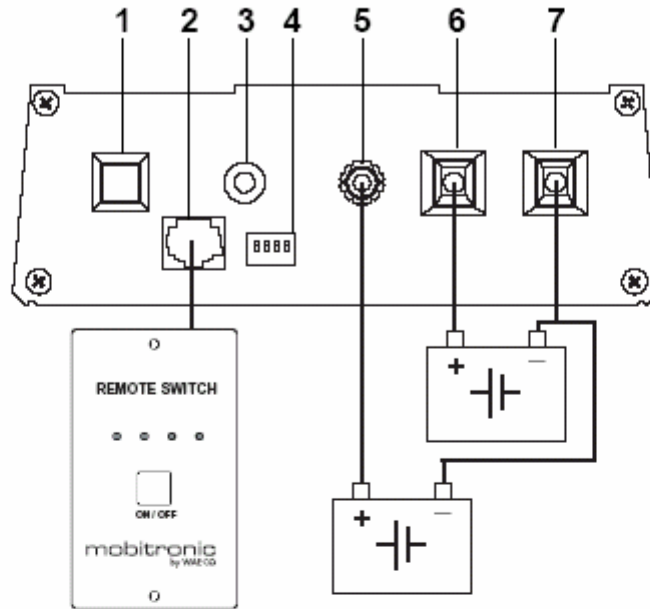


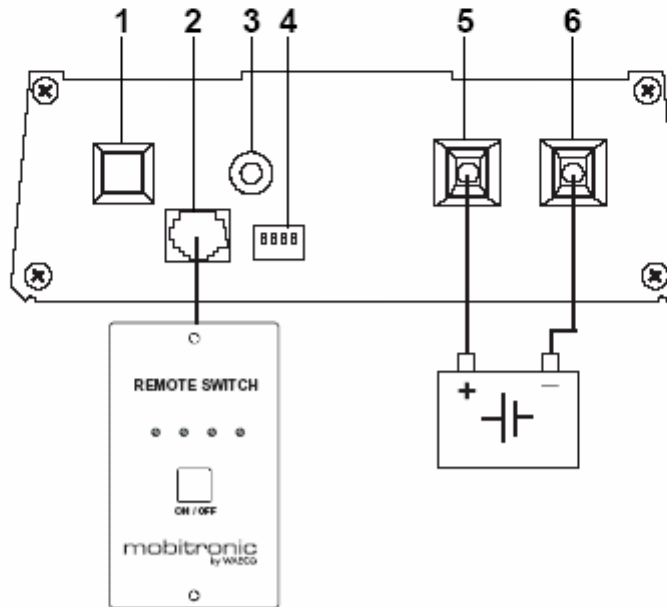
5

915-012TB



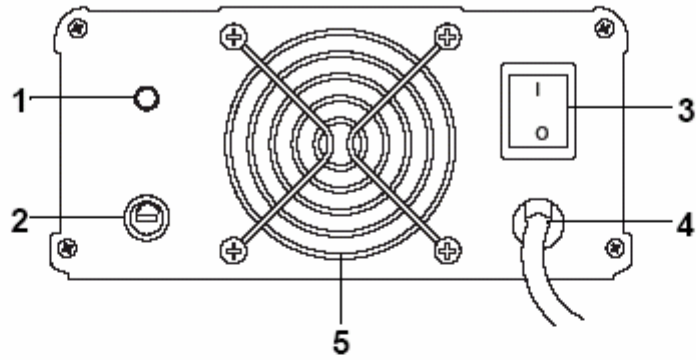
6

915-012TA, 908-024TA



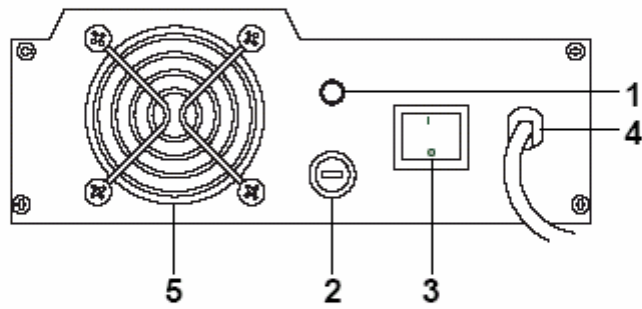
7

**945-012TB, 925-024TB,
945-012TC, 925-024TC**



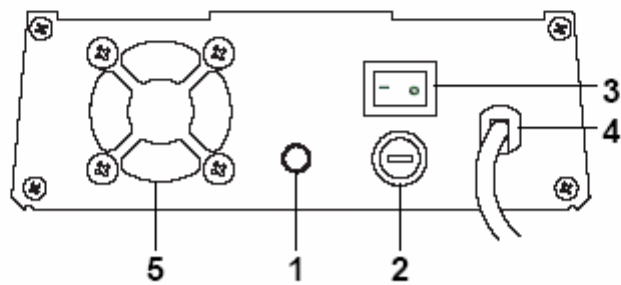
8

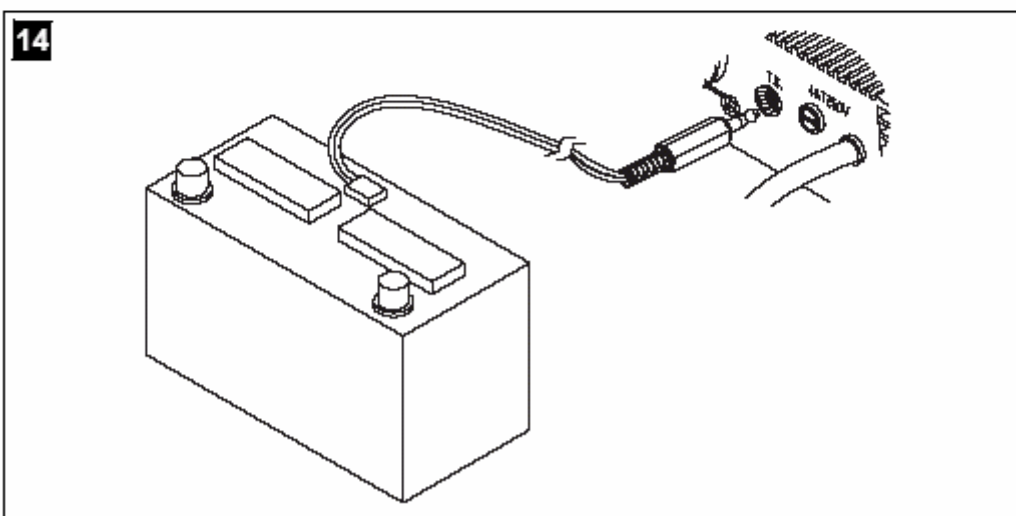
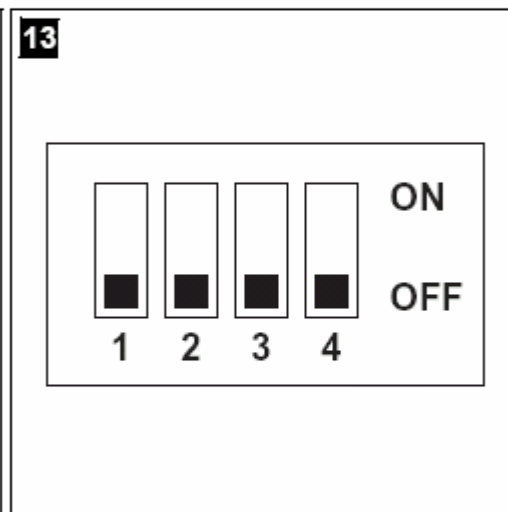
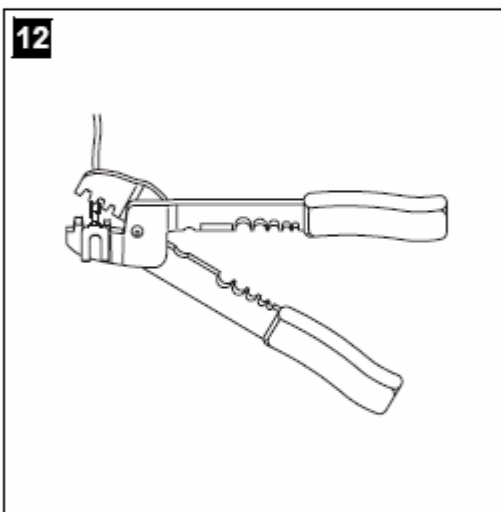
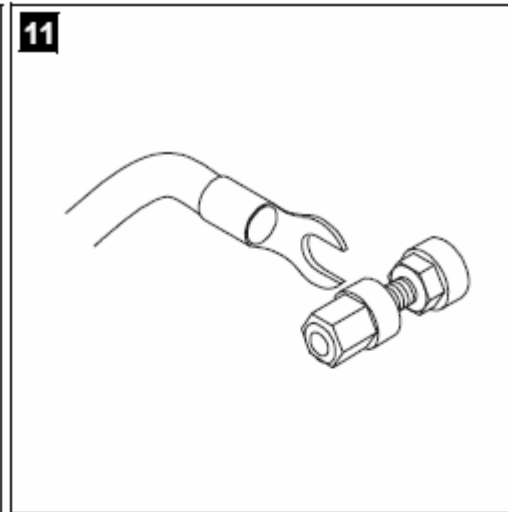
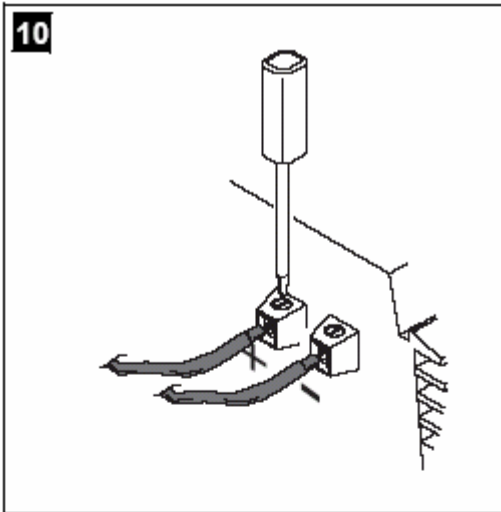
**925-012TB, 915-024TB,
925-012TC, 915-024TC**



9

**915-012TA, 915-012TB,
908-024TA**





Read these instructions carefully before the installation and commissioning and keep them in a safe place. Pass it on to the buyer in case of the further sale of the system.

Contents

1	Information for using the installation instructions	9
2	General safety information.	10
3	Use as intended	12
4	Description	12
5	Installation	16
6	Use of the IU0U automatic charger	21
7	Servicing and cleaning the IU0U automatic charger	24
8	Troubleshooting	24
9	Disposal	25
10	Technical data	26

1 Information for using the installation instructions



Warning!

Safety note: Failure in observing these warnings may result in injuries to persons or damage of equipment.



Caution!

Safety note: Failure to observe this warning may result in damage to materials and impair the functioning of the unit.



Caution!

Safety note which points out the dangers involved with electrical current or electrical voltage: Failure to observe this warning may result in damage to materials and impair the functioning of the unit.



Note

Supplementary information on the operation of the unit.

➤ **Action:** This symbol indicates to you that you must do something. The actions necessary are described step by step.

✓ This symbol describes the result of an action.

Please also observe the following safety notes.

2 General safety information

2.1 General safety

- Use the IU0U automatic charger only for its use as intended.
- Use the IU0U automatic charger only in well ventilated rooms.
- Always interrupt the power supply when doing repair work on the unit!



Warning!

Batteries contain aggressive acids.

- Avoid the contact with the battery fluid agent.

If a contact with battery fluid agent should occur, then rinse the affected parts of the body or clothing etc. with plenty cold water.

It is imperative to seek medical treatment from a doctor with injuries caused by acid.

- Never try to charge a frozen battery.
There is the danger of explosion!
In this case, place the battery at a frost-resistant location and wait until the battery has adapted to the ambient temperature. Only then is the charging process started.
- Store the IU0U automatic charger in a dry and cool place.
- Maintenance and repair must only be carried out by a qualified specialist who is familiar with the dangers involved and aware of the relevant regulations.

2.2 Safety when handling electrical wires

- If cables have to be led through sharp-edged walls, use a cable duct or cable bushes!
- Do not lay any loose or sharp bent cables against electric-conducting materials (metal)!
- Do not pull at the cables!
- Fasten the wirings well and lay them in such a way that there is no risk of stumbling occurring and damage to the cable can be excluded.

- Always use sockets which are earthed and secured by earth leakage circuit breaker.
- The electrical connection may only be carried out by a specialist firm.
- Keep to the indicated minimum cable cross-section.
- Do not lay the 115/230 V line and the 12 V direct current in the **same** cable conduit (cable duct)!

2.3 Safety when operating the unit



Caution

Wrong installation of electrical units on boats will lead to corrosion of the boat. Therefore, please let a (boat-) electrician carry out the installation of the IU0U automatic charger.

- Do not operate the IU0U automatic charger if the housing or cables are damaged!
- Never operate the IU0U automatic charger in a damp or wet environment.
- Take care that there is a firm position!
The IU0U automatic charger as well as the battery to be charged must be securely positioned, so that they cannot fall over or down.
- Ensure that the IU0U automatic charger is kept out of the reach of children.
Dangers may arise which children are not able to recognize!
- Operate the unit only over a socket which is earthed and secured with an earth leakage breaker.

3 Use as intended

Batteries which are used on board vehicles or boats for the power generation are charged by the IU0U automatic charger or will be supplied with a conservation voltage.

The IU0U automatic charger are used for the continuous charging of supply batteries or starter batteries. Thus the batteries can be charged or be kept at a high capacity level.

For the connection possibilities of the various unit variants see Chapter „Specifications of the unit variants“ on page 13.

The IU0U automatic charger are used for charging the following types of batteries:

- Lead-acid starter batteries
- Gel batteries
- Fleece batteries (A-G-M)
- maintenance-free batteries

with the capacities and voltages which are indicated in Chapter „Technical data“ on page 26.

Please ask your battery dealer about the max capacities of lead-acid batteries.



Attention

The IU0U automatic charger may not **be** used in any case for charging other types of batteries (e. g. NiCd, NiMH etc.)!

4 Description

4.1 Operation



Note

A remote control can be obtained as accessory from us for the IU0U automatic charger. The remote control allows you the possibility of monitoring the unit and switching it ON and OFF.

The unit can be switched over between normal operation and soft operation with the mute function (see Chapter „Mute function“ on page 18).

The unit is equipped with a wrong polarity protection. A fuse protects against damage of the unit in the case of wrong polarity. Regarding type and valency of the fuse in your unit see Chapter „Technical data“ on page 26.

**Attention**

The replace of the unit fuse must only be carried out by a qualified specialist who is familiar with the dangers involved and aware of the relevant regulations.

**Note**

A temperature sensor (accessory) which is connected at the battery being charged protects the battery against damage in the case of high or low outside temperature by adapting the charging voltage of the temperature to the battery (see Chapter „Charging characteristic“ on page 21).

A control lamp on the unit or three control lamps on the remote control enable a constant monitoring of the IU0U automatic charger (see Chapter „Functional check“ on page 23).

4.2 Specifications of the unit variants

The IU0U automatic charger are delivered indifferent unit variants.

Your IU0U automatic charger can charge batteries up to a determined battery capacity (see Chapter „Technical data“ on page 26).

Regarding the identification of the specification of your unit, compare the item number on the type plate with the data in the following tables.

Your IU0U automatic charger has following switches, displays and connections (see figure 1-9, page 3-6):

Rear view (see figure 7-9, page 6)**No. Description**

- 1 Connection for temperature sensor
- 2 Unit fuse
- 3 Power switch
- 4 Connection for 115/230 volts voltage supply
- 5 Ventilator

5

Front view WT-1245-TC, WT-2425-TC (see figure 1, page 3)

The units can charge up to three supply batteries.

No. Description

- 1 Switch for mute function
- 2 Connection for remote control (accessory)
- 3 Control lamp
- 4 Switch field for the selection of the charging voltage and time limitation (see also figure 13, page 7)
- 5-7 "+" (plus) terminal for supply battery
- 8 "-" (minus) terminal for supply battery

Front view Article-No.:WT-1245-TB, WT-2425-TB (see figure 2, page 3)

The units can charge up to two supply batteries.

No. Description

- 1 Switch for mute function
- 2 Connection for remote control (accessory)
- 3 Control lamp
- 4 Switch field for the selection of the charging voltage and timer function (see also figure 12)
- 5 "+" (plus) terminal for supply battery
- 6 "+" (plus) terminal for supply battery
- 7 "-" (minus) terminal for supply battery

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

The units can charge up to two supply batteries.

No. Description

- 1 Switch for mute function
- 2 Connection for remote control
- 3 Control lamp
- 4 Switch field for the selection of the charging voltage and timer function (see also figure 12)

No. Description

- 5 “+” (plus) terminal for supply battery
- 6 “+” (plus) terminal for supply battery
- 7 “-” (minus) terminal for supply battery

Front view Article-No.: WT-1225-TC, WT-2415-TC (see figure 4, page 4)

The units can charge up to two supply batteries and one starter battery.

No. Description

- 1 Switch for mute function
- 2 Connection for remote control (accessory)
- 3 Control lamp
- 4 Switch field for the selection of the charging voltage and timer function (see also figure 12)
- 5 “+” (plus) terminal for starter battery
- 6 “+” (plus) terminal for supply battery
- 7 “+” (plus) terminal for supply battery
- 8 “-” (minus) terminal for supply or starter battery

Front view Article-No.: WT-1215-TB (see figure 5, page 5)

The units can charge up to one supply battery and one starter battery.

No. Description

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

Front view Article-No.: WT-1215-TA, WT-2408-TA (see figure 6, page 5)

The units can be used to charge one supply battery.

No. Description

- 1 Switch for mute function
- 2 Connection for remote control (accessory)
- 3 Control lamp
- 4 Switch field for the selection of the charging voltage and timer function (see also figure 12)
- 5 “+“ (plus) terminal for supply battery
- 6 “-“ (minus) terminal for supply battery

5 Installation

**Attention**

Set the power switch at the unit to “0“ and pull out the mains plug before connecting or disconnecting the direct current connection.

**Note**

If you do not have sufficient technical knowledge in respect of the installation and connection of electrical components in the vehicles, let the IU0U automatic charger be installed by a specialist.

Please note the following when installing the unit:

- Select a well ventilated location which is protected against humidity.
- The installation surface must be level and of sufficient strength.
- Make sure that no ventilation surfaces on the unit are covered when installing.

For further safety notes when installing the unit see Chapter „Safety when handling electrical wires“ on page 10.

5.1 Settings on the unit

Charging voltage and time limitation

The required charging voltage and the period for the main charging phase (U0 phase, see also Chapter „Charging characteristic“ on page 21) are selected via a switch field on the unit (see figure 12, page 7):



Note

Ask your battery dealer for the charging voltage and the required timer setting for your batteries.



Caution!

Make sure that the unit is never operated when the switches 1 and 2 or 3 and 4 are at the same time in position "ON". Only the switch positions as described in the following tables ensure correct functioning of the IU0U automatic charger.

Settings for the charging voltage for WT-1245-TB, WT-1245-TC, WT-1225-TB, WT-1225-TC, WT-1215-TB, WT-1215-TA:

Charging Voltage	Switch 1	Switch 2	Application range
13,8 V	OFF	OFF	Old starter batteries, mains charger operation
14,3 V	ON	OFF	Wet and gel batteries
14,7 V	OFF	ON	Fleece batteries

Settings for charging voltage for WT-2425-TB, WT-2425-TC, WT-2415-TB, WT-2415-TC, WT-2408-TA :

Charging voltage	Switch 1	Switch 2	Application range
27,6 V	OFF	OFF	Old starter batteries, mains charger operation
28,6 V	ON	OFF	Wet and gel batteries
29,4 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 and fleece batteries
No timer function	OFF	OFF	-

Mute function

If the mute function is switched on, then the unit is operated without active cooler. Thereby the noise development decreases and the charging capacity is reduced.

- Switch the mute function of the unit ON and OFF with the switch at the front (see figure 1-9, pos. 1, page 3-5).

5.2 Connecting the IU0U automatic charger

Battery



Warning!

Absolutely avoid contact with the battery fluid!



Caution!

Batteries with cell connection may not be charged, since explosive gases could occur by overheating the battery.



Note

Only use cables with the prescribed wire-cross sections for the connection of the IU0U automatic charger to the battery:

Article No.	Supply battery	Starter battery
WT-1245-TB, WT-1245-TC		
WT-2425-TB, WT-2425-TC	25 mm ² - 30 mm ²	Function is not available
WT-1225-TB, WT-2415-TB		
WT-1225-TC, WT-2415-TC	25 mm ² - 30 mm ²	1 mm ² -2.5 mm ²
WT-1215-TB	6 mm ² -10 mm ²	1 mm ² -2.5 mm ²
WT-1215-TA, WT-2408-TA	6 mm ² -10 mm ²	Function is not available

- Lay the cables from the batteries to the IU0U automatic charger.
- Crimp the cable ends with the multicore cable ends.

**Note**

Use for the connection of starter batteries to the unit variants WT-1225-TC, WT-2415-TC and WT-1215-TB the specially intended terminal (see figure 11, page 7). Provide the cable with a fork connection for an optimum connection with the terminal (see figure 12, page 7).

**Note**

The negative pole of the battery is earth-connected in the connected status.

**Attention**

Ensure correct polarity. The internal flat-pin terminal triggers with the wrong polarity of battery and battery charger. The repair must only be carried out by skilled personnel familiar with the dangers involved and aware of the relevant regulations.

- Connect the “-“ (minus) battery pole with a connecting cable with the “-“ (minus) terminal at the IU0U automatic charger (see figure 10, page 7).
- Connect the “+“ (plus) battery pole with the connecting cable with the “+“ (plus) terminal at the IU0U automatic charger (see figure 10, page 7).

Temperature sensor (can be obtained from us as accessory)

The temperature sensor measures the temperature at the battery or in the environment of the battery and transfers it to the IU0U automatic charger. The charging voltages indicated in Chapter „Technical data“ on page 26 refer to an ambient temperature of 15 °C to 25 °C. With deviating temperatures, the charging voltage is increased or decreased according to the diagram on page 23.

- Lay the cables from the batteries to the IU0U automatic charger.
- Connect the temperature sensor to the rear of the IU0U automatic charger (see figure 14, page 7) via the socket.
- Fasten the sensor head directly to the battery. Use e.g. double-sided adhesive tape for this and attach the sensor to the upper side of the battery or in the vicinity of the battery.
- Switch the IU0U automatic charger “OFF“ and “ON“ again to activate the temperature sensor.

Remote control (can be obtained from us as accessory)

The remote control serves for switching ON and OFF and for the functional check (see Chapter „Functional check“ on page 23) of the IU0U automatic charger

**Note**

Attach the remote control at a well accessible place to ensure an optimal remote control and check of the IU0U automatic charger.

**Caution!**

Pay attention when attaching the remote control (when drilling and screwing) to the course of the available, particularly non-visible wiring harnesses, cables and other components which are in the assembly range!

- Lay the cables from the batteries to the IU0U automatic charger.
- Make an oblong convexity in the assembly surface with approx. 50 mm width, 55 mm height and 23 mm depth for the take-up of the remote control.
- Connect the remote control on the rear with the intended connection (see Chapter „Specifications of the unit variants“ on page 13) via the bush at the IU0U automatic charger. The connection cable is equipped with two equivalently allocated modular plugs.
- Insert the remote control into the opening created, so that the faceplate of the remote control rests completely on it.
- Screw the remote control with two screws to the upper and bottom margin of the faceplate – use the available drills.

230 volts voltage supply

- Connect the plug of the 115/230 volts voltage supply at the unit to an earthed socket which is secured by an earth leakage circuit breaker.

6 Use of the IU0U automatic charger

For the safety notes when operating the unit see also Chapter „Safety when operating the unit“ on page 11.

With the IU0U automatic charger you can either recharge batteries or supply empty batteries with a conservation charge.

- Switch the unit on with the power switch on the rear side of the unit.

6.1 Switching on and off with the remote control (can be obtained from us as accessory)



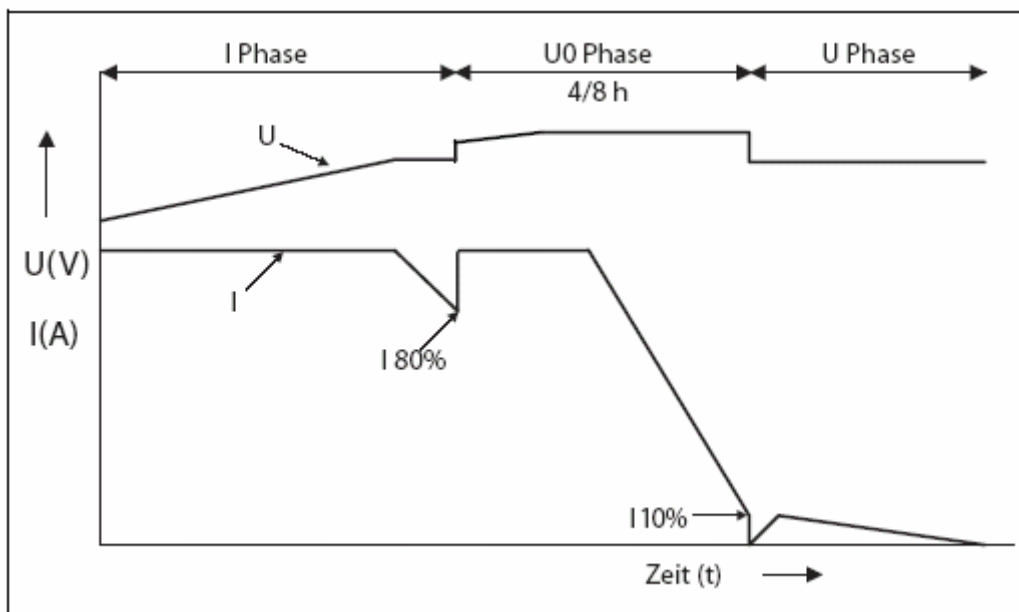
Note

The power switch at the unit (see Fig. 7-9, page 6) must be switched on, so that the unit can be switched ON and OFF with the remote control.

- Press the key “ON/OFF” on the remote control to switch ON or OFF.

6.2 Charging characteristic

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



I phase

At the beginning of the charging process, the empty battery is charged with constant current until the battery voltage reaches 13.8 V or 27.6 V. When the battery reaches this voltage level, the charging current slowly drops. With the drop of the current to the 80 % mark, the charger switches over to the higher charging voltage 14.3 V/14.7 V or 28.6 V/29.4 V.



Note

The charging voltage and the period for the main charging phase (U0 phase) can be selected via a switch field (see Chapter „Settings on the unit“ on page 17).

U0 phase

Here the time registration starts which limits the main charging phase (U0 phase) to a maximum of 4/8 hours. With the switching over of the charging voltage, the current rises again to its maximum value. Now it remains constant as long as the battery voltage is below 14.3 V/14.7 V or 28.6 V or 29.4 V.

After reaching the maximum voltage, the current drops again. Thereby the voltage remains constant (U0). 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% of 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) (U phase).



Note

In the case of chargers with double charging or three-fold charging connection there exists the possibility of charging batteries separately from each other. The outputs are separated internally via diodes. The weaker battery is always first set to the charging level of the stronger battery. The charging characteristic is the same as described above.

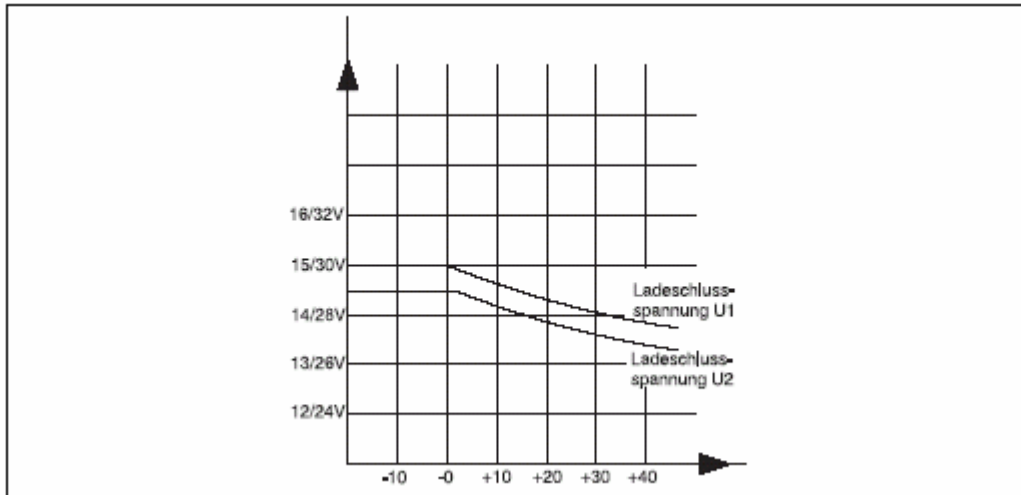


Attention

The maximum battery capacity (see Chapter „Technical data“ on page 26) should not be exceeded in order not to influence the functions of the individual charging phases.

Only for units with temperature sensors that are optionally available.

Adapting the charging voltage dependent on the battery temperature. A temperature sensor can be connected for to provide the optimum charging functioning. The charging voltages, as can be seen from the diagram, are raised or dropped dependent on the battery temperature.

**Note**

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

6.3 Functional check

The charging process of the batteries can be checked via an LED at the front of the unit:

**Note**

The check of the unit can occur also with the optionally available remote control. The LEDs on the remote control indicate the colours and the appropriate charging phases.

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 %

7 Servicing and cleaning



Caution!

Never use sharp or hard detergents as they can damage the unit.

- Clean the outside of the IU0U automatic charger from time to time with a damp cloth.

8 Troubleshooting



Please contact the battery manufacturer **with detailed** questions regarding the battery data.

After the connection and commissioning of the IU0U automatic charger, the voltage in the battery does not increase.

- Measure, if possible, with a suitable multimeter during the charging whether the voltage at the battery terminals increases or not.
- Check whether the terminals are connected properly with the battery poles.
- Clean the battery poles if necessary.

The battery is not fully charged after a charging time of approx. 20 hours.

- Disconnect the IU0U automatic charger from the mains.
- Remove the charging terminals from the battery and wait for some minutes.
- Now measure the voltage at the battery terminals with a suitable multimeter.

12 V battery

If the multi meter displays a voltage of 10 V or less, it means that the battery is defective and does not charge any longer.

- Let the battery be checked by a specialist, if necessary, or dispose of the battery.

24 V battery

The multimeter indicates a voltage of 20 V or below.

- Let the battery be checked by a specialist, if necessary, or dispose of the battery.

The battery discharges already after short time without load.

- Now measure the voltage at the battery terminals with a suitable multimeter.

If the multimeter indicates a voltage below 12 V at a 12 V battery or a voltage below 24 V at a 24 V battery, then the battery is too weak to keep the charge.

- Let the battery be checked by a specialist, if necessary, or dispose of the battery.

9 Disposal

9.1 Dispose of the packing material

Do not throw the packing material away. The following indications must be therefore considered:

- Take the packing material made of cardboard to a waste paper collection for recycling.
- Put the plastic packing into the yellow dustbin.
- Enquire, if necessary, at your local government office about the location of the recycling centre which is responsible for you.

9.2 Dispose of the used unit

If you put the IU0U automatic charger finally out of operation, please bring it to the next recycling centre, or to your specialist dealer, who will take it back against a small fee to cover costs.

9.3 Dispose of the batteries

Protect your environment!

Do not throw defective batteries into the domestic waste.

Please return the used or defective battery to the dealer or dispose of it at an authorised waste collection point.

10 Technical data

Article number:	WT-1245-TB	WT-2425-TB	WT-1245-TC
Battery connections:	two		three
Input voltage range 115 VAC 230VAC	98 - 132 V AC / 50 - 60 Hz 207-253 V AC / 50 – 60Hz		
Charging end voltage:	14.3V / 14.7V	28.6 V/29.4 V	14.3V / 14.7V
Economic charging voltage:	13.8 V	27.6 V	13.8 V
Max. battery capacity:	500 Ah	300 Ah	500 Ah
U0 phase limitation:	4 h or 8 h		
Max. charging current	45 A	25 A	45 A
Operating temperature range:	0 °C - 50 C°		
Dimensions (mm):	230 x 108 x 325		
Fuse: 115VAC 230VAC	T12A/250V T6.3A/250V		
Weight:	5.05 kg		

Article number:	WT-2425-TC	WT-1225-TB	WT-2415-TB
Battery connections:	three	two	
Input voltage range: 115 VAC 230 VAC	98 - 132 V AC / 50 - 60 Hz 207-253 V AC / 50 - 60 Hz		
Charging end voltage:	28.6 V/29.4 V	14.3V / 14.7V	28.6 V/29.4 V
Economic charging voltage:	27.6 V	13.8 V	27.6 V
Max. battery capacity:	300 Ah	300 Ah	200 Ah
U0 phase limitation:	4 h or 8 h		
Max. charging current	25 A	25 A	15 A
Operating temperature range:	0 °C - 50 C°		
Dimensions (mm):	230 x 108 x 325	240 x 77 x 310	
Fuse: 115VAC 230VAC	T12A/250V T6.3A/250V	T8A/250V T4A/250V	
Weight:	5.05 kg	3.5 kg	

Article number:	WT-1225-TC	WT-2415-TC	WT-1215-TA
Battery connections:	two plus 1 A output for: Starter battery		one
Input voltage range: 115 VAC 230 VAC	98 - 132 V AC / 50 - 60 Hz 207-253 V AC / 50 - 60 Hz		
Charging end voltage:	14.3V / 14.7V	28.6 V/29.4 V	14.3V / 14.7V
Economic charging voltage:	13.8 V	27.6 V	13.8 V
Max. battery capacity:	300 Ah	200 Ah	150 Ah
U0 phase limitation:	4 h or 8 h		
Max. charging current	25A	15 A	15 A
Operating temperature range:	0 °C - 50 C°		
Dimensions (mm):	240 x 77 x 310		200 x 60 x 260
Fuse: 115VAC 230VAC	T8A/250V T4A/250V		T4A/250V T2A/250V
Weight:	3.5 kg		2.4 kg

Article number:	WT-2408-TA	WT-1215-TB
Battery connections:	one	one plus 1 A output for: Starter battery
115 VAC 230VAC Input voltage range:	98 - 132 V AC / 50 - 60 Hz 207-253 V AC / 50 - 60 Hz	
Charging end voltage:	28.6 V/29.4 V	14.3V / 14.7V
Economic charging voltage:	27.6 V	13.8 V
Max. battery capacity:	100 Ah	150 Ah
U0 phase limitation:	4 h or 8 h	
Max. charging current	8 A	15 A
Operating temperature range:	0 °C - 50 C°	
Dimensions (mm):	200 x 60 x 260	
Fuse: 115VAC 230VAC	T4A/250V T2A/250V	
Weight:	2.4 kg	

Subject to changes due to technical progress and availability.

The following accessories are available for your IU0U automatic charger:

Remote control (Article number: 900-RC)

Temperature sensor (Article number: TF-500)

Checks/certificates applied to the IU0U automatic charger:

Standards of product series:

- EN 55014-1:1993 / EN 55014-2:1995
- EN 61000-3-2:1995 / IEC 61000-3-2
- EN 61000-3-3:1995 / IEC 61000-3-3

Standards of product series:

- 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

Switch-Mode Charger

with IU0U Characteristic

Art No. WT-1215-TA
Art No. WT-2408-TA
Art No. WT-1215-TB
Art No. WT-1225-TB
Art No. WT-1245-TB
Art No. WT-2415-TB
Art No. WT-2425-TB
Art No. WT-1225-TC
Art No. WT-1245-TC
Art No. WT-2415-TC
Art No. WT-2425-TC

Instruction Manual