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GENEREX User Manuals

English

SMARTBATTERY COMPANION APP

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Content

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About the SMARTBATTERY Companion App

The SMARTBATTERY Companion App is a special software that works exclusively with the SMARTBATTERY / iBACS technology developed by GENEREX.

However, while the SMARTLOGGER can be mounted on any existing batteries independently to the chemistry, the SMART technology can also be integrated into a battery as a fixed component in order to independently store all operating data, like a “black box”, even after a total battery failure. Furthermore, during installation, a vendor can also determine and communicate the condition and quality of their batteries in a binding manner.

As the SMARTLOGGER data cannot be manipulated, it also provides a legally binding basis upon which customers and providers alike can access and thus exchange data and facts in case of problems in order to communicate with each other on an equal footing:

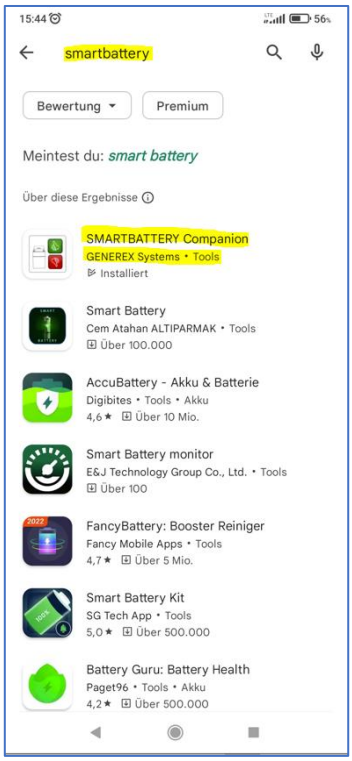
The SMARTBATTERY Companion App gives you access to uncompromisingly transparent and flexible offline monitoring - you can read out the operating data of a battery at-will and carry out capacity tests, thus enabling you to look after your systems in the best possible way without any great effort.

Powerful sharing tools allow the collected files to be shared directly and in a controlled manner for further diagnosis and planning of maintenance windows, or to determine the acute need for action in real time in conjunction with battery experts.

Installation

The SMARTBATTERY Companion App is available in two different ways

1. The SMARTBATTERY Free Companion App



Download directly from the Google Play Store. The Google Play Store will automatically inform you if your currently registered mobile device meets the minimum requirements and the Companion App will run as desired.

2. The SMARTBATTERY Companion App Professional for site technicians and developers

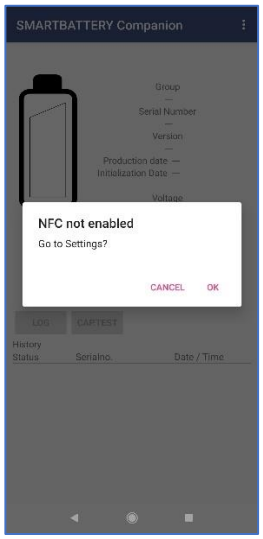
The SMARTBATTERY Companion Professional App can be requested directly from us at GENEREX via sales@generex.de - unlike the Standard Edition, this program version must be installed directly via the internal file browser of your mobile device, whereby the mobile device must meet at least the following system requirements:

- NFC-Interface
- Android 10 or above
- Network access for setup (LAN/ WLAN)
- Administrative access to allow installing applications from unknown sources.

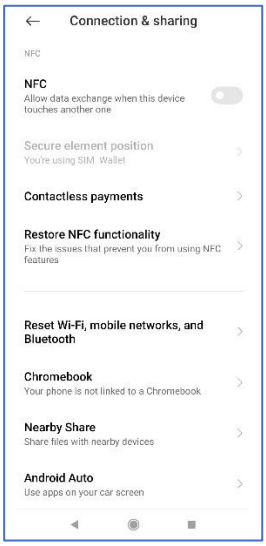
In addition, an internet connection is recommended for advanced functionality such as sharing and sending the collected battery data. The app itself also works as a real offline tool.

Reading Battery Data

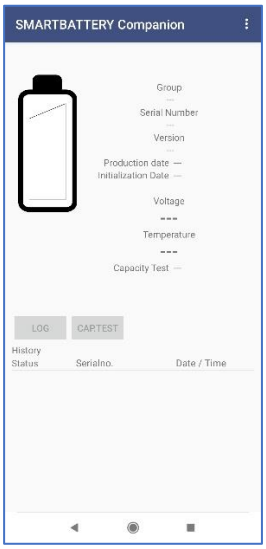
Keep in mind that the NFC function of your mobile device needs to be activated, and that the Companion App also needs to be allowed access to this interface. The SMARTBATTERY Companion App will show an information notification if the access is restricted or offline:



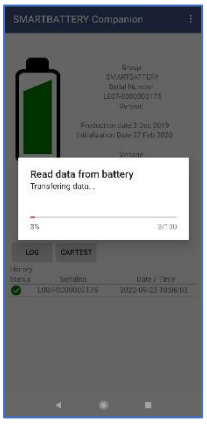
The Companion App detects that the required NFC interface is off. Tap OK to access the Android menu for the NFC function. This note only appears if the Companion App does not have access.



Activate NFC and, if necessary, create a release rule for the Companion App to grant access to the NFC interface. After this, re-open the Companion App.



The Companion App is ready for use. As soon as the mobile device is in range of the SMARTLOGGER NFC interface, the battery data reading process will start.

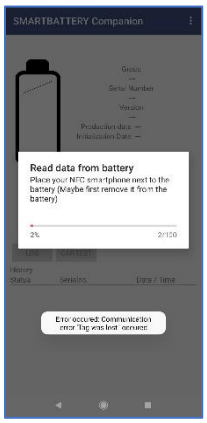


Basic Scan

Place the mobile device next the SMARTLOGGER interface to contact the NFC interface:

As soon as contact is established, the SMARTLOGGER automatically sends measurement data and general information to the Companion App, which processes the data in real time and then displays in an intuitively understandable graphical overview.

The batteries are also clearly stored in an internal database, so you can also scan several batteries and then record the collected measurement data and compare them directly with each other.



Faulty Scan

Under certain conditions, it can happen that the transferred data coming via NFC are corrupt. This happens, for example, if the devices are too far apart, if you switch to the next SMARTLOGGER too soon or if you move the mobile device too much. The Companion App indicates with a message error and an error tone that the battery could not be read out correctly or completely.

In this case, wait briefly and repeat the read-out process.

The faulty battery data readout entry will then be corrected by the Companion App.

Does NFC always have to be activated?

No, the NFC interface does not have to be permanently active:

The NFC function is only required if you want to read out a SMARTLOGGER or a SMARTBATTERY.

If you only want to view and evaluate the data that has already been collected, it is sufficient to tap in the darkened area of the app to hide the notice accordingly.

However, the automatic scan function is not available in this case.

To enable the scan function, activate the NFC chip via the corresponding function menu of your mobile device.

Please note that unnecessarily running interfaces (GPS, NFC, Bluetooth, etc.) have a direct impact on performance and battery life.

Quick Battery test – the scan result overview

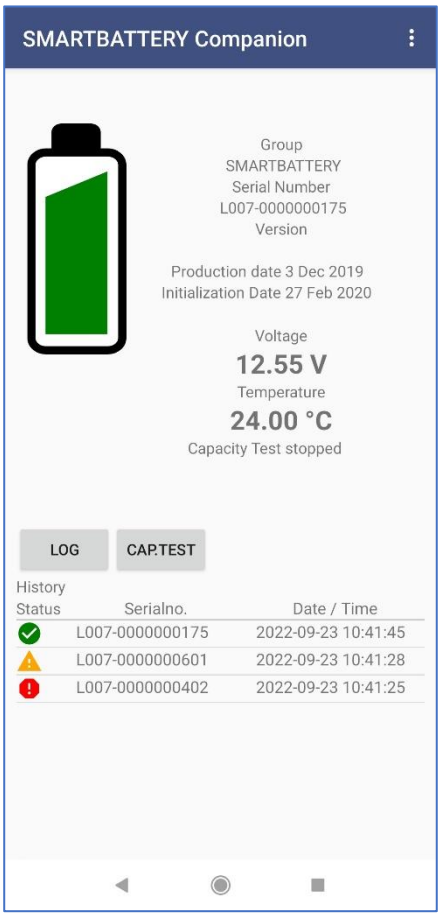
After scanning, the most recently scanned battery generally appears on the display. Repeating a module read out will move the according data set to the top of the list to avoid creating duplicated data sets.

State Of Health

The color of the battery gives an immediate overview as to whether the battery needs further attention or is functioning as desired.

LOG and CAP.TEST

Detailed information about the battery displayed in the overview field as well as further functions and options.



Module Overview

The Module Overview shows either the last scanned battery or battery data set selected from the history list:

- **Group**
- **Serial number**
- **Version of the logger**
- **Production date**
- **Initialisation date**
- **Current voltage**
- **Current temperature**

History and Status

Containing the list of all modules scanned so far, with a brief reference to the individual battery's state of health.

The State Of Health Quick Lookup - Color Code Overview

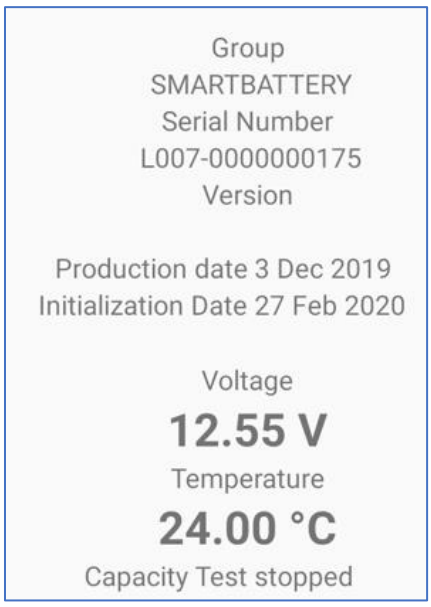
The health status of a battery can be easily checked at a glance. The app uses the battery data to calculate the current state of health and provides a quick and easy-to-understand overview so that technicians do not have to deal with time-consuming lists on site:

	*Green** The battery is absolutely fine and works within the expected parameters.
	*Yellow** The measurement data shows that the battery is partly operated at the edge of the manufacturer's specifications. It is advisable to check the battery for damage in the medium term and to determine or eliminate the cause for the excess.
	*Red** According to the readings, the battery has for some reason left the normal operating parameters to such an extent that damage to the battery is possible. This battery should therefore be examined and observed more closely in order to exclude possible (consequential) damage. Furthermore, the cause of this event should be identified and investigated.

The color code illustrates the existence of measurement data inside or outside of operational alarm thresholds and thus helps to pre-select what should be checked. However, **it is not a binding instruction for action due to a defective battery – a battery malfunction can ultimately only be verified by evaluating the measurement data or checking the battery directly with a reference measuring: A battery marked "red" does not mean that it is necessarily damaged or broken.*

The Battery Overview

The Battery Overview provides general battery information



Group

The group is freely configurable in the Companion App - SMARTBATTERIES and SMARTLOGGER can be sorted and assigned to customers or projects quickly and easily this way.

Serial Number and time stamps

Thanks to SMARTLOGGER technology, the batteries are provided with a digital signature that contains, among other things, the serial number. This means that a battery can be tracked 100% transparently from its creation to its disposal.

Voltage/ Temperature / Capacity Test information

Shows the current state of the battery when reading out.

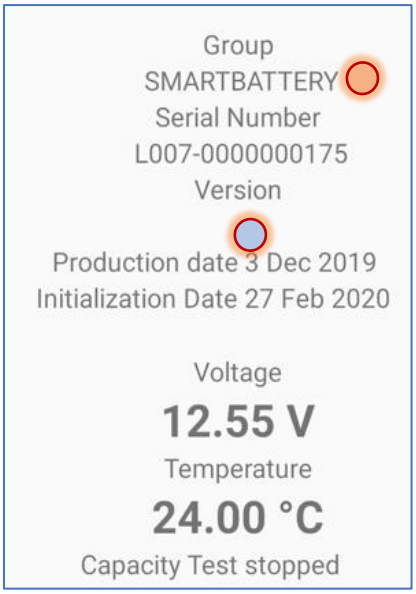
Following actions can be carried out at the battery overview

➔ *Assign a new name or battery group*

Tap on the existing battery group name to change the name of the battery group. The group is created in the internal database of the Companion App and the battery is automatically moved to the assigned or created group.

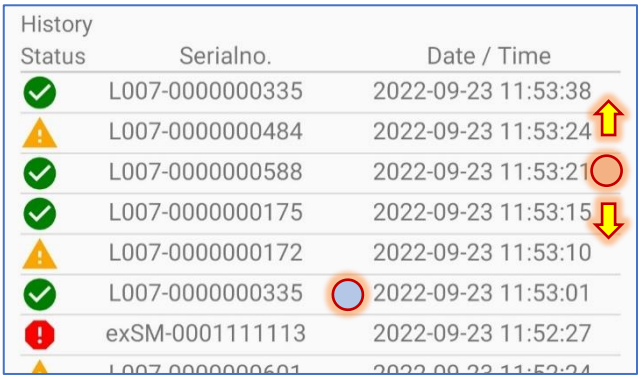
➔ *Show a general battery group list*

Tap in the centre field of the battery overview to switch to the battery group list. Unlike the history list, you can see all available the batteries and modules sorted by group name.



The Battery History List

The history list is a tabular listing of all objects scanned so far. The Companion app enables the user to scroll through scanned objects and retrieve the corresponding data in the overview by tapping on the respective object.



Upon rescanning an establish object (SMARTLOGGER or SMARTBATTERY) again at a later time, the according database entry from the history list is moved to the first position and the corresponding overview field is updated with the associated health status and battery overview.

The history list provides following actions:

➔ Tap to access the detail view and log files of a formerly scanned object

➔ Tap and hold to be prompted to delete the battery and all associated data. Since the data will be permanently deleted, the App will request confirmation:

➔ Tap and swipe up/down to scroll through the list of available battery data.

Detailed information about single batteries: The LOG - Function

The standard scan logs the general health status and creates a set of data recorded for the respective battery.

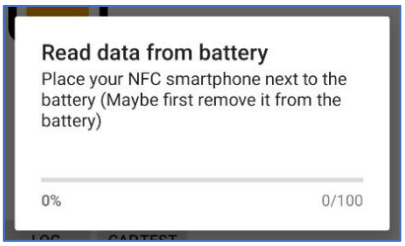
However, the Companion App can do more: it also offers an interface to graphically display advanced measurement data of the SMARTLOGGER technology.

This function becomes interesting as soon as the overview indicates a precarious condition and extended measured values are required for a well-founded evaluation.

➔Tap the button "LOG" to switch to the graphical interface for detailed battery information.

if the LOG function for a battery is called up for the first time:

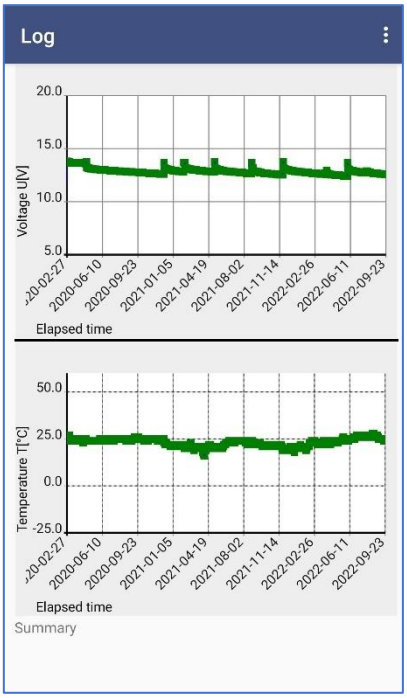
The Companion APP prompts you to read the SMARTLOGGER of the corresponding battery. To do this, hold the Companion APP against the battery / SMARTLOGGER until the scanning process is completed.



You will then be shown a graphical representation of the battery history.

If LOG files are already scanned formerly and thus available:

In this case, the last log file retrieved is displayed directly. In this case, simply hold the mobile device with the Companion App against the corresponding SMARTBATTERY to update the data record.



NOTE: SMARTBATTERY vs SMARTLOGGER

Unlike the SMARTBATTERY, a SMARTLOGGER module can be fully deleted and set back to factory defaults by the *Companion App Pro version* in order to monitor a new battery.

Due to this fact, while reading out a device the Companion App will synchronise the internal database with the data available of a SMARTLOGGER and thus erase and update the internal database.

If you are not sure whether you want to keep the data, use the export function of the Companion App before resetting the SMARTLOGGER.

The following actions can be carried out when LOG screen is in use

Zoom – Function

Tap and hold two thumbs / fingers on the chart to zoom in or out of the data points

Move the graph

Tap and swipe left / right one finger or thumb to move the diagram accordingly.

Read Full Log

All available data points are read out. Depending on the number of datapoints, this can take up to 5 minutes.

Share

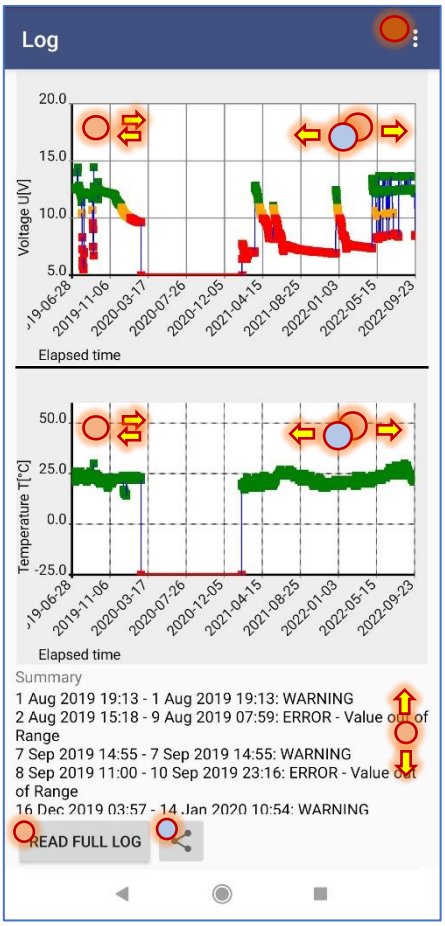
Sends the read-out data via numerous options available to the mobile device for later evaluation

Scroll

Tap and swipe vertically through the Summary entries.

Set Time Period

Displays a calendar to search for a specific time window in the measurement data.



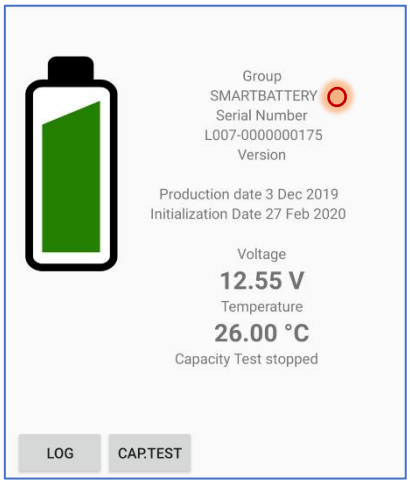
Note: What is the difference between "LOG" and "Read Full Log"

Tapping "LOG" will trigger a read-out compromise between a detailed view, reading time as well as the performance of the mobile device when processing the measuring data.

With "Read Full Log", every data point is fetched without exception, allowing you to zoom into the graphs of a battery up to the minute range.

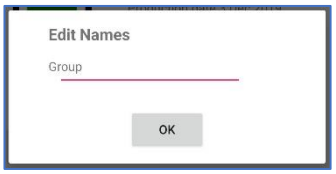
Organizing the Battery Data: Create groups and assign batteries

With an increasing number of battery data readouts, it becomes confusing at some point. The Companion App therefore offers the possibility to organise different SMARTBATTERIES or SMARTLOGGER into groups.

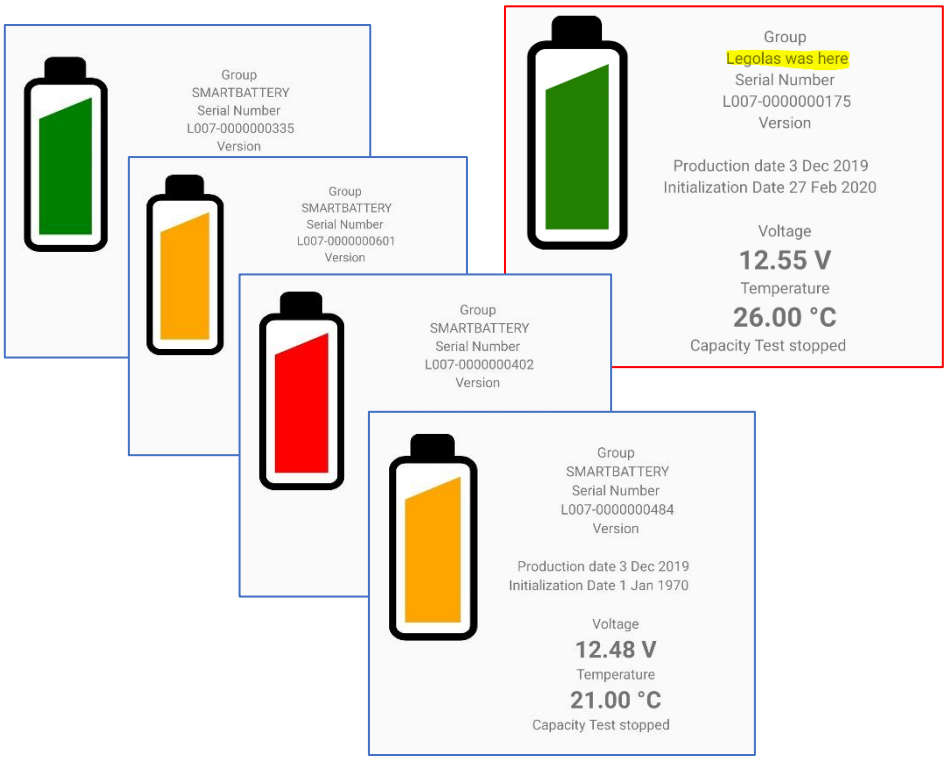


The first scanned battery therefore is always assigned to the group "SMARTBATTERY". Later, a previously unknown battery is always automatically assigned to the battery group of the last formerly scanned / edited battery.

➔Tap the group name in the overview field to assign a new group name. The Companion App will show you a corresponding dialogue box.



The battery group will be renamed and assigned to the correct group accordingly:



Note: Assign a group immediately

When a battery is newly registered, it is placed in the same group as the last battery displayed before. So, if you change the group with a new battery, all the following ones are automatically placed right there. It will save much time if you can avoid comparing serial numbers and groups afterwards.

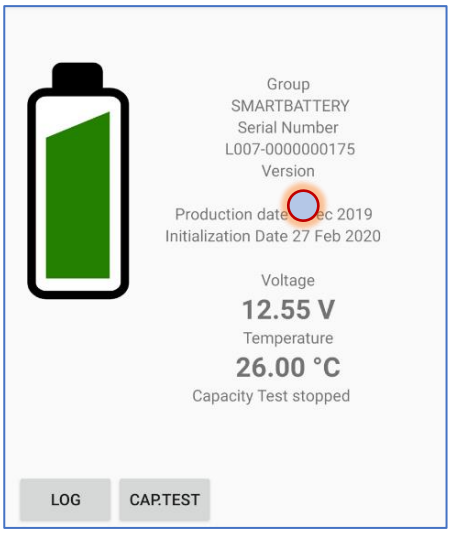
Show available battery groups and re-organize batteries

The SMARTBATTERY Companion App runs two basic functions when reading out:

- In the history list in the lower screen area, the logger that has been read out is placed in the first position.

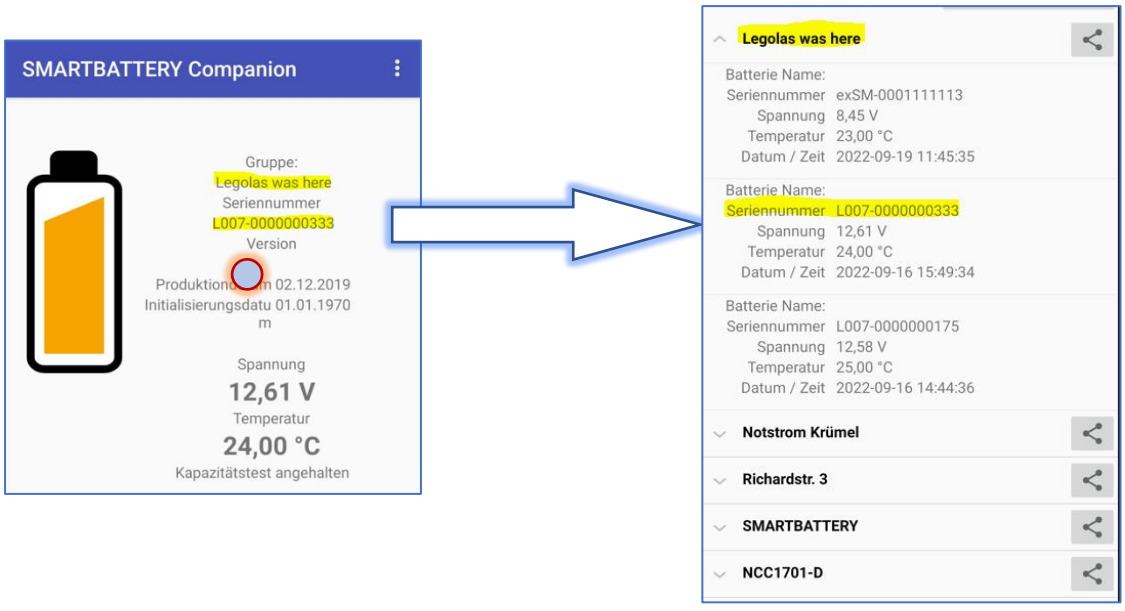
- The battery currently being read out is displayed in the upper area.

This also includes the name of the group in which the battery can be found. If you notice during the readout that the battery belongs in a different group, you can correct this directly. Either tap on the group and change the group name in the free text (e.g., create an initial group if you want to assign it later), or if the group already exists:



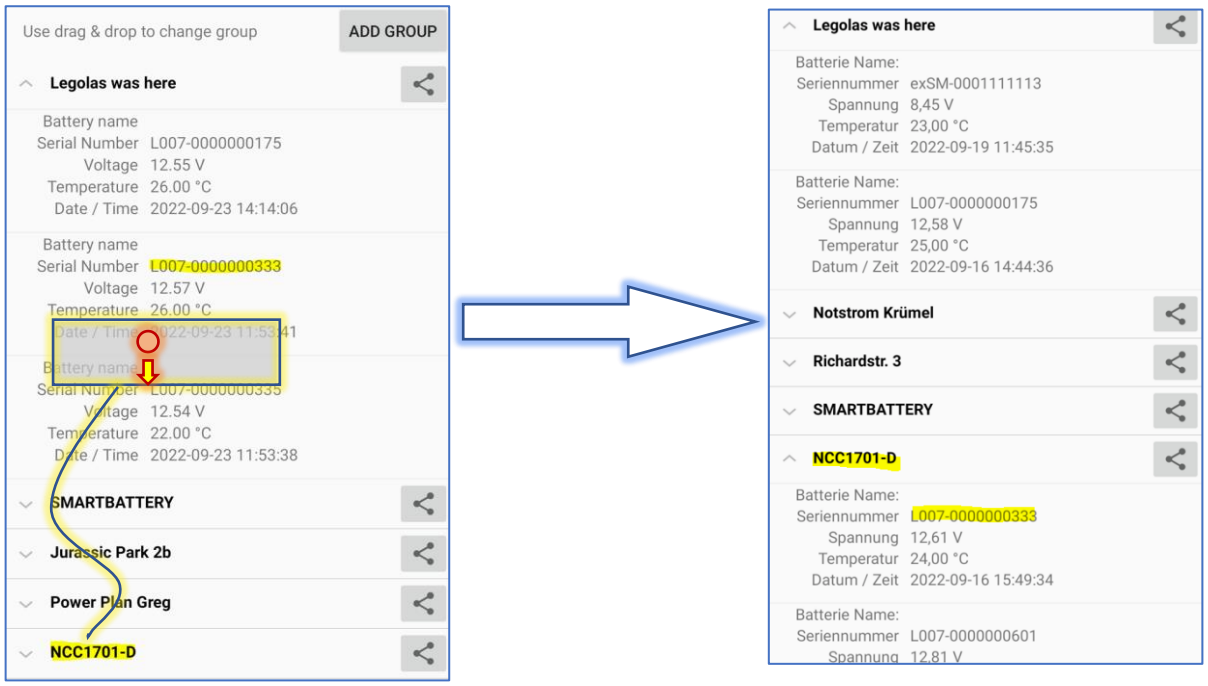
➔ Tap the centre of the battery overview screen to switch to the battery group sight

By doing so, the Companion App will display an overview of all existing battery groups



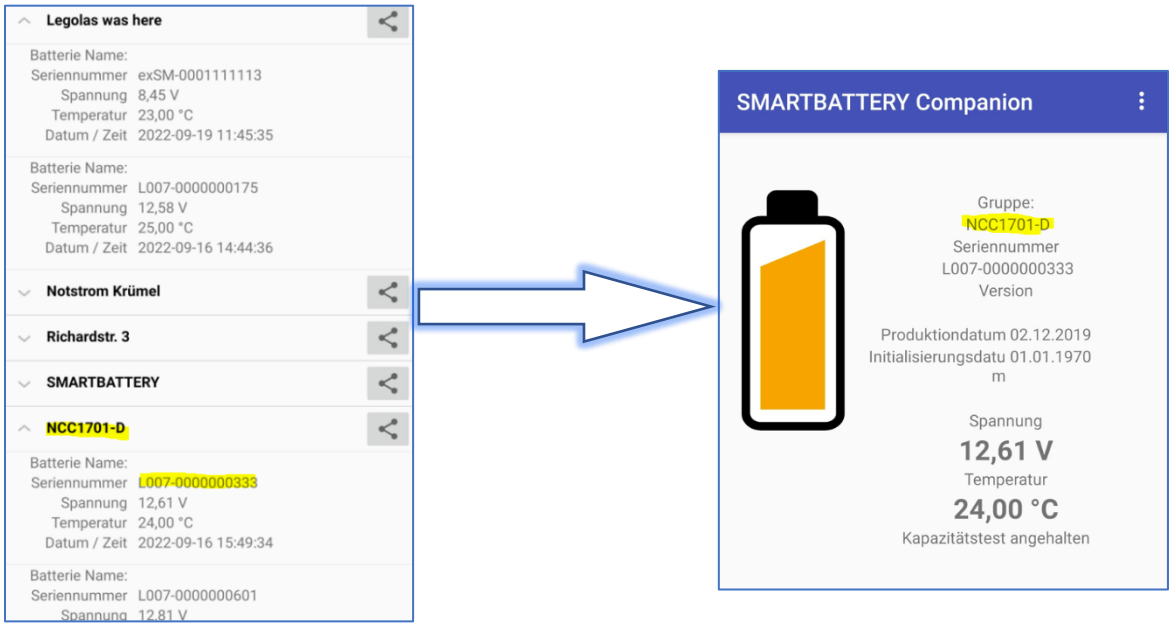
The selected battery will automatically be listed within the battery group it is assigned to.

Moving batteries to a new battery group



➔ Tap on the desired battery and hold it while moving the battery to another group.

The battery is automatically transferred to the new group and the name of the group is changed in the overview:



Note: If moving the last battery of a group into another group

When the last battery is removed from a group, the corresponding group is dissolved and removed from the list.

Premium Feature: The capacity test function

A unique selling point of the SMARTLOGGER technology and the Companion App is the ability to reliably determine the capacity of a battery.

In order to reliably calculate and compare the capacity of a battery, the test conditions as followed must be met:

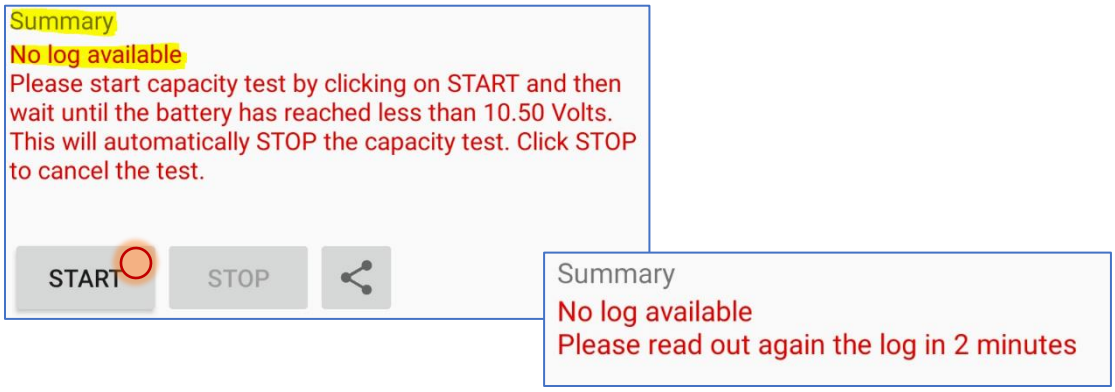
- Use a static power consumer whose values are well-known.
- The GENEREX Companion App
- The possibility of a controlled discharge run

➔Tap CAP.TEST to open the according functions menu

Collect measurement data

When starting the capacity test for the first time, no values are available yet.

1. Connect a power consuming device – Ensure the power switch is OFF.
2. Now tap "Start" in the capacity test of the Companion App and place the mobile device next the SMARTLOGGER:



3. Now switch on the consumer.

The SMARTLOGGER automatically collects measurement data in a 60-second cycle until the respective termination condition.

It is possible to call up an intermediate result at any time by reading the respective battery directly in the screen of the capacity test; however, this will not affect the test results. The first usable data readout is usually available after about 2 minutes.

Note: Use a static load!

To obtain reliable measurement results and make them evaluable, do not change or disable the connected device simulating the load during the test period.

Check the current measuring process and cancelling test

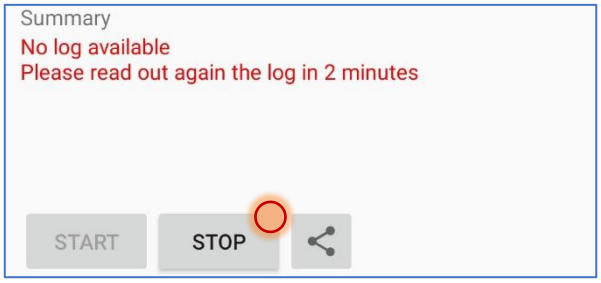
At the battery overview, the SMARTLOGGER shows the current capacity test status in real-time:

Automatic exit conditions of a pending test measurement

The capacity test ends automatically as soon as the lower voltage limit of 10.50V has been reached. In this case, the note "Capacity test stopped" will be shown on the battery overview.

Manual test abort override

➔ At the capacity test screen, tap STOP and place the mobile device next to the logger of the battery to stop the capacity test run.



The logger will then adjust its measurement settings and, as far as available, save the results for readouts.

Note: It is not always necessary to run the full test to discharge

As soon as you have enough measurement data available, you can also specifically end the test measurement via the STOP button and then remove the connected load simulation device.

Evaluate the measurement data

After a successful capacity test measurement, a complete data set for voltage and temperature is available. In order to find "deviations" more quickly in larger systems, an event summary shows time stamped “Points of Interests”, including measured battery showed abnormalities, so that you can scroll and zoom to the interesting data points. You can perform the following actions in the screen of the capacity test

Zoom – Function

Tap and hold two thumbs / fingers on the chart to zoom in or out of the data points

Move the graph

Tap and swipe one finger or thumb left / right to move the diagram accordingly.

START

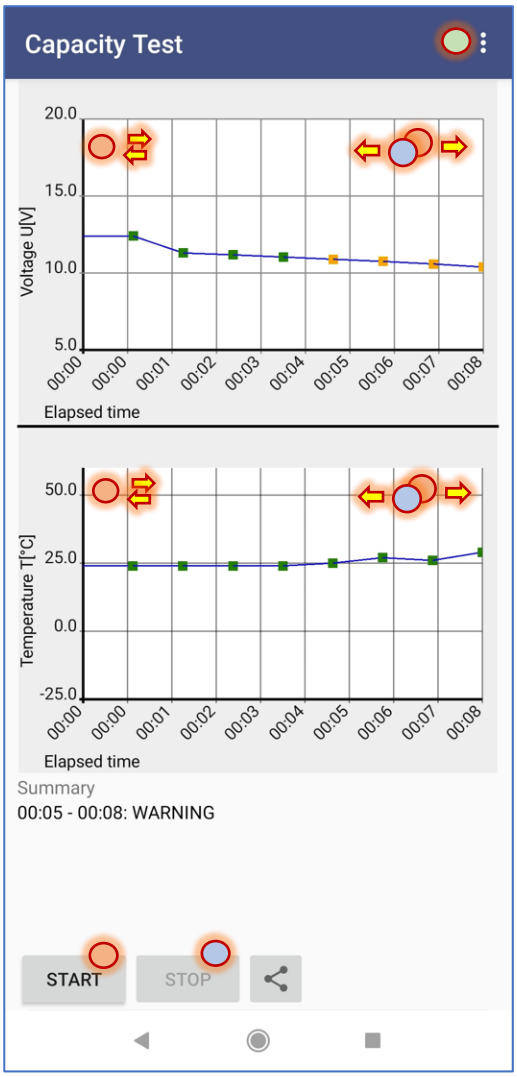
Starts a new capacity test. This test will replace the currently available test data.

STOP

Stops a capacity test in progress. The availability of this function depends on whether a capacity test for the desired battery is currently running.

Functions menu

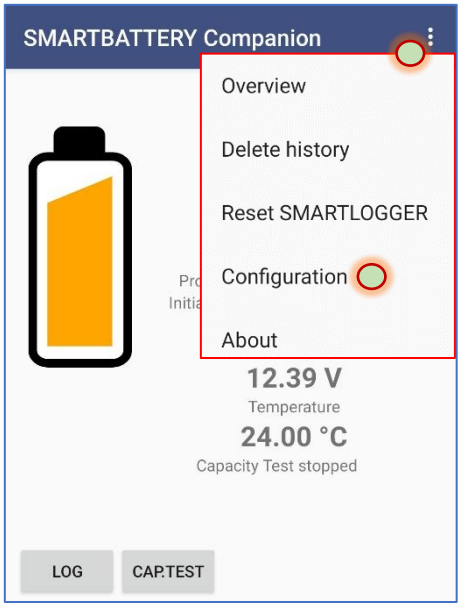
Opens a dialogue to enter the static load value - if capacity measuring data are available, the app will calculate the capacity in real-time.



Just looking at the data points provides information about the voltage curve and temperature of a battery. SMARTLOGGER technology also makes it possible to collect different battery data directly and compare them on site, without the use of complex measuring technology. By doing so, hidden problems within the batteries can be noted and identified in the shortest possible time.

Logging: Additional exSM-SMARTLOGGER functions

Unlike the SMARTBATTERY, a SMARTLOGGER can be adapted to the respective operating environment by fine-tuning various parameter like log rate, as well as the start and end conditions for a specific capacity test run.



➔ Tap on the 3 vertical dots and select "Configuration" in the function menu

The following menu items can be configured:

Start Voltage [V]

When the discharge is pending and this value is reached, the recording starts.

End Voltage [V]

As soon as this value is reached or undershot during an ongoing discharge, the recording is stopped, and the data is saved for the next read-out.

Full Charge Voltage [V]

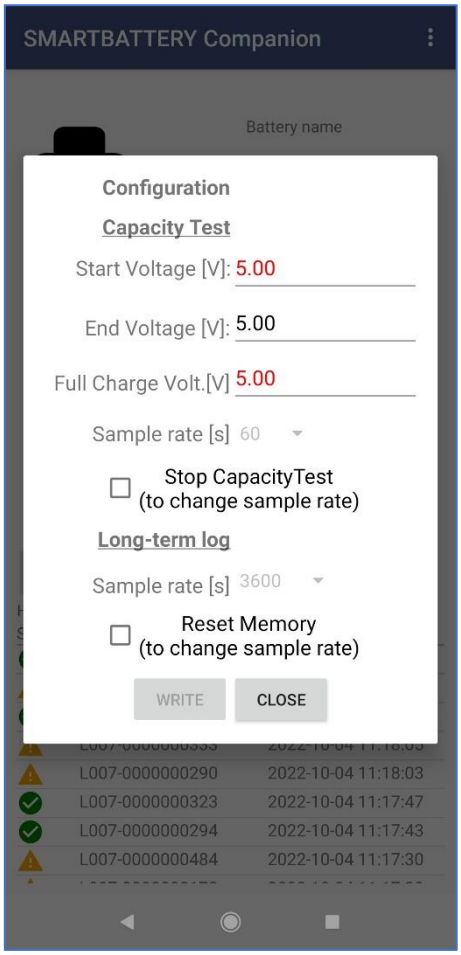
This value indicates when a battery can be considered to be "fully charged". When this value is reached, the stored log file is unlocked and overwritten at the next discharge.

Sample rate [s]

This value is the time interval in seconds that a data point is set during data collection.

Long Term Sample Rate [s]

This value defines the time interval for the data point in a "normal" operating mode.

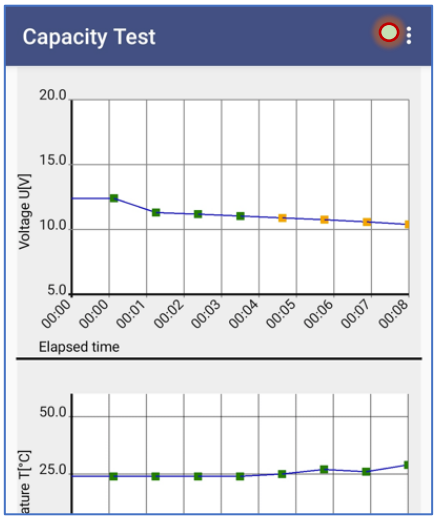


Note: Menu visibility

The SMARTBATTERY Companion App dynamically adjusts available menus according to the firmware version of the logger. Not supported functions are automatically hidden to prevent incorrect configurations.

Calculate and evaluate the capacity of a battery

➔ Tap the 3 dots to enter the data to enter load values for calculating the capacity.



Keep in mind:

1. The calculated capacity is not a measured value, but an estimated value based on your input.

2. Make sure to enter the correct value:

    a. For a series connection, enter the total value of the consumer.
    b. For a parallel connection, divide the total value by the number of strings.

3. If there is the *need for comparable calculations* to search for a general trend, use the same static test load to get identical charge / discharge values.

The calculated value is an overview indicative as to whether a battery is running correctly and in range of standardized operating parameters that fits to nearly all types of batteries. If the calculated value shows unusual results, the battery should definitely be checked more closely - the static component necessary for the test and calculation is mapped via the consumer whose performance is known.

Example calculation: Car heater with 12 V and 120 W output

- The battery provides about 12 V / 7Ah
- A 12 V car windscreen de-icer with 120 W power was connected.

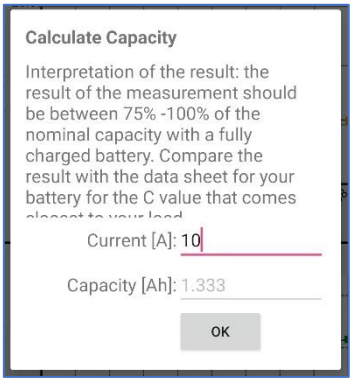
For the Companion App, 12V / 120W must be converted to Ah, the formula for this conversion is:

Watt / Volt = Ampere
120 / 12 = 10Ah

➔ If there are 2 batteries, *connected in parallel,* divide the 10Ah by 2 again to get the current applied to each battery.

➔ If there are 2 batteries, *connected in series*, use the calculated value of 10 Ah at this point.

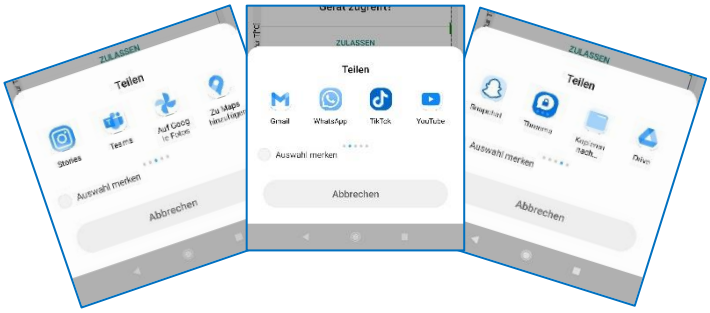
Enter the Ah - value in the Companion App to get a calculated capacity value. Compare this value with the nominal capacity of the battery:



The calculated value should deviate downwards by a maximum of 25% from the value specified in the data sheet for the nominal capacity. If this is not the case, either the value for the consumer has been specified incorrectly or you have found hints for a hidden battery problem, dude 😊.

Sending data: The Share-Button

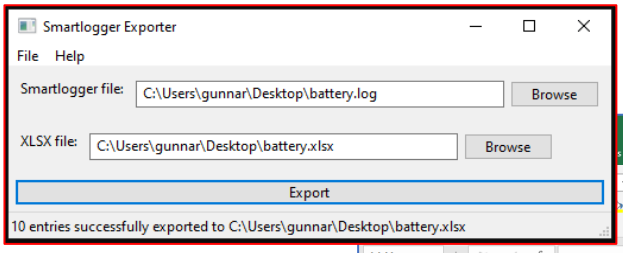
➔ Tap the Share button to transfer the collected data to other devices. You can use any installed sharing method or tool that provides a file sharing option:

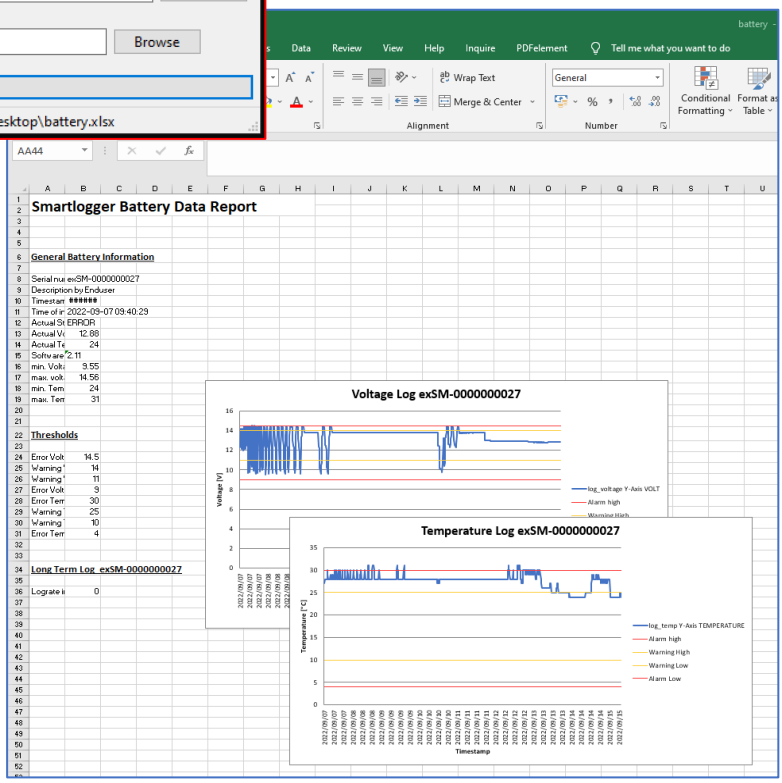


Transfer individual data sets, special battery groups, a complete data backup, and use the respective medium specified by your company for fast data exchange to transfer the data quickly to your office device.

The SMARTLOGGER Exporter: Convert measurements into standard EXCEL format

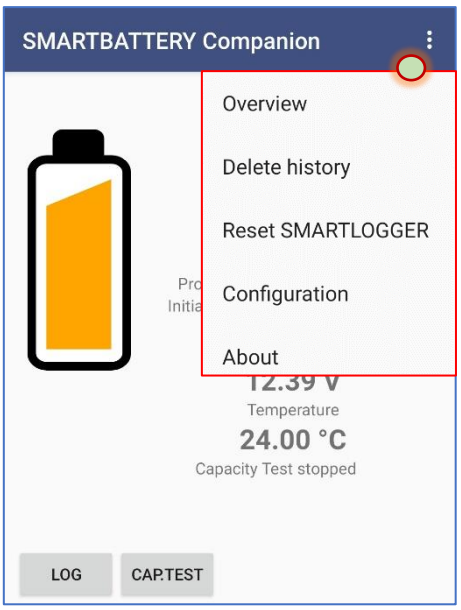
With the freeware tool "SMARTLOGGER Exporter", intuitively transfer all the data that a Companion App has stored locally to a PC and then convert it into a clear Excel document - use the data collected in the field to create professional analyses, maintenance reports, demand planning, time windows for maintenance work, estimated costs and much more.





Delete Data: Empty the Companion App data base

➔ In the battery overview, tap the 3 dots to open the overview menu.



Delete history data

Use Clear History to clear the internal database of the Companion App and return it to its factory default state.

Warning: Deleting the collected battery data is permanent. Please back up your data with the share function before use if necessary.

Please note that you are only deleting the local database on your mobile device. The data can still be fetched again from a SMARTBATTERY, as it is permanently stored there. Using this function will not delete the data stored on a SMARTBATTERY.

Additional functions for the mobile exSM - SMARTLOGGER

Reset SMARTLOGGER

This function is only available in the Companion App Pro combined with a mobile exSM-SMARTLOGGER. The SMARTBATTERY cannot be reset in this way and the collected data manipulated.

With this function you can reset a mobile exSM - SMARTLOGGER to the delivery state and completely delete all internally stored data.

GENEREX

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