

BA Series IUOU Multi-stage Smart Chargers

Please read this manual carefully before installing and starting up this device.

User's manual

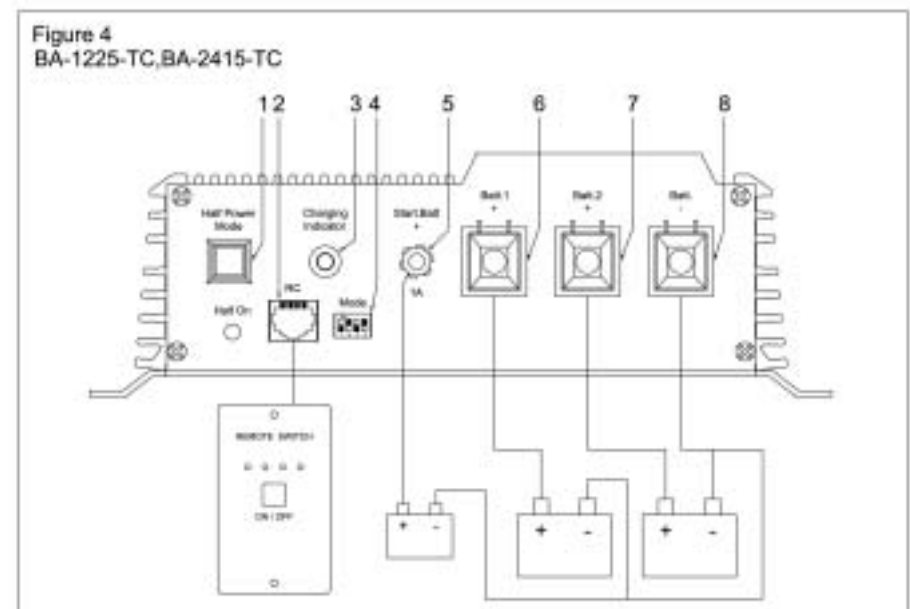
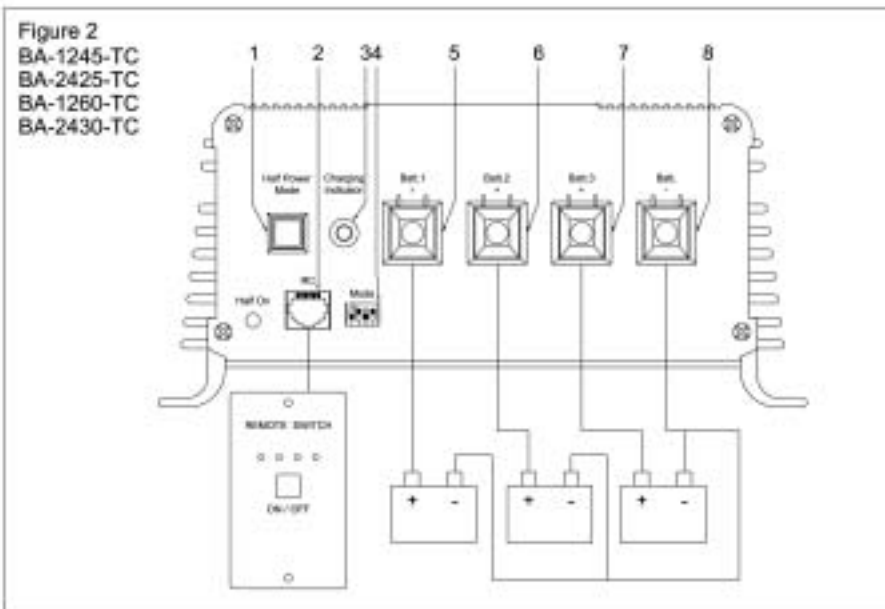
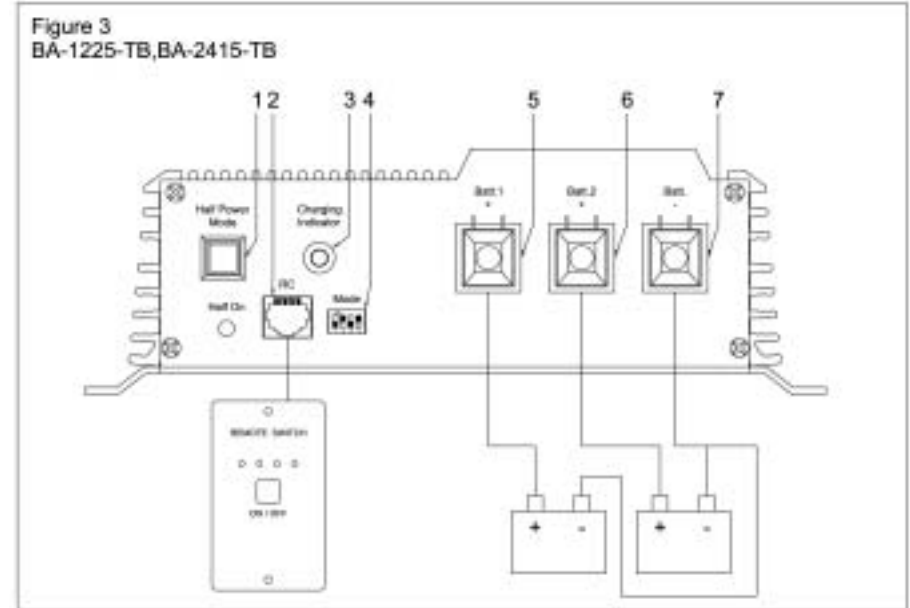
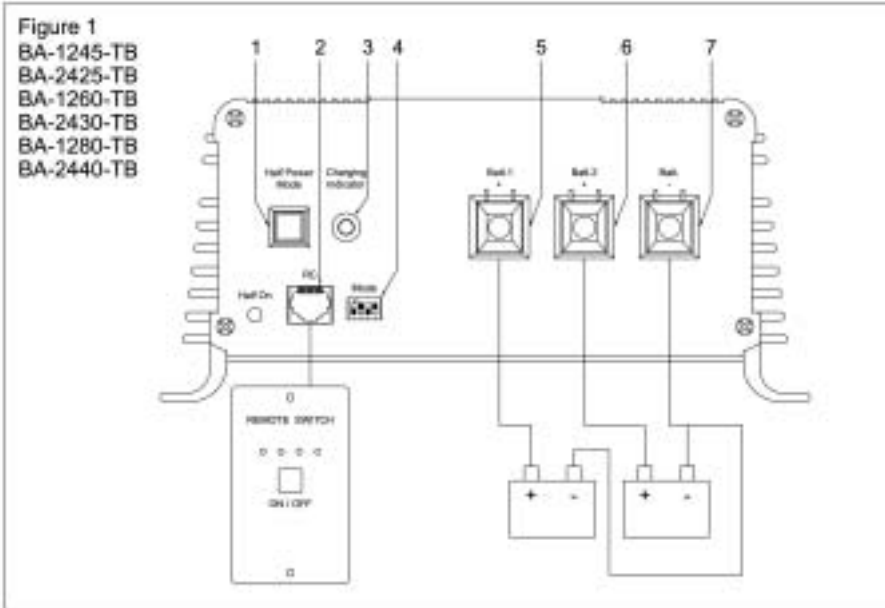


Figure 5
BA-1215-TB

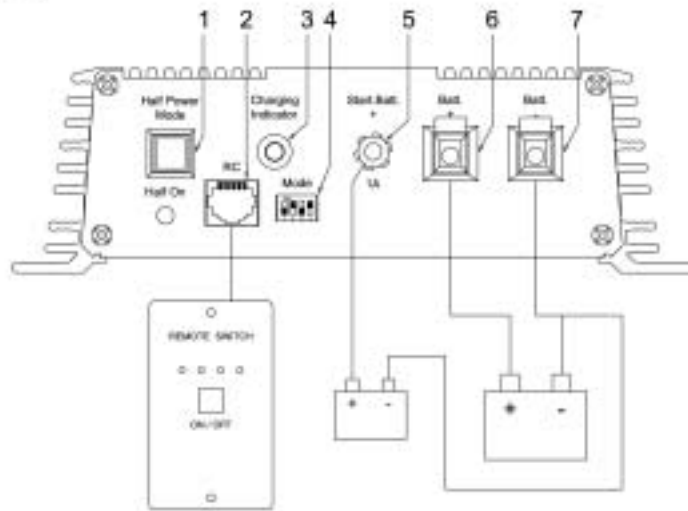


Figure 6
BA-1245-TB
BA-2425-TB
BA-1245-TC
BA-2425-TC
BA-1260-TB
BA-2430-TB
BA-1260-TC
BA-2430-TC
BA-1280-TB
BA-2440-TB

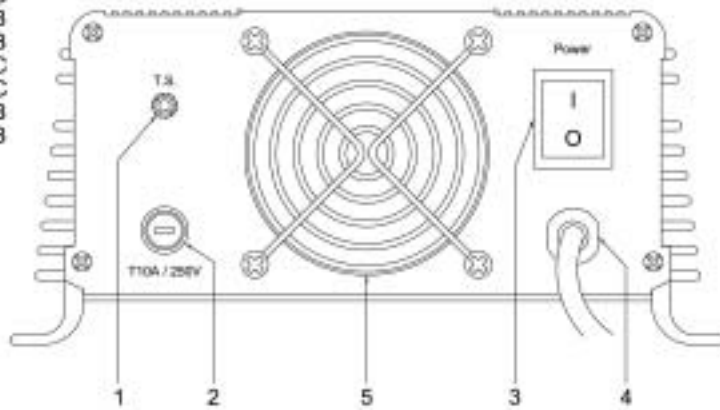


Figure 7
BA-1225-TB
BA-1225-TC
BA-2415-TB
BA-2415-TC

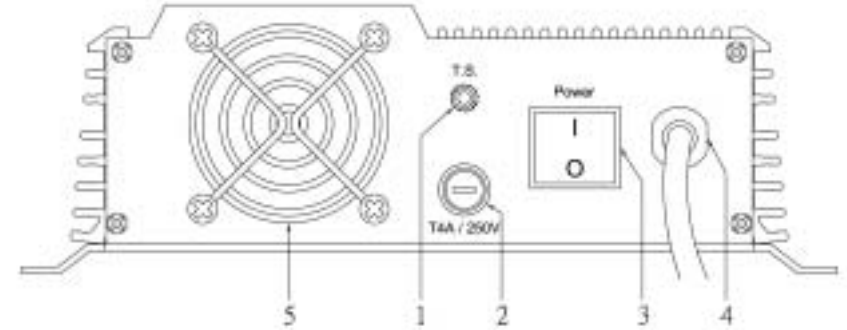
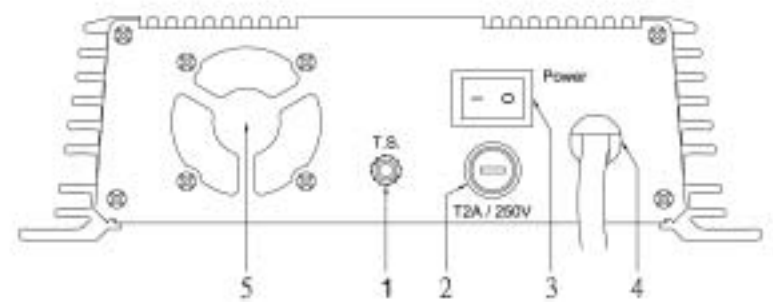
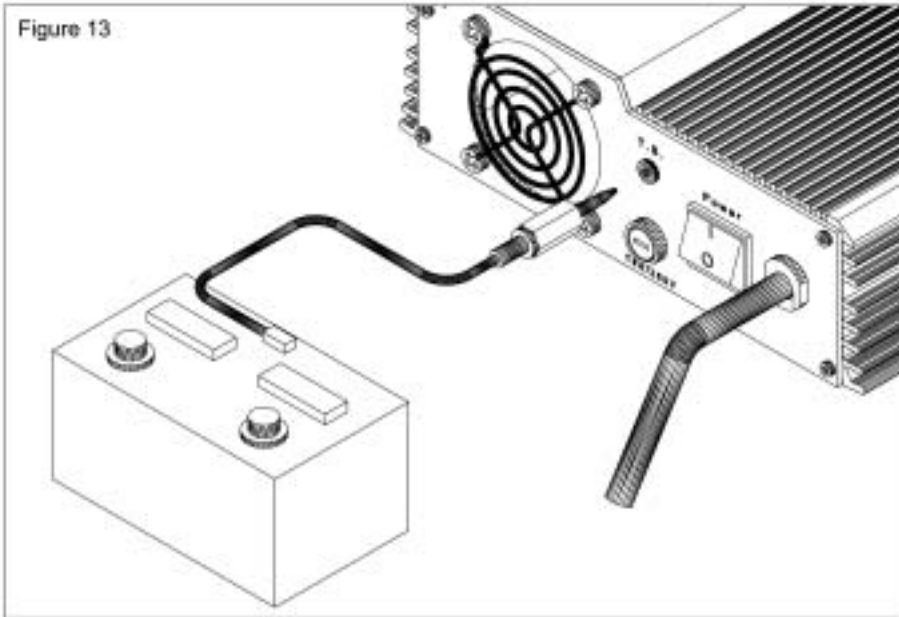
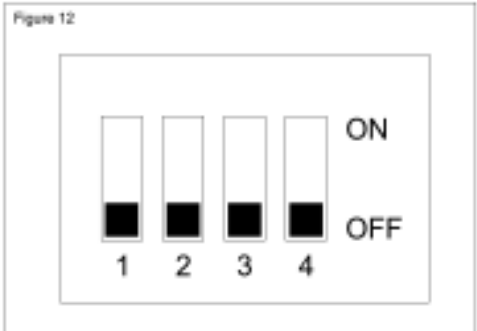
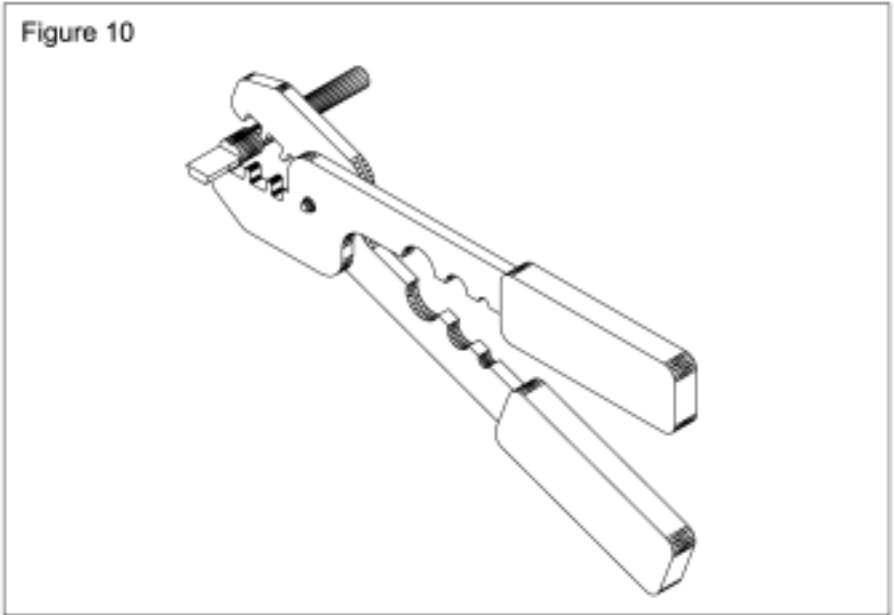
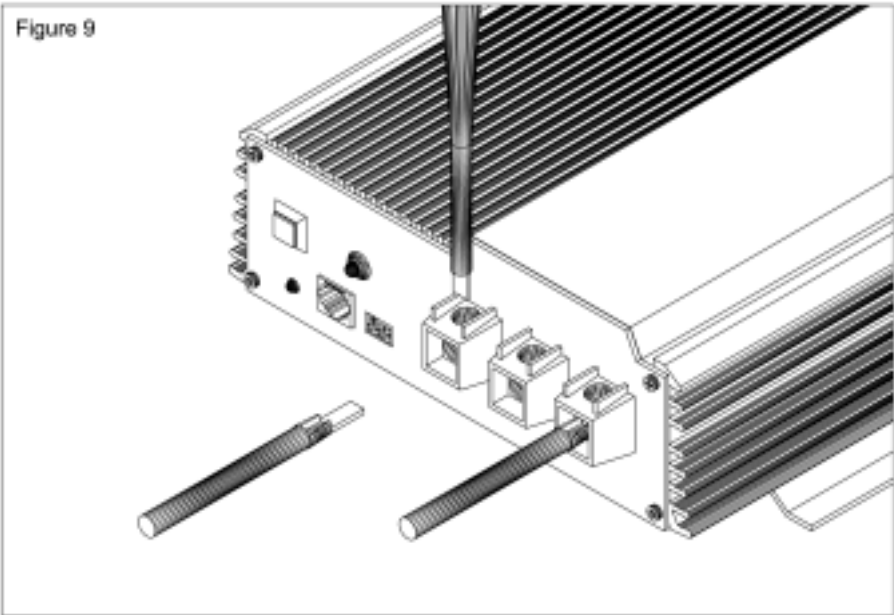
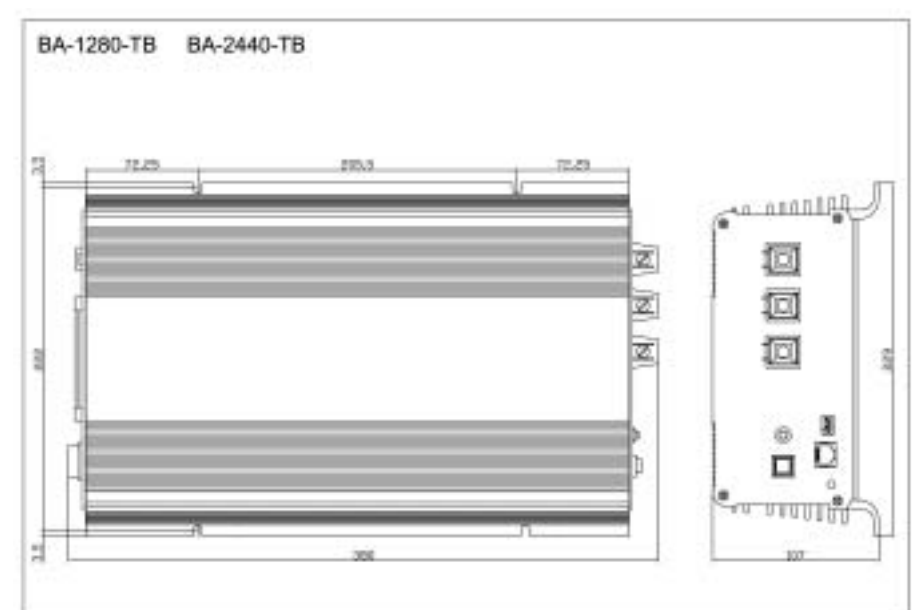
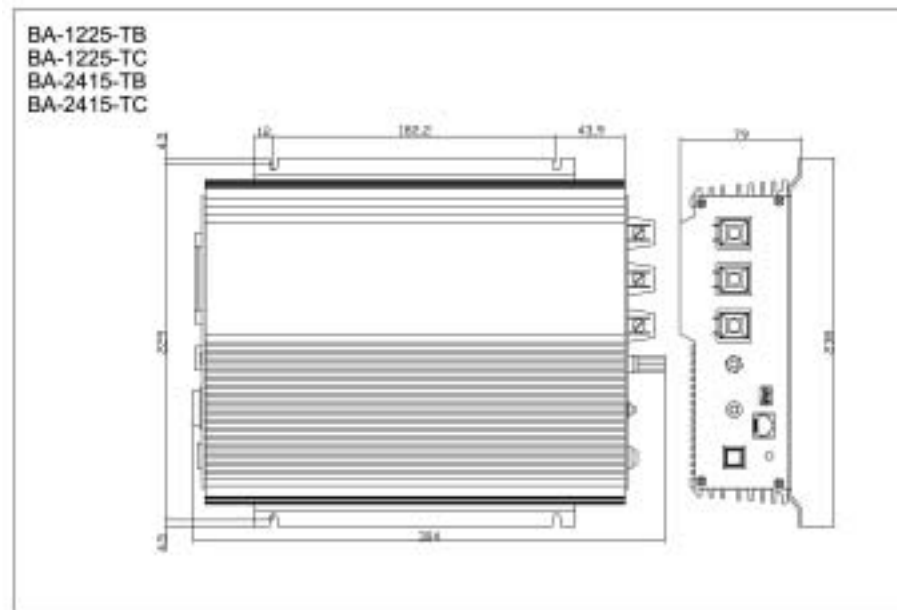
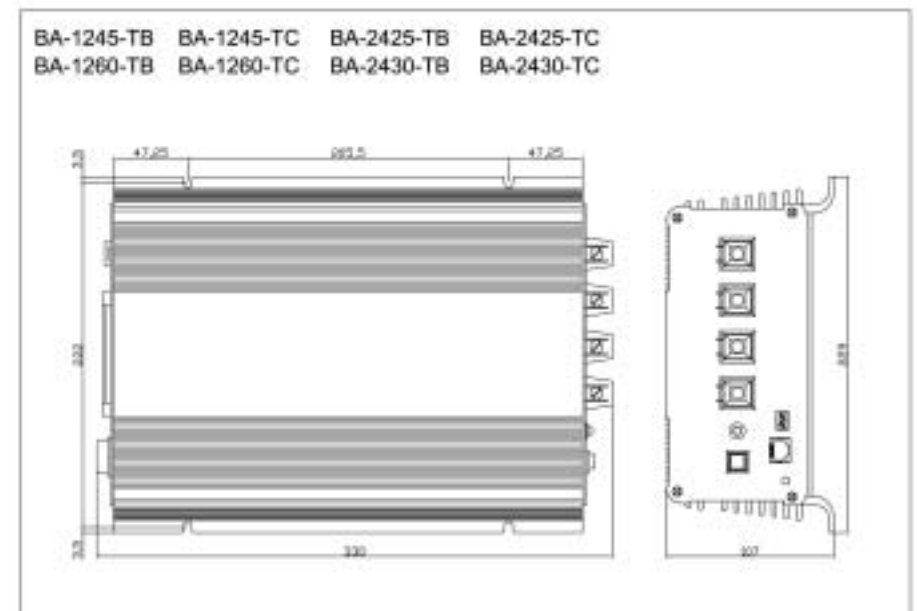
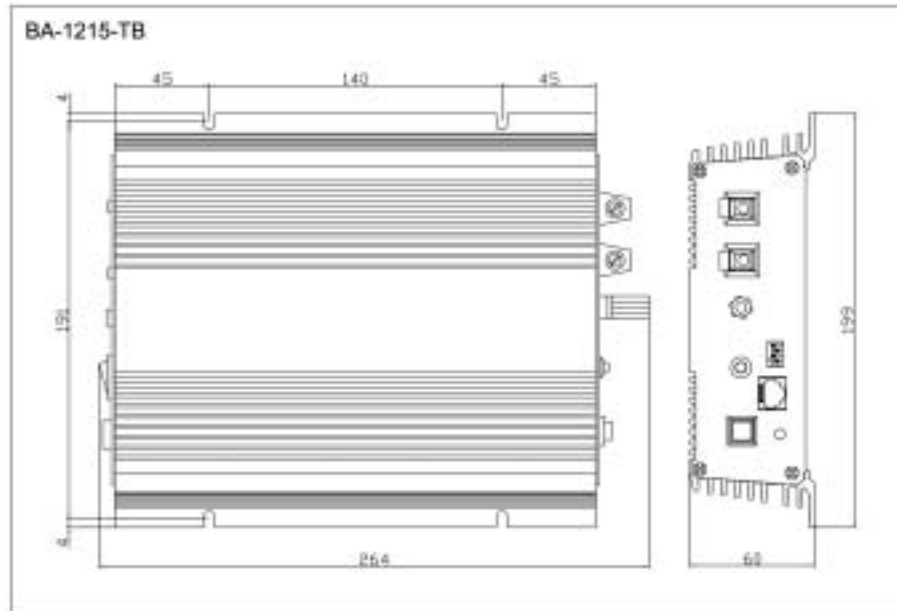


Figure 8
BA-1215-TB







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1 General safety and Installation instructions

1.1 Operating the device safely



Warning

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 115V/230V line and the 12 V 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.

IUOU Multi-stage Smart Chargers

2 **WARNING:**



Warning!

Please read carefully about the following precautions. Damages caused by failure to follow the instructions below will **NOT** be covered by warranty.

- 2.1 Use the charge only as intended.
- 2.2 Do **not** operate the charger if the housing or the cables are damaged.
- 2.3 The charger may **not** be used to charge any other type of batteries than the ones indicated.此
- 2.4 Do **not** operate the device in a damp or wet environment.
- 2.5 Do **not** charge a frozen battery; there is the danger of explosion.
- 2.6 Keep this charger in a safe place, out of reach of children.
- 2.7 Only qualified personnel who are familiar with the risks involved and the relevant regulations should carried out maintenance or repair work.
- 2.8 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 onboard 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 cause 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 of page 8 – 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 Specifications of the unit variants

The IUOU 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.

Rear view (see figure 6-8, page 5-6)

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 |

Front view BA-1280-TB, BA-2440-TB, BA-1260-TB, BA-2430-TB, BA-1245-TB, BA-2425-TB (see figure 1, page 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 time limitation (see also figure 12, page 8) |
| 5 | “+” (plus) terminal for the supply battery |
| 6 | “+” (plus) terminal for the supply battery |
| 7 | “-” (minus) terminal for the supply battery |

Front view Model-No.: BA-1260-TC, BA-2430-TC, BA-1245-TC, BA-2425-TC (see figure 2, page 3)

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 also figure 12, page 8) |
| 5-7 | “+” (plus) terminal for the supply battery |
| 8 | “-” (minus) terminal for the supply battery |

Front view Model-No.: BA-1225-TB, BA-2415-TB (see figure 3, page 4)

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 also figure 12, page 8) |
| 5 | “+” (plus) terminal for supply battery |
| 6 | “+” (plus) terminal for supply battery |
| 7 | “-” (minus) terminal for supply battery |

Front view Model-No.: BA-1225-TC, BA-2415-TC (see figure 4, page 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 also figure 12, page 8) |
| 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 |

Front view Model-No.: BA-1215-TB (see figure 5, page 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 also figure 12, page 8) |
| 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 IUOU automatic charger. With deviating temperatures, the charging voltage increases and decreases accordingly.

- 5.1.1 Lay the cables from the batteries to the IUOU automatic charger.
- 5.1.2 Connect the temperature sensor to the back of the IUOU automatic charger via the socket.
- 5.1.3 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, page 8).
- 5.1.4 Switch the IUOU 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 IUOU 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!

- 5.2.1 Ensure approximately 1.97” width, 2.17” height and 0.91” depth for the take-up of the remote control.
- 5.2.2 Connect the remote control to the IUOU automatic charger. The connection cable is equipped with two equivalent modular plugs.
- 5.2.3 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.

115/230 volts voltage supply

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 BA-1280-TB, BA-1260-TB, BA-1260-TC, BA-1245-TB, BA-1245-TC, BA-1225-TB, BA-1225-TC and BA-1215-TB:

12V Charging Voltage

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

Settings for charging voltage for BA-2440-TB, BA-2430-TB, BA-2430-TC, BA-2425-TB, BA-2425-TC, BA-2415-TB and BA-2415-TC:

24V Charging voltage

Switch 1	Switch 2	Application range
27.6 V	OFF	Old starter batteries mains charger operation
28.8 V	OFF	Wet and gel batteries
29.6 V	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

Refer to Figure 1~ Figure 4.

- 7.1 Place the charger in a dry, cool, clean, and ventilated space.
- 7.2 Set the power switch to "0" (off) and pull out the main plug before connection or disconnecting the direct current connection.
- 7.3 Connect the "-"(minus) battery pole with a connecting cable with the "-"(minus) terminal at the IUOU automatic charger (see figure 9, page 7).
- 7.4 Connect the "+"(plus) battery pole with the connecting cable with the "+"(plus) terminal at the IUOU automatic charger (see figure 9, page 7).
- 7.5 Lay the cables from the batteries to the IUOU automatic charger.
- 7.6 Fold the cable ends with the multicore cable ends.
- 7.7 For connection of starter batteries, please connect the terminal as our drawing (see figure 11, page 8).
- 7.8 Supply the cable with a fork connection for an idea connection with the terminal (see figure 10, page 7).

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 IUOU automatic charger to the battery.

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

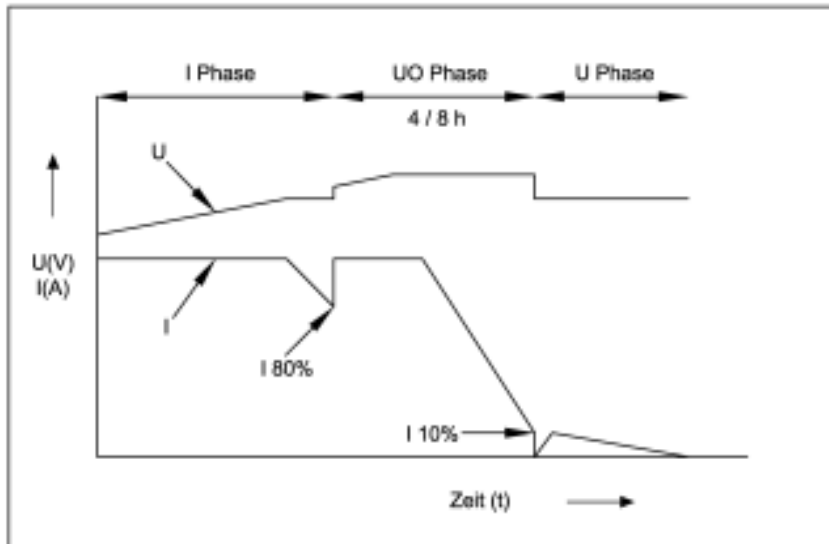
8 Using the Charger

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 IUOU characteristic.



8.2.1 I phase

In the first stage of the charging process, the depleted battery is charged with a constant current until the battery voltage reaches 13.8 V or 27.6 V. 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 14.4 V/14.8 V or 28.8 V/29.6 V.

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

8.2.2 UO 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 14.4 V/14.8 V or 28.8 V or 29.6 V.

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.

8.2.3 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.

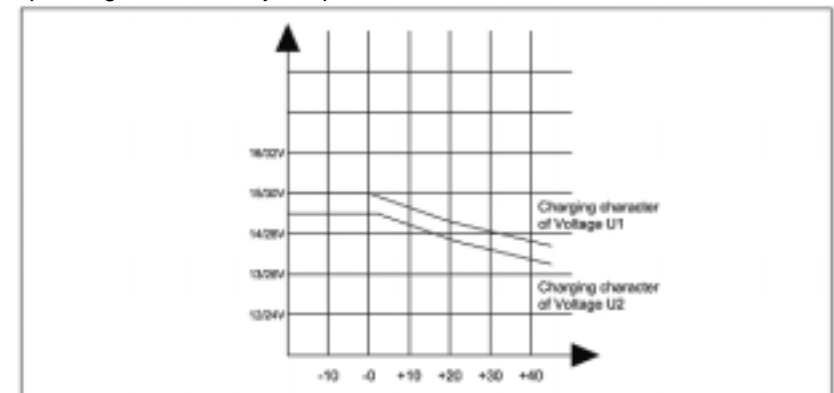


Attention

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

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 WT-1215-TB, WT-1225-TC and WT-2415-TC 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.

8.3 Functional check

8.3.1 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 Shootings

- 9.1 After connecting and charging the battery, the battery voltage would not increase.
 - 9.1.1 If possible, measure with a suitable multimeter during the charging to verify if the voltage at the battery terminals increases.
 - 9.1.2 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

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

12 V battery

If the multimeter displays a voltage of 10 V or less, this indicates that the battery is defective and does not charge any longer.

24 V battery

If the multimeter indicates a voltage of 20 V 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.

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

10 Mounting of Battery Charger

- 10.1 For your mounting battery charger on wall or flat places, please refer to page 9 and 10 regarding size of housing and location of mounting holes for your installation.

11 Specifications

Model Number:	BA-1215-TB	BA-1225-TB	BA-2415-TB
Battery Connection:	One plus 1A Output for: Starter battery	two	Two
Input Voltage range:: 115VAC 230VAC	98 - 132 V AC / 50 - 60 Hz 207-253 V AC / 50 – 60Hz		
Charging end voltage:	14.4V/14.8V	14.4V/14.8V	28.8V/29.6V
Economic charging voltage:	13.8V	13.8V	27.6V
Max. battery capacity:	150Ah	300Ah	200Ah
U0 phase limitation:	4 h or 8 h		
Max. charging current:	15A	25A	15A
Operating temperature	0 °C - 50 C°		
Dimensions (mm):	200 x 60 x 260	240 X 77 x 310	240 X 77 x 310
Fuse: 115VAC 230VAC	T4A / 250 V T2A / 250V	T8 A / 250 V T4A / 250 V	T8 A / 250 V T4A / 250 V
Weight:	2.4 kgs	3.5 kgs	3.5 kgs
Protection	1.Short circuit protection 2.Overload protection 3.Reverse polarity protection 4.Overttemperature protection		

BA Series IUOU Multi-state Smart Charger

Model Number:	BA-1225-TC	BA-2415-TC
Battery Connection:	Two plus 1A Output for: Starter battery	
Input Voltage range:: 115VAC 230VAC	98 - 132 V AC / 50 - 60 Hz 207-253 V AC / 50 – 60Hz	
Charging end voltage:	14.4V/14.8V	28.8V/29.6V
Economic charging voltage:	13.8V	27.6V
Max. battery capacity:	300Ah	200Ah
U0 phase limitation:	4 h or 8 h	
Max. charging current:	25A	15A
Operating temperature	0 °C - 50 C°	
Dimensions (mm):	240 X 77 x 310	
Fuse: 115VAC 230VAC	T8 A / 250 V T4A / 250 V	
Weight:	3.5 kgs	
Protection	1.Short circuit protection 2.Overload protection 3.Reverse polarity protection 4.Overtemperature protection	

BA Series IUOU Multi-state Smart Charger

Model Number:	BA-1245-TB	BA-2425-TB
Battery Connection:	two	
Input voltage range: 115 VAC 230 VAC	98 - 132 V AC / 50 - 60 Hz 207-253 V AC / 50 – 60Hz	
Charging end voltage:	14.4 V/14.8 V	28.8V/29.6V
Economic charging voltage:	13.8 V	27.6 V
Max. battery capacity:	500 Ah	300 Ah
U0 phase limitation:	4 h or 8 h	
Max. charging current:	45 A	25 A
Operating temperature	0 °C - 50 C°	
Dimensions (mm):	230 x 108 x 325	
Fuse: 115 VAC 230 VAC	T12A / 250 V T6.3A / 250V	
Weight:	5.05 kgs	
Protection	1.Short circuit protection 2.Overload protection 3.Reverse polarity protection 4.Overtemperature protection	

BA Series IUOU Multi-state Smart Charger

Model Number:	BA-1245-TC	BA-2425-TC
Battery Connection:	three	
Input voltage range: 115 VAC 230 VAC	98 - 132 V AC / 50 - 60 Hz 207-253 V AC / 50 – 60Hz	
Charging end voltage:	14.4 V/14.8 V	28.8V/29.6V
Economic charging voltage:	13.8 V	27.6 V
Max. battery capacity:	500 Ah	300 Ah
U0 phase limitation:	4 h or 8 h	
Max. charging current:	45 A	25 A
Operating temperature	0 °C - 50 C°	
Dimensions (mm):	230 x 108 x 325	
Fuse: 115 VAC 230 VAC	T12A / 250 V T6.3A / 250V	
Weight:	5.05 kgs	
Protection	1.Short circuit protection 2.Overload protection 3.Reverse polarity protection 4.Overtemperature protection	

BA Series IUOU Multi-state Smart Charger

Model Number:	BA-1260-TB	BA-2430-TB
Battery Connection:	two	
Input voltage range: 115 VAC 230 VAC	98 - 132 V AC / 50 - 60 Hz 207-253 V AC / 50 – 60Hz	
Charging end voltage:	14.4 V/14.8 V	28.8V/29.6V
Economic charging voltage:	13.8 V	27.6 V
Max. battery capacity:	600 Ah	300 Ah
U0 phase limitation:	4 h or 8 h	
Max. charging current:	60 A	30 A
Operating temperature	0 °C - 50 C°	
Dimensions (mm):	230 x 108 x 325	
Fuse: 115 VAC 230 VAC	T15A / 250 V T6.3A / 250V	
Weight:	5 kgs	
Protection	1.Short circuit protection 2.Overload protection 3.Reverse polarity protection 4.Overtemperature protection	

BA Series IUOU Multi-state Smart Charger

Model Number:	BA-1260-TC	BA-2430-TC
Battery Connection:	three	
Input voltage range: 115 VAC 230 VAC	98 - 132 V AC / 50 - 60 Hz 207-253 V AC / 50 – 60Hz	
Charging end voltage:	14.4 V/14.8 V	28.8V/29.6V
Economic charging voltage:	13.8 V	27.6 V
Max. battery capacity:	600 Ah	300 Ah
U0 phase limitation:	4 h or 8 h	
Max. charging current:	60 A	30 A
Operating temperature	0 °C - 50 C°	
Dimensions (mm):	230 x 108 x 325	
Fuse: 115 VAC 230 VAC	T15A / 250 V T6.3A / 250V	
Weight:	5 kgs	
Protection	1.Short circuit protection 2.Overload protection 3.Reverse polarity protection 4.Overtemperature protection	

BA Series IUOU Multi-state Smart Charger

Model Number:	BA-1280-TB	BA-2440-TB
Battery Connection:	two	two
Input voltage range: 115 VAC 230 VAC	98 - 132 V AC / 50 - 60 Hz 207-253 V AC / 50 – 60Hz	
Charging end voltage:	14.4 V/14.8 V	28.8V/29.6V
Economic charging voltage:	13.8 V	27.6 V
Max. battery capacity:	800 Ah	400 Ah
U0 phase limitation:	4 h or 8 h	
Max. charging current:	80 A	40 A
Operating temperature	0 °C - 50 C°	
Dimensions (mm):	230 x 108 x 375	
Fuse: 115 VAC 230 VAC	T20A / 250 V T10A / 250V	
Weight:	6.05 kgs	
Protection	1.Short circuit protection 2.Overload protection 3.Reverse polarity protection 4.Overtemperature protection	

The following accessories are available for our IUOU automatic charger:

Remote control (Model number: 900-RC)

Temperature sensor (Model number: TF-500)

Certificates applied to the IUOU automatic charger:



EMC Standards of product series:

- EN 55014-1:1993 / EN55014-2: 1995
- EN 61000-3-2:1995 / IEC 61000-3-2
- EN 61000-3-3:1995 / IEC 61000-3-3
- EN 61000-4-2:1995 / IEC 61000-4-2
- EN 61000-4-4:1995 / IEC 61000-4-4
- EN 61000-4-5:1995 / IEC 61000-4-5
- EN 61000-4-6:1996 / IEC 61000-4-6
- EN 61000-4-11:1995 / IEC 61000-4-11

LVD Standards of product series:

- EN 60335-2-29:2004 in conjunction with
EN 60335-1:2002+A1:2004+A11:2004+A2:
2006+A12:2006