

DIAMEX SWEEPY

Revitalizer and charger for lead accumulators

In cooperation with Sieghard Woydig, DIAMEX has developed a revitalizing charger with microprocessor control. DIAMEX Sweepy can recharge and recharge 12V lead-acid accumulators



Technical specifications:

- 3 different loading / revitalizing profiles: Soft, Normal, Strong
- Automatic switch-off when the battery is fully charged, including the maintenance charge
- Overcurrent and overtemperature protection with polyfuse
- Reverse polarity protection of the connected lead accumulator
- 4-digit 7-segment display for the functions, charging voltages and charging current
- 2 LEDs for status display
- Display of charging current and voltage
- 2 buttons for operation
- Controlled by high-performance 32-bit ARM Cortex microcontrollers
- Maximum charging voltage: 14.4 V
- Maximum charging current: 2 A
- Power supply via 15V / 2A plug-in power supply
- Length of lead wire for lead battery approx. 1 meter

CONNECT SWEEPY

Sweepy requires a 15V power supply that can supply at least 2A current. Please use only the supplied power supply, this is tested and 100% is suitable for the operation of the Sweepy.

Plug the power supply plug of the power supply into the socket labeled "Power" on the back of the Sweepy. A lead battery should not be connected to the battery terminals at this time.

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Sweepy briefly reports the software version



and then switches to the OFF mode.



There is no lead battery connected and there is no voltage on the battery terminals.

CONNECT LEAD BATTERY

Sweepy is only designed for lead acid batteries with a nominal voltage of 12V. Connect the lead battery correctly to the battery terminals:

BLACK to MINUS -

RED to PLUS +

Due to the built-in protection diodes, polarity reversal does not damage Sweepy or lead acid batteries.

Important instructions:

- **Connect only 12V lead acid**
- **Only connect the lead battery, no additional loads.**
- **Do not connect the lead battery in parallel or in series.**
- **Lead batteries can only be charged, not revitalized.**
- **Do not connect other batteries (NiCd, NiMH, Li-Ion, Li-Po) or batteries.**

The residual voltage of the connected lead battery should be at least 6 volts. If the voltage is lower, the sweepy cannot be used, since the charging current would exceed the maximum power of the sweepy electronics. Therefore, before charging the Sweepy, charge the deep discharge lead briefly with a normal battery charger until the idle voltage is higher than 6 volts.

If the lead battery is connected in the correct polarity and its idle voltage is more than 6 volts, the sweepy display changes:

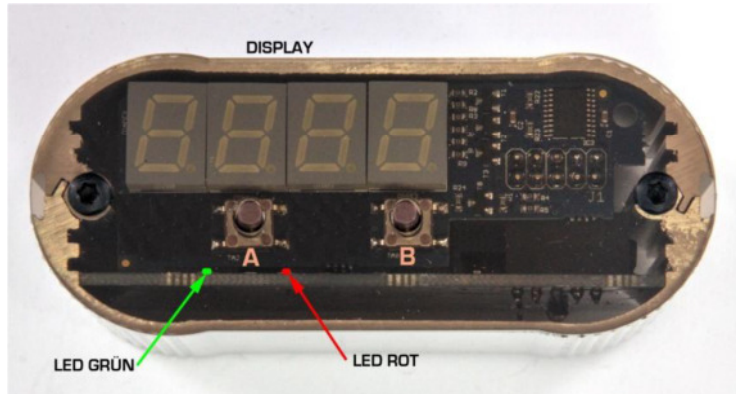


The currently selected profile (here profile # 2) and the measured idle voltage (example 12.5V) of the connected lead battery are displayed alternately. In addition, the red LED will light up and indicate the load on the sweepy. The profile can now be changed and / or the loading process can be started.

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OPERATING AND STARTING THE LOAD / REVITALIZATION OPERATION



Change the profile by pressing B:

Profile # 1 

Soft charge / revitalization process with 20% pulse width and slow "sweep".

Profile # 2 

Default setting. Uniform charge / revitalization process with 50% pulse width.

Profile # 3 

Aggressive load / revitalization process with 70% pulse width and fast "sweep".

Use the B button to set the desired profile. As a rule, Profile # 2 should be the right choice for most Lead Acids.

Pressing key A starts the charging / revitalizing process:



The green LED lights up and indicates that charging pulses are generated.

Then the display changes:



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The current charge voltages and currents of the connected lead acid are measured at regular intervals. Here, a voltage of $U = 12.5$ volts and a current of $I = 1.3$ amperes is charged and revitalized (example values). As the voltage increases slowly during the charge / revitalization process, the current drops steadily.

The charging process can be interrupted at any time via button A and the profile can be changed by pressing key B. Then, press button A again to start charging.

The duration of the recharge / revitalization process depends on the capacity of the connected lead acid battery. The complete recharge / revitalization cycle for a lead battery can take several days. The charging current decreases with increasing voltage more and more and an increase of the charging voltage always takes longer. It is perfectly normal that a charge voltage of e.g. 14.3 volts and a charging current of 0.3 amps over a very long time.

A still usable battery reaches charging end voltages of more than 14 volts. If the charge voltage does not exceed a certain value below 14 V for a very long time, the battery is probably defected (cell closure). You can cancel the charging process and dispose of the battery correctly.

If the charging process is interrupted immediately after the start (STOP), the battery does not receive any charging current and can be disposed of properly.

Heat generation of the sweepy during the charging / revitalizing process, especially when starting with higher charging currents, is normal. A temperature protection (polyfuse) protects the hardware reliably against excessive currents and the resulting heat.

During the recharge / revitalization process, chirping noise can occur in the sweepy or on the battery terminals. This results from the variable frequency of the clocked charge voltage and is completely normal.

The current and voltage data displayed in the sweepy display during charging are calculated values. Since these are pulsating voltages, the displayed values of measured values can differ with simultaneously connected multimeters.

FULL DETECTION AND CHARGING

When a charge voltage of 14.4V is reached, the automatic charge conservation is activated.



The green LED goes out and the charging voltage is switched off; a charging current is no longer displayed on the display. After the battery voltage drops, the voltage is switched on again at irregular intervals. This is indicated by the green LED and the indication of the charging current. Since the battery voltage drops relatively quickly, the differences in the displayed charging voltages are particularly large, jumps from 14.4V to 13.9V and again to 14.3V are normal.

The lead battery can now be removed from Sweepy.

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AUTOMATIC SHUTDOWN

Sweepy will automatically turn off after 1 second if

- the connected lead battery is defective and does not receive a charging current.
- the lead battery is disconnected.



A restart of the charging process is only possible once a lead battery is connected.

LEDs

RED

Lights up when the lead battery is connected correctly and the recharge / revitalization process has not yet started.

GREEN

Lights up when the charge / revitalization process is started and charging voltage is applied to the battery terminals.

In the charge-conserving mode, this LED goes out in non-regular intervals.

ERROR MESSAGES

An external power supply with an insufficient output voltage is used (**Power Supply Low**):



Plus and minus of the lead battery are reversed (**Error, -Polarity**):



Due to built-in protection diodes Sweepy or the connected lead battery does not cause any damage. Please replace the battery terminals, Red to Plus and Black to Minus.

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NOTES

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LIABILITY

The manufacturer assumes no liability for damage caused by the use of the DIAMEX Sweepy.

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Revitalization (desulphation, regeneration) of lead acid. © Dipl.-Ing. Sieghard Woydig 10.02.2014

LINKS

DIAMEX Online-Shop

<http://www.diamex.de>

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