

LCH SERIES USER MANUAL

Thank you for selecting this AC to DC Battery Charger. Please read this manual carefully before installing and starting up this device.

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 Battery Charger has to offer.

Please save this manual!

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

Please save or recycle the packaging materials!

The Battery Charger'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 Battery Charger for service. Damage sustained during transit is not covered under the warranty.

1. GENERAL SAFETY AND INSTALLATION INSTRUCTIONS

1-1 Operating the Device Safely

Failure to observe this instruction can cause material damage, device malfunction, or danger of bodily injuries. Fundamental safety measures should be observed when using electrical equipment to avoid the danger of:

- Electric shock
- Fire hazard
- Injury

1-2 Safety Instructions when installing the device

- Handle the batteries with care; they contain strong acids.

- Avoid contact with the battery fluid agent. If come in contact with battery fluid, one should rinse the affected parts of the body or clothing with plenty of cold water and seek medical attention immediately.
- Be sure that the device has a firm foundation.
- Do not use sharp or hard objects to clean the device; doing so may cause device damage.

1-3 Electrical Cables

- If cables have to be fed through metal walls or other walls with sharp edges, use ducts or wire bushings to prevent damage.
- Lay the cables so that other people will not trip over them.
- Do not lay cables which are loose or bent next to electrically conductive materials.
- Do not pull the cables.
- Fasten the cables properly.
- Lay the cables so that they cannot be easily damaged
- Always use sockets that are grounded and secured by earth leakage circuit breaker.
- Only a specialist should make the electrical connections.
- Do not lay the 115VAC / 230VAC line and the 12VDC direct current in the same cable duct.
- Keep to the indicated minimum cable cross-section.

1-4 Installation on Boats

Incorrect use or installation of the charger on boat may lead to corrosion of the boat. Please allow qualified personnel to perform the installation of the charger.

2. WARNING

- Use the charger only as intended.
- Do not operate the charger if the housing or the cables are damaged.
- The charger may not be used to charge any other type of batteries than the ones indicated.
- Do not operate the device in a damp or wet environment.
- Do not charge a frozen battery; there is the danger of explosion.
- Keep this charger in a safe place, out of reach of children.
- Only qualified personnel who are familiar with the risks involved and the relevant regulations should carry out maintenance or repair work.
- The device must be fixed and installed in such a way that it will not fall over or fall down.

3. APPLICATIONS AND DESCRIPTIONS

The chargers regenerate power or recharge mobile batteries used on board vehicles or boats. The charger can continuously charge supply batteries or starter batteries, enabling the batteries to maintain at a high capacity level.

The charger can be used for charging three types of batteries:

- Gel batteries
- Lead-acid starter batteries
- Maintenance-free batteries

Please inquire your battery supplier about the maximum capacities of your lead-acid batteries.

The charger is equipped with a polarity protection; this prevents the charger from being damaged in case of incorrect polarity.

A temperature sensor (model number TF-500) that is connected at the battery being charged protects the battery against damage caused by varying outside temperature by adapting the charging voltage of the temperature to the battery. Please connect two ends of TF-500 as figure 13 – one end to “T.S.” jack on rear panel and another end to battery.

An optional remote control (model number 900-RC) can be obtained in order to provide remote access to the charger.

4. SPECIFICATION OF THE UNITS VARIANTS

The IU0U automatic charger can deliver different unit variants. It can charge batteries up to the specified battery capacity as indicated in the specification section. Regarding the identification of the specification of your unit, locate your model number in the following tables.

4-1 Rear view (see figure 6-8)

No. Description

- | | |
|---|--|
| 1 | Connection for the temperature sensor |
| 2 | Unit fuse |
| 3 | Power switch |
| 4 | Connection for 115/230 volts voltage supply 115/230V |
| 5 | Ventilation outlet |

4-2 Front view of LCH-1280-2, LCH-2440-2, LCH-1260-2, LCH-2430-2, LCH-1245-2, LCH-2425-2 (see figure 1). The units can charge up to two supply batteries.

No. Description

- | | |
|---|--|
| 1 | Half power mode |
| 2 | Connection for remote control (accessory 900-RC) |
| 3 | Control lamp |

No. Description

- | | |
|---|--|
| 4 | Switch field for the selection of the charging voltage and time limitation (see figure 12) |
| 5 | “+” (plus) terminal for the supply battery |
| 6 | “+” (plus) terminal for the supply battery |
| 7 | “-” (minus) terminal for the supply battery |

4-3 Front view of LCH-1260-3, LCH-2430-3, LCH-1245-3, LCH-2425-3 (see figure 2). The units can charge up to three supply batteries.

No. Description

- | | |
|-----|---|
| 1 | Half power mode |
| 2 | Connection for remote control (accessory 900-RC) |
| 3 | Control lamp |
| 4 | Switch field for selection of the charging voltage and timer function (see figure 12) |
| 5-7 | “+” (plus) terminal for the supply battery |
| 8 | “-” (minus) terminal for the supply battery |

4-4 Front view of LCH-1225-2, LCH-2415-2 (see figure 3). The units can charge up to two supply batteries.

No. Description

- | | |
|---|---|
| 1 | Half power mode |
| 2 | Connection for remote control (accessory 900-RC) |
| 3 | Control lamp |
| 4 | Switch field for the selection of the charging voltage and timer function (see figure 12) |
| 5 | “+” (plus) terminal for supply battery |
| 6 | “+” (plus) terminal for supply battery |
| 7 | “-” (minus) terminal for supply battery |

4-5 Front view of LCH-1225-3, LCH-2415-3 (see figure 4). The units can charge up to three supply batteries.

No. Description

- | | |
|---|---|
| 1 | Half power mode |
| 2 | Connection for remote control (accessory 900-RC) |
| 3 | Control lamp |
| 4 | Switch field for the selection of the charging voltage and timer function (see figure 12) |
| 5 | “+” (plus) terminal for supply battery (1A Charge) |
| 6 | “+” (plus) terminal for supply battery |
| 7 | “+” (plus) terminal for supply battery |
| 8 | “-” (minus) terminal for supply battery |

4-6 Front view of LCH-1215-2 (see figure 5). The units can be used to charge two supply batteries.

No. Description

- | | |
|---|---|
| 1 | Half power mode |
| 2 | Connection for remote control (accessory 900-RC) |
| 3 | Control lamp |
| 4 | Switch field for the selection of the charging voltage and timer function (see figure 12) |
| 5 | “+” (plus) terminal for supply battery(1A Charge) |
| 6 | “+” (plus) terminal for supply battery |
| 7 | “-” (minus) terminal for supply batter |

5. ACCESSORIES

5-1 The temperature sensor

The temperature sensor measures the temperature of the battery or the environment around the battery and transfers the data to the IU0U automatic charger. With deviating temperatures, the charging voltage increases and decreases accordingly.

- Lay the cables from the batteries to the IU0U automatic charger.
- Connect the temperature sensor to the back of the IU0U automatic charger via the socket.
- Attach the sensor head directly to the battery. Use e.g. double-sided adhesive tape to attach the sensor to the top of the battery or in the vicinity of the battery (see figure 13).
- Switch the IU0U automatic charger “OFF” and “ON” again to activate the temperature sensor.

5-2 Remote control

The remote control can switch the charger ON and OFF as well as be used for functional check.

*** Note: Attach the remote control at a well accessible place to ensure easy access of the IU0U automatic charger.**

*** Caution: Be careful when attaching the remote control, for wiring harnesses, cables and other components that are in the assembly range could be damaged in the process.**

- Ensure approximately 1.97” width, 2.17” height and 0.91” depth for the take-up of the remote control.
- Connect the remote control to the IU0U automatic charger. The connection cable is equipped with two equivalent modular plugs.

- Place the remote control into the opening created. Secure the remote control with screws on the upper and bottom margin of the faceplate – use the available drills.

*** Note: Connect the plug of the 115/230 volts voltage supply at the unit to a grounded socket that is secured by an earth leakage circuit breaker.**

*** Note: The power switch at the unit must be switched ON, so that the unit can be switched ON and OFF with the remote control.**

6. SETTINGS

6.1 Charging voltage and time

A switch field can select the charging voltage and the period for the main charging phase.

*** Warning: Make sure that switch 1 and 2 or switch 3 and 4 are never switched on simultaneously while operating the charger. Please follow the table below to ensure correct operation of the charger**

Settings for the charging voltage for LCH-1280-2, LCH-1260-2, LCH-1260-3, LCH-1245-2, LCH-1245-3, LCH-1225-2, LCH-1225-3 and LCH-1215-2:

12V Charging Voltage	Switch 1	Switch 2	Application range
13.8 V	OFF	OFF	Old starter batteries mains charger operation
14.4 V	ON	OFF	Wet and gel batteries
14.8 V	OFF	ON	Fleece batteries

Settings for charging voltage for LCH-2440-2, LCH-2430-2, LCH-2430-3, LCH-2425-2, LCH-2425-3, LCH-2415-2 and LCH-2415-3:

24V Charging Voltage	Switch 1	Switch 2	Application range
27.6 V	OFF	OFF	Old starter batteries mains charger operation
28.8 V	ON	OFF	Wet and gel batteries
29.6 V	OFF	ON	Fleece batteries

Settings for the limitation of the period of the main charging phase:

Time limitation of the main charging phase	Switch 4	Switch 3	Application range
4 hrs	ON	OFF	Wet batteries
8 hrs	OFF	ON	Gel batteries
No timer function	OFF	OFF	

6-2 Half power mode

If you push the button “Half Power Mode”, the output power will reduce to half the chargers amp rating and a green “Half ON” LED will light. The Half Power LED is located on the bottom left corner of the front panel.

7. MAKING CONNECTIONS

- Place the charger in a dry, cool, clean, and ventilated space.
- Set the power switch to “0” (off) and pull out the main plug before connection or disconnecting the direct current connection.
- Connect the “-”(minus) battery pole with a connecting cable with the “-”(minus) terminal at the IU0U automatic charger (see figure 9).
- Connect the “+”(plus) battery pole with the connecting cable with the “+”(plus) terminal at the IU0U automatic charger (see figure 9).
- Lay the cables from the batteries to the IU0U automatic charger.
- Fold the cable ends with the multicore cable ends.
- For connection of starter batteries, please connect the terminal as our drawing (see figure 11).
- Supply the cable with a fork connection for an idea connection with the terminal (see figure 10).

Ensure correct polarity of the battery and the battery charger, otherwise the internal flat-pin terminal will trigger with the wrong polarity.

*** Warning: Batteries with cell connection may not be charged. Explosive gases could result from battery overheating.**

*** Note: Only use cables with the designated wire cross sections to connect the IU0U automatic charger to the battery.**

Model No.	Supply battery
LCH-1280-2	AWG # 4 ~ AWG # 2
LCH-1260-2 / LCH-1260-3	AWG # 6 ~ AWG # 4
LCH-2440-2 / LCH-1245-2 / LCH-1245-2	AWG # 7 ~ AWG # 6
LCH-1225-2 / LCH-1225-3 / LCH-2425-2 LCH-2425-3 / LCH-2430-2 / LCH-2430-3	AWG # 10 ~ AWG # 8
LCH-1215-2 / LCH-2415-2 / LCH-2415-3	AWG # 12 ~ AWG # 10

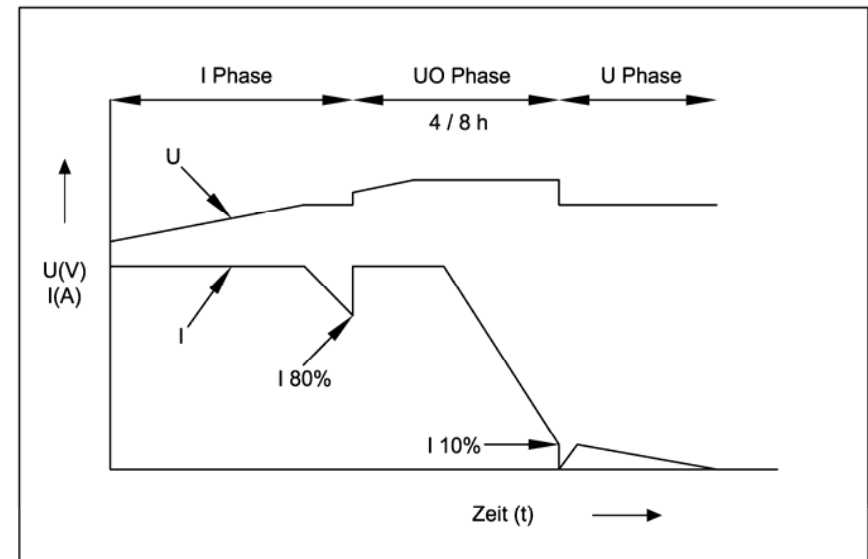
8. USING THE CHARGER

8-1 Using the remote control

The power switch at the unit must be switched ON so that the charger can be switched ON and OFF with the remote control.

8-2 Charging characteristic

The charging characteristic is generally designated as a modified IU0U characteristic.



- I phase: In the first stage of the charging process, the depleted battery is charged with a constant current until the battery voltage reaches 13.8V or 27.6V. When the battery reaches this voltage level, the charging current gradually drops. When the current drops down to 80%, the charger switches over to the higher charging voltage of 14.4V / 14.8V or 28.8V / 29.6V.

***Note: The charging voltage and the period for the main charging phase (U0phase) can be selected using the switch field.**

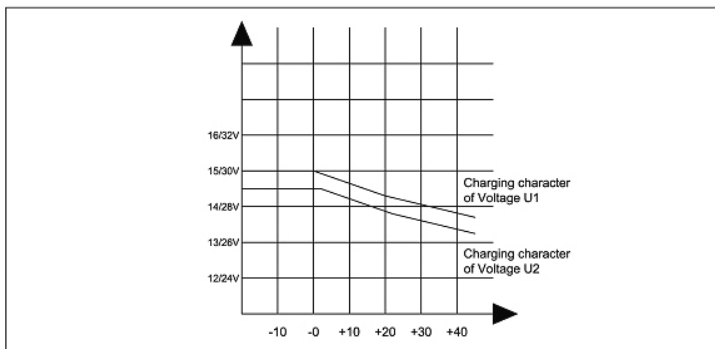
- U0 phase: This main charging phase is limited a maximum of 4 / 8 hours and the current rises again to its maximum value. The current remains constant as long as the battery voltage is below 14.4V / 14.8V or 28.8V / 29.6V. After reaching the maximum voltage, it remains constant. However, the current drops again. Within this main charging phase, which is limited to 4/8 hours, the battery is fully charged.
- U phase: If the current decreases to 10% or under the rated current or if the time limit of 4 / 8 hours is exceeded, then the charger switches over to economy charging (13.8 V or 27.6 V).

***Note: Batteries may be charged separately from each other if the chargers have double charging or three-fold charging connections. The outputs are separated internally by diodes, thus the weaker battery is always first set to the charging level of the stronger battery.**

*** Attention: The maximum battery capacity should not exceed the specified capacity, otherwise the functions of the individual charging phases could be influenced.**

8-3 Units with Temperature Sensor

A temperature sensor can be connected in order to provide the optimum charging functioning. The charging voltages, as can be seen from the diagram, vary, depending on the battery temperature



***Note: The battery chargers LCH-1215-2, LCH-1225-3 and LCH-2415-3 have a charging output for the starter battery. The output voltage is between 13.2V (26.4V) and 13.8V(27.6V) and can recharge the starter battery with a current of 1A or keep it at a high capacity level.**

8-4 Functional check

- Charging phases: The LED in the front of the unit can be used to check the status of the charging process.

***Note: The optional remote control can also be used to check the status of the charging process. The LEDs on the remote control indicate the different charging phases with its respective colors.**

LED	Charging phase	Charging status of the battery
red	I phase	between 10 % and 50 %
yellow	U0 phase	between 10 % and 50 %
green	U phase	over 90%

9. TROUBLE SHOOTING

9-1 After connecting and charging the battery, the battery voltage would not increase.

- If possible, measure with a suitable multimeter during the charging to verify if the voltage at the battery terminals increases.
- Determine whether the terminals are connected properly to the battery poles. Clean the battery poles if necessary to ensure better connection.

9-2 After a charging time of approx. 20 hours, the battery is still not fully charged

- Disconnect the power to the IU0U automatic.
- Remove the battery from the charging terminals and wait for a few minutes.
- Then, measure the voltage at the battery terminals with the multimeter.

12V battery: If the multimeter displays a voltage of 10V or less, this indicates that the battery is defective and can not be charged.

24V battery: If the multimeter indicates a voltage of 20V or below, allow the battery be checked by a specialist, if necessary. Otherwise, dispose of the battery.

9-3 The battery discharges after a short period of time without usage.

- Measure the voltage at the battery terminals with a suitable multimeter. If the multimeter indicates a voltage below 12V of a 12V battery or a voltage below 24V of a 24V battery, then the battery is too weak to retain the charge.

Figure 1

LCH-1245-2
LCH-2425-2
LCH-1260-2
LCH-2430-2
LCH-1280-2
LCH-2440-2

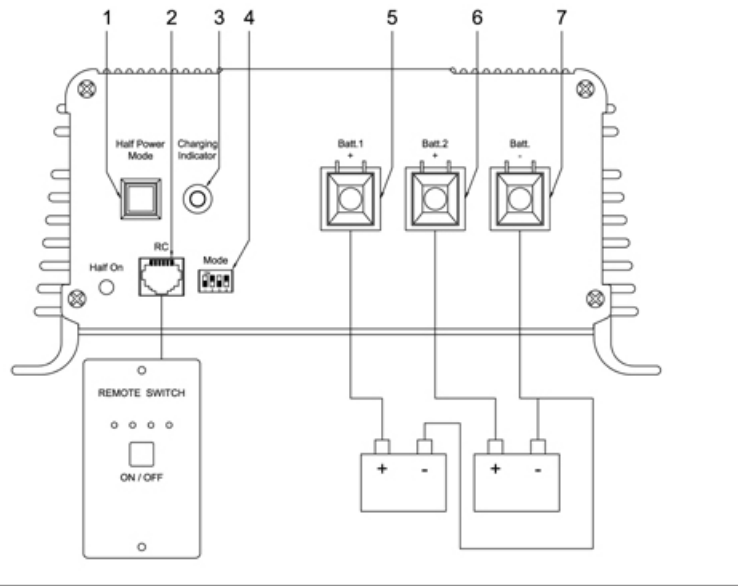


Figure 3

LCH-1225-2
LCH-2415-2

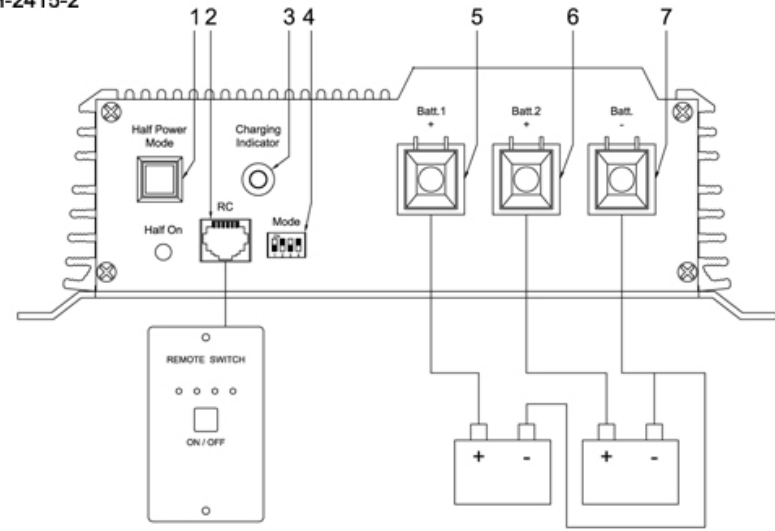


Figure 2

LCH-1245-3
LCH-2425-3
LCH-1260-3
LCH-2430-3

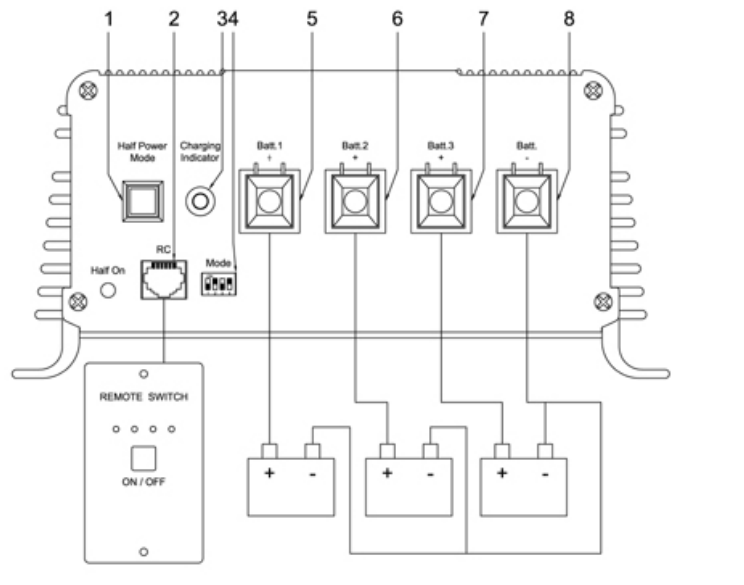


Figure 4

LCH-1225-3
LCH-2415-3

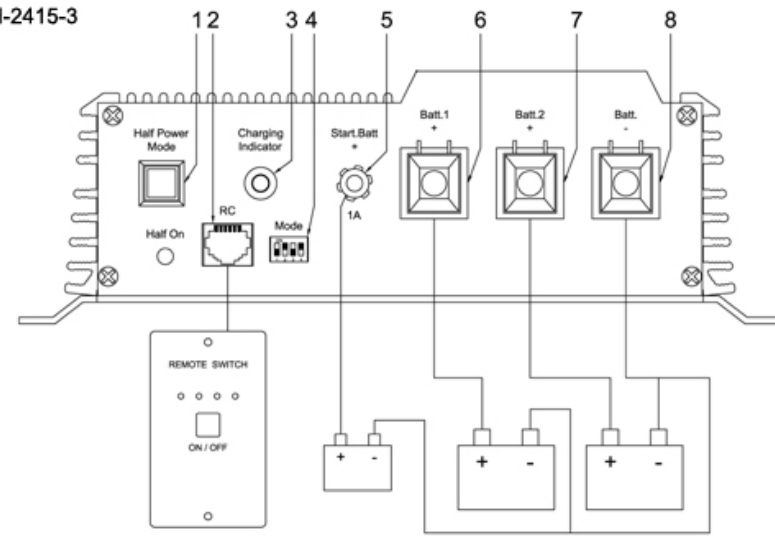


Figure 5
LCH-1215-2

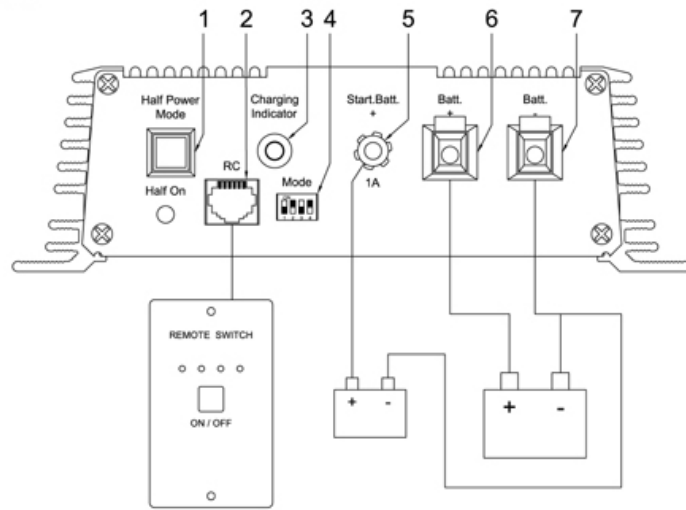


Figure 7
LCH-1225-2
LCH-1225-3
LCH-2415-2
LCH-2415-3

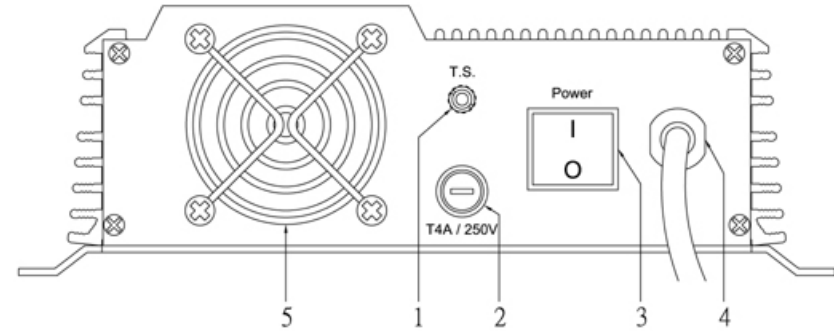


Figure 6
LCH-1245-2
LCH-2425-2
LCH-1245-3
LCH-2425-3
LCH-1260-2
LCH-2430-2
LCH-1260-3
LCH-2430-3
LCH-1280-2
LCH-2440-2

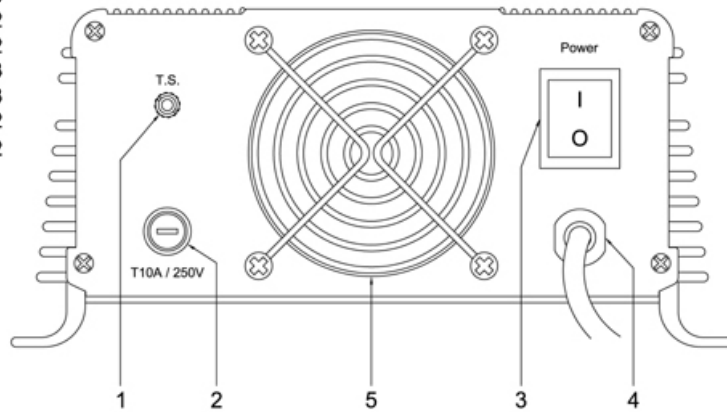


Figure 8
LCH-1215-2

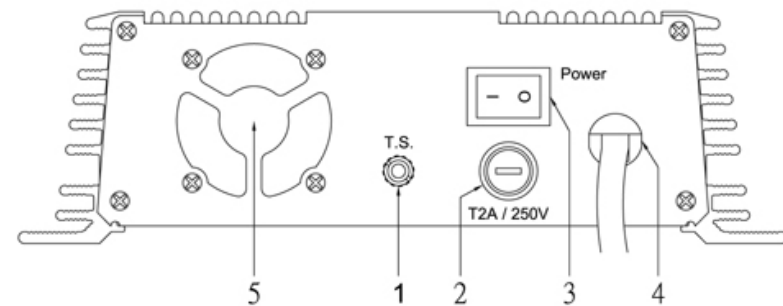


Figure 9

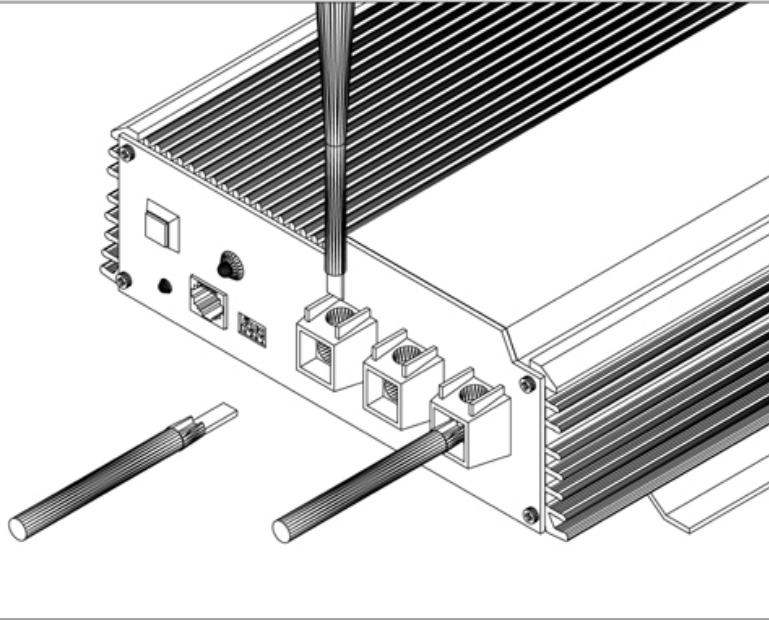


Figure 11

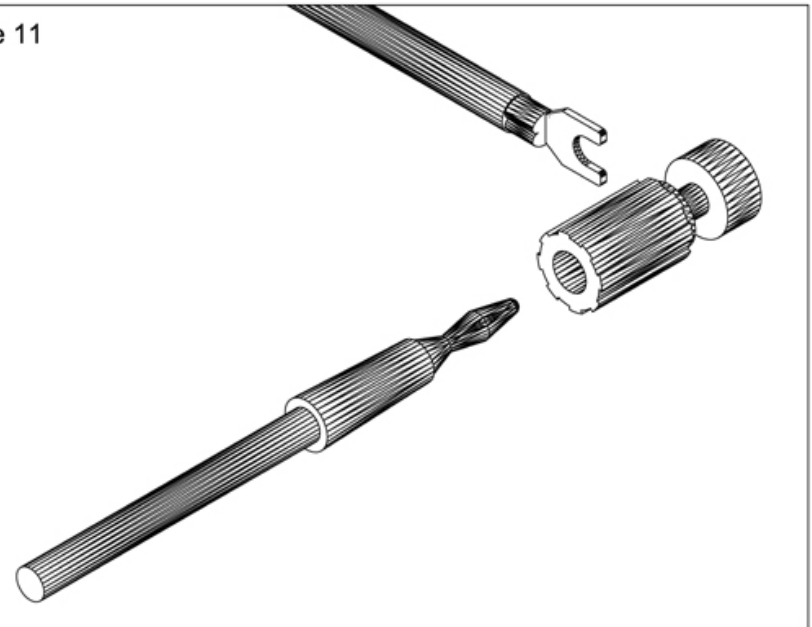


Figure 10

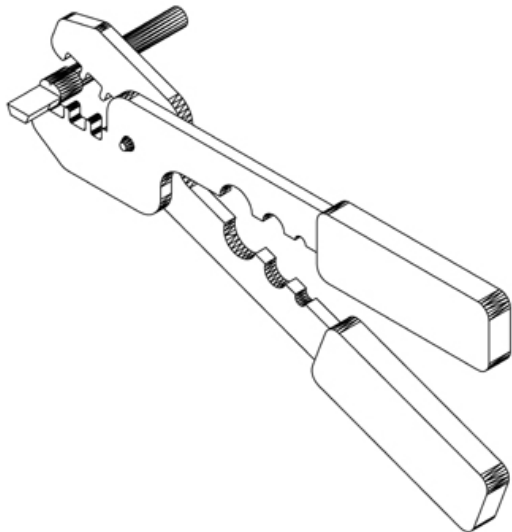


Figure 12

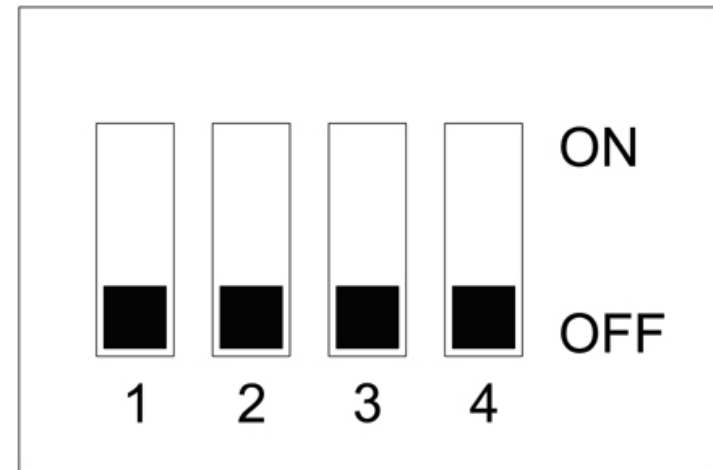
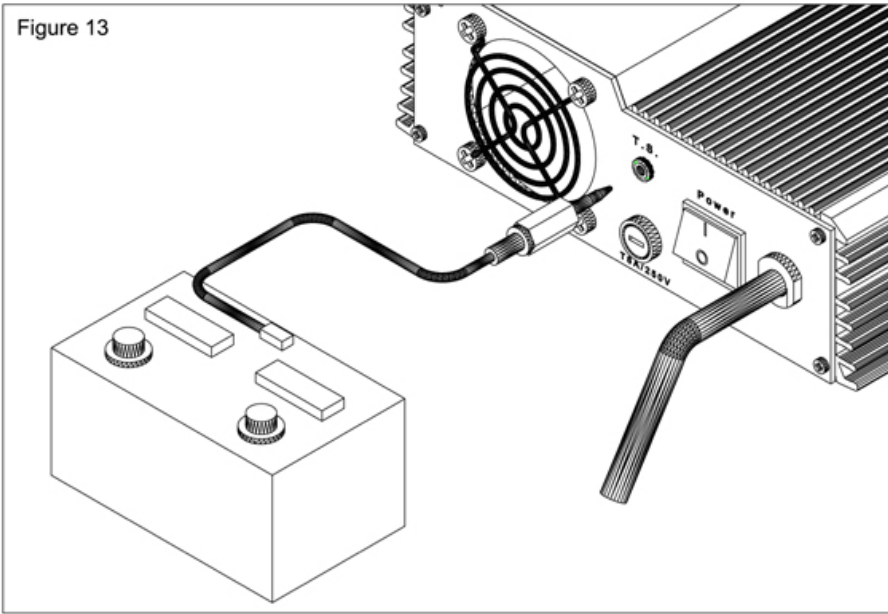
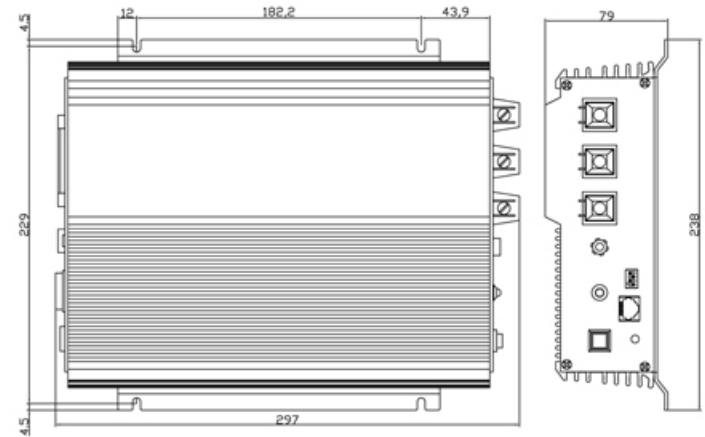


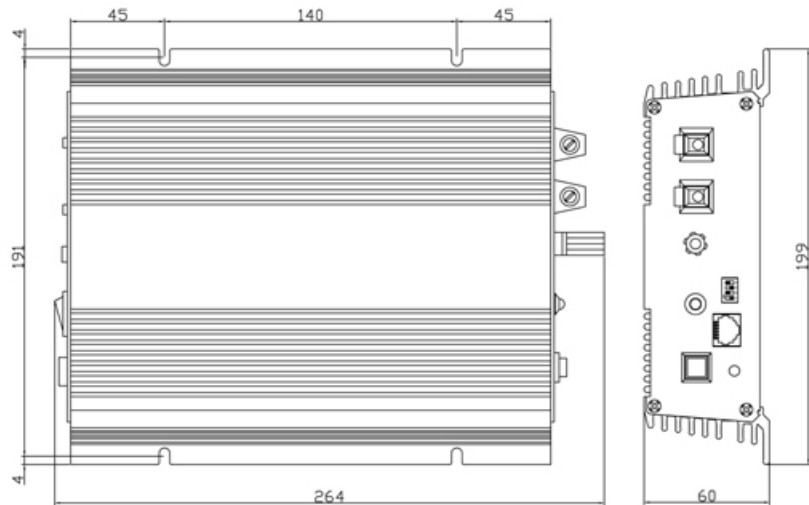
Figure 13



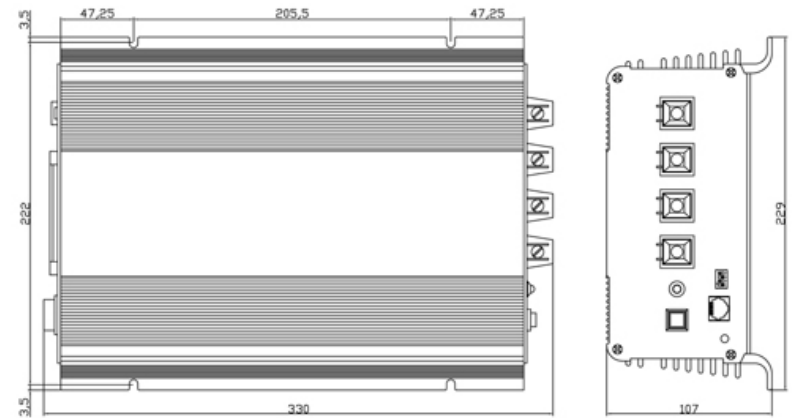
LCH-1225-2
LCH-1225-3
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LCH-1215-2



LCH-1245-2 LCH-1245-3 LCH-2425-2 LCH-2425-3
LCH-1260-2 LCH-1260-3 LCH-2430-2 LCH-2430-3



LCH-1280-2 LCH-2440-2

