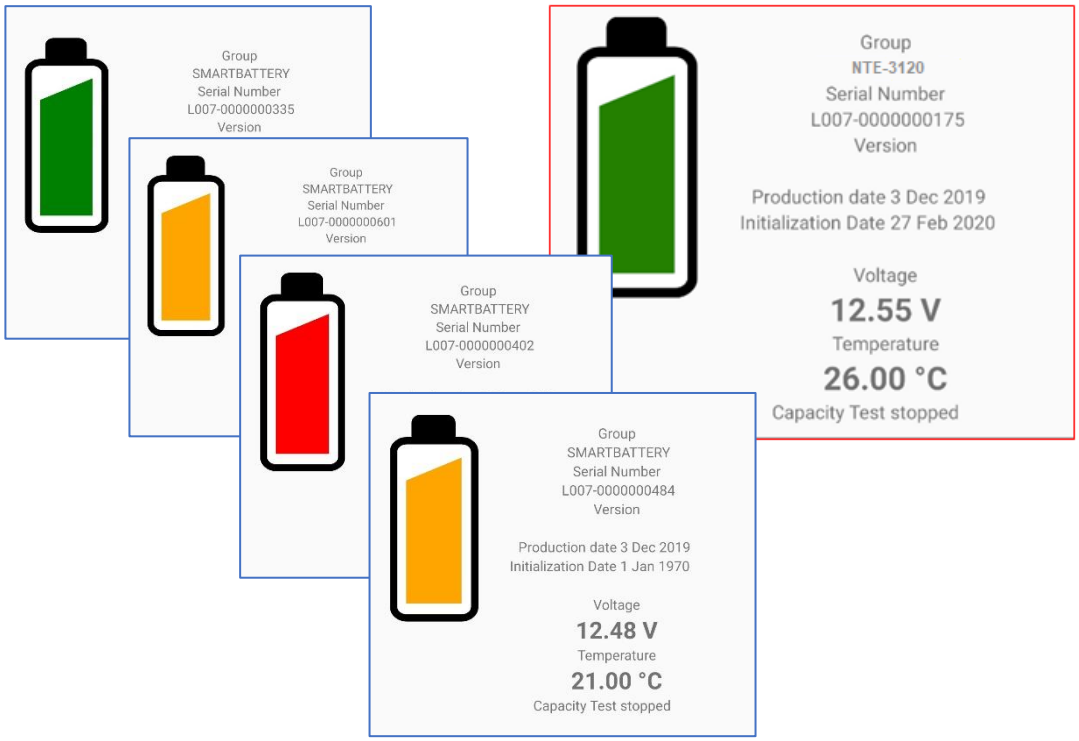
Ex_SM SMARTLOGGER

Intelligent Smart Logger Device

for long term statistical battery data recording

Data storage

Patented technology: EP 18726032.8



The unique pocket-sized battery monitoring system:

Transparent, Flexible, Intuitive, Safe …

… And always "ready for use"!

The new dimension of Offline Battery Monitoring

A SMARTLOGGER / SMARTBATTERY is a „Blackbox "(like a flight data recorder used for aviation), but records battery data starting at the production until disposal. using a unique long term permanent data storage.

At the same time, the device provides the user/battery service with important data for assessing battery health (SOH) and capacity (SOC).

The device therefore complies with the far-reaching EU battery regulation for long-term data storage as well as the GDPR and exceeds the functions required by the EU for a "battery passport", which every battery sold within the EU must have in stock from 2024.

The SMARTLOGGER/SMARTBATTERY stores all battery data in accordance with the European battery pass BattG2024 and is the ideal tool for retrofitting existing systems. The patented technology is currently available for 12V battery systems, and from 2025 also for other battery cell voltages of 1.2/2/4/6 volts and 48 volts.

"From the cradle to the grave" - one device - many possible applications!

- ✓ Versatile and flexible on site as a "fast and intuitive measuring device".
- ✓ As a kind of "fitness tracker", it detects weak batteries and monitors warranty violations.
- ✓ The long-term "black box" records battery data for up to 10 years at the lowest power consumption (less than the natural self-discharge of a battery).

The innovative "Click'n'Play" assembly allows the SMARTLOGGER to be attached directly to a battery. The logger's slim NFC interface then offers intuitive access to initialization and reading out the battery data. This means that the SMARTLOGGER can observe a battery from the cradle to the grave, but is also a professional measuring tool with powerful functions for short-term discharge and load tests. In addition, the SMARTLOGGER provides the optimal basis for compliance with data protection laws in accordance with the GDPR and Cybersecurity Acts thanks to the contactless NFC process.

The working principle:

The SMARTLOGGER is both a short-term monitoring unit for data collection in the event of acute problems with a battery system and a long-term battery monitoring solution that works constantly in the background without measurably discharging the battery - As a special feature, a SMARTLOGGER can generally be installed subsequently to monitor individual batteries or battery systems and can be configured and read contactless via without violating cybersecurity guidelines. Thanks to the modern connection concept, the system may not even have to be taken off the grid. The SMARTBATTERY variant integrated into the battery ex works detects faulty batteries during production, transport or storage.

Both devices record measured values for the entire battery life and indicate warranty or limit violations.

Data analysis and export:

Use the reliable and energy-saving NFC technology to read out measurement data and automatically export it for analysis (MS EXCEL graphics).

Functions: Battery status display, capacity testing, long-term voltage/temperature recording (>10 years), number of battery cycles, trend display for fault prediction.

Overview

If the battery in a particular system fails unusually often, investigating the cause is important. These causes are rarely a single incident, but are made up of a chain of small individual events that interact with each other. As a consequence, vendors must fulfill warranty contracts without knowing what really happened.

With this device, vendors can take statistical data about a battery within the string without setting up a complete monitoring system.

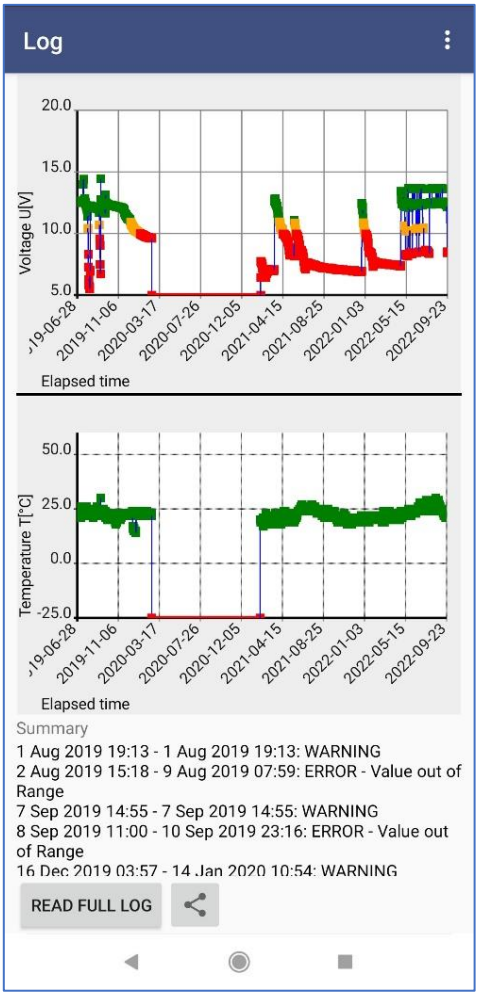
The intelligent smart logger device is a small sensor that can be used to get standard battery data like temperature and voltage data for each charge/discharge cycle.

The device provides a

- Fast and flexible connection concept that fits to any battery.
- An intuitive and clear smartphone app for instant data logging as well as a visual overview of the statistical data on site.

How the intelligent smart logger device works

Once you have connected the smart logger device to the battery, it will automatically power up and wait for the initialization common NFC interface. The initialization will be confirmed by the GENEREX iBACS SMARTLOGGER app that is available at the google play store.



After initialization, the intelligent smart logger starts collecting statistical data transparently without harming the battery or the battery string:

"Voltage during charge and discharge cycles"

- Charging processes, burst charges as well as discharging processes.
- All data are provided with an individual time stamp.
- Statistical long-term monitoring in order to collect valuable battery data over the years.
- If you have several battery strings, use several SMARTLOGGER at different points in order to obtain comparable data sets

"Temperature of the according battery"

- Collect comparable normal and abnormal temperature values during charge/discharge cycles
- All measured temperature data come with individual time stamps that fits to the voltage data
- Install several smart logger inside a battery system to obtain comparable data sets.

"Short time capacity test"

- Semi-volatile memory to collect and store short term capacity data for up to 24 hours
- Can be used independently to any other logging function

Smart Logger App

The unique handheld battery monitoring and analyzing tool:

With this app, it is possible to read and analyze all battery data collected by the SMARTLOGGER on site and to trigger, collect and analyze short term capacity tests independently to al long-term statistical battery data. All you need is an android device with NFC – support.

Using on site

The app can be used for reading out the battery values and calculates the current health state of the battery:

- Green: The battery state is OK
- Orange: Maintenance should be planned
- Red: Battery must be changed as fast as possible

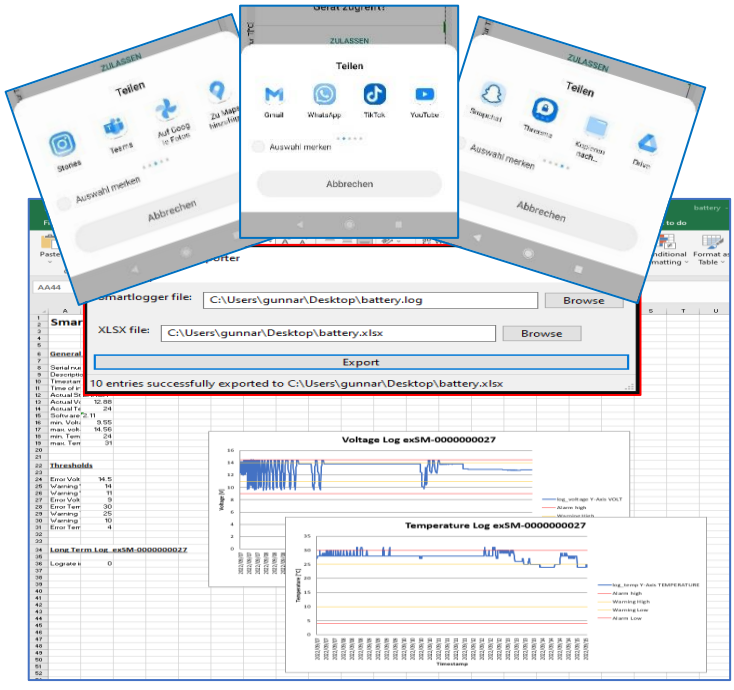
Customized Smart Logger device

The smart logger can be configured individually for each OEM customer in order to adapt the values of the notification colour change to fit to the battery model and specification that is in use. Furthermore, all values and alarm levels can be changed on demand within in the APP by the OEM customer for their users to max out the flexibility. The end users will automatically receive the corrected values comfortable via Google Updates.

Uplink to other systems:

The Smart Logger App provides additional options to send the battery data collected on site to a remote system for long term statistical observation as well as a part of deep analyzing a problem with the entire UPS solution.

With the smart logger technology, technical staff will be able to shorten maintenance windows, spot an abnormal battery behavior and differ between warranty cases and wrong term of usage.



Technical data: Smartlogger

Description	***Units***	**Measuring**
Operating voltage range	V	5-24V
Reverse connection protection	yes/no	yes
Power consumption	mA	30µA
Operation temperature range	°C	-40 - 75
Temperature measurement range	°C	-25 - 60
Temperature measurement accuracy	°C	2
Temperature measurement resolution	°C	1
Voltage measurement range	V	5V – 21V
Voltage measurement accuracy	%	0,30%
Voltage measurement resolution	V	0,01
Onboard storage (long time log)	Years	10+
Long term datal log interval	Hours	1
Onboard storage (short time log)	Hours	24
Short term data log sampling interval	Minutes	1
Size (a x b x c)	mm	71x43x15.5
Acoustic alarm / Optical alarm	yes/no	Optional
Data Communication APP		NFC
App Controlled Reset Via APP		Yes

App data

Voltage thresholds

Normal voltage	
Green:	11,01V - 14,99V
Low voltage	
Yellow/Orange	10,01V - 11V
Red	<10V
High voltage	
Yellow/Orange	15V-17,09V
Red	>=17,1V

Temperature thresholds

Green	+5°C - +31°C
Low temperature	
Yellow / Orange	-1°C - 4°C
Red	> -5°C
High temperature	
Yellow / Orange	32°C - 40°C
Red	> 41°C