



1 Safety instructions

1.1 In general

- Read the user manual completely and carefully before use.

The user manual is part of the product and contains important information for correct use.

- Keep this user manual.

The user manual must be available for uncertainties and passing the product.

- Use product, product parts and accessories only in perfect condition.
- Compare the specifications of all used devices to ensure compatibility.
- In case of questions, defects, mechanical damage, trouble and other problems, non-recoverable by the documentation, contact your dealer or producer.
- Never operate irons, heaters and similar devices which cause fire risk, with voltage converters.
- Do NOT connect already connected devices to other interfaces of the vehicle simultaneously.
- Not recommended for children and people with physical and / or mentally limited capabilities.
- Use only with the vehicle stationary.
- Not intended for commercial use.



Risk of electric shock

- Do not open the housing.
- Do not modify product and accessories.
- Installation, assembly, maintenance and repair work must be carried out only by trained electrical specialists.
- Do not short connectors and circuits.



Hot surfaces

- Do not touch during or immediately after use.
- Avoid proximity to flammable surfaces.



Heat storage

- Do not cover the product.
- Keep fan slots and vents free.
- Do not use in sealed environments.



Injury by cutting

- Secure packaging, small parts and insulation against accidental use.

Operation and storage conditions

- For large temperature differences, wait a few minutes after transport, to take the unit into operation.
- Avoid stresses such as heat and cold, moisture and direct sunlight, vibration and mechanical pressure.
- Do not touch the product with wet hands.
- Not in the vicinity of heating and battery mount.
- Do not operate in explosive environments.
- Operating elements of the vehicle must not be impaired by mounting and use of the voltage converter.
- Only use in dry ambience.



1.2 Warning levels



Warnings against hazards that may result in injuries in case of non-observance.

EN



Warnings against hazards that may result in material damage in case of non-observance.

2 Description and Function

2.1 Voltage converters

Your voltage converter converts, depending on the design 12 or 24 V DC in

- AC 230 V ~ / 50 Hz and / or
- DC 5 V / max. 2.1A provided.

The voltage converter is intended for permanent installation in cars, trucks or boats and may only be operated with the vehicle stationary.

2.2 Scope of Delivery

- Voltage converter
- Battery cable (2x / 4x depending on model)
- Ground wire
- Operating manual

2.3 Operating Elements

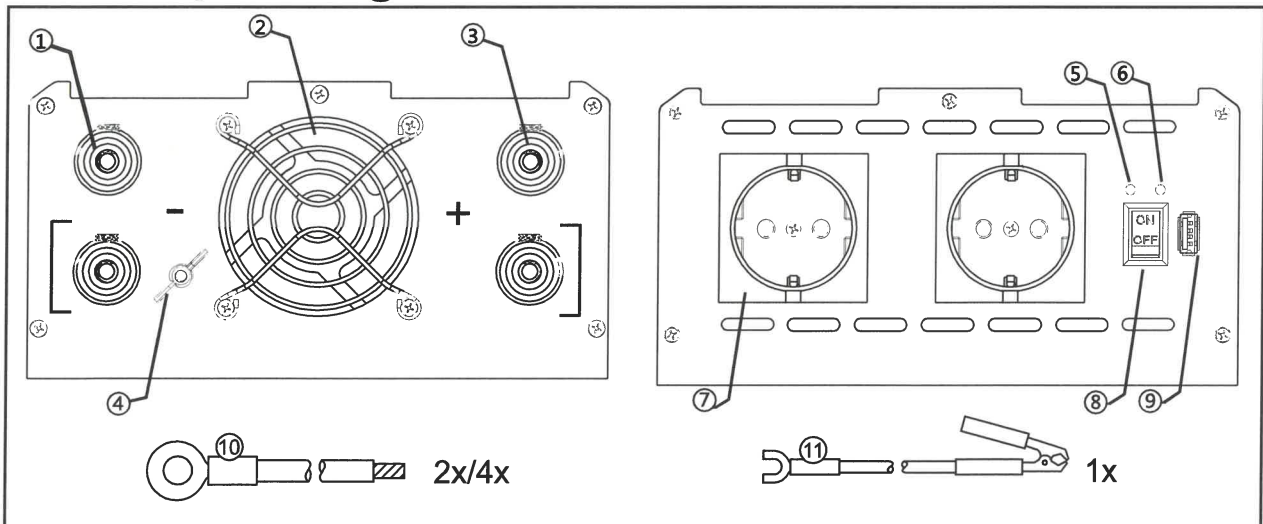


Fig.2: Operating elements

- | | | | |
|----|------------------|----|-------------------|
| 1 | DC input (-) | 2 | Fan |
| 3 | DC input (+) | 4 | Ground connection |
| 5 | Power LED | 6 | Error LED |
| 7 | AC output 230 V | 8 | On/Off switch |
| 9 | DC Output USB 5V | 10 | Battery cable |
| 11 | Ground wire | | |

2.4 Specifications



| Model | 58890 | 58884 | 58891 | 58892 | 58895 | 58896 |
|--|----------------------------|----------------|-----------------|-----------------|-----------------|-----------------|
| Nominal input voltage (V ₋₋₋) | 12 (11-15) | | | | 24 (22-30) | |
| Output voltage (V ~) | 230±10 % | | | | | |
| Max. Output power (W) | 1000 | 1500 | 2000 | 3000 | 2000 | 3000 |
| Continuous power (W) | 1000 | 1500 | 2000 | 2800 | 2000 | 2800 |
| Peak power 0.1 s (W) | 2000 | 3000 | 4000 | 6000 | 4000 | 6000 |
| Output frequency (Hz) | 50±3 (modified sinus wave) | | | | | |
| USB output voltage (V ₋₋₋) | 5 | | | | | |
| Output current USB (A) | 2.1 max. | | | | | |
| Efficiency (%) | >80 | | | | | |
| No-load input (A) | <0.6 | | | | <0.4 | |
| Input low voltage alarm (V ₋₋₋) | 10.2-10.8 | | | | 20.4-21.6 | |
| Input Low Voltage Cutoff (V ₋₋₋) | 9.2-9.8 | | | | 18.4-19.6 | |
| Input overvoltage shutdown (V ₋₋₋) | 15-16 | | | | 30-32 | |
| Overload shut-down (W) | 1200-1300 | 1800-1950 | 2300-2600 | 3300-3600 | 2300-2600 | 3300-3600 |
| Ambient temperature (° C) | 5-35 | | | | | |
| Cooling method | Fan | | | | | |
| Fuse | 20 A x 6 | 30 A x 6 | 25 A x 10 | 30 A x 12 | 15 A x 10 | 15 A x 12 |
| Dimensions (mm) | 241 x 167 x 70 | 265 x 167 x 70 | 380 x 218 x 100 | 415 x 218 x 100 | 380 x 218 x 100 | 415 x 218 x 100 |

| | | | | | | |
|------------------------------------|---------|------|--------------------|------|------|------|
| Weight (kg) | 1.85 | 2.30 | 5.30 | 6.00 | 5.30 | 6.00 |
| All 4 battery cables must be used. | - | | for loads > 1000 W | | | |
| Childlock | Shutter | | | | | |

Tab.3: Specifications

3 Intended Use

We do not permit using the device in other ways like described in chapter "Description and Function" and „Safety Instructions“. Not attending to these regulations and safety instructions might cause fatal accidents, injuries, and damages to persons and property.

4 Mounting and Connecting

4.1 Preparation

1. Check the battery terminals before connecting.
2. If the positive pole „+“ connected to a metallic part of the vehicle, the voltage converter must NOT be used with this vehicle.
3. Use the battery cable with ring terminals for connecting to the vehicle battery.

The vehicle battery discharges when the vehicle is not in operation.

4. Check the delivery for completeness and make maintaining its integrity.

4.2 Mounting

- Mount the voltage converter with suitable screws in the vehicle interior
 - >> on stable and leveled places,
 - >> on clean, dry and nonflammable surfaces,
 - >> in well-ventilated areas.

Mounting screws are not included.

4.3 Connecting to the vehicle battery

CAUTION

Short circuit!

- Attend to correct polarity.
- Avoid a short circuit of the battery terminals.



1. Loosen the terminal screws of the plus and minus pole at the rear side of the voltage converter.
2. Put the red battery cable (10) straight in the DC-input „+“ (3) and tighten the terminal screw.
3. Put the black battery cable (10) in the DC-input „-“ (1) and tighten the black terminal screw.

4. Connect the red battery cable (10) with the eyelet to the positive terminal of the battery.

This is red or marked with „P“ or „+“.

5. Connect the black battery cable (10) with the eyelet to the negative pole of the battery.

This is black or marked with „N“ or „-“.

Voltage converters, which are supplied with 2 red and black battery cables each, ALL cables must be connected with loads >1000 W.



Risk of electric shock!

- Not connecting the ground terminal may cause electric shock when equipment defects.



6. Connect the ground cable (11) to the ground terminal (4) and to an available ground system such as the vehicle body or for stationary use, at equipotential.

5 Operation

5.1 In general

Some external devices such as audio and battery-powered devices and precision equipment may not be suitable to operate at a voltage converter and the connected device and/or the voltage converter may get damaged.

1. Check the user manual of the device to be connected to corresponding notices.
2. Turn the device off immediately and unplug the power cord when it hums or excessively heats up.
3. If there is anything unclear, contact the dealer of your device.

Both AC outputs 230 V (7) and the DC output USB 5 V (9) can be used simultaneously. The total power rating for all connected equipment must not exceed the continuous output of the voltage converter. The power rating of your equipment can be found on the nameplate. External devices, such as electric motors, drills, electric saws, refrigerators and music systems normally have a higher rated power when starting as indicated on the nameplate. The voltage converter can therefore briefly make a higher peak output power if the power rating is only given in current as ampere,

- multiply the value in amperes (A) by a factor of 230 to obtain the power in watts (W).

Example: $0.5 \text{ A} \times 230 \text{ V} = 115 \text{ W}$

The vehicle battery discharges when the vehicle is not in operation.

5.2 Switching the voltage converter on/off

1. Turn the On/Off switch (8) on (ON).
If the Operation LED (5) lights, the voltage converter is ready for operation.
2. Should the Error LED (6) light, turn off the voltage converter by pressing the On/Off switch (OFF) and read the chapter „Troubleshooting.“

5.3 Use of 230 V AC outputs

1. Use only devices that are equipped either with safety plug or European cable connectors.
2. Turn the voltage converter on (ON).
3. Make sure that the device to be connected is switched off.
4. Connect the plug of the device to be connected with the 230 V AC output (7) of the voltage converter.

5.4 Use of the 5V USB DC output

NOTICE

Material damage

- Do not connect memory sticks, MP3 player or similar external data storage devices.

1. Turn the voltage converter on (ON).
 2. Connect a USB device to the USB 5V DC connector (9).
- The 5V USB DC connection of the voltage converter provides 5 V DC power for USB devices such as lights, fans and radios.*
- The 5V USB DC connection of the voltage converter is not provided for data transmission.*

6 Troubleshooting

| Function | Status description | | | Method for restart |
|-----------------------------|----------------------|-------|-----------|--|
| | LED | Alarm | AC output | |
| Input low-voltage-alarm | green on, red off | yes | yes | Does the battery voltage become usual, the alarm stops automatically. |
| Input low-voltage shutdown | green +red on | No | No | <ul style="list-style-type: none"> • Charge the battery. • Switch off the voltage converter for 3-5 seconds. • Switch on the voltage converter. |
| Input over-voltage shutdown | green +red on | No | No | <ul style="list-style-type: none"> • Check battery for correct voltage or assure it. • Switch off the voltage converter for 3-5 seconds. • Switch on the voltage converter. |



| | | | | |
|---------------------------|-------------------|-----|----|--|
| Overload shut-down | green an, red an | No | No | <ul style="list-style-type: none"> • Reduce the load to the mentioned permanent load. • Switch off the voltage converter for 3-5 seconds. • Switch on the voltage converter. |
| Over temperature shutdown | green an, red an | Yes | No | <ul style="list-style-type: none"> • Remove the reason for over temperature. • Switch off the voltage converter for ~5 minutes to cool down. • Switch on the voltage converter. |
| Output short circuit | green an, red aus | No | No | <ul style="list-style-type: none"> • Remove the reason for short circuit. • After that, the voltage converter restarts work automatically. |

Tab.4: Troubleshooting

7 Maintenance, Care, Storage and Transport

The product is maintenance-free.

NOTICE

Material damage

- Only use a dry and soft cloth for cleaning.
- Do not use detergents or chemicals.
- Hold vent and cooling fins clean.
- Store cool and dry.
- Store the product out the reach of children and in a dry and dust-protected ambience when not in use.
- Keep and use the original packaging for transport.

8 §

Liability notice

We reserve the right to printing errors and changes to product, packaging or product documentation.

- See our terms of warranty. These are available in their current form under the given contact details.

9

Disposal Instructions



According to the European WEEE directive, electrical and electronic equipment must not be disposed with consumers waste. Its components must be recycled or disposed apart from each other. Otherwise contaminative and hazardous substances can pollute our environment.

As a consumer, you are committed by law to dispose electrical and electronic devices to the producer, the dealer, or public collecting points at the end of the devices lifetime for free. Particulars are regulated in national right. The symbol on the product, in the user`s manual, or at the packaging alludes to these terms. With this kind of waste separation, application, and waste disposal of used devices you achieve an important share to environmental protection.

WEEE No: 82898622

10 EU Declaration of Conformity



With the CE sign Goobay®, a registered trademark of the Wentronic GmbH ensures, that the product is conformed to the basic standards and directives.