LDS-60 / LDS-100 / LDS-150 / LDS-200
USER MANUAL

Thank you for selecting this DC to AC Pure Sine Wave Power Inverter. It designed to be your best companion at home, in the office, when traveling, outdoors camping, at sea, etc…

Please read this manual!

This manual provides safety, installation and operating instructions that will help you derive the fullest performance and service life that this Power Inverter has to offer.

Please save this manual!

It includes importance instructions for the safe use of this Power Inverter and for obtaining factory service should the proper operation of the Power Inverter come into question.

Please save or recycle the packaging materials!

The Power Inverter's shipping materials were designed with great care to provide protection from transportation related damage. These materials are invaluable if you ever have to return the Power Inverter for service. Damage sustained during transit is not covered under the warranty.

1. GENERAL SAFETY INSTRUCTIONS

1-1 General safety

- Use the device only as intended.
- Do not operate the device in a damp or wet environment.
- Do not operate the device in areas that are potentially explosive.
- Maintenance and repair work only be carried out by qualified personnel who are familiar with the risks involved and the relevant regulations.

1-2 Safety when installing the device

- Ensure that the device has a firm foundation. The device must be set up and fastened in such a way that it cannot tip over or fall down.
- Take the precautions necessary to ensure that children cannot interfere with operation. Dangerous situations may occur which cannot be recognized by children.

- Do not expose the device to a heat source such as direct sunlight or heating. Avoid additional heating to the device.
- For installation on boats, if electrical devices are incorrectly installed on boats, corrosion damage might occur. Have the inverter installed by a specialist (marine) electrician.
- If cables have to be fed through metal walls or other walls with sharp edges, use ducts or wire bushings to prevent damage.
- Do not lay cables which are loose or bent next to electrically conductive material (metal).
- Do not pull on the cables.
- Do not lay the 115VAC / 230VAC mains cable and the 12VDC / 24VDC cables in the same duct.
- Fasten the cables well.
- Lay the cables so that they cannot be tripped over or damaged.
- Operate the device only if you are certain that the housing and the cables are undamaged.
- Make sure the air inlets and outlets of the device are not covered.
- Ensure good ventilation.
- Do not connect the 115VAC / 230VAC output of the inverter (please see fig.3 / fig.12) to an appliance not using the source of 115VAC / 230VAC.
- Even after the fuse triggers, parts of the inverter remain live.
- Always disconnect the power supply when working on the device.
- Reverse polarity connection of the battery wires can damage the inverter. Do not use inverter with electrical systems using positive ground.

2. TECHNICAL DESCRIPTION

The inverter can be operated wherever there is 12VDC supply or a 24VDC supply. With its light weight and the compact design the inverter can be easily installed into camping mobiles, commercial vehicles or motor and sailing yachts.

The output voltage corresponds to the socket standard (pure sinus-voltage).

Please observe the values for constant output power and peak output power (Max. 10 mins). Never connect devices that have a higher power requirement.

**** Note: when connecting devices with an electrical drive such as power drills and refrigerators, that they often need more power than is stated on the type plate.***

3. INSTALLING THE INVERTER

3-1 Tools required

For installation and assembly you require the following tools:

- Pencil.
- Drill bit set.
- Drill.
- Screwdriver.

For making and testing the electrical connection the following tools are required:

- Crimping tool.
- 3 different flexible cable connections. The required cable diameter can be taken from the table in section “4. CONNECTING THE INVERTER”.
- Various terminals, multi-core cable ends.

For fixing the inverter you need the following mounting devices:

- Screws (M4) with spacers and self-locking nuts or sheet metal screws resp. wood screws.
- Mounting size (please see fig.8 / fig.9 / fig.17)

3-2 Installation instructions

When selecting the installation location, observe the following instructions:

- Installing the inverter can be set horizontal or vertical.
- The inverter has to be installed in a dry and clean place; not exposed to humidity.
- Make sure that the place is well ventilated. If installed into housing, ensure proper ventilation. At least keep a free space of 10 cm around the inverter (please see fig.7 / fig.16).
- The air intake at the bottom of the inverter and the air outlet on the back may not be blocked.
- In case of ambient temperature of more than 35° C (e.g. engine or heating rooms, direct sunlight), the inverter will switch off automatically, because of the activated self heating feature.
- The installation surface must be level and of sufficient strength.

**** Caution: Before making any drill holes, ensure that no electrical cables or other parts of the vehicle can be damaged by drilling, sawing and filing.***

3-3 Installing the inverter

- Adjust the inverter to the chosen installation place and mark the fixing points.
- Fix the inverter by using the self-chosen fixing method.

4. CONNECTING THE INVERTER

4-1 General instructions

- In case the inverter is installed into vehicles or boats, it has to be connected to the chassis (ground).
- On building up an electricity supply network, the safety regulations according to the VDE 0100 standard are t be kept.
- Make sure to use the correct cables. A table is provided below for your reference:

Device	Required cable cross section
LDS-60	25–50 mm
LDS-100	35–50 mm
LDS-150	50–70mm
LDS-200	50–85mm

4-2 Connecting the inverter

- Lay the flexible connecting cable (plus and minus) from the battery to the connecting poles of the inverter (please see fig.6 / fig.15).

**** Warning: Make sure that the poles will not be exchanged! Reverse polarity connection will blow the internal fuses. Exchange of fuses by experts only!***

- Bind the cable and the terminal firm and well together (please see fig.5-1 / fig.13-1).
- First connect the negative cable to the white negative terminal (please see fig.6 / fig.15).
- Install a DC fuse or a DC circuit breaker in the positive side of the circuit within 18 inches of the battery.
- Connect the positive cable to the red positive terminal.

**** Warning: In order for the integrated residual current-operated protective device of the LDS-60 / LDS-100 / LDS-150 / LDS-200 inverters to work properly, the earth connection of the inverter (please see fig.4 / fig.14) must be electrically connected to the chassis of the vehicle or boat.***

- Lay the flexible earth cable from the earth point of the vehicle to the earth point of the inverter.
- Connect the earth cable to the chassis terminal (please see fig.4 / fig.14).

**** Warning: Reverse polarity connection of the battery wires can damage the inverter. Do not use the inverter with electrical systems using positive ground.***

5. USING THE INVERTER

LDS-60 / LDS-100: always connect only one consumer unit to the 115VAC or 230VAC socket on

the front of the device.

LDS-150 / LDS-200: always connect max two consumer unit to each of the 115VAC or 230VAC sockets on the front of the device.

Switching ON: operation is done with the ON / OFF switch at the front side of the inverter. In switch mode ON the LED control “Power” illuminates.

Malfunctions:

- Does the battery voltage fall below 10.7VDC (12VDC system) resp. 21.4VDC (24VDC system)?
- Does the LED control “OVERLOAD” illuminates and an audible signal is given.
- The inverter switches off automatically in case of a battery voltage down to 10VDC (12VDC system) resp. 20VDC (24VDC system).
- If the device overheats, the inverter switch OFF – the “OVER TEMP” LED lights up. If this happens:

  - Switch OFF the inverter using the switch.
  - Ensure that the inverter is sufficiently ventilated.
  - Wait for approx. 5 ~ 10 minutes and switch ON the inverter only.

When operating the inverter at high load for lengthy periods, you have to pay attention to voltage of battery. If voltage is not enough, please charge the battery immediately or replace battery.

There is a modular jack for remote control (please see fig.1 / fig.10) for LDS-150 and LDS-200 on the front panel and for LDS-60 (option) and LDS-100 on the bottom plate.

GFCI for LDS-60 / LDS-100 is an option
GFCI for LDS-150 / LDS-200 is a must
An un-intentional electric path between a source of current and a grounded surface is referred to as a “ground fault”. Ground faults occur when current is leaking somewhere. In effect, electricity is escaping to the ground. How it leaks is very important. If your body provides a path to the ground for this leakage you could be injured, burned, severely shocked or electrocuted. A GFCI protects people from electric shock by detecting leakage and cutting off the AC source.

In case there is a leakage of >5mA for 115VAC ver. or >30mA for 230VAC ver. due to ground fault, the output will be shut down. The green LED will be switched off and the red overload LED will be lighted. The inverter gets latched in this condition. To reset, the power on/off switch is required to be switched off and on again. Before switching on the inverter again, ensure that the cause of the ground fault is removed.

6. CLEANING AND CARING FOR THE INVERTER

Occasionally clean the device with a damp cloth.

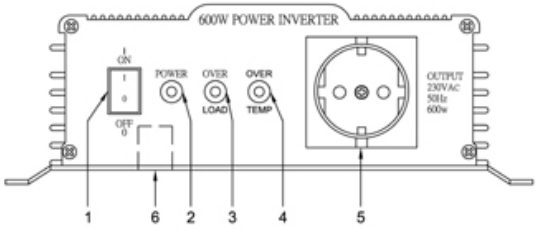
**** Caution: do not use sharp or hard objects for cleaning as these may damage the device.***

7. RECTIFYING FAULTS

Fault	Cause	Remedy
No output voltage, LED not illuminated.	1. Bad connection between battery and inverter. 2. Internal fuses defect.	1. Check the cables and contact. 2. In this case send the unit back to supplier.
No output voltage, “OVER TEMP” LED illuminates.	The inverter has been overheated.	1. Switch OFF the inverter and the power consuming units. 2. Wait for approx. 5~10 minutes and switch ON the inverter only. 3. Reduce the loading and ensure the better ventilation for the inverter. 4. Then switch back on the consuming unit.
Overload LED illuminates.	Current consumption of the consuming unit is too high. Possibly there is a short circuit in the consuming unit.	1. Switch OFF the inverter and disconnect the consuming units 2. Switch back on the inverter only. If the OVERLOAD LED is OFF, there is a short circuit at the consuming unit or the total load was higher than the performance specified within the technical data table. 3. Check the connecting cable of the consuming unit for mechanical damages.
Acoustic signal in case of loading.	Battery voltage too low. In case of loading battery voltage falls below 10.7VDC resp. 21.4VDC.	The battery must be recharged.

1

LDS-60
LDS-100

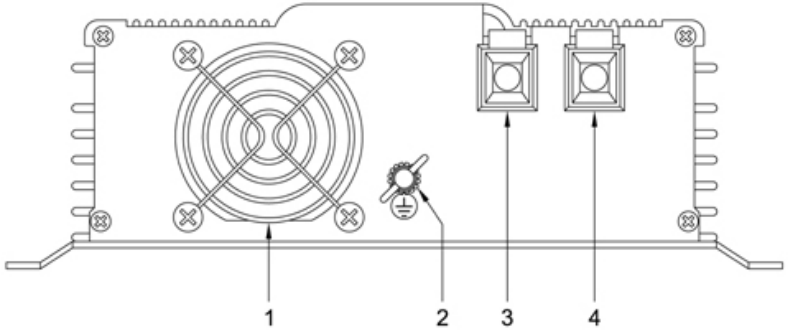


1.Power on / off Switch
2.Green LED - Power output status
3.Red LED - Over load
4.Red LED - Over temperature
5.AC output receptacles (Europe)
6.Remote controller jack

AC Output (available Sockets)				Remote (RC-15)
Australia New Zealand *1	United Kingdom *1	Universal *1	North America *2	6

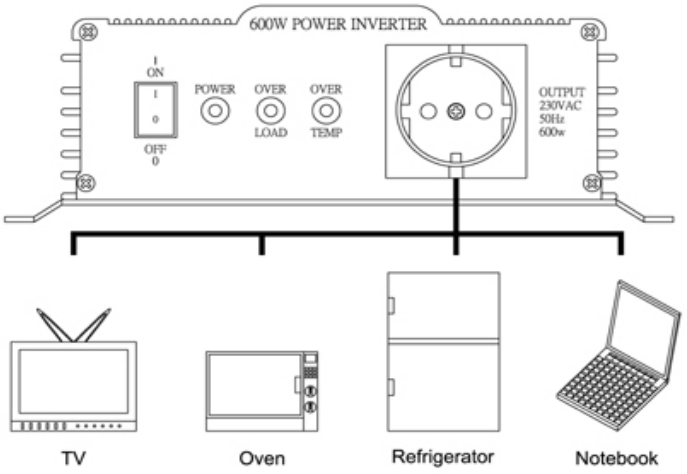
2

LDS-60
LDS-100

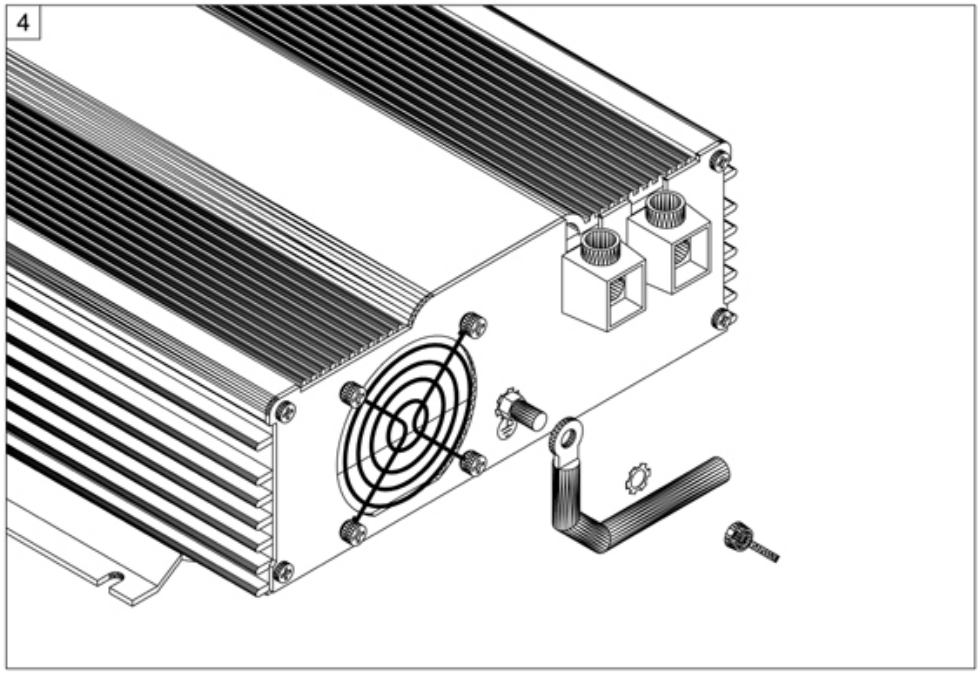


1.Cooling fan
2.Grounding lug
3.DC Input " - "
4.DC Input " + "

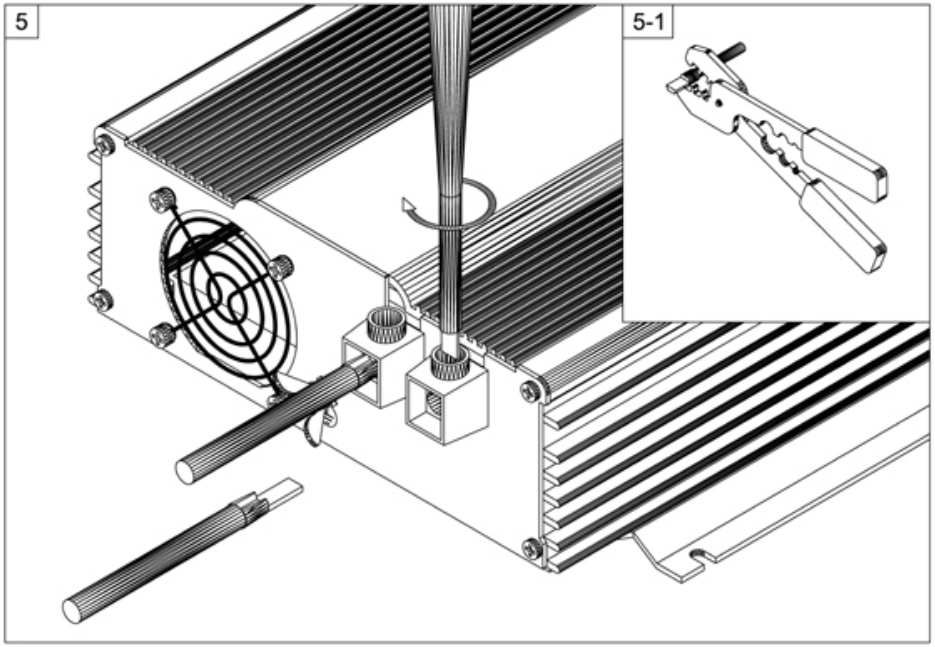
3



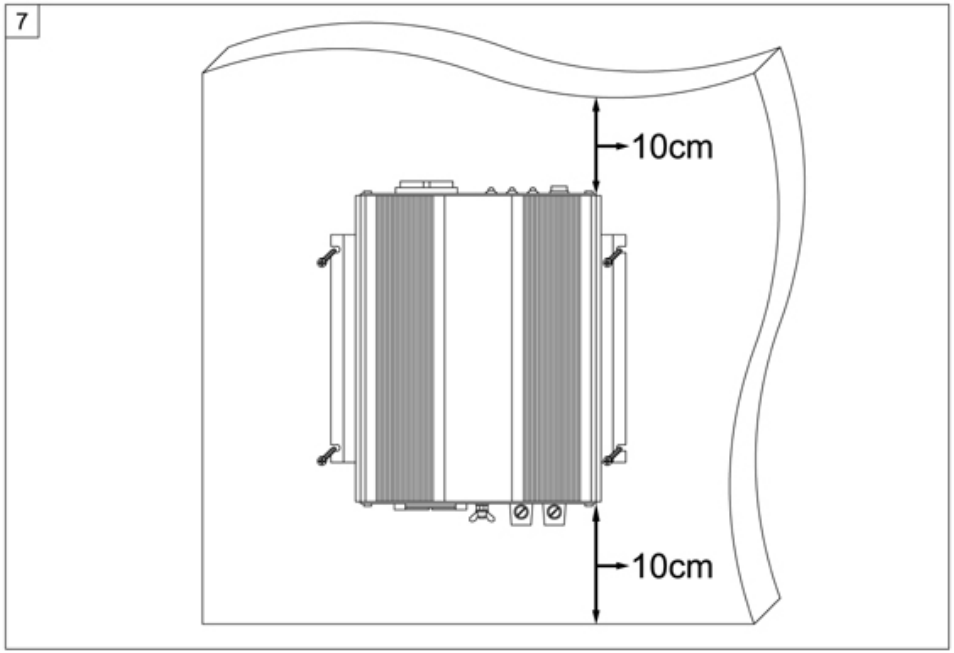
4



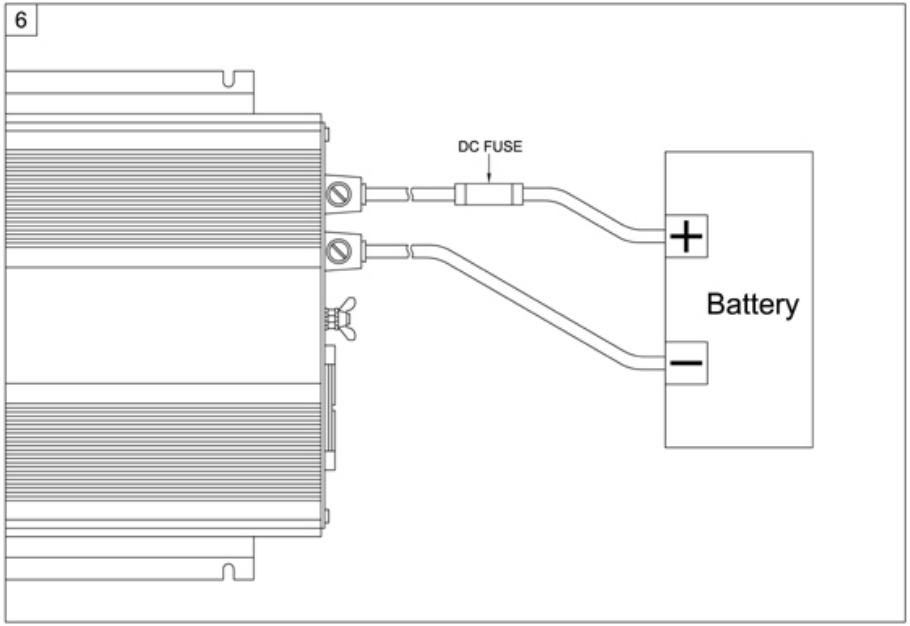
5



7

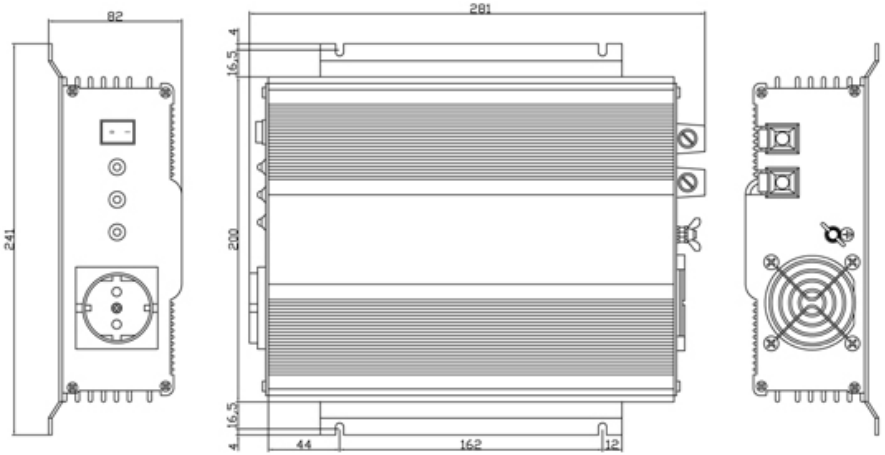


6



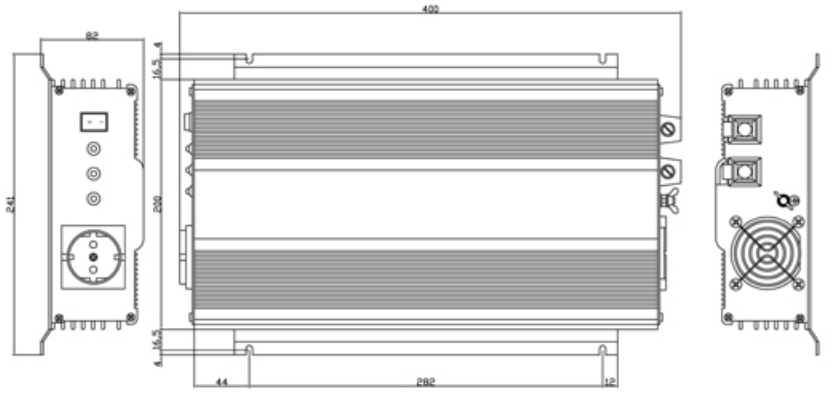
8

LDS-60



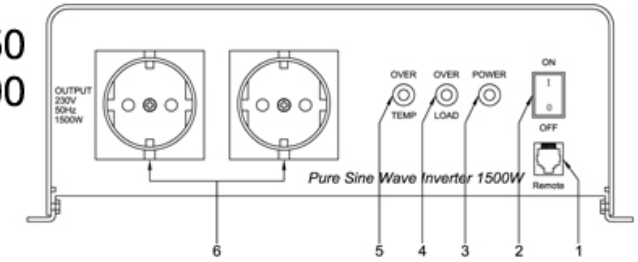
9

LDS-100



10

LDS-150
LDS-200



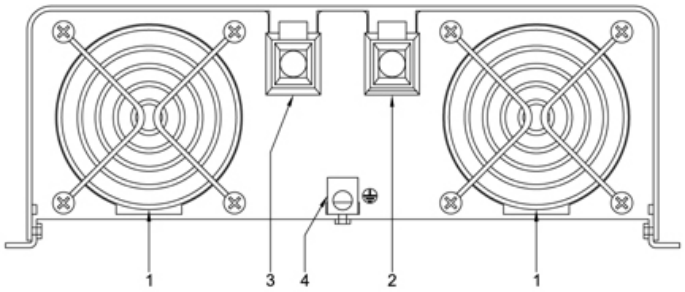
1.Remote controller jack
2.Power on / off Switch
3.Green LED - Power output status
4.Red LED - Over load
5.Red LED - Over temperature
6.AC output receptacles (Europe)

AC Output (available Sockets)

Australia New Zealand	United Kingdom	Universal	North America 1500W	North America 2000W
*2	*2	*2	*3	*1

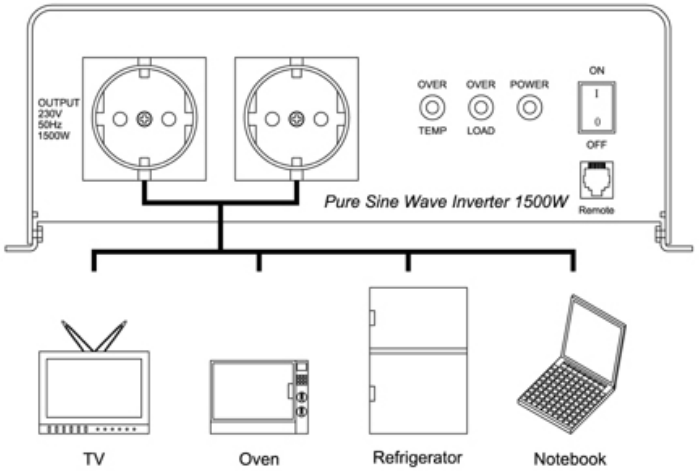
11

LDS-150
LDS-200

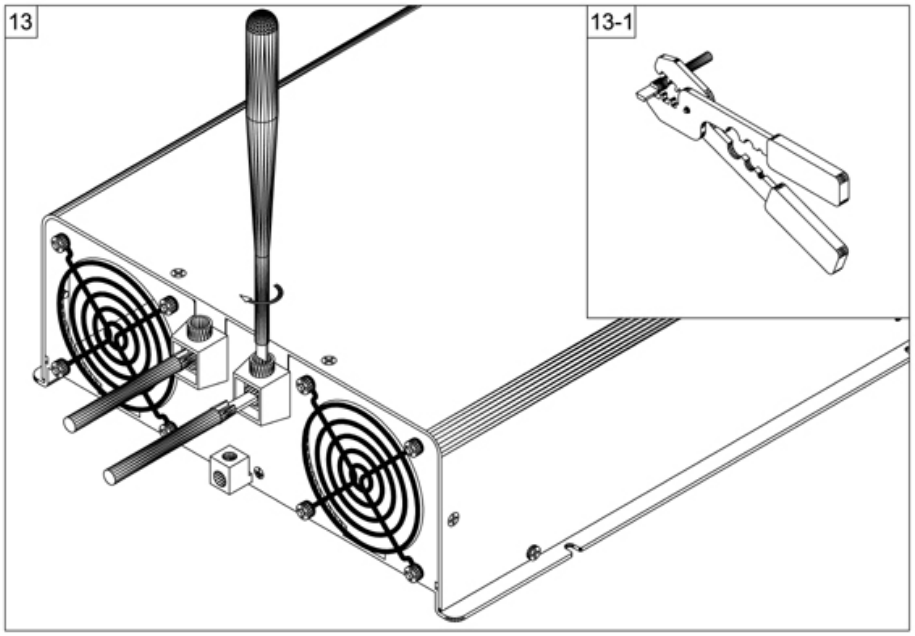


1.Cooling fans
2.DC Input " - "
3.DC Input " + "
4.Grounding lug

12

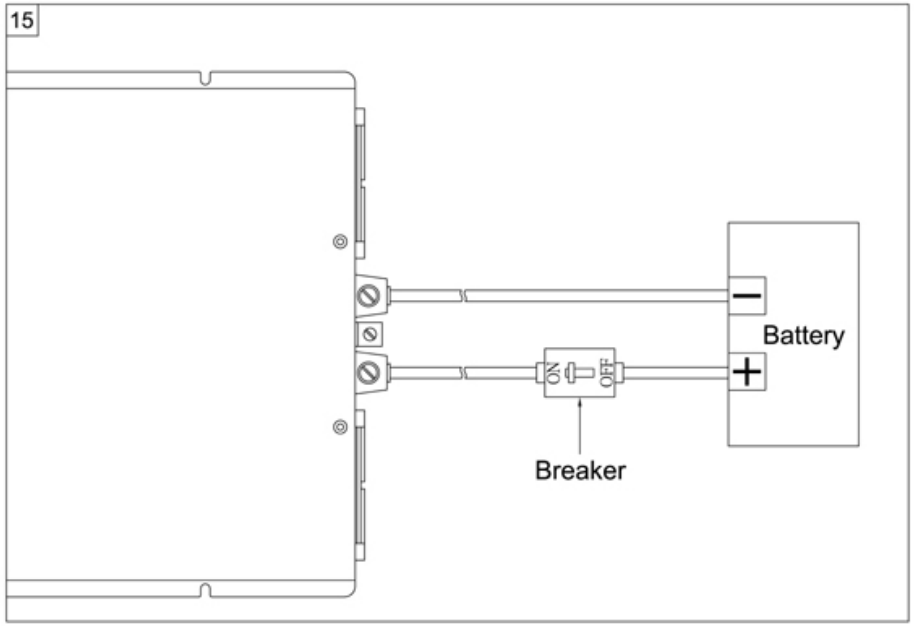


13

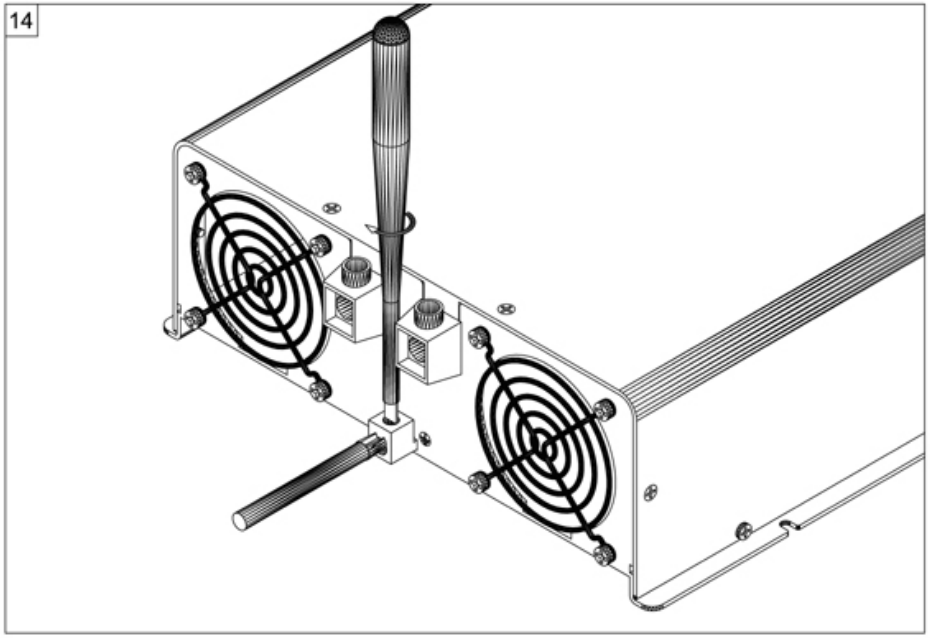


13-1

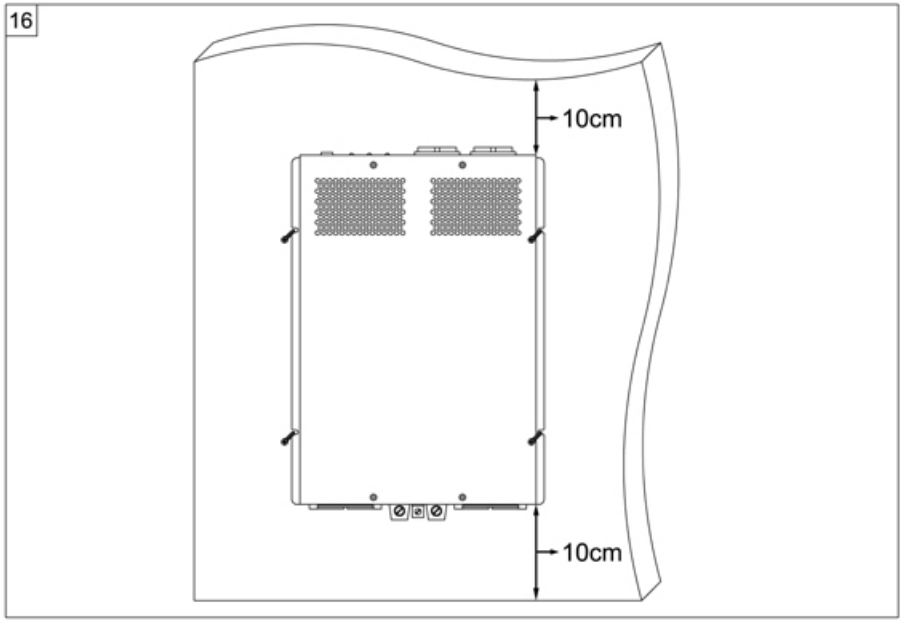
15



14



16



LDS-150
LDS-200