Timetronic® plus

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Operating instructions

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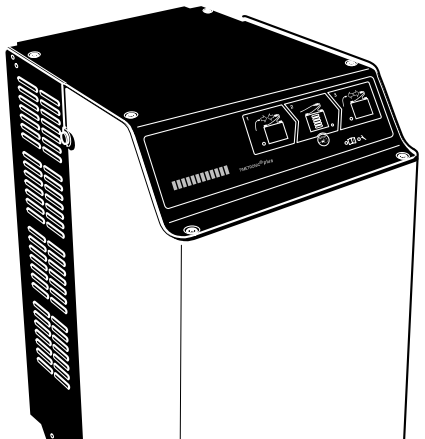

Operating instructions: Timetronic®plus

Foreword

Safe operation of the battery charger requires specific knowledge which is imparted by the present operating instructions. The information is presented in concise and clearly laid out form. The individual chapters are arranged in alphabetical order.

Safety instructions and important notes are are identified by the following pictograms:

Used before safety instructions that have to be observed in order to prevent danger to personnel.

Used before notes that have to be observed in order to prevent damage to equipment.

Used before general notes and explanations.

● Used to indicate standard equipment.

○ Used to indicate optional equipment.

In the interest of continued development, the manufacturer reserves the right to incorporate modifications (which will not, however, change the essential features of the type of machine described) without updating the present operating instructions at the same time.

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A Correct use and application

The Timetronic®plus battery charger is designed for the fully automatic charging of lead batteries and may only be operated for this purpose. The charger functions according to the W characteristic specified in DIN 41774. This current characteristic curve, which slopes downwards as the charging condition of the battery rises, permits optimal charging. Safe functioning of the battery charger is ensured by the reliable charging electronics monitoring the battery charging operation.
The technical data and specifications regarding the connection requirements can be found on the identification plate and in the operating instructions. These specifications must always be heeded.
Operation of the battery chargers is subject to the provisions resulting from the applicable laws and regulations, from guidelines issued by associations (VDE), from the EMC directive (89/336/EEC) or from directives issued by local authorities. Excerpts of such provisions are given in chapter E1.

The battery charger must only be used for charging batteries which are of the type stipulated by the manufacturer.
The battery charger must only be operated with the housing closed. It is forbidden to loosen and remove parts of the housing or any type of suppressor elements.
It is forbidden to place any objects onto the device or to climb onto the device.

Additional components may only be installed after a written approval by the manufacturer has been obtained.

Duties of the user: User within the meaning of these operating instructions is any

The user is responsible for the installation location. He must check whether the battery charger affects any devices that are highly sensitive to electromagnetic interference.
The installation location of the battery charger must be chosen in such a manner that operation (high direct current generates magnetic interference fields) does not affect the functioning of sensitive electromagnetic devices and magnetic data media (e.g. pacemakers, monitors, disks, magnetic tapes, magnetic cards, clocks)(see chapter C2, “Installation”).

The user must ensure that the battery charger Timetronic®plus is not abused and only used within its design limits and that all danger to life and limb of the operator, or third parties, is avoided.

In addition to this, it must be ensured that the relevant accident prevention regulations and other safety-related provisions, as well as the operating and maintenance guidelines, are observed. The user must also ensure that all persons operating the battery chargers have read and understood these operating instructions.

B Description of battery charger

1 Technical description

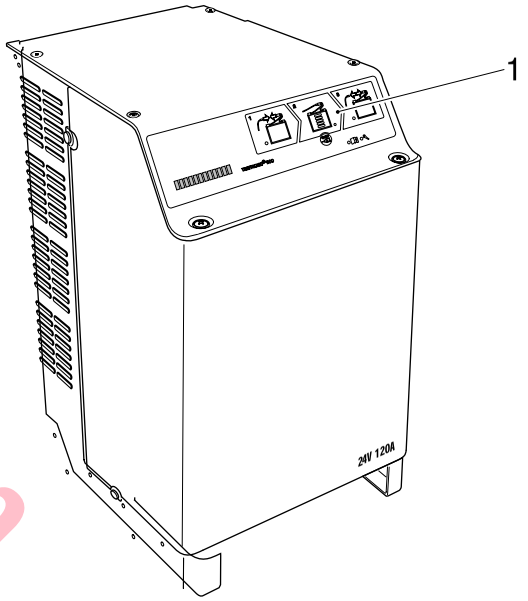
The Timetronic plus battery chargers are designed for the full automatic charging and recharging of lead batteries. These quick-charging units operate according to the W-characteristic specified in DIN 41774.

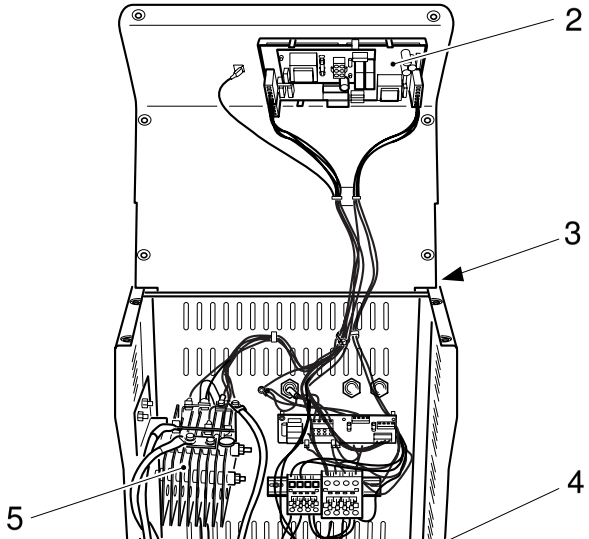
The indicated rated charging current flows at a charging voltage of 2.0 V per cell. Battery assignment should be such that the initial charging current is 25 Ampere per 100 Ah of battery capacity in order to achieve a charging time of 8 hours.

The difference lies in the initial charging current - Refer to the identification plate (3).

Safe functioning of the battery chargers is ensured by the reliable recharging electronics (1, 2) monitoring the battery charging operation. To ensure the operational safety of the system, only self-cooled stacked silicon rectifier elements (5) are used. Stray field transformers (4) are employed to comply with the required charging characteristic.

The stray field transformers are provided with a supplementary primary tapping to DIN 41 774, equivalent to +10%, +5%, 0 and -5%, to allow for mains voltage deviations. (A conversion should only be carried out by the manufacturer's service).





Charging electronics extra option (Aquamatic)

The Aquamatic serves to control an external solenoid valve of an automatic water refilling system.

When a cell voltage of 2.4 V/cell is reached, a relay contact (normally open contact, contact rating 5 A) is triggered by the following pulse train:

6-7 pulses with a duration of 3 sec., then maintained contact for 7 min.

The contact is potential-free, a 230 V power connection of the battery charger is available.

Electrolyte circulation:

Possibility to control an electrolyte circulation pump.

Observe the respective manufacturer's guidelines!

The connection may only be carried out by qualified service technicians of the manufacturer.

The function of the Aquamatic and the electrolyte circulation are monitored and a fault will be displayed on the front panel.

The connection of external additional equipment may only be carried out by skilled electricians.

The manufacturer's service technicians should be consulted for the connection of external additional equipment.

Characteristic curve:

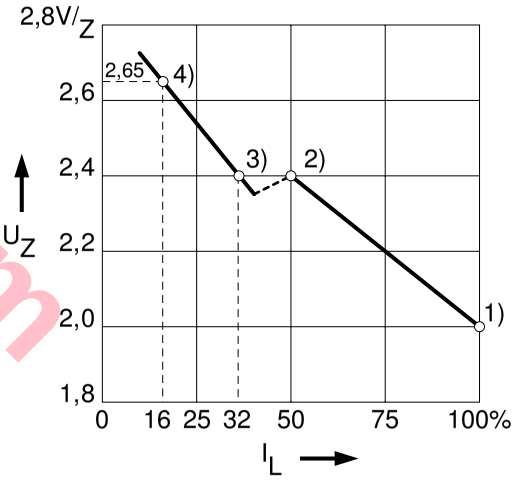
W0Wa Charging characteristic

Recharging:

Change-over to the second characteristic occurs between points 2) and 3).

3) 32% I_{dN} at U = 2.4 V/cell

4) 16% I_{dN} at U = 2.65 V/cell



This current characteristic curve, which falls with the increase in the charging state of the battery, permits optimum battery charging.

The variable recharging time (max. 4 h) is a function of the length of the initial charging phase.

2 Charging electronics

The Timetronic®plus charging electronics control the charging operation as a function of time. Progress of the charging operation is shown by the light-emitting diodes (7). An