

BMZ RS-MOTOR

Operating Instructions



Art. No.

- 34911
- 607195
- 621496
- 621497



Read carefully before use.
Keep for reference.
Hand to the next owner.



E-MOBILITY



DRIVE
SYSTEMS



ENERGY STORAGE
SYSTEMS



POWER- AND
GARDENTOOLS



INDUSTRIAL



MEDICAL

IDENTIFICATION

PRODUCT

Motor version: 48-250

Model: BMZ RS-Motor

Art. No.

- 34911 (Pedelec E25, 6 V Light)
- 607195 (S-Pedelec E45, 6 V Light)
- 621496 (Pedelec E25, 12 V Light)
- 621497 (S-Pedelec E45, 12V Light)

Country of origin: Slovenia

Mark:



MANUFACTURER

BMZ Germany GmbH

Zeche Gustav 1

63791 Karlstein

Germany

Web: bmz-group.com

Email: mail@bmz-group.com

CUSTOMER SERVICE

Ph: +49 6188 – 9956 9680

Email: CentralService@bmz-group.com

DOCUMENT

MAN-10070 | BMZ RS-Motor Operation (EN)

Revision: 0-2

Date: 3-Mar-23

Subject to change.

IMPORTANT NOTES ON THIS DOCUMENT

PURPOSE AND TARGET GROUP

This document contains information on the safe and correct operation of the RS-Motor on a pedelec or s-pedelec. It is intended for all users.

EXPLANATION OF SIGNAL WORDS




SIGNAL WORD	MEANING
 WARNING	Non-observance can lead to death or serious injury.
 CAUTION	Non-observance can lead to minor or moderate injury.
NOTICE	Non-observance can lead to material damage.
	Additional information.

TABLE 1: MEANING OF SIGNAL WORDS

CONTENTS

1	Safety	4
1.1	Safety Notes	4
2	Product Description	4
2.1	Important Product Information	4
2.1.1	Designated Use	4
2.1.2	Properties	4
2.1.3	Conformity	4
2.1.4	Label	5
2.1.5	Guarantee Conditions	5
2.2	Technical Data	5
2.2.1	Communication	5
2.2.2	Sensors	5
2.2.3	Settings	6
2.2.4	Dimensions and Weight	6
2.2.5	Protection Class	6
2.2.6	Thermal Properties of the RS-Motor	6
3	Operation	6
3.1	Introduction	6
3.1.1	Safety instructions	6
3.1.2	When does the motor assist?	7
3.2	Adjusting the speed sensor	7
3.3	Starting the system	7
3.4	Switching off the system	7
3.5	Setting the assistance level	7
3.6	Using the push assistance	7
3.7	Maintenance	7
4	Storage and Transport	7
5	Disposal	8
6	Further Directories	8
6.1	Glossary	8

1 SAFETY

1.1 SAFETY NOTES

Follow the safety instructions. Non-compliance can endanger the installer and persons in the vicinity.

The installation of the motor must be carried out by qualified personnel who are trained in drive installation and who are aware of possible hazards and damage risks.

Only use original spare parts and tools.

Do not open the motor.

Disconnect the power supply (battery) before assembly and disassembly.

Only install components supplied with the motor or approved by the manufacturer.

Do not use aggressive cleaning agents.

The motor is a precision machine. Do not disassemble it or apply great force to it (e. g. do not hit it with a hammer). Since the crankshaft is directly connected to the inside of the e-bike motor, damage to the crankshaft can lead to malfunctions.

Do not modify or alter the motor.

Be prepared for strong acceleration at high assistance levels. For inexperienced riders there is a risk of falling.

Contact the manufacturer if you have any questions about installing the motor.

2 PRODUCT DESCRIPTION

2.1 IMPORTANT PRODUCT INFORMATION

2.1.1 DESIGNATED USE

The RS-Motor is a mid-mounted motor for pedelecs and s-pedelecs, designed to be mounted on a bracket specific to this motor.

The motor is intended for private use.

The cyclist must have a minimum fitness for cycling. For s-pedelecs, a driver's license is required, depending on local traffic laws.

Please observe the laws and regulations of the state where the RS-Motor is used.

2.1.2 PROPERTIES

- High maximum torque
- Low weight
- High input torque sensitivity
- Excellent thermal properties
- High flexibility through peripheral connections

These characteristics make the engine ideal for e-mountain bikes and e-cargo bikes, where high torque and responsiveness are best used.

The motor has a torque sensor that measures the force applied by the cyclist. Based on this torque and the selected assistance level (1 to 4), the electric motor power is generated to assist the cyclist.

The motor does not assist under the following conditions:

- The power supply to the control unit is interrupted.
- You ride 25 km/h (s-pedelec: 45 km/h) or faster.
- You do not pedal and do not use the push assistance.
- The battery is empty.
- The assistance is switched off.
- The speed sensor is misaligned, defective or lost.

2.1.3 CONFORMITY

The products comply with all EU directives and standards that apply to electric motor drives for e-bikes and pedelecs. The manufacturer has certificates and documents to prove conformity.

- Low Voltage Directive (2006/95/EC).
Applied Standards: EN 60335-1:2012/AC:2014 and
EN 60335-2-51:2003/A1:2008/A2:2012.
- EMC-Directive (2014/30/EU).
Applied Standards from EN 15194:2018
- Safety of machinery ISO EN 13849-1/2:2013,
Performance Level PL_r C
- Cycles - Electrically power assisted cycles -
EPAC Bicycles; German version EN 15194:2018
(at art. 34911 for EPAC / Pedelec)
- Rotating electrical machines - Part 1: Rating
and performance EN 60034-1:2010

After opening, modifying or changing the engine, the conformity with EU law is no longer guaranteed.

2.1.4 LABEL

This label is located on the upper side of the motor:

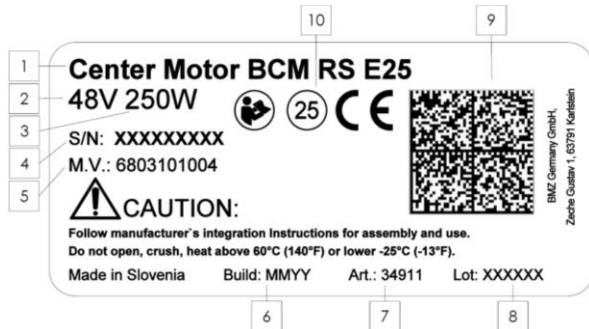


FIGURE 1: SAMPLE LABEL 6 V LIGHT

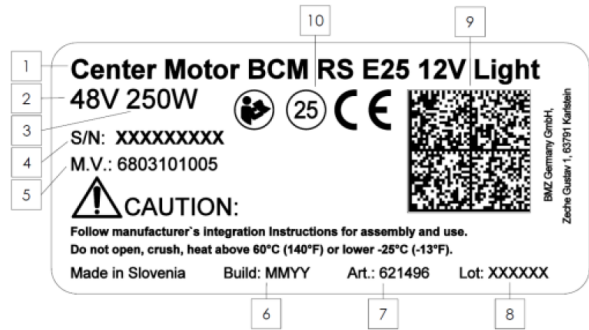


FIGURE 2: SAMPLE LABEL 12 V LIGHT

1. Name
2. Rated voltage
3. Continuous rated power
4. Serial number
5. Motor version number
6. Date of production (MMYY)
7. Article number
8. Lot number
9. Data matrix code
10. Pedal assistance up to [...] km/h

2.1.5 GUARANTEE CONDITIONS

Any improper and inappropriate handling of the components of the electrical system can be dangerous and will invalidate the warranty.

The following measures on the motor will invalidate the warranty:

- improper handling
- improper servicing
- improper installation
- technical change
- unauthorized opening
- improper disassembly

The warranty also expires if the motor is

- willfully damaged;
- stored at below -25 °C or above 60 °C for days;
- installed with tools that have not been confirmed by the manufacturer;
- cleaned with high-pressure water cleaner;
- immersed in water or another liquid;
- overloaded (e. g. as equipment for other purposes);
- not installed as described in these instructions;
- used for commercial purposes such as rental or hire.

2.2 TECHNICAL DATA

CENTER MOTOR BCM	RS E25	RS E45	RS E25 12 V LIGHT	RS E45 12 V LIGHT
Art. No.	34911	607195	621496	621497
Output power (nominal / peak)	250 W / 700 W	400 W / 700 W	250 W / 700 W	400 W / 700 W
Max. torque	112 Nm	112 Nm	112 Nm	112 Nm
Voltage (nominal)	48 V	48 V	48 V	48 V
Battery voltage	54.6 V - 39 V	54.6 V - 39 V	54.6 V - 39 V	54.6 V - 39 V
Speed	25 km/h	45 km/h	25 km/h	45 km/h
Light voltage	6 V	6 V	12 V	12 V
HMI voltage	12 V	12 V	12 V	12 V
Standby current	250 mA	250 mA	250 mA	250 mA
Light output (switched)	2.0 A	2.0 A	max. 1.3 A	max. 1.3 A
Break light output (opt.)	0.2 A	0.2 A	0.2 A	0.2 A
Lights				
- voltage	6 V	6 V	12 V	12 V
- power (max.)	12 W	12 W	15.6 W	15.6 W
- current (max.)	2 A	2 A	1.3 A	1.3 A

NOTICE: Parallel connection of 12 V light and 12 V HMI output is prohibited.

2.2.1 COMMUNICATION

- CAN Bus (specific protocol)

2.2.2 SENSORS

- Speed sensor: magnetic sensor on the rear wheel; tamper-proof
- Motor control: built-in cadence sensor and torque sensor

2.2.3 SETTINGS

The motor is delivered with four preset assistance profiles.

2.2.4 DIMENSIONS AND WEIGHT

- Dimensions (mm): 135 x 224 x 96 (135 incl. shaft)
- Weight: approx. 3.7 kg

2.2.5 PROTECTION CLASS

- IP 56

2.2.6 THERMAL PROPERTIES OF THE RS-MOTOR ENVIRONMENTAL CONDITIONS FOR OPERATION

- -10 °C to 40 °C
- 15 % rel. to 90 % rel. also condensation conditions
- 650 hPa to 1100 hPa

ENVIRONMENTAL CONDITIONS FOR STORAGE

- -25 °C to 60 °C
- 5 % rel. to 98 % rel. also condensation conditions
- 350 hPa bis 1100 hPa

PEAK OPERATION OF THE MOTOR

The peak torque of the RS is 112 N m. This high torque is used for fast acceleration and enables the user to climb steep slopes with little effort. At 60 rpm this torque corresponds to 700 W of mechanical power.

Due to the necessary thermal control of the motor, the peak torque is available for a limited time. This time depends on the output temperature of the motor, the ambient temperature and the required power of the drive. Conformity is thus established.

MID-RANGE POWER LIMITATION OF THE MOTOR

An average maximum power is available between the short-term peak power and the long-term nominal power, which is continuously adjusted. Higher ambient temperatures limit this medium-term motor torque and associated power. Riding with a higher cadence and pedal pressure leads to a higher power output of the engine and also to faster heating and subsequent regulation. The engine will maintain this mid-range power output for up to 40 minutes

NOMINAL POWER OF THE RS-MOTOR

The RS-Motor achieves its thermal equilibrium at the legally required mechanical rated output of 250 W or 400 W for s-pedelegs.

WARMING OF THE MOTOR HOUSING

The following conditions must be met so that the hottest part of the motor housing does not exceed 60 °C:

- The ambient temperature must be below 25 °C.
- The air movement around the engine must correspond to a driving speed of at least 12,5 km/h.
- Air can pass unhindered by or under the engine. (No override protection is therefore better).

3 OPERATION

3.1 INTRODUCTION

3.1.1 SAFTY INSTRUCTIONS

Observe the safety instructions. Failure to follow these instructions may result in electric shock, fire and/or serious injury.

You must have a minimum fitness level to ride the bike.

If you are not used to riding an e-bike, start with the lowest assistance level to get a feel for it. A high assistance level can lead to accidents and serious injuries for inexperienced cyclists.

Do not open the BMZ RS-Motor, only the manufacturer may open and repair it.

Do not use aggressive cleaning agents.

The BMZ RS-Motor must not be modified or changed. In particular, do not tamper with the power or speed.

Worn components (e. g. chainring, spider, pedals) may only be replaced with original spare parts or parts approved by the manufacturer.

To prevent the e-bike from being switched on unintentionally during transport, storage or maintenance, remove the battery beforehand. (See operating instructions for battery.)

Only use the push assistance when pushing the e-bike. (See operating instructions control element.)

When using the push assistance, make sure that the pedals do not strike your legs.

At temperatures above 25 °C or high stress (e.g. inclines, heavy loads), the drive unit can become very hot. Avoid skin contact with the housing.

Only use batteries that are approved by the manufacturer.

Observe the national traffic regulations and the national regulations for the use of pedelecs.

Observe the instructions in all operating manuals for your pedelec.

3.1.2 WHEN DOES THE MOTOR ASSIST?

The motor only assists while you are pedaling. It does not assist when the battery is empty or the assistance level is switched off.

The motor will stop assisting if you are pedaling faster than 25 km/h (or 45 km/h for s-pedelecs).

i Drives for pedelec and s-pedelecs are not compatible with each other. In addition, an s-pedelec requires type approval.

3.2 ADJUSTING THE SPEED SENSOR

To ensure that the system functions properly, the spoke magnet must pass the speed sensor at a distance of 5 to 10 mm.

If the spoke magnet is in an incorrect position, loosen the spoke magnet and fix it in a suitable position.

Note the line-like marking on the sensor housing, which should be aligned with the magnet.

3.3 STARTING THE SYSTEM

PREREQUISITES

- The battery is securely locked in the holder and sufficiently charged (see operating instructions for battery).
- The control unit is correctly installed (see operating instructions control unit).
- The speed sensor is correctly installed (see 3.2).

INSTRUCTIONS

1. Switch on the control unit. (See operating instructions for control unit).
2. If the battery does not start automatically, switch on the battery (see operating instructions for battery).
3. Make sure that the preferred assistance level is set (see operating instructions for the control unit).

3.4 SWITCHING OFF THE SYSTEM

Depending on the drive system, there are different ways to switch it off:

- Switch off the battery (see operating instructions for the battery).
- Switch off the operating unit or remove it from the holder (see operating instructions for the control unit).
- To save energy, most drive systems switch off automatically if they are not used for approx. 10 minutes (see operating instructions for the control unit).

3.5 SETTING THE ASSISTANCE LEVEL

The drive unit supports four assistance levels which can be selected via the control unit (see operating instructions for control unit).

If the battery is empty or no assistance level is selected, you can use your e-bike like a normal bicycle.

3.6 USING THE PUSH ASSISTANCE

Only use the push assistance when you are pushing your e-bike.

To switch the push assist on and off, see the operating instructions for the control unit.

3.7 MAINTENANCE

The BMZ RS-Motor is maintenance-free and protected against water and dust. Nevertheless, heavy dust and mud should be removed from the motor.

Do not use strong water jets when cleaning.

For maintenance of the vehicle battery, please refer to the operating instructions of the battery.

4 STORAGE AND TRANSPORT

- Handle with care.
- Store in a dry and dark area.
- Store the motor in its original packaging at -25 °C to +60 °C
- The storage area must be level and sturdy and protected from external influences.

5 DISPOSAL

The motor and packaging must be disposed of and recycled in an environmentally friendly manner. Do not dispose of the motor in household waste.



In accordance with Directives 2012/19/EC and 2006/66/EC, electrical equipment and tools that are no longer in use as well as defective or used batteries must be collected separately and be recycled in an environmentally friendly manner.



Ensure that the packaging is disposed of in an environmentally friendly manner. Cardboard packaging must be disposed of separately for paper recycling. Plastic films and parts in the packaging must be collected separately for recycling.

6 FURTHER DIRECTORIES

6.1 GLOSSARY

TERM	DEFINITION
user	Individual using products
specialist	Individual who, on the basis of his or her relevant professional education, training and/or experience, is capable of identifying risks and preventing hazards arising from the use of the product.
damage	Physical injury or damage to human health or damage to property/possessions or the environment

More Information?

Feel free to contact us. We are glad to help.



BMZ Germany GmbH
Zeche Gustav 1
63791 Karlstein am Main
Germany
Phone: +49 6188-9956-0
Email: mail@bmz-group.com
www.bmz-group.com