

SMP SERVICE CHARGER

User manual



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Valid for **SMP 120/10 Battery charger**

Safety

Safety precautions



Read the instructions. The manual contains important safety and operating instructions. Always keep this manual nearby the product.

Read and understand this instruction, the battery instruction provided by your battery manufacture, and your employer's safety practice, before using, installing, or servicing the product.

Only qualified personnel should install, use, or service this product.

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

NOTE

Always connect the battery cables before connecting mains. Disconnect mains before disconnecting battery cables.

Intended use

The battery chargers are intended for charging lead acid batteries.

Battery charger adjustment

The charger must be adjusted to each type of battery to be charged (Freely Ventilated FVLA or Valve regulated VRLA).

Each charger can be ordered as pre-adjusted with charging curve and parameters optimized for a specified battery.

Before start charging

Ensure that the charger is adjusted for the battery type. The following must be set for each individual battery type before charging:

- Charging curve.
- Battery voltage settings.
- Capacity Code

For further information, see Parameter settings.



WARNING

Incorrect settings of the battery charger may damage the battery and generate explosive gases from the battery during charging. Always check settings before start charging.

ELECTRIC SHOCK



WARNING, risk of electric shock. High voltage inside. The battery charger contains voltage at a level that can cause personal injury.



WARNING, risk of electric shock. High output voltage. Do not touch uninsulated battery terminals, connectors or other live electrical parts.



WARNING

Disconnect the battery and power supply before maintenance, servicing or dismantling.

Do not touch uninsulated battery terminals, connectors or other live electrical parts.

Check that the power supply at the site of the installation complies with the rated voltage specified on the battery charger's data label.

Before connection, check the marking on the battery and the battery charger.

The battery charger may only be connected to a power outlet with protective earth.

Do not operate the charger if there is any evidence of damage.

If the supply cord is damaged, the charger should be scrapped.

If a stationary appliance is not fitted with a supply cord and a plug, or with other means for disconnection from the supply mains, disconnection must be incorporated in the fixed wiring in accordance with the national wiring rules.

EXPLOSIVE GASES



WARNING, explosive gases. Lead-acid batteries generate explosive gases during charging.



No open flame. Fire, open ignition source and smoking are prohibited near battery.



Well-ventilated. Always provide proper ventilation during charging.



WARNING

Risk of explosion!

Explosive gases. Prevent flames and sparks. Provide proper ventilation during charging.

State that during charging, the battery must be placed in a well-ventilated area.

Do not smoke, cause sparking or use open flames near battery.

Do not disconnect the battery charger terminals when the charging process is in progress. Sparks may occur and cause hydrogen explosion when charging lead acid batteries. Arc flash may occur and damage the connector pins. Always stop the charging process by disconnecting the mains before disconnecting the battery.

Do not keep inflammable material close to battery charger.

Incorrect settings of the battery charger may damage the battery and generate explosive gases from the battery during charging. Always check settings before start charging.

Do not charge non-rechargeable batteries, damaged batteries or battery types not intended for the charger.

Warning information

Hazardous situations and precautions are presented in the text as follows.

WARNING

Indicates a potentially dangerous situation. Death or serious injury may occur if appropriate precautions are not taken.

CAUTION

Indicates a situation where damage or injury could occur. If it is not avoided, minor injury and/or damage to property may result.

NOTE

General information not connected to safety for person or the product.

Graphical symbols

The following graphical attention symbols may appear on the products and in the documentation.



Read the instructions. The manual contains important safety and operating instructions.



Stop operation. Always stop the charging by pressing the STOP button before any disconnection.



WARNING, risk of electric shock. High voltage inside. High output voltage. Do not touch uninsulated battery terminals, connectors or other live electrical parts.



CAUTION, undesirable consequences. The situation needs operator awareness or action.



For indoor use only. The battery charger is designed only for indoor use unless the charger is at least IPX4-rated.



Well-ventilated. Always provide proper ventilation during charging.



WARNING, explosive gases. Lead-acid batteries generate explosive gases during charging.



No open flame. Fire, open ignition source and smoking are prohibited near battery.



Wear protective gloves. The battery cables / battery connectors may become hot during charging.

Introduction

SMP is a High Frequency Charger and DC Power Supply developed for service needs as well as for your electronic laboratory.

SMP is a perfect help when servicing of batteries and chargers since it is so small and handy. This unit is extremely suitable for the purpose of desulphating batteries. It is also useful as an aid to start deeply discharged batteries.

Receiving

On receipt, visually inspect the product for any physical damage. If necessary, contact the transport company.

Check the delivered parts against the delivery note. Contact your supplier if something is missing, see *Contact information*.

Installation



Install the battery charger indoors in a dry, clean and well-ventilated environment, unless the charger is at least IPX4-rated.

If several chargers are to be mounted next to each other, they may not be located so that exhaust air from one charger blows into the air intake of another charger.

Install the charger so gasses from the charging does not get sucked in by the chargers fans.

Operation

The SMP is equipped with an mains switch and two potentiometer knobs for adjustment of voltage and current levels. There is also a push button, which shows the set limit values when pressed. In effect, voltage and current levels will never increase above adjusted levels.

Adjustments

Are done with knobs marked **VOLTAGE** and **CURRENT** as well as the **SET** button. The SMP has to be connected to an electric load to be able to see any current draw on the display.

Voltage

Turn the setting knob marked **VOLTAGE** until the desired output voltage is shown on the display.

Current

Turn the setting knob marked **CURRENT** until the desired output current is shown on the display.

Voltage limit

Press the **SET** button while adjusting the desired voltage limit with the **VOLTAGE** knob.

Current limit

Press the **SET** button while adjusting the desired current limit with the **CURRENT** knob.



CAUTION

Turn the controls to the 0 position (turn counterclockwise) before connecting the battery or starting charging. This should be done to avoid unintentionally high voltage / current.

Example

Example of adjustment when desulphating batteries

Typical for a sulphated battery is that the capacity is low even if the charger show fully charged. The total charging time normally tends to be rather short and the specific gravity is lower than for a normally fully charged battery.

The SMP-charger can be a very good aid to recondition batteries. A constant low DC-current during a long period of time is needed (2-14 days). A rule of thumb is that the voltage should not override 2.8V/cell and the current should only be 0.8-1.0% of the battery capacity (Ah).

NOTE

It is critical, not to increase the current level in the belief to speed up the desulphating process. It can only destroy the battery through over-heating.

Practical example

Let's assume that we have a 48V battery on 500 Ah capacity. A suitable voltage according to above information should be $2,8 \text{ V/cell} \times 24 \text{ cells} = 67.2 \text{ V}$. The adjusted current should be $0,8 \times 500 \text{ Ah} / 100 = 4$, i.e. 4.0 A ($0.008 \times 500 = 4$).

Action to be taken:

1. Connect the SMP to the battery and turn on the charger using the mains switch on the back of the SMP.
2. Press the **SET** button and adjust the voltage limit to 67.2 V using the **VOLTAGE** knob.
3. Press the **SET** button and adjust the current limit to 4.0 A using the **CURRENT** knob.

NOTE

To maintain the set values, the setting knobs must now not be turned.

Please have in mind that this charger will limit the output effect to 800 W.

The top display will now show the actual voltage level that slowly increases to max. 67.2 V. In the meantime the lower display will show the adjusted current level. To verify the set values, press the **SET** button.

The desulphating process is only ready when battery voltage and specific gravity is stabilised. In cases when only the weekends are available for desulphating you can continue the following weekend.

Contact information

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