TREMEX PULSER

The digital activator for lead batteries

Connections on the lead battery

Connect the terminal of the blue cable to the negative terminal and the terminal of the red cable to the positive terminal of the battery. Please pay attention to correct polarity! When connected to the lead-acid battery all the LEDs light up to indicate a standby mode. The first pulse is always generated even after 5 seconds (unless low voltage is detected), all subsequent pulses are generated depending on the configuration data. The internal power consumption of Tremex-PULSER is very low at approximately 0.5mA. An example is a 60Ah car battery, it would be discharged only after about 130000 hours by Tremex-PULSER, which corresponds to about 15 years. The energy for the light emitting diodes during the pulse is supplied almost entirely by capacitors which are charged gently during the pulse pauses.

LEDs in TREMEX-PULSER

All LEDs are switched off. Tremex-PULSER is in power saving mode and waits the next pulse

Battery is charged to 100%, pulses are generated
6.3V (Tremex-PULSER 6), 12.5V (Tremex-PULSER 12), 25.0V (Tremex-PULSER 24) adjustable at Tremex-PULSER-PLUS

Battery partly discharged, pulses are generated
6.0V (Tremex-PULSER 6), 12.0V (Tremex-PULSER 12), 24.0V (Tremex-PULSER 24) adjustable at Tremex-PULSER-PLUS

Battery heavily discharged, pulses are generated
5.7V (Tremex-PULSER 6), 11.5V (Tremex-PULSER 12), 23.0V (Tremex-PULSER 24) adjustable at Tremex-PULSER-PLUS

Battery deeply discharged, pulses are generated
5.3V (Tremex-PULSER 6), 11.0V (Tremex-PULSER 12), 22.0V (Tremex-PULSER 24) adjustable at Tremex-PULSER-PLUS

Undervoltage detected, no pulses are generated

Blue LED flashes, Tremex-PULSER is connected in USB mode on the PC, no pulses are generated.

All LEDs will flash briefly when Tremex-PULSER is connected to the lead-acid battery or to the USB port of the PC.
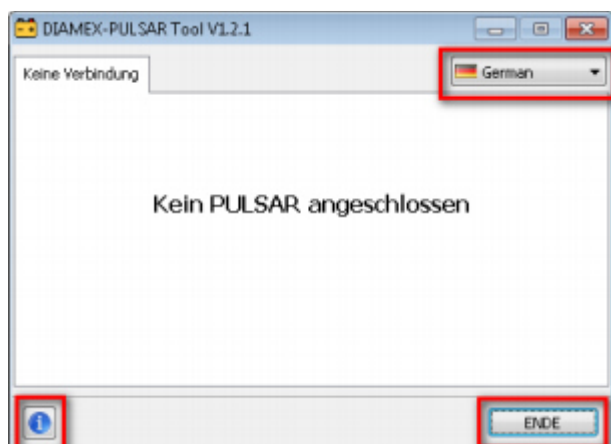
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Configuration on Windows PC (only Tremex-PULSER-PLUS)

Through a comfortable Windows program with USB interface you can change the pulse parameters and voltage ranges according to your wishes at the Tremex-PULSER-PLUS units. Install the PULSER tool on your PC and start it. Select the menu language, German or English.
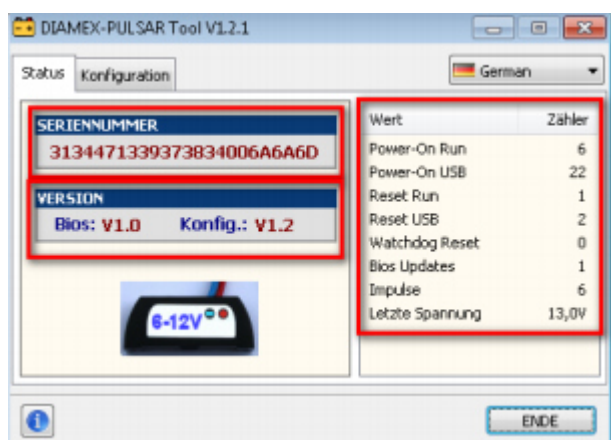About the info-symbol a short copyright notice with link will be displayed on the homepage of the manufacturer.

Quit the PULSER tool by clicking on the END button.

Connect now the Tremex-PULSER to a free USB port of your PC. Tremex-PULSER must therefore not be separated from the lead accumulator. If you have not have a USB cable, you can also use each commercially available Micro-USB cable which is now shipped with most smartphones and many other electronic devices. Tremex-PULSER logs after the first connection to the PC. If your PC is now proposing a reboot you can ignore this report as it is not necessary. Even if you have several Tremex-PULSER and USB cable, only one Tremex-PULSER may be connected to the PC.

The Tremex-PULSER tool reads out only the parameters and statistical data from the connected TREMEXPULSER. On the Status page displays the following information:

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The serial number and the current bios and configuration version of the connected TREMEX PULSER.

On the right side you will find the statistics of Tremex-PULSER. The statistical data will be written in the current pulse mode at the earliest after 3 minutes the first time and subsequently once every 30 to 60 minutes. Wait at least 5 minutes after connecting the TREMEX PULSER to a lead battery before you can read the current values via USB.

Meaning of statistics entries:

Power-On Run

Number of times Tremex-PULSER was connected to the lead-acid battery.

Power-On USB

Number of times Tremex-PULSER is connected via USB to the PC when Tremex-PULSER was not connected simultaneously to the lead-acid battery

Reset Run

Number of reset operations when it was connected by USB mode to pulse mode (Deducted when PULSER is connected to the lead-acid battery USB).

Reset USB

Number of reset operations (USB infected when Tremex-PULSER is connected to the lead-acid battery) if changed from pulse mode in the USB mode

Watchdog Reset

Should be set to zero, emergency reset, if exceptional circumstances a proper function is no longer able to ensure (for example by extreme undervoltage).

Bios Updates

Number of USB implemented BIOS updates (if available)

Impulse

The total number of generated by Tremex-PULSER pulses.
In case of undervoltage no pulses are generated and not counted.

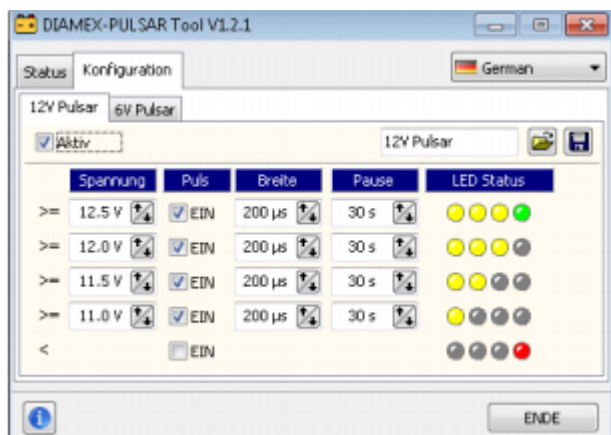Note: The statistics data cannot be reset or changed!

About the "Configuration" tab you enter the edit mode of the profile data.
Tremex-PULSER-PLUS 6/12 has 2 profile data blocks, one for 6 volt and 12 volt.
Tremex-PULSER-PLUS 24 has 1 profile data block for 24 Volt

All profile data blocks can be changed within limits and sent to Tremex-PULSER. They can be stored and read in as a file to transfer as a well-tested profile data to another Tremex-PULSER. The standard profiles for 6, 12 and 24 volts in the Pulser tool are included in the software package. They are used to reset to the default values in the delivery.

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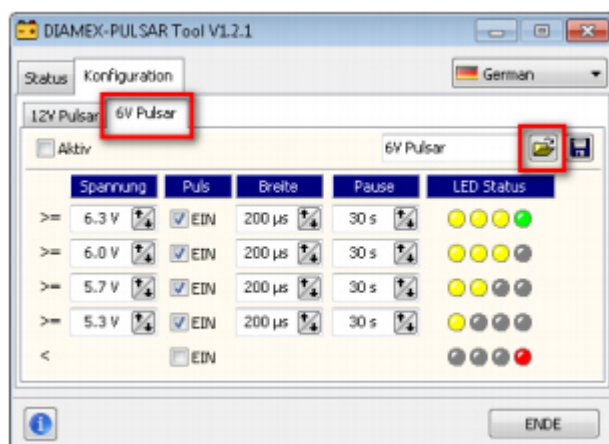
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On the next example the default configuration of a Tremex-PULSER-PLUS 6/12 can be seen. The 12V profile data is active. The pulse duration is constant 200 microseconds, pulse pause 30 sec. at all voltages. Through the number of LEDs that light up is the pulse roughly the voltage level of the battery can be read at voltages greater than / equal to 12.5 volts illuminate all 3 yellow and the green LED. At voltages between 12.0V and 12.4 volts light 3 yellow LEDs for voltages between 11.5V and 11,9V light 2 amber LEDs and tensions between 11.0 V and 11,4V a yellow LED only lights. Below 11.0 V, the pulse is turned off and it only the red LED flashes.

Example: changing the profile in an aggressive variant

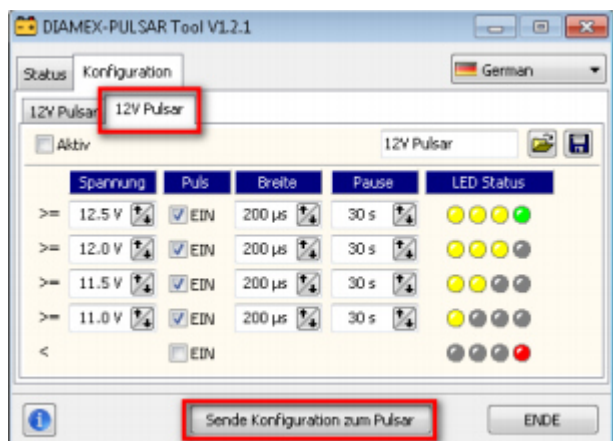Since we do not need the 6 volts profile, we first load the 12V-profile in here:
1. Select 6V Pulser
2. "Load configuration" push button, select and load profile "12V Pulser.pulser".
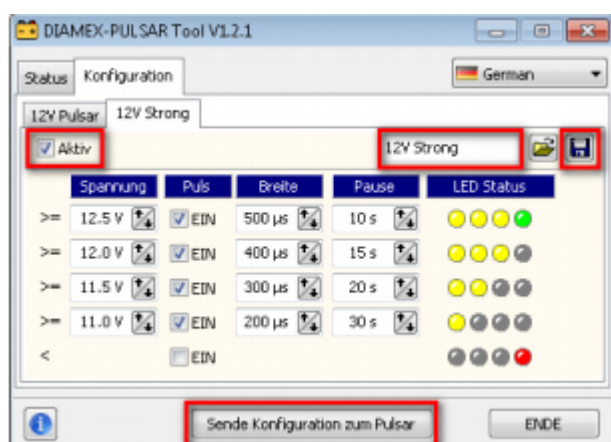3. Now there is a second 12V profile, we can edit.

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Below appears a button "transmission configuration for Pulser", this means changes have been made in the profile but not yet transferred to the pulser. We do that later when the changes were made in the profile. The tensions we leave as they are however change the pulse widths and pauses.

The pulse widths and intervals are adjusted in the following picture
and the profile "12V Strong" was renamed. Through the button "Save Configuration" we secure the profile on the hard disk. By clicking on "active" the new profile will be activated and only needs to be sent to Tremex-PULSER. The new profile can be tested at the lead battery after removing the USB plug immediately.

Please note that all values can only be changed within limits:
Voltages must be smaller from top to bottom. Resolution is 0.1 Volt.
The pulse width is adjustable in the range of 100 to 500 microseconds in steps of 50 microseconds.
The pulse interval is adjustable in the range from 5 to 120 seconds in 1 second increments.

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Technical data

Maximum operating voltage:	16 Volt (TREMEX-PULSER 6/12), 30 Volt (TREMEX-PULSER 24)
Current consumption in pulse mode:	ca. 0.5 mA (all LEDs are switched off)
Operating voltage / current USB:	5 Volt, max. 7 mA
Pulse duration:	200 microseconds, adjustable from 100 to 500 microseconds at Tremex-PULSER PLUS
Pause between the pulses:	30 sec, adjustable from 5 to 120 seconds at Tremex-PULSER-PLUS
Undervoltage detector:	5.3V (Tremex-PULSER 6), 11.0V (Tremex-PULSER 12), 22.0V (Tremex-PULSER 24), adjustable in Tremex-PULSER-PLUS
Reverse polarity protection:	Yes, 100% for all versions
Pulse current:	about 60A (12V) for max. 500 microseconds
LEDs:	3x yellow 1x RGB
USB port:	Micro-USB (only TREMEX-PULSER-PLUS)
Microcontroller:	Low-Power, 32-Bit Cortex-M0+
Connection cable:	Approximately 25-30cm (red, blue) with cable lugs (6mm)

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Important information

Please use Tremex-PULSER only with lead-acid batteries! Other batteries, such as NiCd, NiMh, LiPo can be damaged or destroyed.
If a charger is connected to the lead-acid battery Tremex-PULSER should be removed. The charger could be disturbed by the short pulses. Please pay attention to the correct polarity when connecting the Tremex-PULSER to the lead accumulator. Red is positive, Blue is negative. However, a reverse polarity may due to existing protection diodes in Tremex-PULSER not lead to damage of lead battery or the Tremex-PULSER.

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Liability notice

The manufacturer assumes no liability for damages that may result from the application of the Tremex-Pulser

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