the affected skin areas with copious amounts of water and seek additionally medical assistance.** Escaping battery liquid can cause skin irritations or burns.

**Batteries must not be subjected to any mechanical impact.** This poses the risk of damaging the battery.

**In the event of damage or improper use of the battery, vapours can emerge. Ensure an adequate supply of fresh air and seek medical assistance if discomfort persists.** The vapours can irritate the respiratory passages.

**Charge the battery only with the original Bosch charger.** If a charger other than the original Bosch charger is used, the risk of a fire cannot be ruled out.

**Use the battery only in conjunction with the original vehicle.** Only this way the battery will be protected against dangerous overloads.

**Use only original Bosch batteries that are approved for your vehicle by the manufacturer.** The use of other batteries can result in injuries and poses the risk of fire.

**Read and observe the safety information and instructions in all operating manuals for the vehicle system as well as the operating manual for the vehicle.**

**Keep the battery away from children.**

**Do not charge a damaged battery and do not use it.** Contact the vehicle manufacturer or vehicle dealer.

## 2 Technical data

CHARACTERISTICS	ON-BOARD BATTERY	PORTABLE BATTERY
Dimensions	364 mm x 260 mm x 100 mm	335 mm x 268 mm x 109 mm
Weight	15 kg	11 kg
Energy content	2.4 kWh	1.6 kWh
Nominal voltage	48 V	48 V
Nominal capacity	50 Ah	33 Ah
Recommended storage temperature	0...+25 °C (ambient temperature)	=
Protection class	IP65	=
Design	Aluminum housing Passive cooling	Aluminium housing Passive cooling Ergonomic handle bar

\* The battery can become warm during a quick charge and when under high load (e.g. driving uphill at full power for a prolonged period of time). If the temperature in the battery becomes too high, the battery management system from Bosch (BMS) protects the battery against damage and reduces the power output accordingly. In exceptional cases, power output and/or charging may be deactivated. As soon as the battery has cooled sufficiently again, it is ready for use and/or charging.

## 3 Charging the battery

### No memory effect

Batteries with lithium-ion cells can be charged briefly at any time regardless of the state of charge. Interruptions of the charging process do not damage the battery.

### Very low self-discharge

Renewed use of the battery without recharging is possible even after lengthy storage, e.g. overwintering. Thus, the batteries do not need to be recharged after a long period of non-use. For extended storage, a charge state between 30 and 60% is recommended.

### Charging modes

You can extend the service life of the battery by using primarily the standard charging mode. Use the quick-charge mode only in situations where you need to use the vehicle again as quickly as possible. (The quick-charge mode is only possible at vehicles with built-in charger.)

## 4 Range

### Weight

Weight has a direct impact on the range. Take only the amount of luggage really needed.

### Starting & braking

Frequent starting and braking is less economical than driving long stretches at the most constant speed possible. Look ahead when driving.

### Energy recovery

The drive unit serves also as a generator. As soon as you place the throttle grip in the neutral position when driving, the drive unit generates electricity and charges the battery (recuperation). This brakes the vehicle slightly; this is comparable to the engine braking of a combustion engine. Moreover, when you brake actively, energy recuperation increases. Pulling strongly on the brake lever actuates the mechanical brake of your vehicle as well.

## 5 Service life

The intelligent, electronic battery management system (BMS) from Bosch protects the lithium-ion batteries against overloading and deep discharge, also at high and low temperatures. The BMS checks the cells and in this way extends the service life of the battery.

The service life of a battery is affected above all by the nature and duration of the use. Like every lithium-ion battery, the battery in your vehicle ages in a natural way when it is not used.

### Factors that affect the service life of your battery in a positive way:

- ▶ Adapted load (e.g. looking ahead when driving)
- ▶ Storage at a temperature between 0 and 25°C
- ▶ Storage at a state of charge between 30 and 60%

### Factors that shorten the service life:

- ▶ Continuous high load (e.g. repeated prolonged uphill driving at full power)
- ▶ Storage at an ambient temperature above 25°C
- ▶ Extended storage in the fully charged or fully discharged state
- ▶ Parking the vehicle in full sunlight

If a considerably shorter range is indicated after charging fully, have your vehicle dealer check the battery.

## 6 Tips & tricks

### Proper disposal of damaged batteries

You should not grasp severely damaged batteries with your bare hands, since liquid can escape and cause skin irritations. Keep the battery at a safe location in the open air. Place tape over the terminals and notify your vehicle manufacturer or vehicle dealer. They will assist with proper disposal.

### Cleaning

To protect the electronic components in particular, do not clean the battery with a stream of water. A damp cloth without solvent or cleaning agent is better suited for careful cleaning. The battery must not be immersed in water.

### Overwintering

Store the batteries dry and at temperatures between 0 and 25 °C. The ideal state of charge for longer storage times is between 30 and 60 %. Check the state of charge after 6 months. If the state of charge is below 30%, charge the battery to approx. 60 %.

Note: If the battery is stored for longer than 6 months in a discharged state, it can be damaged despite the minimal self-discharge and the storage capacity can be reduced significantly. It is also not recommended to keep the battery attached to the charger continuously.

### Winter operation

When the battery is operated in the winter (especially below 0 °C), we recommend that it be charged at room temperature. In this way you achieve maximum range.

### Recycling

The battery contains valuable raw materials. For environmentally appropriate disposal at no cost, please contact the vehicle manufacturer or dealer. This way, valuable raw materials are recycled, thereby conserving resources.

**Robert Bosch GmbH**

Automotive Electronics  
PO Box 10 60 50  
70049 Stuttgart, Germany  
Germany

Contact:

Bernd Reinkenobbe  
[Bernd.Reinkenobbe@de.bosch.com](mailto:Bernd.Reinkenobbe@de.bosch.com)