ASPiON ■ G-Log
ASPiON ■ G-Log 💧💧
ASPiON ■ G-Log 2
ASPiON ■ G-Log 2 💧💧

Monitoring shocks and climate during transport

Wireless. Inexpensive. Long lasting.

User manual

for the ASPION G-Log product family

Find updates, FAQs and more useful information
online in our ASPION customer portal at
www.aspion.de/en

Contents

ASPION G-Log shock sensors

0. General description

With the ASPION G-Log shock sensor, you can record shocks, vibrations and climate data. It offers a 3-axes accelerometer and, depending on the product variant, an integrated temperature and humidity sensor. The following table shows you the available software versions and variants. You can reuse the sensor a number of times and for different transports.

Using the ASPION G-Log Manager computer software, you can define thresholds and operate the sensor. When reading out data from the sensor, the software displays the measured values. Data is transferred wirelessly to and from the sensor using Near Field Communication (NFC) technology and a card reader which is connected via a USB interface to the computer. To easily read out a sensor, you can use the additional ASPION G-Log Apps for smartphones free of charge.

Additional functions for ASPION G-Log 2 and ASPION G-Log 2 Waterproof:
- Read out via Bluetooth (BLE) at a distance of a few meters, e.g. even through packaging.
- Activation through App via BLE (only when deploying ASPION G-Log Premium), e.g. by a service provider

Data is easily sent from the App via e-mail or automatically (ASPION G-Log Premium). The ASPION G-Log Manager computer software then quickly analyses and further processes your data.

Each sensor has a unique ID which can be found on the label and in the QR code or in the barcode.

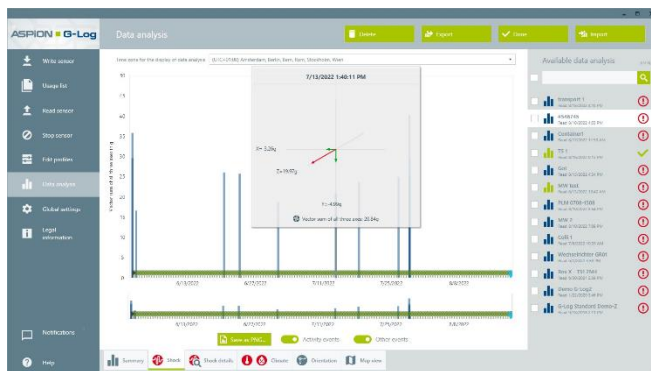**The solution contains the following components:**

ASPION G-Log shock sensor
in different variants
is mounted to the transported goods

USB card reader
for activation/operation

ASPION G-Log Manager
PC software on USB stick
(opt. Download aspion.de)

PC software ASPION G-Log Manager for Windows 10 and later

App for Android and iOS smartphones

1. Variants

The following table lists the available variants of ASPION G-Log sensors. It will give you an overview about the essential characteristics and differences. The ASPION G-Log Manager computer software as well as the apps can be used for all sensor variants.

Characteristic	ASPION G-Log	Water-proof*	ASPION G-Log 2	Water-proof*
Accelerometer	☑		☑	
Temperature sensor	☑		☑	
Humidity sensor (rel. humidity)	–		☑	
Circular buffer for events (shock, climate data)	286		950	
Shock events with details (9 shocks)	☑		☑	
Shock and vibrations check in accordance with IEC 60721-3-2	–	analog to ASPION G-Log	☑	analog to ASPION G-Log 2
Wireless data transfer via NFC (Near Field Communication)	☑		☑	
Wireless data transfer with BLE (Bluetooth Low Energy)	–		☑	
ABS housing with protection	IP 50	IP 65/67	IP 50	IP 65/67
Battery	Replaceable by manufacturer	Not replace-able	Replaceable by user	

* Waterproof is the waterproof variant of ASPION G-Log and ASPION G-log 2.

The following descriptions apply to all ASPION G-Log sensors. Important differences or sections referring to the ASPION G-Log 2 variant are explicitly described and marked in blue font.

2. Export information

The following export information applies to all ASPION G-Log sensors and variants.

Export information		
	Product tariff code	▪ 9031 8080
	Country of origin	▪ EU (DE)
	Data regarding legal control	▪ Al = no, ECCN = no

3. Technical specifications

3.1 ASPION G-Log and ASPION G-Log Waterproof

	Description	Details
Accelerometer	3 axes: x, y and z up to ±24 g per axis	- Up to ±16 g, 2.5% accuracy Extendable up to ±24 g with 3.5% accuracy, verified by a testing facility 0.2 g resolution - Adjustable threshold from 0.2 g to 12 g
	Measuring frequency	Between 25 Hz and 1,600 Hz
Temperature sensor	Calibrated internally, by manufacturer	-30°C ... +60°C with accuracy of ± 2°C 1°C resolution - Lower and upper threshold freely definable
Memory/logging	Non-volatile memory Event triggered	- Capacity: 286 events in circular buffers - Saves first and 8 highest peak events with details permanently
Data transfer and analysis	Wireless via NFC with PC software and App	- Data is transferred to sensor via NFC - Configuration and analysis with PC software and NFC-enabled reading devices
Near Field Communication (NFC)	NFC Tag (Type 4)	- ISO/IEC 14443B compatible 13.56 MHz RF interface
Battery	CR2032 3V Lithium 225 mAh replaceable by manufacturer (does not apply to Waterproof version)	- Battery life depends on data rate, up to 1.5 years, e.g. 1 year for 100 Hz; battery life may be shorter for lower temperatures - Battery power level at delivery: full - Battery consumption when not active: 5 % per year for indicated storage conditions - Data can be read out even with empty battery - No declaration required
Operating conditions	Temperature range Storage	-30°C ... +60°C 5°C ... +40°C, humidity: max. 85 %
Housing and mounting	ABS housing; screw mounting M3 ISO 7380 FL; industrial adhesive tape, amongst other	- Dimensions: 88 mm x 45 mm x 16 mm - Distance of mounting holes: 80 mm - Tightening torque: 0.4 - 0.5 Nm
Variants	Standard, IP 50 protection	- Weight: approx. 35 g - Penetration of fluids is to be prevented (Corrosion damage/short circuit)
	Waterproof, IP 65/67	Weight: approx. 50 g, dustproof and waterproof
Approvals/Standards	Conformity declarations and directives	- CE/ROHS/REACH/WEEE - RED (EU) - Not required: FCC/IC/SRRC - DO160 (IATA) → for details, please go to customer portal

3.2 ASPION G-Log 2 and ASPION G-Log 2 Waterproof

	Description	Details
Accelerometer	3 axes: x, y and z up to ±24 g per axis	▪ up to ± 16 g calibrated, 2.5% accuracy, extendable up to ± 24 g approx. 3.5% accuracy, verified by accredited testing lab ▪ 0.2 g resolution ▪ Adjustable threshold from 0.2 g to 12 g
	Measuring frequency DIN EN IEC 60721-3-2	▪ Adjustable between 25 Hz and 1,600 Hz ▪ Shock/vibration testing 2M4 / 2M5 / 2M6
Temperature sensor	Calibrated by manufacturer Adjusted during production	▪ -40°C … +85°C with accuracy of ± 0.2°C ▪ 0.1°C resolution ▪ Lower and upper threshold freely selectable
Humidity sensor	Calibrated by manufacturer Adjusted during production	▪ 0% rH … 100 % rH non-condensing ▪ ± 2% rH accuracy; 0.1% rH resolution ▪ Adjustable thresholds
Memory/logging	Non-volatile memory Event and interval triggered with thresholds	▪ Capacity: 950 events in circular buffers ▪ Additionally, shock details for the first and 8 highest peak events in permanent memory
Data transfer and analysis	Wirelessly via NFC with PC software and App	▪ Data transfer via NFC ▪ Configuration and analysis with PC software and NFC-enabled reader
Near Field Communication (NFC)	NFC Tag (Type 4)	▪ ISO/IEC 14443B compatible ▪ 13.56 MHz RF interface
BLE for data transfer	Bluetooth Low Energy for reading out the data via app or PC software; activation via app (only ASPION Premium)	▪ Max. 10m range (line of sight) ▪ Min. Bluetooth 4.0 specification ▪ Can be switched off optionally ▪ Bluetooth Declaration ID: D047584
Battery	CR2032 3V Lithium 225 mAh battery replaceable, manufacturer Panasonic recommended	▪ Battery life depends on data rate; up to 1.5-2 years; e.g. 1 year at 100 Hz; battery life may be shorter at lower temperatures ▪ Battery power level at delivery: full ▪ No battery consumption in delivery state until the battery pull tab is removed ▪ For transport including air freight no labeling obligation of the lithium metal button cell; IATA DGR compliant
Operating conditions	Operating temperature Storage temperature range Humidity range	▪ -30°C ... +60°C ▪ 5°C … +40°C ▪ 0% rH … 100% rH, non-condensing
Version	ASPION G-Log 2: IP 50 protection	▪ Sensor protected by membrane ▪ Weight: approx. 35 g ▪ Penetration of fluids is to be prevented
	ASPION G-Log 2 Waterproof: IP 65/67 protection	▪ Weight: approx. 50 g, dustproof/waterproof

Housing and mounting	ABS housing; Screw mounting; optional: industrial adhesive tape, magnets, cable ties	For ASPION G-Log 2 ▪ Dimensions: 88 mm x 45 mm x 16 mm ▪ Distance of mounting holes: 80 mm ▪ Tightening torque: 0.4 - 0.5 Nm For ASPION G-Log 2 Waterproof: ▪ Dimensions: 96 mm x 51 mm x 19 mm ▪ Distance of mounting holes: 85 mm ▪ Tightening torque: 0.4 - 0.5 Nm
Approvals/Standards	Declarations of conformity and directives	▪ CE / ROHS / REACH / WEEE ▪ RED (EU) ▪ FCC (USA) ▪ IC (Canada) ▪ SRRC (China) ▪ DO160 (IATA) → for details see customer portal

4. Conformity declarations

Please go to our customer portal to download the conformity declarations for the ASPION shock sensors: www.aspion.de/en. Please find more explanations according to the regulations in the following paragraphs.

FCC/ISED Regulatory Statements:

This chapter contains the required regulatory notices.

This product contains:

FCC ID: SQGBL652.	This ID is printed on the front label of the product.
IC ID: 3147A-BL652.	This ID is printed on the front label of the product.

FCC/ISED compliance statement

This device complies with Part 15 of the FCC Rules and Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

FCC/ISED Caution Statement for Modifications:

Aspion has not approved any changes or modifications to this device by the user. Any changes or modifications could void the user's authority to operate the equipment.

Aspion n'approuve aucune modification apportée à l'appareil par l'utilisateur, quelle qu'en soit la nature.Tout changement ou modification peuvent annuler le droit d'utilisation de l'appareil par l'utilisateur.

FCC/ISED Wireless notice

This device complies with FCC/ISED radiation exposure limits set forth for an uncontrolled environment and meets the FCC radio frequency (RF) Exposure Guidelines and RSS-102 of the ISED radio frequency (RF)

Exposure rules. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Le présent appareil est conforme à l'exposition aux radiations FCC / ISED définies pour un environnement non contrôlé et répond aux directives d'exposition de la fréquence de la FCC radiofréquence (RF) et RSS-102 de la fréquence radio (RF) ISED règles d'exposition. L'émetteur ne doit pas être colocalisé ni fonctionner conjointement avec à autre antenne ou autre émetteur.

FCC Information for a Class A (industrial use) digital device

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

FCC Mobile Device RF Exposure Statement

This device is only authorized for use in a mobile application. At least 20 cm of separation distance between the (Product Name) device and the user's body must be maintained at all times.

5. Mounting

5.1 Mounting orientation
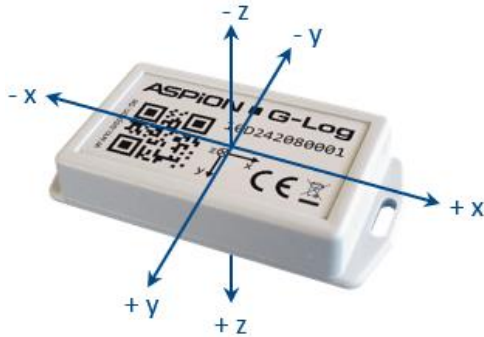
To correctly assign the axes in case of shock events, the mounting orientation is critical.

Recommended mounting

- On steel: M3 ISO 7380 FL
  M4 ISO 7380 for ASPION G-Log 2 Waterproof
- On wood/sheet metal: flathead screws with a maximum thread diameter of 3.5 mm (e.g. DIN 7981)
  3.9 mm for ASPION G-Log 2 Waterproof
- Tightening torque: 0.4 - 0.5 Nm

Alternatively, you can use industrial adhesive tape (e.g. of 3M 5925F), magnets or cable ties for fixing.

When mounting the ASPION G-Log 2 and ASPION G-Log 2 Waterproof, make sure that you do not damage the membrane used to protect the humidity sensor from splashing water. Furthermore, in order to record correct climate data, the climate sensor must not be shielded from the air, e.g. by packaging material.

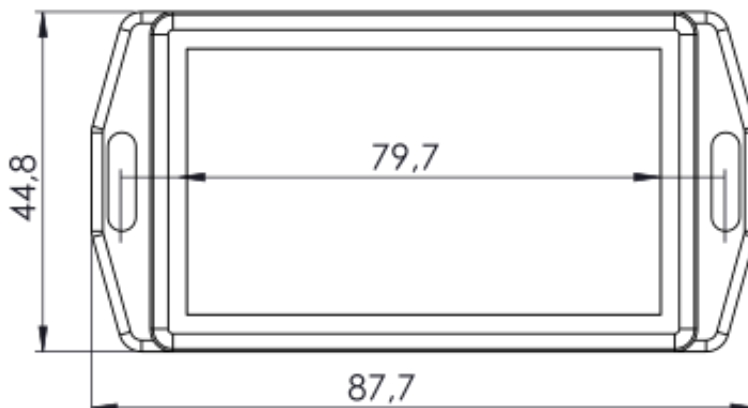### 5.2 Housing dimensions and mounting template

Housing cross section
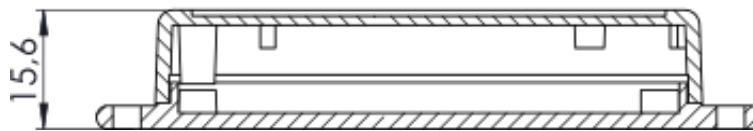
Dimensions in millimeters
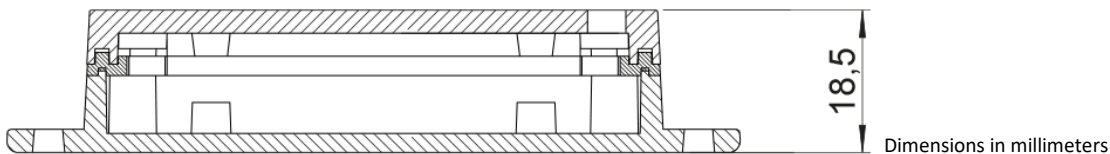
Housing dimensions

To easily mount the sensor, copy this mounting template (scale: 1:1).
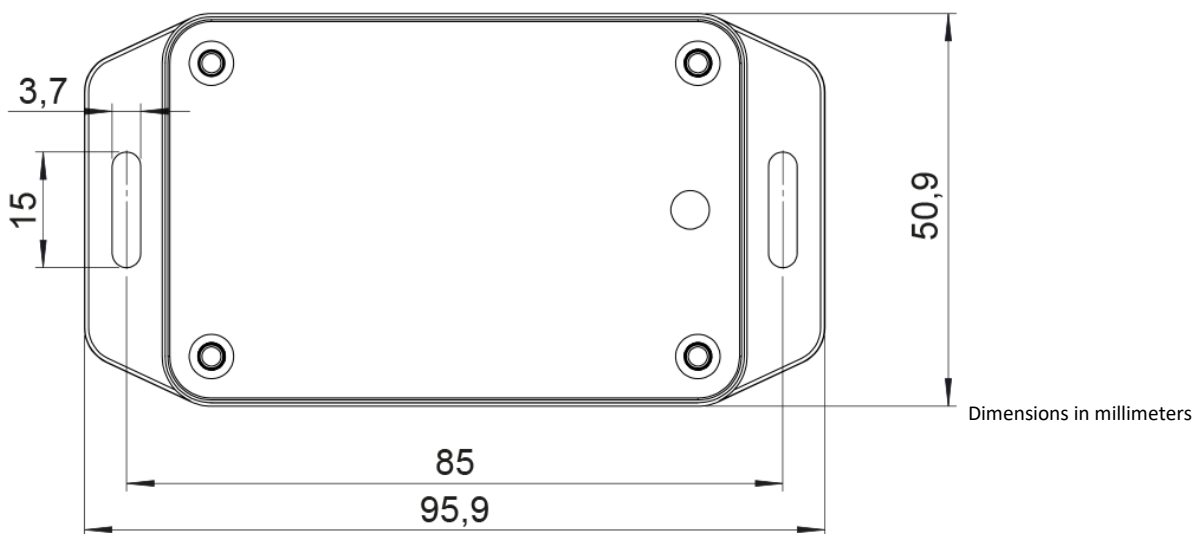

Dimensions in millimeters

5.3 Housing dimensions and mounting template ASPION G-Log 2 Waterproof

Housing cross section

18,5

Dimensions in millimeters

Housing measures

Mounting template 1:1

3,7

15

50,9

85

95,9

Dimensions in millimeters

6. Battery replacement for ASPION G-Log 2

As soon as the battery of the ASPION G-Log 2 or ASPION G-Log 2 Waterproof is exhausted, the sensor can no longer be read out. But all recorded data is stored in memory. To read the data and use the sensor again, replace the battery. Replace the battery only on a clean, dry and non-conductive work surface. How to:

1. Open the housing by unscrewing the screws on the bottom (for ASPION G-Log 2 Waterproof on top) of the housing with a screwdriver.
2. Remove the battery using a blunt, non-metallic object from the holder on the side of the housing edge. Avoid contact with electronic devices.
3. Insert a new battery of type CR2032, 3V/220 mAh in the holder, we recommend the manufacturer Panasonic. Please note the polarity: the + side of the battery (label) is on top. When inserting the battery, the two LEDs marked in the picture light up briefly. Screw down the housing again. Important: For the ASPION G-Log 2 Waterproof, use a torque screwdriver with 26cNm (otherwise warranty expires). Only then is the housing waterproof.
4. Wait 10 seconds before reading the sensor and check the battery capacity.

Please note: The sensor keeps its previously set state during the battery exchange and adopts this state after the battery has been replaced. As soon as the battery is empty, the internal timer also stops.
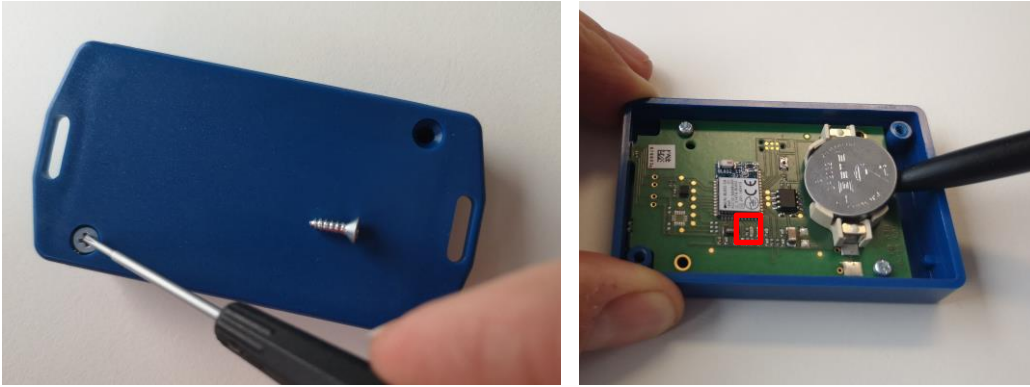
■ Brief blinking of LEDs when inserting the battery

Tips for battery replacement

Replace weak battery while sensor is active

If you replace a low battery of a sensor in an activated, running state, proceed quickly to avoid an excessive time delay. The internal timer stops if no battery is inserted and continues to run from the time the new battery is inserted.

Restoring the current time

As soon as the battery of a sensor is exhausted, the internal timer stops. You can reset the time after battery replacement by reactivating it. If you do not immediately reinsert the sensor afterwards, we recommend to stop the sensor. This significantly reduces battery consumption compared to a sensor in the activated state.

7. Disposal

To comply with the WEEE directive, no ASPION G-Log shock sensor must be disposed of with domestic waste; make sure to dispose it at the respective recycling facility. ASPION data loggers that are no longer required can be returned free of charge to the manufacturer at any time to the following address:

ASPION GmbH

Return of used devices

Alte Kreisstraße 40

76149 Karlsruhe, Germany

8. Card reader (NFC)

To operate the ASPION G-Log shock sensors, you require an Identiv uTrust 3700 F card reader with NFC technology. You find a description on how to install this card reader in this user manual.

ASPION G-Log 2 and ASPION G-Log 2 Waterproof may be an exception: you can activate it via BLE through the Smartphone App without having to use the card reader. To do so, you require the ASPION G-Log Premium software (→ see Configuration and ASPION G-Log Premium).

9. Security notes

- The ASPION G-Log shock sensors are not designed for safety-relevant applications.
- A sensor which is visibly damaged must not be operated. Please return sensors which do not operate correctly or are damaged to your provider.
- Prevent fluids from penetrating the device, as they may cause corrosion damage or short circuit. The ASPION G-Log 2 is protected by a membrane at the lateral opening, the ASPION G-Log 2 Waterproof from top.
- You must not open or modify the ASPION G-Log, or replace the battery itself of the ASPION G-Log. The battery can be replaced by the manufacturer (this does not apply to the Waterproof variant). The battery of the ASPION G-Log 2 and ASPION G-Log 2 Waterproof can be replaced by the user. When replacing the battery, be careful not to cause short circuits and follow the instructions.
- Never use a sensor with leaking battery. Do avoid touching this sensor with your bare hands. If you had contact to leaking fluids, thoroughly wash your hands. Make sure to remove the remaining electrolyte using a damp cloth. Wash contaminated clothing that has come into contact with the electrolyte.
- The manufacturer does not assume any liability for damages which were caused due to inappropriate use or wrong operation.
- The sensors are in compliance with the IEC 62368-1:2014security standards.

ASPION G-Log Manager – PC software

1. System requirements

Please note the following system requirements for your PC system:

- Windows operating system Version 10 or later
- Monitor with at least 1600 pixels horizontal resolution
- .NET Framework V4.8 or later
- USB connector for Identiv uTrust 3700 F card reader

2. Installation

The required files and programs to set up the software are stored on the ASPION USB stick. Connect it to your USB slot. For the latest software versions and updates, additional product information and FAQs, please go to our internal ASPION customer portal, at www.aspion.de/en.

Please note: You require administrator rights to install the software. Please contact your IT if necessary.

2.1 Getting ready for installation: .NET framework and card reader

- If the .NET framework is not set up on your computer, you must first install it:
  Double-click the dotNET Framework\NDP452-KB2901907-x86-x64-AllOS-ENU.exe file to execute it
- Install the driver for the Identiv uTrust 3700 F card reader:
  Double click the Smart Card Reader\Identiv uTrust V1.27.exe file to execute it; then connect the card reader to the USB interface.

Important: Do not place the card holder on metallic underground (e.g. PC) as this negatively affects the NFC technology.

2.2 Installing the ASPION G-Log Manager PC software

- Installing ASPION G-Log Manager:
  Double click theASPION_G-Log_Manager_Installer.msi file to execute it.
- Depending on the operating system language, the program is automatically installed in English, German, Italian or Chinese. You can make language changes via the configuration program (→ see User manual Configuration).
  The Setup Wizard opens. Please follow the steps of the wizard.
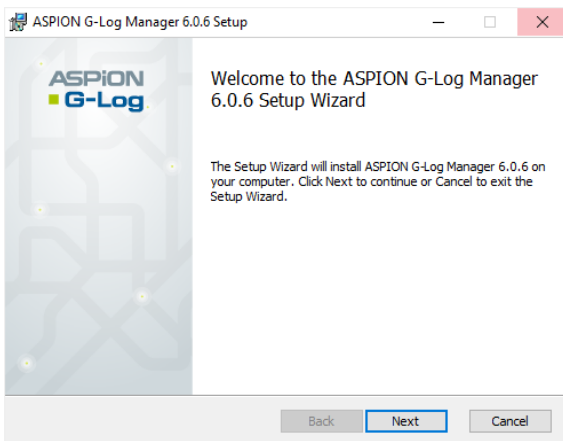
Starting the setup wizard.
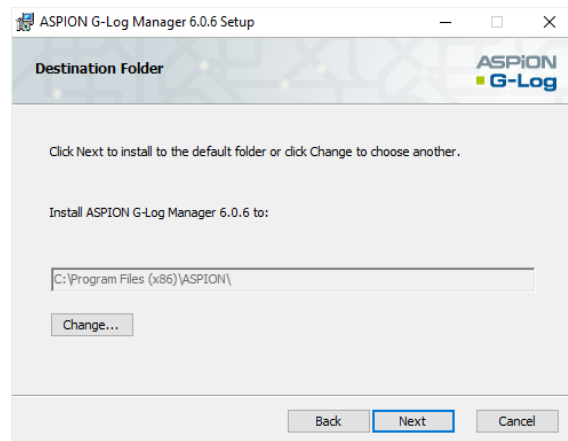
Select a local data directory to which you have write rights.

Please note: To enable shared access for several users to profile and usage data, and also analyses, you use one shared network drive for program data (→ see User manual Configuration).

After you have successfully installed the software, ASPION G-Log Manager is displayed as link on your desktop. Start the program with a double click. The program automatically starts with the **Write sensor** function.
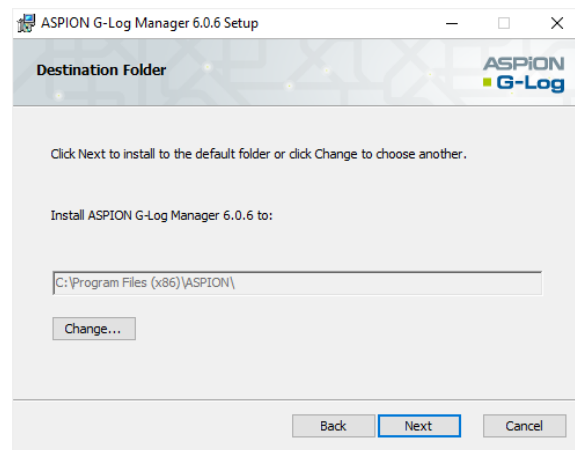
2.3 Installing updates

To install an update, follow the same steps as when installing the software for the first time (→ see ASPION G-Log Manager – PC software, chapter 2.2, "Installing the ASPION G-Log Manager PC software"). The update software automatically recognizes previously installed versions.

You can still work with data you have saved before, for example, saved profiles or analyses. Just select the same storage location for your data that you have used before. You can also change the storage location via the configuration tool (→ see User manual Configuration). In that way, you can access all previously created data after an update has been made.
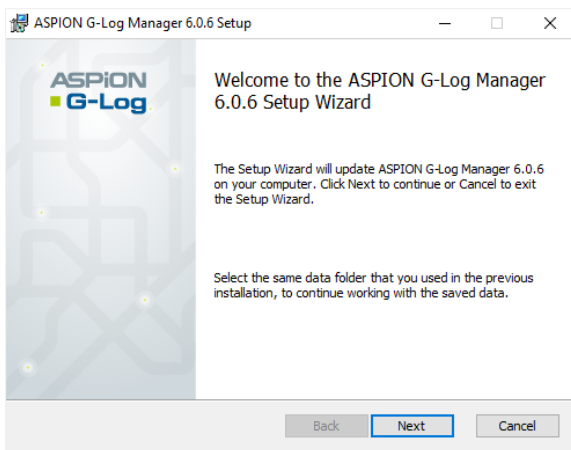
Starting the setup wizard for updates.

During update, select the same directory to store data. In this way, all previously stored data will be available to you in the new version.

2.4 Deinstalling the software

You can deinstall the software following the instructions of your operating system. Data, however, is not deleted, so it is still available if you install the program again. To permanently delete data, you must delete the respective data folder (→ see ASPION G-Log Manager – PC software, chapter 2.2, "Installing the ASPION G-Log Manager PC software").

2.5 Starting the program

Start ASPION G-Log Manager. All existing data is automatically loaded. In the case of large amounts of data, such as many analyses or when working in a shared network, these are automatically loaded in the background.

2.6 Information about product version

To find out which software version of the ASPION G-Log Manager you are currently deploying, please click on **Legal information** in the left pane.

3. Before getting started

3.1 General overview of the user interface

The ASPION G-Log Manager always starts with the Write sensor function. The software user interface is organized in three areas:
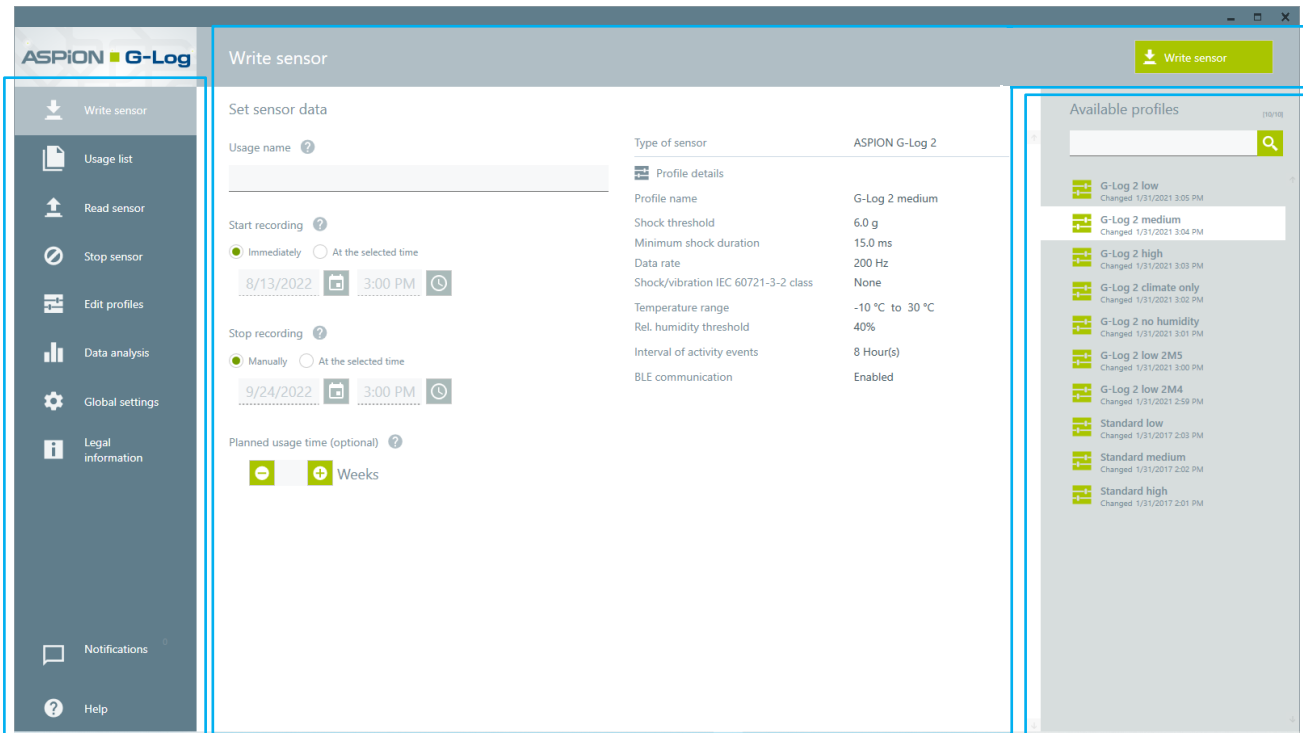
Functions ⓿   Content area and associated function buttons ❶   List area ❷

- Depending on the function you have selected, the content area and the list area change. This especially applies to the selected sensor types.
- When calling a function, the corresponding first entry of the list area is automatically marked.
- The entries in the list area are sorted by date: the entry with the latest date (e.g. created on, changed on, read on) appears at the top.

3.2 Important: Setting the sensor types

The ASPION G-Log Manager is used to operate all ASPION G-Log sensors. Therefore, first set the sensor type(s) that you are using: ASPION G-Log (incl. Waterproof) and/or ASPION G-Log 2 (incl. Waterproof). The important differences are described in section 1 (→ see ASPION G-Log shock sensor, chapter 1, "Variants"). Both sensor types are selected after the installation.

The program will support you with exactly the functions you need to operate the respective sensor type. The matching information is shown in the respective views and functions.

Please note: You can select the sensor type or operate both sensor types together at any time. The ASPION G-Log Manager immediately applies the selected setting.

You set the sensor type or both sensor types as follows:
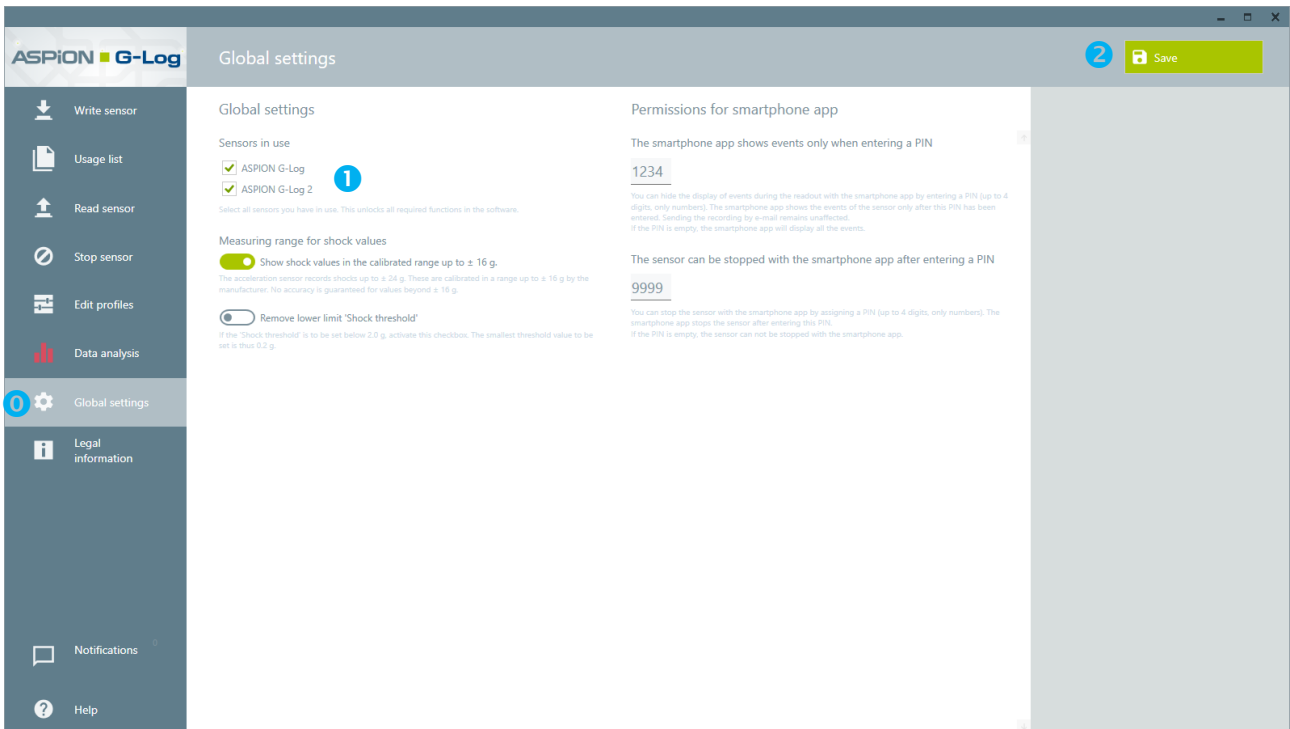
❿ Select Global settings in the left area.

❶ Select the sensor type(s) you use:

ASPION G-Log / Waterproof = lightgray housing

ASPION G-Log 2 / Waterproof = blue housing

**❷** Save your selections by clicking Save.

Tip: Select only the sensor type which you are planning to use productively. This returns a better overview of the necessary information and functions.

4. Operating the sensor

4.1 Defining the settings

You define the sensor details for your shipment with the **Write sensor** function.

0 Select the **Write sensor** function in the left area
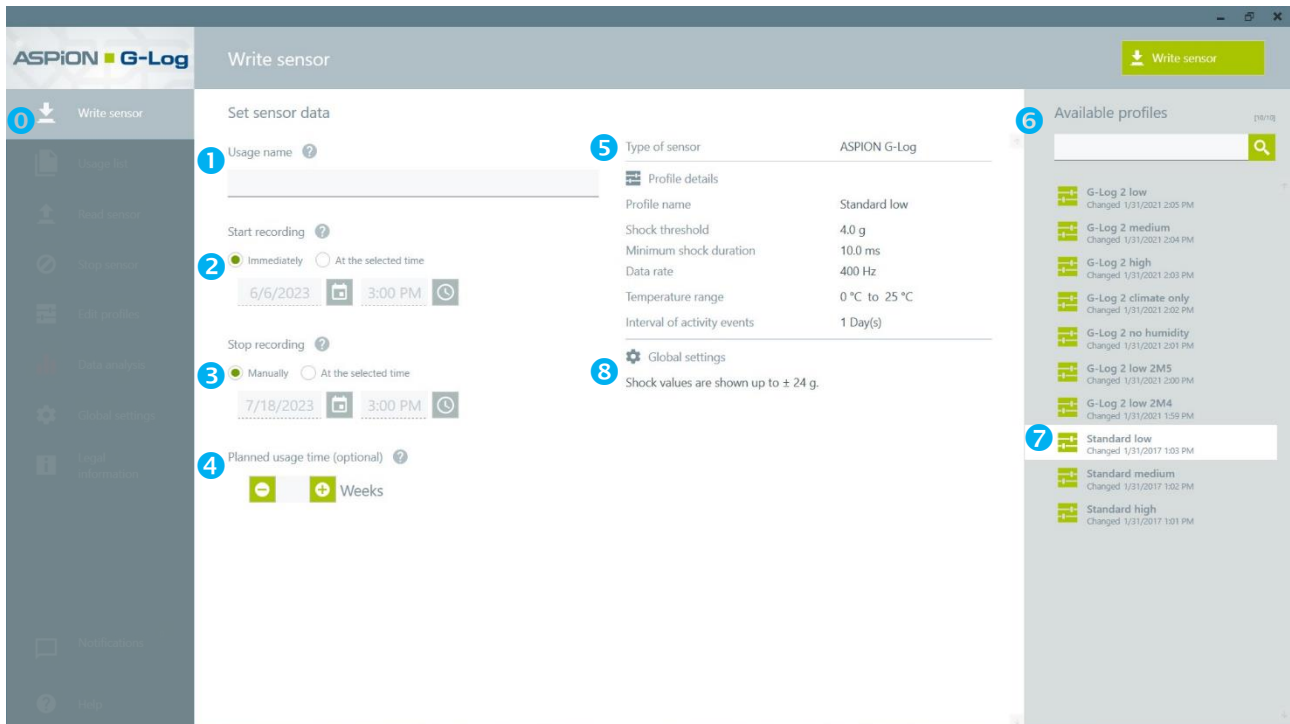
Define the following settings:

❶ Enter any name for your shipment. This name is uniquely assigned to the shipment and the sensor and displayed, for example, for analyses. If this field is not filled in, a sensor ID will automatically be assigned.

❷ Define a time when the sensor starts logging data: immediately or at a specific date/time in the future, at the earliest after the next full hour.

> Please note: The ASPION G-Log sensor consumes 5% of its battery capacity per year in delivery state. For ASPION G-Log 2, the battery consumption is 0% as long as the battery pull tab has not been removed.
> If it was used once and then deactivated, the battery consumption in a non-active state is increased to 25% per year.

❸ Define a time when the sensor stops logging data: manually via the **Stop sensor** function or automatically at a specific date/time in the future. The sensor can also be stopped using the Smartphone App (➔ see ASPION G-Log App for smartphones).

❹ By entering the planned usage time (weeks/optional), the program checks whether the battery life of the sensor will be sufficient for the planned transportation time. If the capacity is insufficient, you will receive a corresponding message.

❺ You enter a predefined profile for each shipment. This profile contains the sensor type, threshold values, information on the battery life, and so on. You select the profile from the list area on the right.

❻ The list view shows you all available profiles. If you have to select from a large number of available profiles, you will quickly find the required profile using the search function.

❼ Select the desired profile here. The profile details will immediately be displayed in the content area. Only the profiles of the set sensor type will be listed (→ see ASPION G-Log Manager – PC software, chapter 3.2, "Important: Setting the sensor types").

Please note: you change a profile with the **Edit profiles** function (→ see ASPION G-Log Manager – PC software, chapter 6, "Creating and editing profiles").

❽ Here, you will receive information about your global settings. If no information is displayed, the default setting applies: shock values up to ± 16g are displayed; the ASPION G-Log App for smartphones displays all events directly. A PIN to stop the sensor with the Smartphone App is not entered.

With the **Global settings** function you define whether you display shock events up to ± 16 g (= calibrated area) or up to ± 24 g. And at the same time you can also remove the lower threshold limit for shocks. You can also define that events are displayed hidden when reading out data with the ASPION G-Log App and that they are only displayed for the smartphone user when entering a PIN. Additionally, you can assign a PIN to stop the sensor with the Smartphone App

Please note: You make changes to the global settings with the **Global settings** function
(→ see ASPION G-Log Manager – PC-Software, chapter 7, "Global settings").

4.2 Transferring data to sensor

⬇ Write sensor   You transfer the selected settings by clicking the Write sensor button. Follow the instructions of the program. Place the sensor you want to use with the label facing upwards (label visible) on the card reader. If you use different sensor types, make sure you select the correct sensor type, otherwise you receive an error message. After successful writing, the sensor is read out and its current data is displayed in the summary window.

Tip: Place the ASPION G-Log 2 sensor as illustrated in the picture to the right.
You will then receive the best results when exchanging data with the card reader.

Important: Make sure to remove the battery pull tab for the ASPION G-Log 2 first by pulling the tab all the way out. Only then the battery contact is enabled and you can write data. You do not have to open the housing for this purpose.
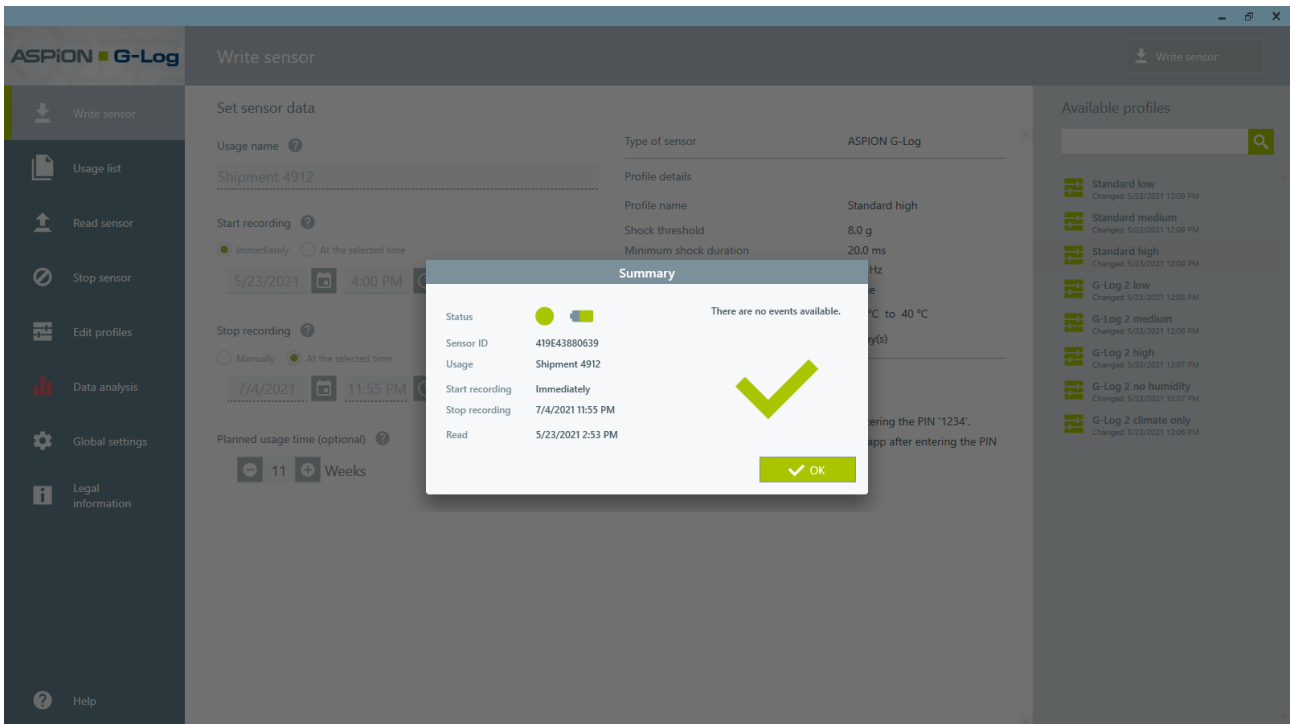
The sensor is now ready to be mounted.

Please note: You find explanations on how to mount the sensor and a mounting template in ASPION G-Log shock sensors, chapter 5, "Mounting".

States

⬤　Sensor is activated and records events

⊘　Sensor is not activated and does not record any events

🔋　Current battery life in percent; display at mouse over

Errors and problem solving

Possible error messages, causes and hints for problem solving
→ see ASPION G-Log Manager – PC software, chapter 12, "Help, errors and problem solving".

5. Usage list

The usage list shows all sensors that you have used with the **Write sensor** function including the defined settings. Additionally, all sensors from which analyses were already made are marked. This helps you to keep track of your activated sensors including all details at any time.

Note: If you deploy ASPION G-Log Premium you also receive the usages of the ASPION G-Log 2 which have been activated via App (→ see Configuration and ASPION G-Log Premium, chapter 3, "Working with G-Log Premium").

❶ In the left area, select **Usage list**.

❶ Select an entry from the list. If you have already analyzed a usage case, the program indicates it with the 📊 icon.

❷ All details of the selected usage are displayed.

❸ To delete a usage, select an entry from the list and click **Delete**. You can select a number of usages at once by ticking the checkbox next to each usage. If available, you can directly go to an analysis with the **Go to data analysis** button. You export usage data as PDF file with the **Create PDF** button, for example, to send this information via e-mail. You can always export the currently selected usage. By clicking the **Status report** button, you receive an Excel list with all usages including the available analyses. Report example:

	A	B	C	D
1	Name of the usage	Sensor ID	Sensor written on	Record read out on
2	F5.68C6-b	41B8432801C6	8/3/2020 8:29:50 tt	
3	1600-L2 NW 28 cn	41B8432801D7	7/30/2020 18:09:36 tt	8/20/2020 8:48:30 tt
4	#99-568 CH 2-400	41B8432801B4	7/28/2020 13:40:25 tt	8/16/2020 19:53:53 tt
5	#488 SN-DE/L	217A220B001B	7/24/2020 14:51:49 tt	
6	F5.68D5	41B8432801D5	7/23/2020 18:45:54 tt	8/6/2020 19:06:10 tt
7	F5.68C8-a	41B8432801C8	7/23/2020 18:41:48 tt	8/3/2020 8:24:40 tt
8	#488 SN-DE/R	41B8432801B1	7/23/2020 15:16:17 tt	
9	#678594 SG Zone5	41B84328024B	7/22/2020 8:46:09 tt	
10	#99658 KL Con2	41B843280203	7/18/2020 18:58:20 tt	7/28/2020 13:34:55 tt
11	#4556 CN 1a	41484308001E	7/18/2020 18:54:04 tt	8/13/2020 20:34:10 tt

Please note: The usage list shows all usages that you create with the **Write sensor** function. If you, for example, notice that you have written data incorrectly to the sensor and you re-write the sensor, the system creates a separate entry in the usage list. You can easily delete the usage you no longer require.

❹ The list view shows you all available usages and the corresponding analyses. If the list contains a lot of usages, the search functions helps you to find the required usage quickly. You can enter the sensor ID and/or the name of the usage in the search field.

6. Creating and editing profiles

Depending on your transported goods, you can create, edit and manage different profiles. Since the setting options between ASPION G-Log (incl. Waterproof) and ASPION G-Log 2 (incl. Waterproof) are very different, they are described separately in the following chapters.

⓪ Select the **Edit profiles** function from the left area. The first entry in the list area is automatically selected and displayed.
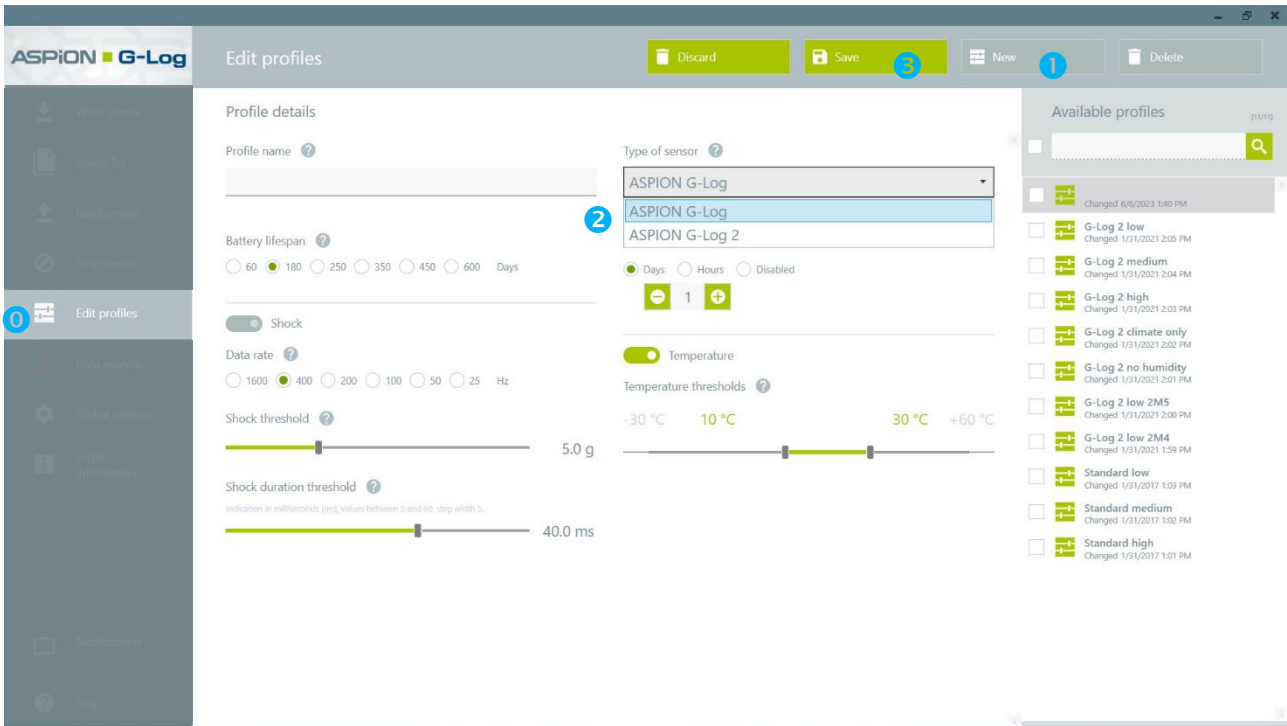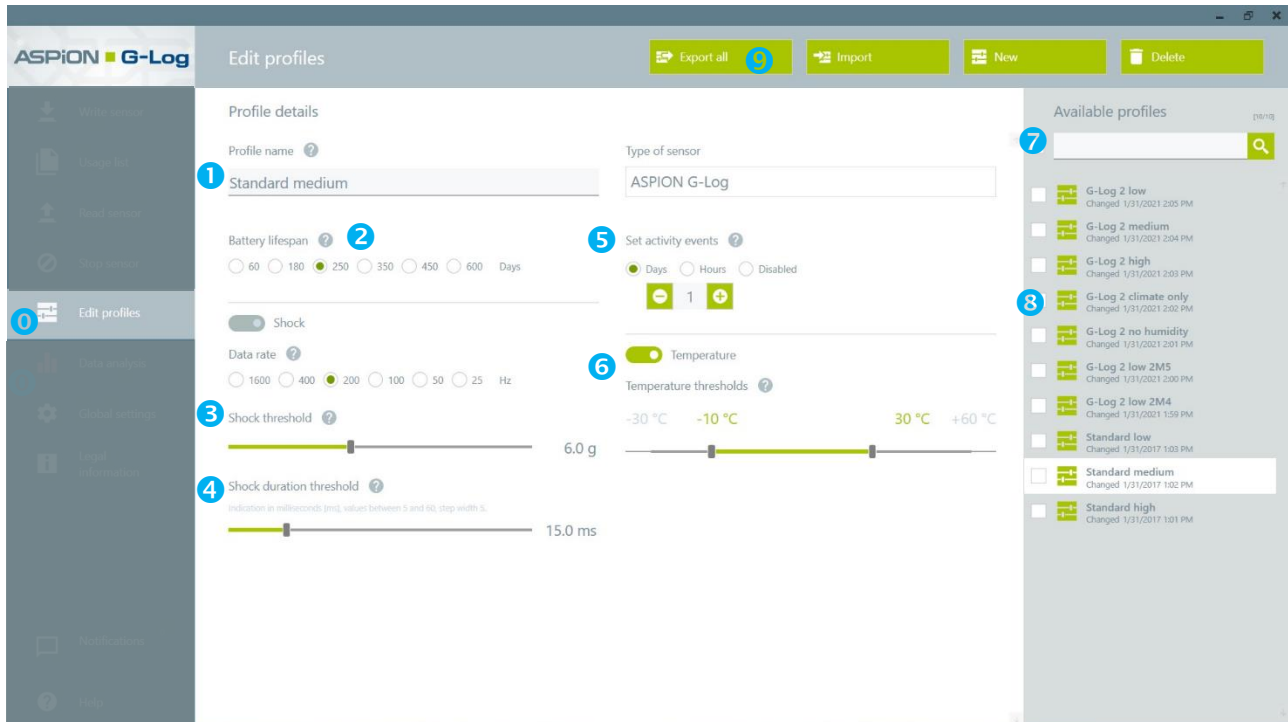

❶ Click **New** to create a new profile.

❷ Option: If you work with both sensor types and have saved this setting in the global settings (→ see ASPION G-Log Manager, chapter 3, "Important: Set sensor type(s)"), select the sensor type via the selection menu. The content changes depending on the selected sensor type.

❸ Make the appropriate settings as described below and save the profile by clicking the **Save** button.

6.1 Profile settings for ASPION G-Log

You will receive three default profiles with the ASPION G-Log (incl. Waterproof) to make orientation easier: "Standard low", "Standard medium" and "Standard high". Use the settings to define the battery lifespan and threshold values for which an event is recorded if the values are above or below this defined threshold.

⓪ Select the **Edit profiles** function from the left area.

Settings for ASPION G-Log (incl. Waterproof):

❶ Enter a profile name.

❷ The battery lifespan or the data rate affects the maximum recording time of the sensor. Select a battery lifespan or data rate. The other value will be assigned automatically. The data rate is reduced for longer durations – and vice versa.
Shortest battery life = 60 days, longest battery life = 600 days
Highest data rate = 1600 Hz, lowest data rate = 25 Hz.

> Please note: The data rate is the higher, the shorter you define the lifespan of the battery. A high data rate is useful especially for the recording of short shocks.

❸ Define the threshold value for one shock event for all 3 axes for both directions ±. If this defined value is exceeded for at least one of the 3 axes with the corresponding duration (see **❹**), the sensor records this event. If you want to set the threshold value to < 2.0 g, go to the local settings (→ see ASPION G-Log Manager – PC software, chapter 7, "Global Settings").

> Please note: The sensor saves 286 events (shock/temperature/activities). If the non-volatile memory is full, events of an earlier date are overwritten. This excludes the first shock value and the 8 peak shock values (→ see ASPION G-Log shock sensors, chapter 3.1., "Technical data ASPION G-Log").

Important: Not all combinations from the selected threshold value and shock duration return relevant and useful analyses. Please refer to the already included default profiles and talk to your technicians or contact your supplier/support to be able to define the right settings.

❹ The threshold value for the shock duration is entered in milliseconds.

Please note: The shorter the duration, the earlier a shock event is recorded. The longer a shock event lasts, the greater the effects and damage may occur.

❺ To monitor sensor activity, a shock event is triggered automatically in regular intervals. This event is called activity event and is used to visualize the orientation (➔ see ASPION G-Log Manager, PC software, chapter 10, "Data analysis"). Here you can define the time of the interval in days or hours or deactivate this function. The time when the activity event is triggered is defined as follows:
- for days: at the next full hour after the start date
- for hours: time-triggered by the number of hours starting with the start date and time (at the full hour)

Example:
Start = 25.05.21 at 06:30
>> when selecting 3 hours, the first recording is made on 25.05.21, at 10:00
>> when selecting 1 day, the first recording is made on 26.05.21, at 06:00

Please note: The sensor saves 286 events in total. Activity events are also included in that number. Earlier events are overwritten in the circular buffer, but the first shock value as well as the 8 peak shock values are permanently stored with details (➔ see ASPION G-Log shock sensors, chapter 3.1, "Technical data ASPION G-Log").

Calculation table for memory capacity as orientation aid for the setting of activity events.

Set Interval	Memory capacity duration of approximately
hourly	12 days
every 3 hours	36 days
4 x day (every 6 hours)	10 weeks
3 x day (every 8 hours)	13 weeks
2 x day	20 weeks
1 x day	40 weeks
Every 2 days	80 weeks

When calculating, please keep in mind that no recording of further shock or temperature events in the memory is taken into account for the capacities calculated. This might reduce the duration accordingly.

Tip: If your transport is only a few days on the road and you also want to measure the position of the goods to be transported, select a shorter interval, for example every 3 hours. For longer transports of several weeks, select a larger interval, for example, every 2 days.

❻ Set the temperature range for allowed temperature values. If values are outside this range, a temperature event is created and recorded. The value must be above or below the threshold for at least 10 minutes. By using the On/Off ⬤ button, you can deactivate the recording of temperature events.

An example for the scheme of recording temperature events:

Settings: Allowed temperature range: 0 – 25°C

The temperature drops to -5°C for at least 10 minutes and then raises again to +1°C:
-> The sensor records a temperature event as soon as the temperature has risen to 1°C again. The date and time at the point at which the sensor returns to the allowed temperature range are logged.

The temperature drops to -5°C and remains in this range during the next 48 hours:
-> The sensor records a temperature event approx. every 10 hours; the date and time are then recorded each time after 10 hours have been expired.

For each temperature event, the average temperature and one peak value are recorded.

❼ The list view shows you all available profiles. If you have to select from a large number of available profiles, you will quickly find the required profile using the search function.

❽ Select an existing profile here. The profile details will immediately be displayed in the content area. Now you can make changes, overwrite the profile or undo changes. You create a new profile with the **New** button. If you want to delete one or several profiles, you select the corresponding profile from the list and click **Delete**.

❾ You can exchange created profiles with the export/import function of other ASPION G-Log Manager installations. To use the tool, please follow the steps below:
Export your profiles with the **Export all** button and save the file (YYYY-MM-TT_Profiles.ZIP) locally. Transfer this file to the computer of the other user on which the ASPION G-Log Manager is also installed. Import the profiles with **Import all**. The existing exported profiles are added to the existing installation.

6.2　Profile settings for ASPION G-Log 2

You will receive three default profiles with ASPION G-Log 2 (incl. Waterproof) to make orientation easier: "G-Log 2 low", "G-Log 2 medium" and "G-Log 2 high". Additionally, two more profiles for climate recording will be provided. Use the settings to define the battery lifespan and threshold values for which an event is recorded if the values are above or below this defined threshold.

0 Select the **Edit profiles** function from the left area.
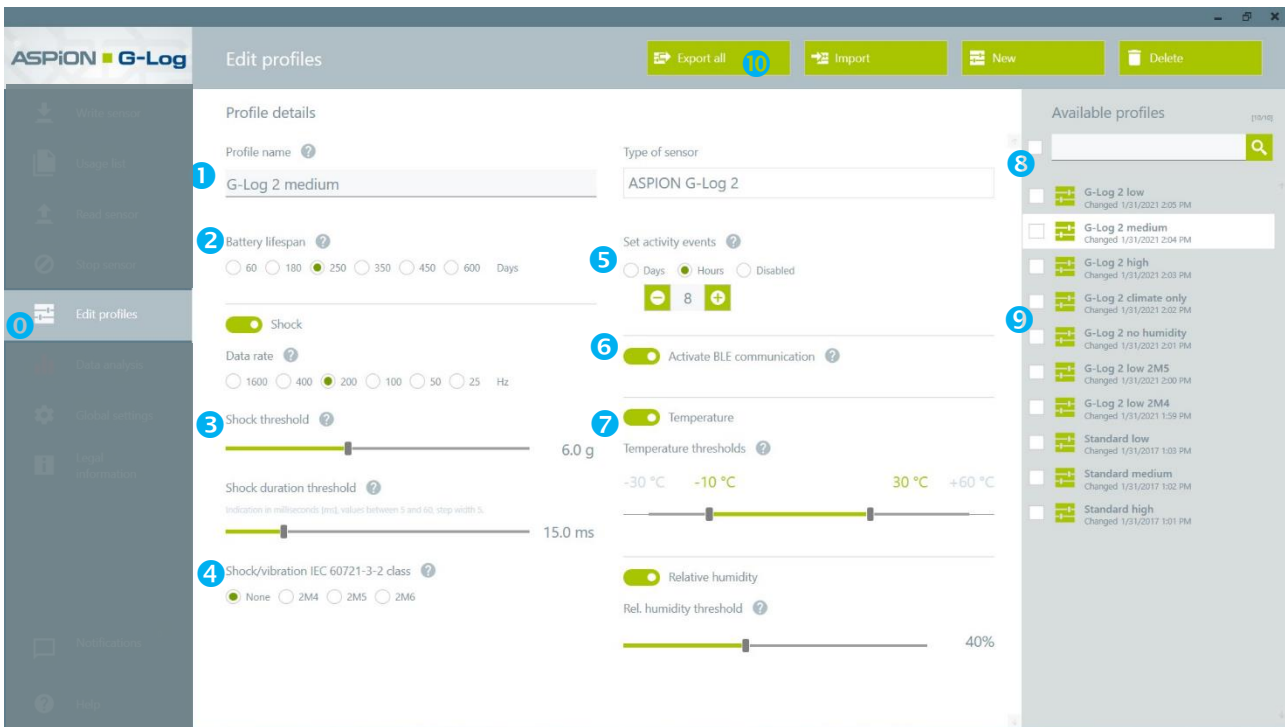
Settings for the ASPION G-Log 2 profile:

❶ Enter a profile name.

❷ The battery lifespan or the data rate affects the maximum recording time of the sensor. Select a battery lifespan or data rate. The other value will be assigned automatically. The data rate is reduced for longer durations – and vice versa.
Shortest battery life = 60 days, longest battery life = 600 days
Highest data rate = 1600 Hz, lowest data rate = 25 Hz.

> Please note: The data rate is the higher, the shorter you define the lifespan of the battery. A high data rate is useful especially for the recording of short shocks.

If you do not want to record a shock, deactivate the switch for the shock by clicking the Off button (grey switch).

❸ Define the threshold value for one shock event for all 3 axes for both directions ±. If this defined value is exceeded for at least one of the 3 axes with the corresponding duration, the sensor records this event. If you want to set the threshold value to < 2.0 g, go to the local settings (→ see ASPION G-Log Manager – PC software, chapter 7, "Global Settings").

The threshold value for the shock duration is entered in milliseconds.

> Please note: The shorter the duration, the earlier a shock event is recorded. The longer a shock event lasts, the greater the effects and damage may occur.

Tip: In order to set threshold values less than 2 g, go to the global settings (→ see ASPION G-Log sensors, chapter 7, "Global settings").

Please note: The sensor saves 950 events (shock/temperature/humidity/activities). If the non-volatile memory is full, events of an earlier date are overwritten. This excludes the first shock value and the 8 peak shock values (→ see ASPION G-Log shock sensors, chapter 3.2., "Technical data ASPION G-Log 2").

Important: Not all combinations from the selected threshold value and shock duration return relevant and useful analyses. Please refer to the already included default profiles and talk to your technicians or contact your supplier/support to be able to define the right settings.

❹ Specify whether you want to check shocks/vibrations in accordance with the IEC 60721-3-2 standard. Select one of the displayed 2M4/2M5 or 2M6 classes (available for 1600/400/200 Hz). The check will be made for each shock per axis. The result will be visualized in the shock details.

Tip: The best detection rate of overruns is achieved with a data rate of 200 or 400 Hertz. 95% of overruns across all transport classes are reliably identified. This has been tested and approved in an accredited testing facility. Please contact your manufacturer for more detailed information about shock and vibration testing in accordance with IEC 60721-3-2.

❺ To monitor sensor activity and to permanently record climate data at the same time, a shock and a climate event are triggered at regular intervals. It is called activity event for orientation and climate. The shock events are used to visualize the orientation (→ see ASPION G-Log Manager – PC software, chapter 10.5, "Orientation"). The climate events record climate data for the selected interval independently of the set threshold values, which are displayed in the analyses together with other climate data if the values are above or below the set threshold. Here you can define the time of the interval in days or hours or deactivate this function. The time when the activity event is triggered is defined as follows:
- for days: each time at midnight at 00:00:00
- for hours: each time at the full hour for the defined interval, starting during the selected interval following an internally defined algorithm

Example:
Start = 25.05.21 at 06:30
>> when selecting 1 day, the first recording is made on 26.05.21, at 06:00
>> when selecting 3 hours, the first recording is made on 25.05.21, at 9:00

Please note: The sensor saves 950 events in total. This count also includes activity events, each measurement containing a shock and climate event. Earlier events are overwritten in the circular buffer, but the first shock value as well as the 8 peak shock values are permanently stored with details (→ see ASPION G-Log shock sensors, chapter 3.2., "Technical data ASPION G-Log 2").

Calculation table for memory capacity as orientation aid for the setting of activity events.

Set Interval	Memory capacity duration of approximately
hourly	20 days
every 3 hours	59 days
4 x day (every 6 hours)	17 weeks
3 x day (every 8 hours)	22 weeks
2 x day	34 weeks
1 x day	67 weeks

Please keep in mind that no further recording of shock or climate events in the memory is taken into account for the capacities calculated. This might reduce the duration accordingly.

Tip: If your transport is only a few days on the road and you also want to measure the position of the goods to be transported and the climate data permanently, select a shorter interval, for example every 2 hours. For longer transports of several weeks, select a longer interval, for example, 4 times a day.

❻ Define whether the sensor can be read out using Bluetooth Low Energy (BLE) with a BLE-enabled smartphone or deactivate this function. The ability to read out data via NFC is not changed.

Please note: BLE is an active radio technology. The use for air freight transport is permitted by the current IATA DGR regulations. For up-to-date information, go to our ASPION customer portal. Please contact your transport service provider if other rules or regulations apply.

❼ Specify the area for permitted climate values. A climate value consists of the value pair temperature and relative humidity and is stored as climate event. Climate values are measured in an interval of 5 minutes and climate events are recorded according to the following rules:

Rule 1: If the last climate value was within the permitted range and the current climate value is within the permitted range, no climate event is stored.

Rule 2: If the last climate value was within the permitted range and if the current climate value is outside the permitted range, a climate event with the current values is recorded.

Rule 3: If the last climate value was outside the permitted range and if the current value is also outside the permitted range, a climate event is recorded if the current value deviates from the last climate event by 0.6°C or 4% relative humidity.

Rule 4: If the last climate value was outside the permitted range and the current value is within the permitted range again, a climate event is generated with the last climate value outside the permitted range.

Applying these rules, you will receive a climate event as soon as it exceeds or falls below the specified threshold value, as well as the further course outside the permitted range. By using the On/Off buttons for temperature and humidity, you can deactivate the recording of events.

Examples for the recording pattern of climate events:
Permitted temperature range: 0°C – 25°C

Example 1: The temperature drops to -5°C for at least 15 minutes and then raises again to +1°C:
→ The sensor records a climate event applying rule 2 as soon as the values were outside the permitted range. Another climate event with date and time is recorded as soon as the deviation of the last value recorded is another 0.6°C. If the sensor returns to the permitted temperature range, the last climate value pair that has fallen below the specified threshold is logged as a climate event applying rule 4.

Example 2: The temperature drops to -5°C and remains in this range during the next 48 hours:
→ The sensor records a climate event every 5 minutes if the deviation of the last climate event differs at least 0.6°C; the date and time at which the deviation from the previous value occurred are then recorded.

The temperature and relative humidity are recorded with one decimal place (e.g. 8.5°C) with date and time for each climate event.

⑧ The list view shows you all available profiles. If you have to select from a large number of available profiles, you will quickly find the required profile using the search function.

⑨ Select an existing profile here. The profile details will immediately be displayed in the content area. Now you can make changes, overwrite the profile or undo changes. Click **New** to create a new profile. To delete one or several profiles, select a profile from the list and click **Delete**.

⑩ You can exchange created profiles with the export/import function of other ASPION G-Log Manager installations. To use the tool, please follow the steps below:
Export your profiles with the **Export all** button and save the file (YYYY-MM-TT_Profiles.ZIP) locally. Transfer this file to the computer of the other user on which the ASPION G-Log Manager is also installed. Import the profiles with **Import all**. The exported profiles are added to the existing installation.

Tip: Profile for recording climate data independent of threshold values
To exclusively record climate data, select the following profile settings:
Deactivate shock, activity event 1 hour (or higher),
Deactivate temperature and relative humidity thresholds.
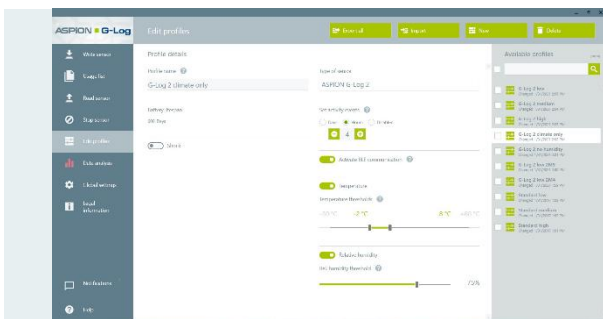
Applying this profile setting, the sensor records a climate event with temperature and relative humidity every full hour. With this setting, the memory space of the circular buffer will be sufficient for approx. 40 days.

With the **Global settings** function, you make global settings which apply during operation. Furthermore, you define the sensor type(s) you use. Click on the **Save** button to change your entries.

0 Select **Global settings** in the left area.
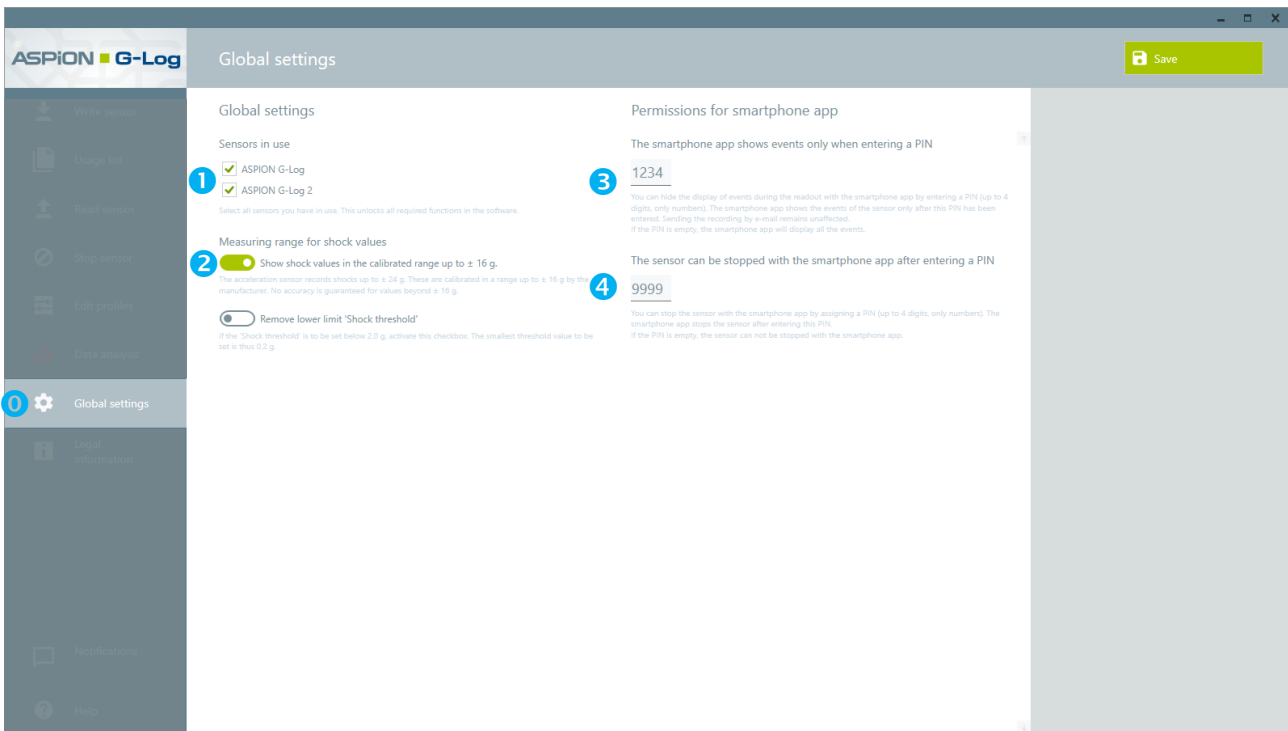
❶ Select the sensor type(s) you use:

ASPION G-Log / Waterproof = lightgray housing

ASPION G-Log 2 / Waterproof = blue housing

Tip: Select only the sensor type which you are planning to use productively. This returns a better overview of the necessary information and functions.

The information about the measuring range will help you to adjust the shock values:

❷ Show shock values in the calibrated range up to ± 16 g

Define here the value range for shock values. The "Show shock values in the calibrated range up to ± 16 g" option is activated as default setting. By switching to the Off button, you extend the range up to ± 24 g per axe (grey switch).

Explanations for the measuring range

The accelerator sensor is calibrated up to ± 16 g by the manufacturer and records shock values up to ± 24 g. You can define yourself whether you want to restrict the display of recorded values to this calibrated range of up to ± 16 g or whether you want to display values up to ± 24 g.

Please note: We do not guarantee the accuracy of values above ± 16 g as the deviation can be approx. 3.5%.

Remove lower limit Shock threshold

Activate this function to record shocks which are less than 2.0 g per axis (green button). You can now define any profile threshold value from 0.2 g up to 12.0 g, at intervals of 0.2 g. (→ see ASPION G-Log Manager – PC-Software, chapter 6, "Creating and editing profiles").

Please note: Profiles with < 2.0 g are only retained as long as this global setting is activated. Otherwise, the threshold < 2.0 g is reset to the smallest possible threshold with 2.0 g for an already created profile.

With the rights to the Smartphone App, you control the behavior of the ASPION G-Log App:

❸ Display of app contents: no PIN is assigned per default, the ASPION G-Log App does not display any events.

Enter a PIN (up to 4 digits, only numbers). Now, the events that were recorded are hidden for the user when reading out the sensor with the ASPION G-Log App. Only if the user enters the PIN, the ASPION G-Log App displays all events (→ see ASPION G-Log App for smartphones). All other functions of the ASPION G-Log App are not affected.

❹ Stopping the sensor with a PIN: Per default, no PIN is entered and the ASPION G-Log App cannot stop the sensor.

Enter a PIN (up to 4 digits, only numbers). Now, you can stop the recording of a sensor with the Smartphone App by entering this PIN (→ see ASPION G-Log App for Smartphones). You cannot continue the recording. You can newly re-start a stopped sensor (→ see ASPION G-Log Manager - PC software, chapter 4, "Operating the sensor").

8. Reading the sensor

You receive analyzed data by clicking the **Read sensor** function in the left area. Options: ASPION G-Log exclusively via NFC with card reader,
ASPION G-Log 2 via NFC with card reader or Bluetooth (Bluetooth on PC required and activated).

⬆ N)) Read sensor   Reading sensor via NFC: Click **Read sensor**. Follow the instructions of the program. For reading data via NFC, place the sensor to be read out with the label facing upwards (label visible) on the card reader.

New ASPION G-Log sensors (as of 12/2022) can also still be read out via NFC with the card reader and the App even if the battery is empty.

Tip: Place the ASPION G-Log 2 sensor as illustrated in the picture to the right for reading out data via NFC. You will then receive the best results when exchanging data with the card reader. Never place the card reader on a metallic surface (e.g. PC) as this will disrupt the NFC transmission.

⬆ ✱ Read sensor

⬆ ✱ Read marked sensors   Reading out data via BLE for ASPION G-Log 2 sensors:

If the Bluetooth interface is available and activated (Windows version 10.1703 and later), calling the **Read sensor** function automatically starts the search for ASPION G-Log 2 sensors. All sensors within range will be listed.

Click **Read marked sensors** to read all sensors included in the list. All sensors which have not been read yet or have not been read for at lease an hour are automatically marked. To read one specific sensor, mark it in the list and click **Read sensor**.

If several sensors are read at once, the program switches to the **Data analysis** function. If only one sensor is read, the read-out data is displayed in the overview.
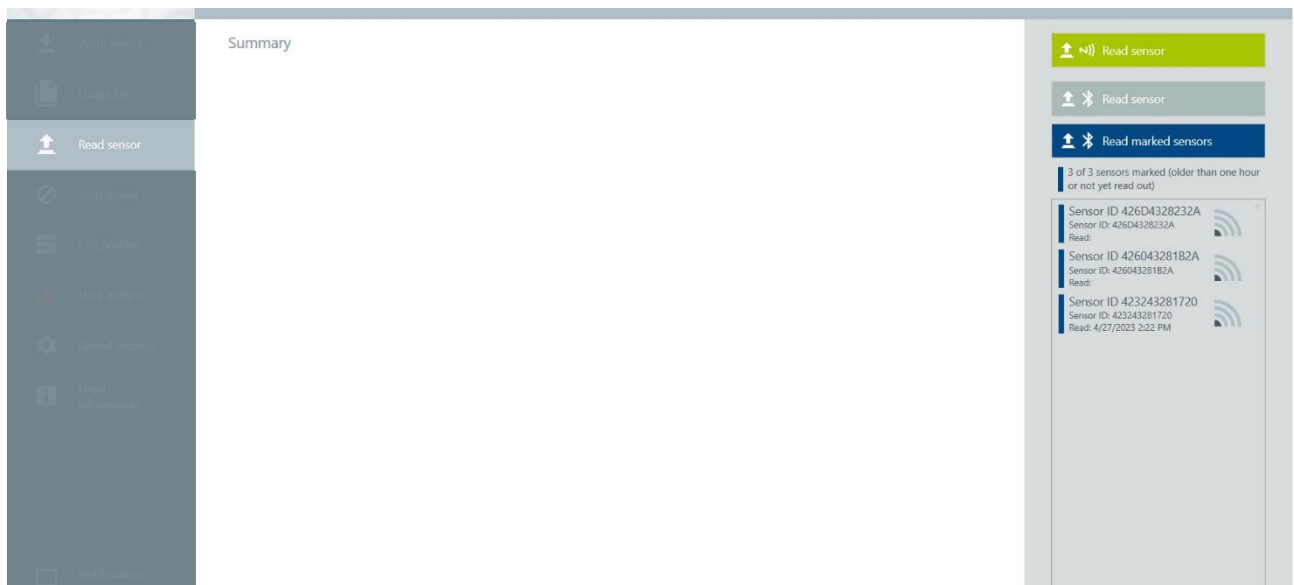
You can also read out the sensor with the Smartphone App and import the analyzed data (→ see ASPION G-Log App for smartphones, chapter 1.1, "Reading out data via App").

⓿ Select the **Read sensor** function in the left area.
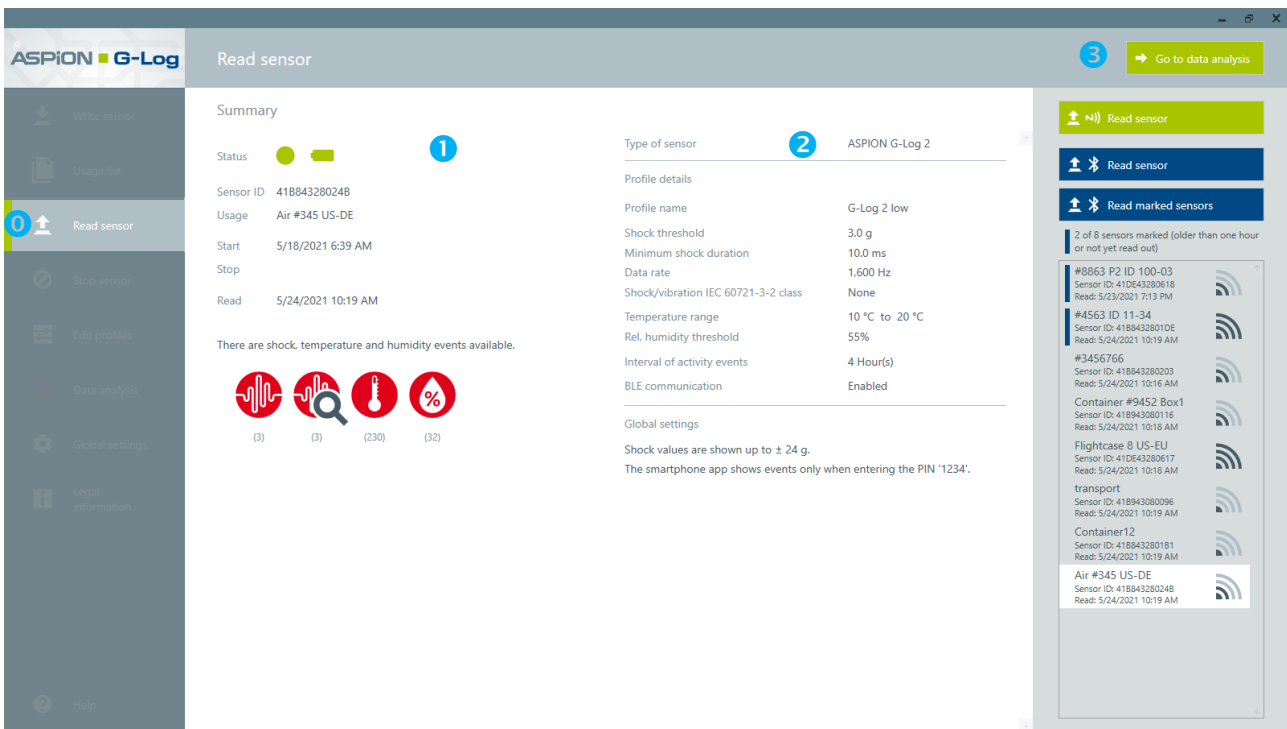
❶ The overview presents all important information recorded on the sensor at a glance. The following symbols indicate whether and what kind of events occurred: Red symbols indicate, that the defined threshold was exceeded (otherwise: grey):

	Existing shock events, number in brackets.
	Existing shock details, number in brackets.
	Existing shock details, shock/vibration testing in accordance with DIN. IEC 60721-3-2 of specified class was exceeded, number in brackets.

> **Tip:** Further information can be found in the profile settings and analyses (→ see ASPION G-Log Manager – PC-Software, chapter 6.2, "Profile settings for ASPION G-Log 2 and chapter 10.4, "Shock details").

	Existing temperature events, number in brackets.
	Existing humidity events, number in brackets.
	No existing events.

❷ Overview of the currently used profile and all sensor settings.

❸ With the **Go to data analysis** button or the **Data analysis** function, you go to the events (→ see ASPION G-Log Manager – PC software, chapter 10, "Data analysis").

Further results after the data has been read out

- A sensor is activated, but no events are recorded.
- A sensor is activated and has recorded events.
- A sensor is not activated in delivered condition and no events are recorded.
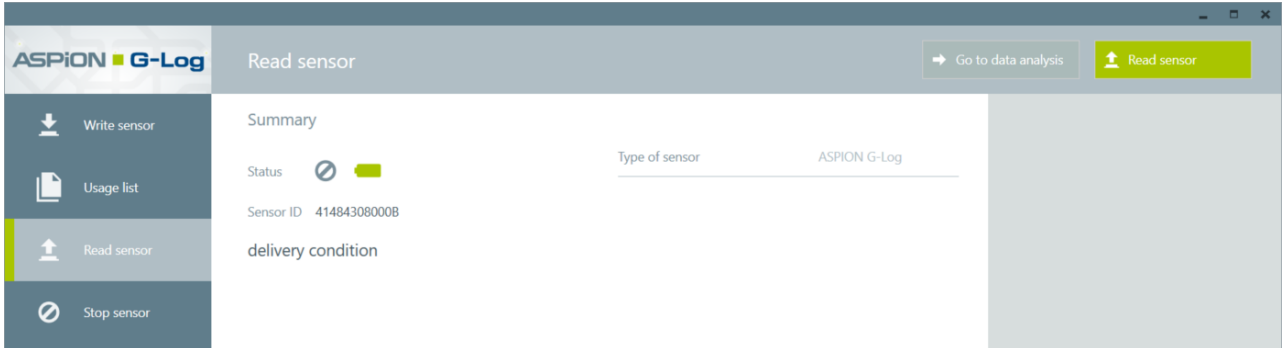
Errors and problem solving

Possible error messages, causes and hints for problem solving:

Please refer to ASPION G-Log Manager – PC software, chapter 12, "Help, errors and problem solving".

9. Stopping the sensor

To stop the recording of events on a sensor, select the **Stop sensor** function in the left area. Click on the **Stop sensor** button. Follow the instructions of the program. Place the sensor you want to stop with the label facing upwards (label visible) on the card reader.

Please note: recorded events will remain on the sensor after it was stopped. You can read out a stopped sensor at any time. With the **Write sensor** function, you can newly operate a stopped sensor again. The memory of the sensor will then be reset.

10. Data analysis

By going to **Data analysis** in the left area, you receive all information of a read-out sensor. Since the setting options between ASPION G-Log (incl. Waterproof) and ASPION G-Log 2 (incl. Waterproof) are different for only the recording of temperature and climate events, they are described in separate chapters (10.6 Temperature for ASPION G-Log and 10.7 Climate for ASPION G-Log 2). The analysis of shock events, shock details, orientation and map view are identical. For shock details in ASPION G-Log 2, the shock and vibration testing in accordance with DIN IEC 3-2-60721 is furthermore explained.

10.1 Content, overview and functions

⓪ Select **Data analysis** in the left area. The program automatically selects the first entry from the list view on the right.

Alert upon new data analyses of events: if new events are available, the **Data analysis** button signals red.
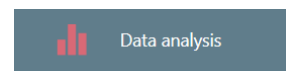
Automatic aggregation of events: If the sensor is read out several times, for example, with the App or the PC software and if the data is stored in the same directory (program data), the analyzed information is merged. By doing so, events can be recorded endlessly (maximum number of events between two readout times for ASPION G-Log: 286 and for ASPION G-Log 2: 950).
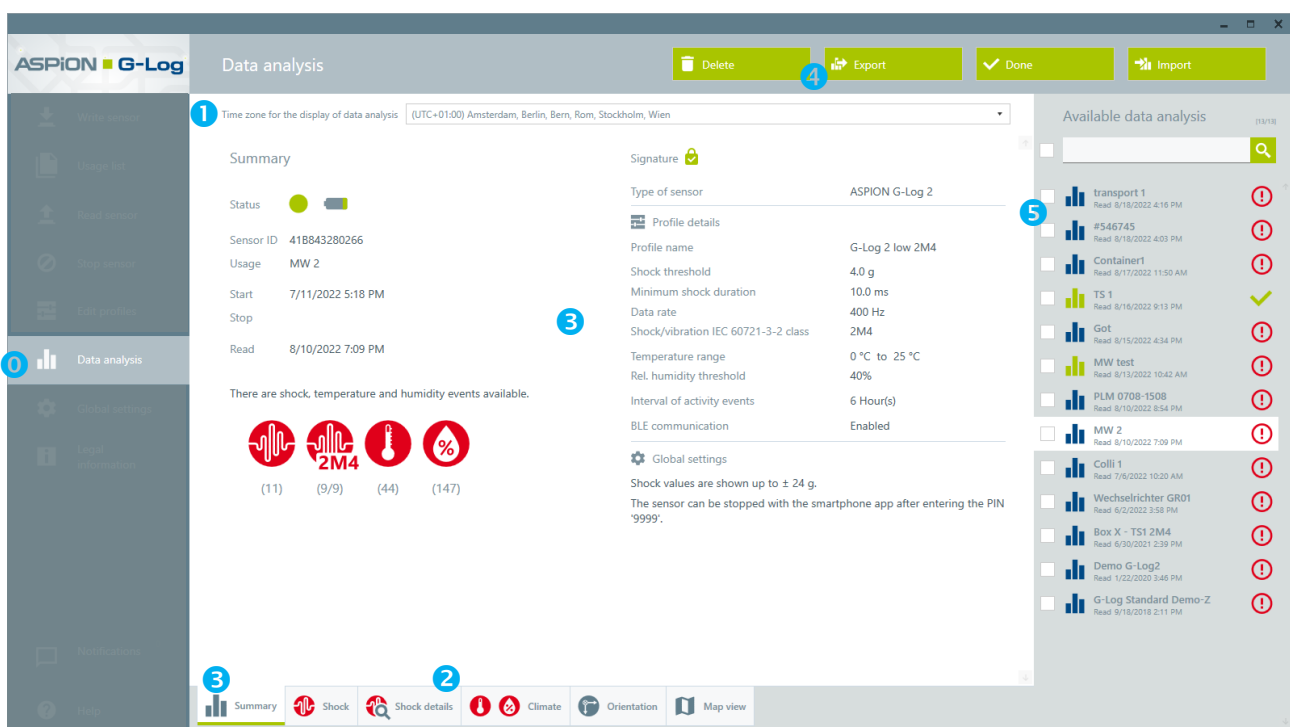
A data analysis includes the following information:

❶ Select the time zone for which you want to display the sensor information and analyses. The time zones also include summer and winter times. The time zone bar remains unchanged for all analyses views.

❷ Selecting the tab: Depending on the selected tab in the lower bar, the content area (see **❸**) displays the corresponding information. Use the tabs to select which events you want to display. If you cannot click on a tab, no recorded events or data information exist(s).

❸ The **Summary** tab displays all details for the sensor, the shipment, the current status and profile details. This tab is automatically selected when calling an analysis. The numbers in brackets inform you about

the number of recorded events. Each analysis (starting with Version 4) is protected against manipulation with a signature: Analyses with the 🔒 symbol are original analyses, manipulated analyses are indicated with the 🔓 symbol. Manipulated analyses cannot be read out.

❹ You delete the currently active analysis with the **Delete** button.

With the **Export** button, you export the currently active analysis:

- as PDF report with the complete analysis information and grafic files; you can also directly view the PDF file if required.
- as Excel file with all analyzed content in several Excel sheets.

Please note: All date content both in the PDF and in the Excel file relate to the currently defined time zone.

- as proprietary G-Log file format

Select the desired format before saving the file.
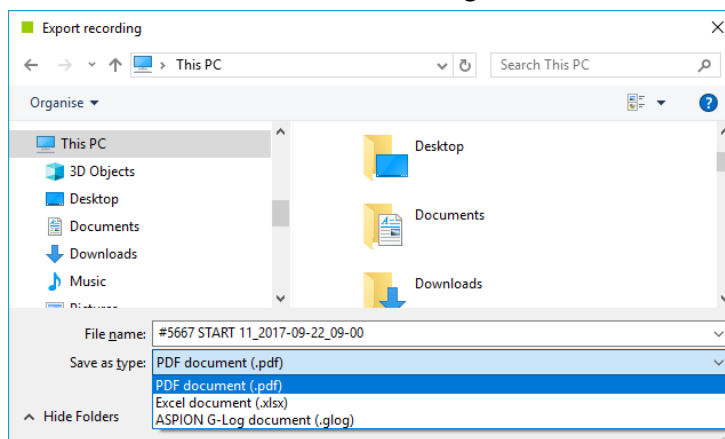
If the archive function is also activated, these analyses are also stored as ZIP file in the defined directory (→ see User manual Configuration).

With the **Import** button, you can import analyses saved in the proprietary G-Log format.

Example for the usage of the proprietary G-Log format:
A service technician reads out a sensor with an ASPION G-Log Manager once the transported good has arrived and exports the analyzed data in the proprietary G-Log format. Now he or she sends the file to a colleague in the main office via e-mail. This colleague imports the analysis in his or her ASPION G-Log Manager version.
By doing so, he or she will see the same analysis view as the service technician on site. He or she can then also create a PDF report, for example, to forward it to a service provider.

New analyses are marked blue. By clicking the **Done** button you can remove the blue mark in a data analysis.

❺ The list view displays all available analyses. The ⚠ symbol indicates whether events are available. All data analyses which are highlighted blue in the list contain new events. If you have a large number of analyses, you will quickly receive a result by searching the analysis via the search field.

You can select a number of analyses at once by ticking the checkbox next to each analysis. You delete all selected analyses with the **Delete** button. With the **Export** button, you export all selected analyses in the desired format. With the **Done** button, you undo the blue mark for the selected analyses.

10.2 Shock events

❶ Select the **Data analysis** function in the left area. Select the desired analysis from the list area to the right. Click on the **Stop sensor** tab.
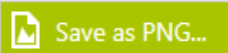
Tip: The interpretation of shocks is not easy and can become complex. To make it easier, you will find detailed information on the www.aspion.de/en Web page, in the "Data logger analysis" area, in detailed white papers and in the FAQ section of the ASPION customer portal.
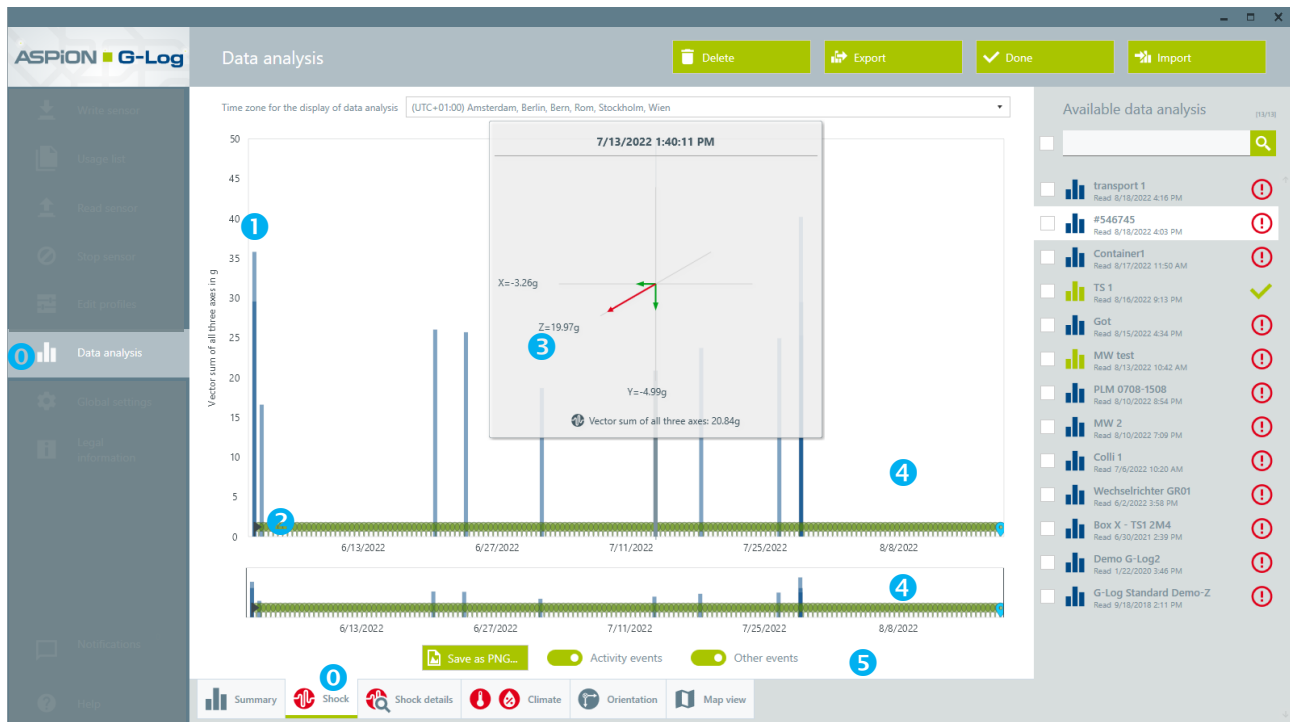
The content area includes the following information:

❶ Display range of shock events represented by a blue bar. The height of a single shock event displayed as bar chart is calculated from the amount of the vector sum of all axes.

❷ Display area of the activity events on the timeline to be able to check if the sensor is active and for orientation visualization, represented by a green circle. Each shock location recorded by the App or PC software is marked as 📍 pin and includes date, time and the following description:

📍 Location and country (country code)

📍 No location: it was not possible to identify the location

📍 G-Log Manager: the sensor has been read out with PC software and card reader

The map view shows you the location information, if available, in a smart overview.

❸ Using the mouse-over function, you receive the details of a single shock event or activity event. The arrows of the axis displayed in red show an overlap of the threshold in the respective axe direction. The maximum values can vary depending on the measuring range you have defined (± 16 g or ± 24 g), see ASPION G-Log shock sensor, chapter 7, "Global settings".

Please note: If shock events are recorded at the same second, the view displays up to 3 shock events. To retrieve more details, use the zoom function (see ❹) or the export functions (see previous chapter 10.1).

❹ Zoom function: In order to view a time period in more detail, you can zoom in and out using the mouse wheel function in the upper view. The lower timeline marks the selected time slot white. Double-click the left mouse button in this area to return to the general overview. The start time of the recording is marked by a gray triangle, the end (stop) of the recording – if available – at the end of the timeline.

❺ The display in the upper area can be varied and saved as image:

displays or hides activity events and/or other events.
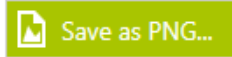
creates an image of the current view.

10.3 Shock details

The detailed data of a shock event is essential for evaluations and interpretation in the event of damage. The sensor records the temporal course of a shock of all three axes in milliseconds: This particular subset of data with a total of 19 values is used for the exact analysis of the course, allows you to draw conclusions about the effects and can make a significant contribution to the assessment in the event of damage or during packaging inspection tests. The sensor permanently stores the very first and the other eight peak shock events in this granularity.

⓪ Select the **Data analysis** function in the left area. Select the desired analysis from the list area to the right. Click on the **Shock details** tab.


The content area includes the following information:

❶ List with a selected shock detail: The first recorded shock and 8 more peak shock events are permanently saved with all shock details, also if the memory is full.

> Please note: the peak shock events are calculated via the so called shock intensity, e.g. "shock intensity 1481". It includes the strength and the duration of the shock. The higher the value, the higher the load.

❷ Display area of a single shock detail of each axis showing the course in milliseconds. The duration depends on the selected data rate and includes 19 values over the time period. This helps you to better track the duration of a shock. Mouse-over displays detailed values for each axis at this time of measuring.

❸ Legend for axis allocation.

❹ ![Save as PNG...] creates an image of the current view.

10.4 Shock details with shock/vibration testing complying to IEC 60721-3-2 for ASPION G-Log2

The display of the shock details with shock/vibration testing in accordance with IEC 60721-3-2 is defined by the specified class and per axis.

Tip: The best detection rate of overruns is achieved with a data rate of 200 or 400 Hertz. 95% of overruns across all transport classes are reliably identified. This has been tested and approved in an accredited testing facility. Please contact your manufacturer for more detailed information about shock and vibration testing in accordance with IEC 60721-3-2.

0 Select the **Data analysis** function in the left area. Select the desired analysis from the list area to the right. Click on the **Shock details** tab.
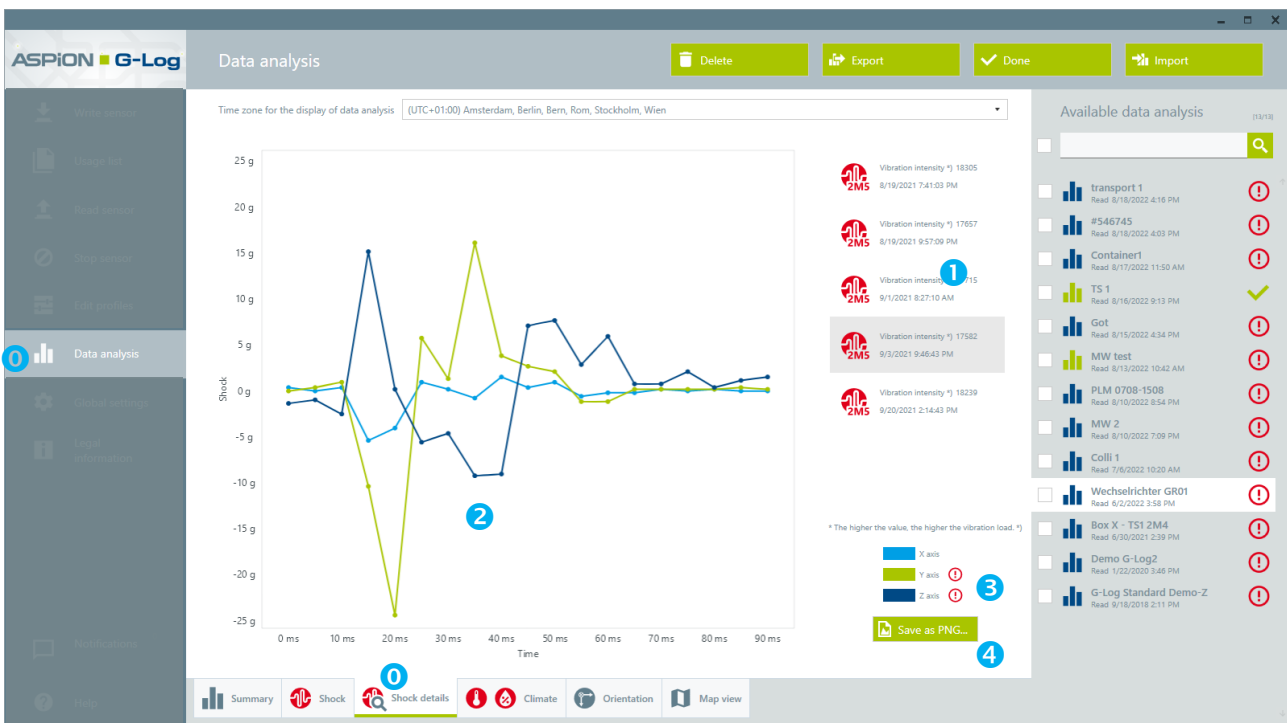
The content area includes the following information:

❶ List with the selection of a shock detail and display of shock/vibration class: If the specified class has been exceeded, the traffic light indicator is red. The affected axes are marked with ⊘ in the legend. The first recorded shock and 8 more peak shock events are permanently saved with all shock details, also if the memory is full.

Please note: The peak shock events are detected via the so called vibration intensity, for example, "vibration intensity16840". This value includes the force and the duration of the vibration level. The higher the value, the higher the force.

❷ Display area of a single shock detail of each axis showing the course in milliseconds. The duration depends on the selected data rate and includes 19 values over the time period. This helps you to better track the duration of a shock. Mouse-over displays the detailed values for each axis at this time of measuring.

❸ Legend for axis assignment for each selected shock detail with simultaneous marking of the affected axes.

❹ [Save as PNG...] creates an image of the current view.

Explanations and examples to interpret shock details

Whether a transported good is actually damaged by a shock cannot be answered generally and depends in particular on the transported good and the environmental circumstances. However, the longer a shock lasts and the more shocks occur within a short time (e.g. in the same minute), the more likely it is to be damaged. An assessment can only be made for each case individually and must take all circumstances into account.

The following recordings of shock details and their interpretation support you to better classify your own curves of shock details. For more information please refer to the ASPION Web page.
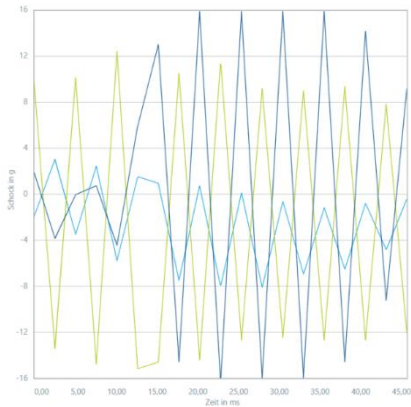
Vibration curves:

Short pulses of short duration
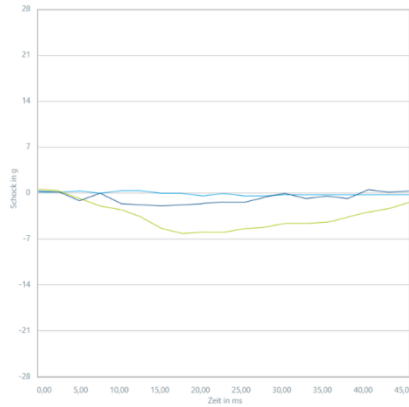
Typical curve

for air freight
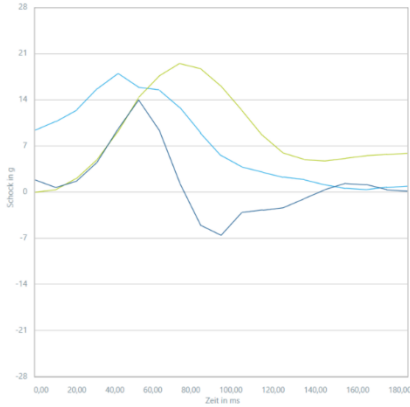
Curve display for

longer shocks, eventually critical

We will be happy to help you with the interpretation of your evaluations at any time: Simply contact our support team, which can be contacted by e-mail at support@aspion.de.

10.5 Orientation

Whether the orientation of the sensor – and thus that of your transported goods – has changed permanently can be seen from the simple orientation visualization: the sensor records the current values of the acceleration sensor according to the set interval for the activity events. From these data, the main direction of gravity of approx. 1 g is determined. This determines the orientation of the sensor at this point in time.

⓪ Select the **Data analysis** function in the left area. Select the desired analysis from the list area to the right. Click on the **Orientation** tab.
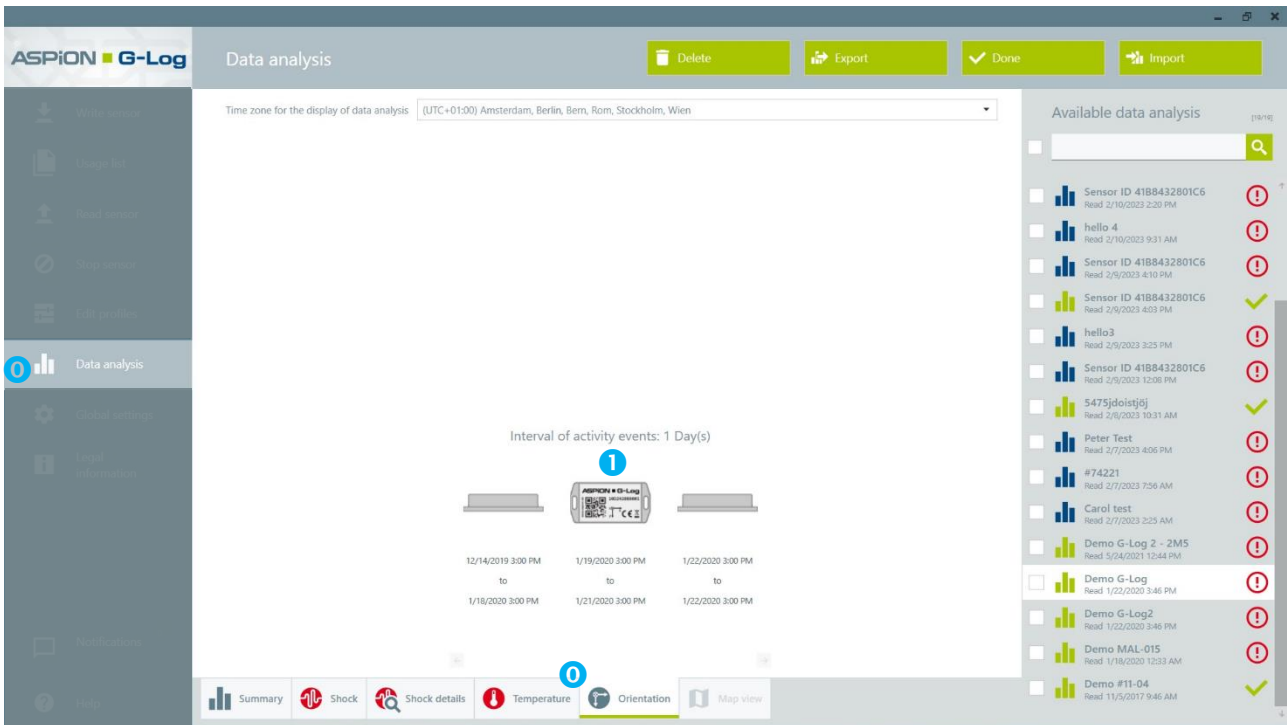
The content area includes the following information:

❶ The activity events visualize the approximate orientation towards the 6 main directions. If the orientation changes, it will be displayed the next time an activity event is recorded.

10.6 Map view

When a sensor is read out with the Smartphone App, it determines the location at the readout time, if the access to the location information is permitted and the location can be determined. The location identification is also available when reading out data with the ASPION G-Log Manager, if the requirements for accessing the location information are also met. The shock locations are displayed in a digital map.

O Select the **Data analysis** function in the left area. Click the **Map view** tab.
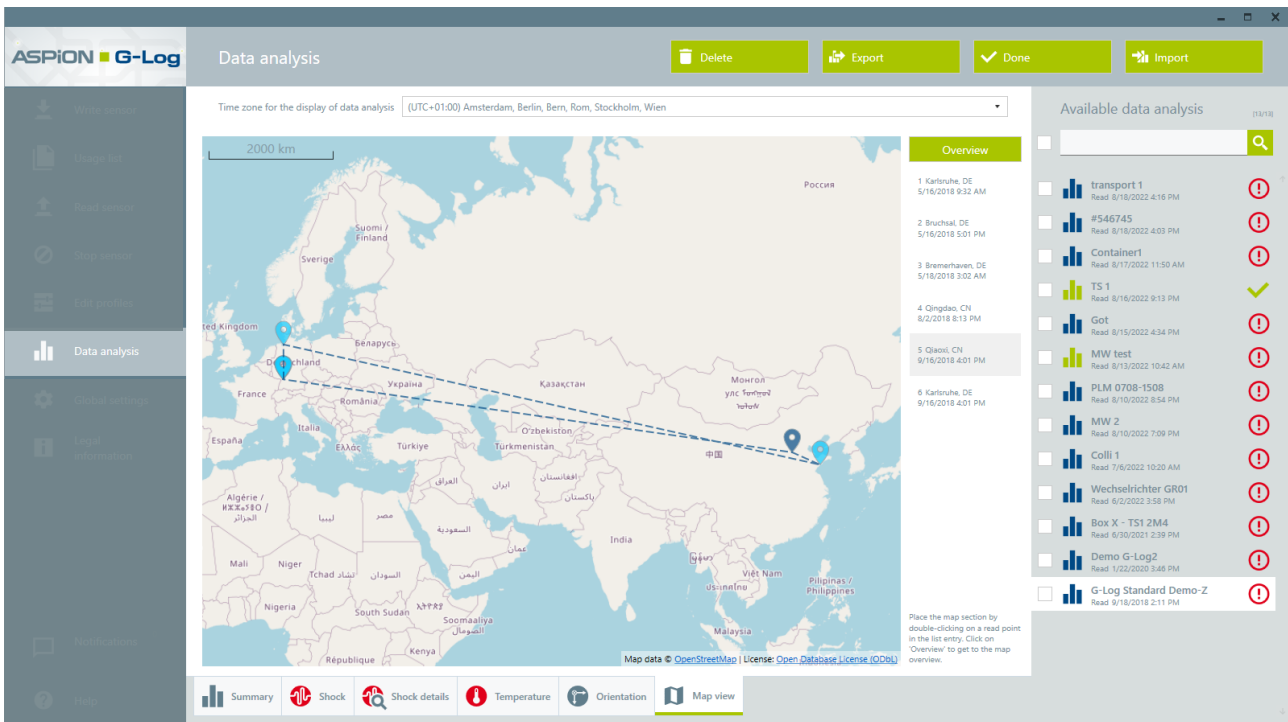
The shock locations are displayed in a digital map. The list selects the corresponding entry and displays the shock location with date and time. You can set the map section by double-clicking on the shock location in the list entry. By clicking on the overview, you can go back to the map view. If no coordinate could be detected, it is not displayed in the map view.

10.7 Temperature events with ASPION G-Log

0 Select the **Data analysis** function in the left area. Select the desired analysis from the list area to the right. Click on the **Temperature** tab.
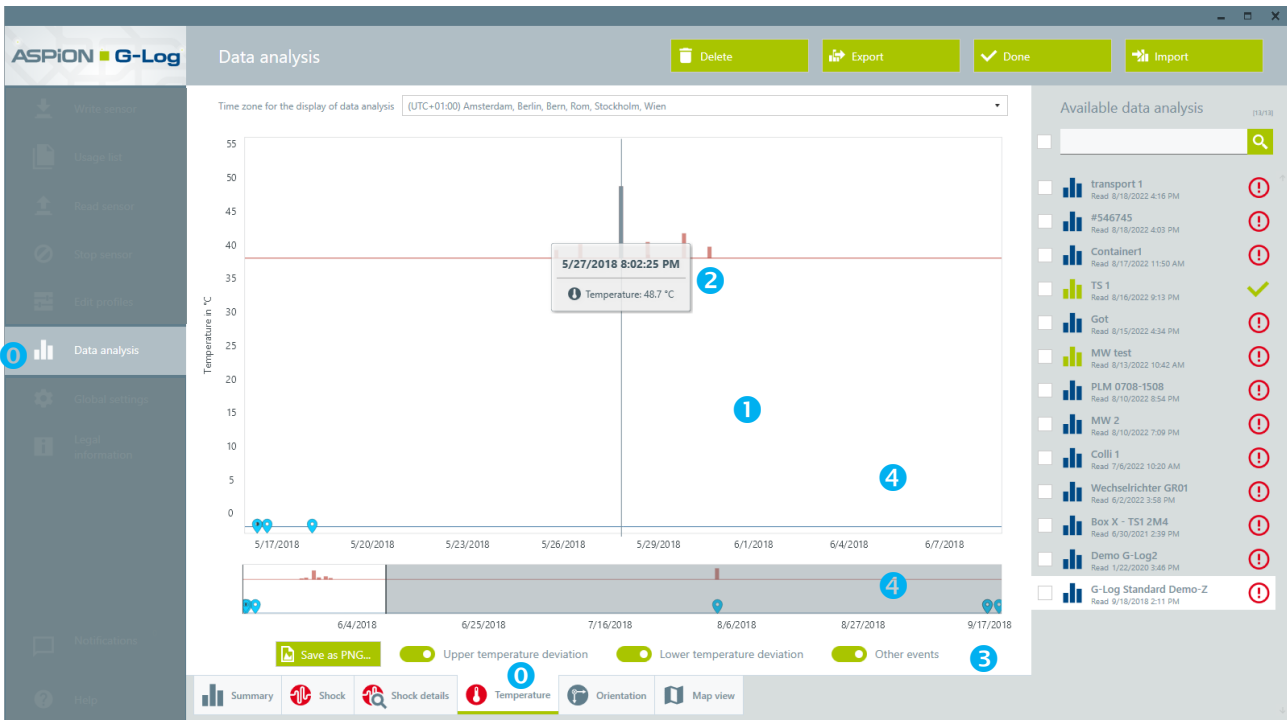
The content area includes the following information:

1 Display area of temperature events represented by a blue bar. The permitted temperature range is marked by a red and blue line.

Scheme of recording temperature events:

The temperature is measured every 5 minutes with the internal and factory-calibrated temperature sensor and recorded as follows:

Case 1: If the temperature remains within the prohibited range for at least 10 minutes and then returns to the permitted range, a temperature event is created.

Case 2: If the temperature remains permanently outside the permitted range, a temperature event is stored approx. every 10 hours at the end of the recording.

Please also refer to ASPION G-Log Manager – PC software, chapter 6.1, "Profile settings for ASPION G-Log".

2 With the mouse-over function, you receive the details of a single temperature event including date/time and average temperature. For each temperature event, the average temperature and one maximum/minimum value are recorded and can be exported in a PDF report.

Please note: In the case of temperature events that are recorded shortly after each other - due to a varying value around the set threshold value - the bars can be close together. For further details, use the zoom function (see **4**) or the export functions.

❸ The display in the upper area can be varied and saved as image:

hides or displays values that are above or below a certain temperature and/or other events.
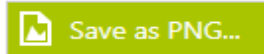
Save as PNG...

creates an image of the current view.

❹ Zoom function: In order to view a time period in more detail, you can zoom in and out using the mouse wheel function in the upper view. The lower timeline marks the selected time slot white. By double-clicking on this area, you go back to the general overview.

10.8 Climate events with ASPION G-Log 2

You have many analysis options for climate recording with ASPION G-Log 2 (incl. Waterproof). In the following, the analysis is described in general and various configurations and their application are explained in further examples (We make no claim to completeness).

⓪ Select the **Data analysis** function in the left area. Select the desired analysis from the list area to the right. Click on the **Climate** tab**.**

The content area includes the following information:

❶ Display area of the climate events represented in a course. If threshold values are set, these are displayed as lines. The left axis shows temperature values, the right axis shows relative humidity values in %.

Temperature:
The permitted temperature range is marked by a red and blue line. The temperature curve is displayed in gray. Values above the permitted range are marked red, values below the permitted range are marked blue.

Relative humidity: The relative humidity threshold is indicated by a green line. Values that are above the threshold value are highlighted in green.

Scheme of recording climate events:

Temperature and relative humidity are measured every 5 minutes with the factory-calibrated temperature/humidity sensor and are recorded as follows:

If the temperature and/or relative humidity remains within the prohibited range for at least 5 minutes, a climate event is created. If the temperature and/or relative humidity in the further course deviates by 0.6 °C or 4% from the previous value or returns to the permitted range, another climate event is recorded.

Please also refer to ASPION G-Log Manager – PC software, chapter 6.2, "Profile settings for ASPION G-Log 2".

If activity events are activated, a climate event is stored according to the set interval and displayed during the course of the event, independent of the selected threshold values.

❷ Using the mouse-over function, you receive the details of a single climate event.

Please note: For climate events which occur in very short intervals, use the zoom function (see ❸) or the export functions (see 10.1).
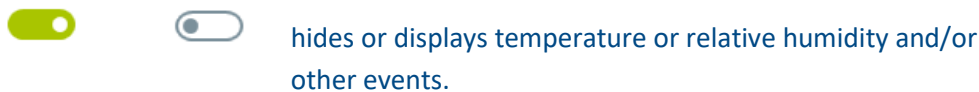
❸ The display in the upper area can be varied and saved as image:

hides or displays temperature or relative humidity and/or other events.

Save as PNG... creates an image of the current view.

❹ Zoom function: In order to view a time period in more detail, you can zoom in and out using the mouse wheel function in the upper view. The lower timeline marks the selected time slot white. By double-clicking on this area, you go back to the general overview.

The following analyses explain and clarify the recording method.
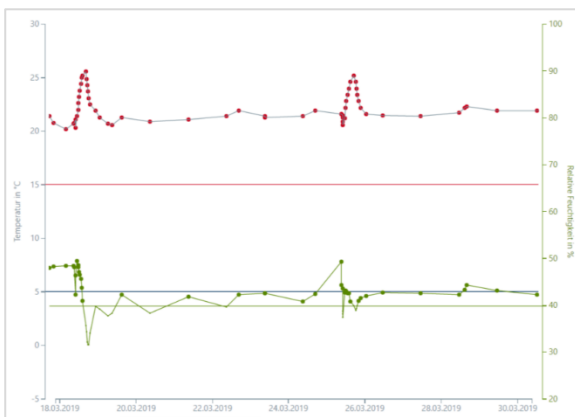
Automatic data recording:

If there is little change, only a few values are logged at longer intervals. If the values change by more than 0.6 °C or 4% relative humidity, the following value is recorded at a shorter interval. This gives you detailed information on when changes exactly occurred.
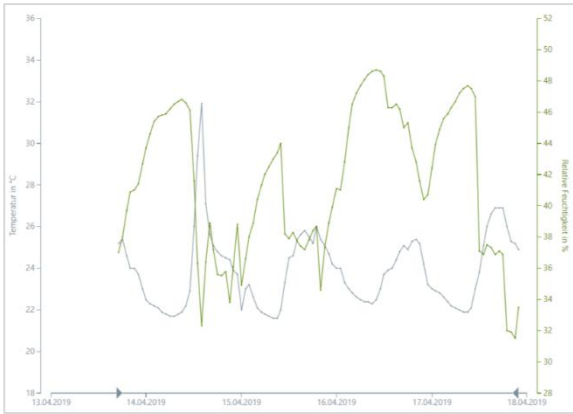
Data recording function for activity events:

The figure to the left does not include any threshold values. The recording of temperature and humidity values which exceed the thresholds is deactivated. The recorded climate data is generated by activating the activity events in the specified interval.
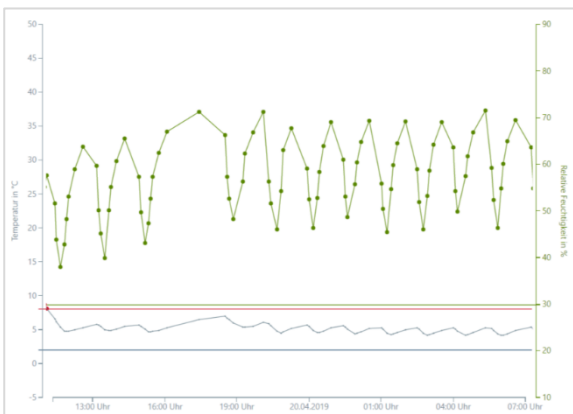
Typical climate profile in low-temperature environments:

Temperature values: 2 .. 8°C
Humidity changes: between 40% .. 70%

A temperature value is recorded for each humidity value and displayed in the permitted range. Environmental changes such as a door which stands open for a longer time can be easily detected.

11. Notifications

You find the **Notification** function in the lower menu area. Here, you have a smart overview about how many analyses were added at any time. Only those analyses are included which were not loaded via the import function, for example, when added via drag and drop or via a double click. You can directly access an analysis by clicking on the respective entry. Clicking the recycle bin icon or the **Remove all** button, you can delete all notifications.

12. Help, errors and problem solving

In the lower left-hand corner, you find the **Help** function. When clicking this button, you open the manual as PDF in your PDF reader. You can navigate in the contents to directly go to the required chapter. The following table helps you with errors that may occur and explains you the possible steps to solve the problem.

Error/Problem	Estimated cause	Probable solution
Sensor cannot be written or read.	Card reader does not recognize the sensor.	Remove the sensor from the card reader. Wait a moment and then repeat the process.
Communication with sensor failed.	Card reader does not recognize the sensor.	Please check: - Installation of driver for card reader - Is the card reader correctly connected to the PC via USB - Do NOT place card reader on metallic underground **Important:** NEVER leave a sensor on the card reader, as battery consumption increases significantly.
	Sensor battery empty.	Read out the sensor: An ASPION G-Log sensor (grey housing) can also be read out with an empty battery, but you can no longer activate it. An ASPION G-Log 2 / waterproof sensor (blue housing) does not react with an empty battery. Replace the battery.
Sensor cannot be written or read.	Communication with card reader fails.	Place ASPION G-Log 2 on the card reader as illustrated. The data is transmitted if the card reader blinks red as soon as you have placed a sensor on the card reader.
Sensor can no longer be read out, is not recognized by the card reader.	Empty battery or no contact with battery.	To read out the sensor, you can send the sensor to the manufacturer or replace the battery of ASPION G-Log 2 / waterproof. If you do no longer need the sensor, please dispose of it correctly (→ see ASPION G-Log shock sensor, chapter 7, "Disposal").
The entered card reader name was not recognized.	Card reader is not connected correctly.	Check whether the USB connector of the card reader is connected correctly.

Error/Problem	Estimated cause	Probable solution
Data could not be transferred. A Smartcard is required for the process.	The sensor is not completely connected to the card reader.	Place the sensor completely on the card reader and repeat the process.
Data could not be transferred. The data is invalid.	The sensor's firmware is not compatible to the PC software.	Contact your technical support.
No sensor could be recognized.	Empty battery or no contact with battery.	ASPION G-Log: Please contact your technical support. ASPION G-Log 2 / Waterproof: Replace the battery (→ see ASPION G-Log shock sensor, chapter 6, "Battery replacement")
Data cannot be written (wrong sensor type).	When writing data to the sensor, a wrong sensor type (ASPION G-Log/ASPION G-Log 2) was selected.	Select a profile that matches the sensor type and try again.

12.1 Support Infotool

To quickly and easily analyze possible errors, our support team uses the InfoTool. To use the tool, please follow the steps below:

1. Search "ASPION" in the Windows start menu.
2. Select the "ASPION Support Info Tool" app and execute it.
3. The "LogFiles.ZIP" is created and saved on your Desktop.
4. Send this file together with the error description to support@aspion.de.

ASPION Support Info Tool
App

For FAQs and more helpful information, please go to our ASPION customer portal at www.aspion.de/en.

ASPION G-Log App for smartphones

1.   Description and installation

Using the ASPION G-Log Apps, you can read out a sensor directly and, if required, stop it. At the same time, the current location is identified via the smartphone, displayed in the list view and saved in the data record. The smartphone must be NFC capable for ASPION G-Log, ASPION G-Log 2 (incl. waterproof) can also optionally be read out via Bluetooth (BLE). The table in chapter 2 explains the requirements and functions. You can download the ASPION G-Log App for installation on you smartphone from the respective store using the following links:

Android: https://play.google.com/store/apps/details?id=com.aspion.glog

iOS: https://itunes.apple.com/de/app/aspion-g-log/id1305876678?mt=8
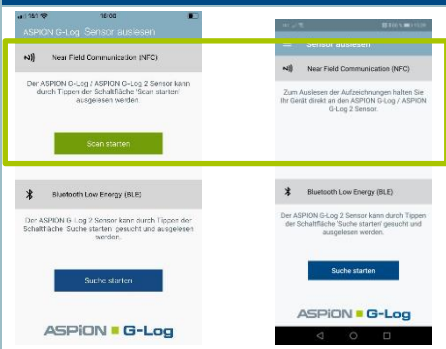
You also have the option to scan the QR code with your smartphone. Depending on the language of your operating system, the ASPION G-Log App is displayed in German, English or another available language.

Tip: You can go to our YouTube channel to watch helpful video tutorials on how to best use our apps: **https://www.youtube.com/channel/UCyPrXy8bNbXMKcp_MQEor3w/**

1.1   Reading out data via App

The sensor types have different wireless communication options: You can read out all sensors via NFC. To do so, hold your smartphone directly and up close to the sensor.

You can also read out ASPION G-Log 2 (incl. waterproof) via BLE (if it has not been deactivated via PC software). When compared to NFC, the range of BLE for data transmission is several meters, depending on the environmental conditions.

Sensor type	Reading sensor	Notes	App operation	
ASPION G-Log 2 ASPION G-Log Waterproof	via NFC	To read out the sensor, hold the smartphone directly to the sensor. For iOS, click **Start scan**. For Android, directly hold the sensor to the smartphone and data is read out automatically.	iOS App	Android App

ASPION G-Log 2 and ASPION G-Log 2 Waterproof	via NFC or via BLE (if active)	Description see above Read out data via BLE by clicking **Start search**. The sensors are listed; read out one or several sensors at once via a click.	
			iOS App · Android App

1.2 Short descriptions for customers

To support your customers or colleagues when using the sensors, we provide practical short descriptions for ASPION G-Log and ASPION G-Log 2.

Tip: A short description of the App for your customers is included in the delivered product on the USB stick or you can download it from our ASPION customer portal on our website. You can also complete the template with your individual data.

Preview of the short description for your customers and colleagues.

Short descriptions: ASPION G-Log   ASPION G-Log 2

2. App functions

The following table shows the smartphone requirements and App functions. The following chapters will include descriptions for specific functions, the standard functions are self-explanatory and will not need further explanations. The functions also apply to the Waterproof versions and are not mentioned separately.

	Android	iOS
Operating system	Version 5.0 and later	Version 11 or later
Hardware	Smartphones with NFC	NFC: iPhone 7 and later BLE: iPhone 5 and later
	for ASPION G-Log 2: NFC and/or BLE (Bluetooth)	
Reading the sensor	☑	☑
Wireless data transfer via NFC	☑	☑
	for ASPION G-Log 2: additionally with BLE (Bluetooth)	
Activate the sensor in delivery state	☑[1]	☑[1]
	only ASPION G-Log 2 (BLE), only with ASPION G-Log Premium	
Stopping sensor via App (see 2.1)	☑	☑
Display state and battery	☑	☑
Display shock events and climate data	☑	☑
Display shock details	☑	☑
Display shock/vibration testing in accordance with IEC 60721-3-2 by class	☑ ASPION G-Log 2	☑ ASPION G-Log 2
Live display of climate, battery, RSSI via BLE	☑ ASPION G-Log 2	☑ ASPION G-Log 2
Display events protected by PIN (see 2.2)	☑	☑
	to enter PIN double-click on display	
Activity events with orientation respecting gravity	☑	☑
Traffic light indicator after reading data and in list	☑	☑
Transferring data analysis	via e-mail in G-Log format, e-mail addresses can be saved, automatic transfer via cloud upload[1]	
Tracing location	☑	☑
Automatic transfer to cloud storage	☑[1]	☑[1]

[1] with ASPION G-Log Premium

2.1 Stopping sensor via App

If a PIN to stop the recording was entered in **Global settings** (→ see ASPION G-Log Manager – PC software, chapter 7, "Global settings"), you can stop the sensor with the Smartphone App. If no PIN was entered, then this function is not executed.

Views for stopping the sensor (the function is called via the menu):
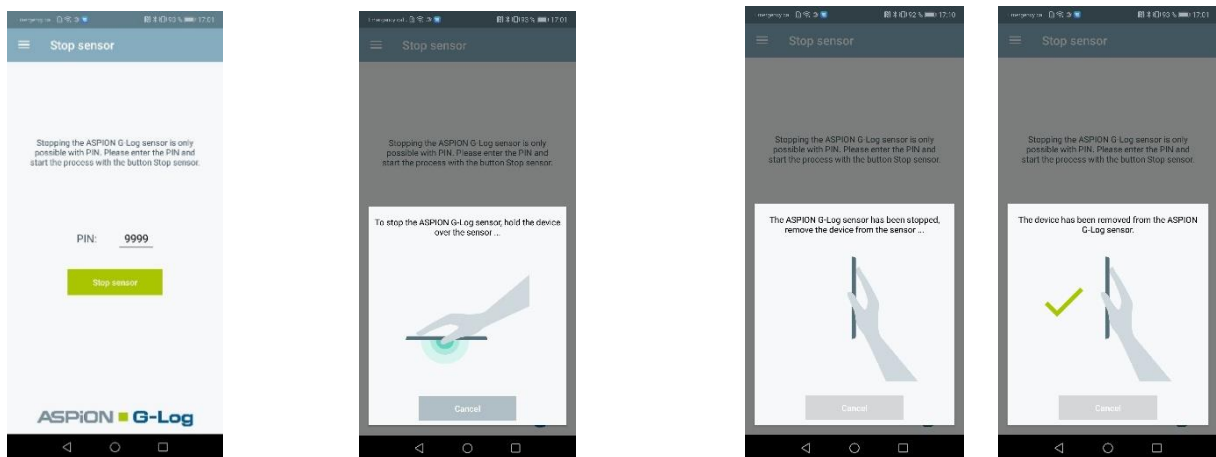
Enter PIN, click
Stopping the sensor

Hold smartphone
to sensor and wait until

the sensor has been stopped; then
remove smartphone

2.2 Display of events is protected by PIN

If a PIN to display the events was entered in the **Global settings** (→ see ASPION G-Log Manager – PC software, chapter 7, "Global settings"), the Smartphone App only displays general information but no possibly recorded shock or temperature events, or activity events. All other functions are not affected.

You enter the PIN to display the events as follows: Double-click the display and you will see a field in which you enter the PIN. After you have correctly entered the PIN and confirmed with OK, all event details will be displayed.

Views for PIN protection:

Display for analysis
with PIN protection
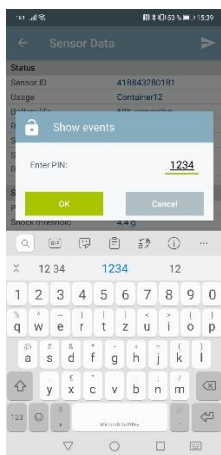
After double-tap:
Enter the assigned PIN
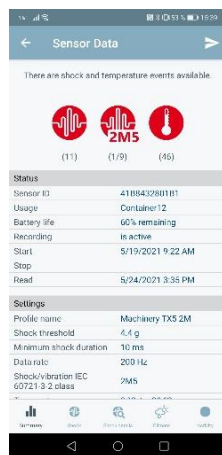
Display for analysis
after the PIN has been entered

Configuration and ASPION G-Log Premium

1. Overview

With the configuration program for network and ASPION G-Log Premium, administrators and users can enhance and optimize the operation and data retrieval in a company as follows:

- The network installation enables shared data administration and access to data for all users
- Language setting
- Data backup including recovery
- Exports and export formats of data and storage as archive
- **ASPION G-Log Premium,** as software-based cloud service, extends the solution with the following features:
  - Cloud storage, hosting and operation in a German data center, TÜV certified (German testing laboratory)
  - Starting ASPION G-Log 2 (incl. waterproof) data loggers in delivery state via Smartphone App through BLE. This enables users to activate the loggers without PC software/card reader and can, for example, be done by a local service provider.
  - Automatic transmission of analyses, read out with the Smartphone App
  - Automatic transmission of analyses, read out with the ASPION G-Log Manager PC software and NFC card reader or BLE which are not connected to the network (remote computer).

The following overview illustrates the interplay, the structure and the architecture.

ASPION G-Log Premium: Technology and function overview
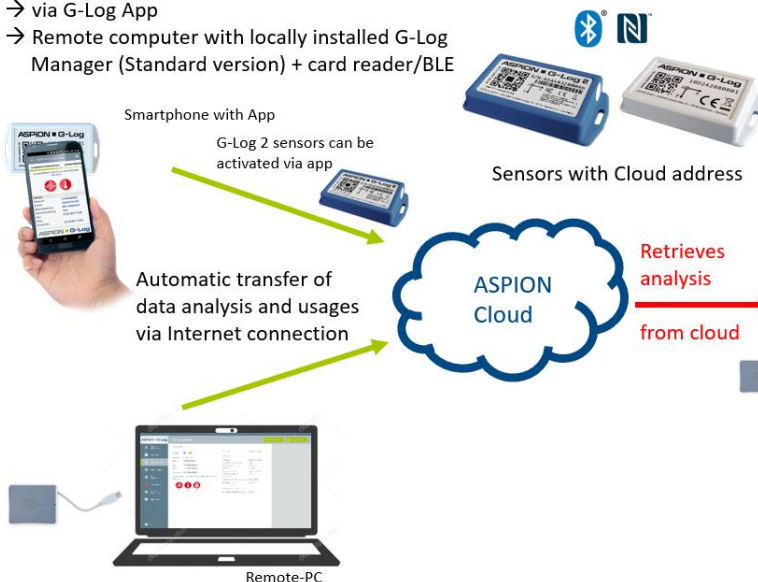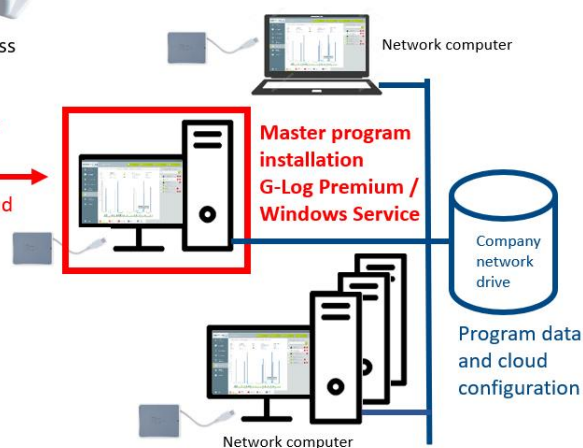
Architecture and components in the network and ASPION G-Log Premium.

Installation can be done on a PC with Windows operating system (from version 10) with access to the Internet via port 443 (https access). Please refer to the Configuration user manual for a detailed description of the options and functions. The following section describes the operation of the sensors with ASPION G-Log Premium as overview of the most important information. To purchase and set up ASPION G-Log Premium, please contact the manufacturer.

ASPION ■ G-Log

2. Start configuration program

The "G-LogConfig.exe" configuration program is stored in the same directory as the ASPION G-Log Manager. Example: C:\Program Files (x86)\ASPION. Start the "G-LogConfig.exe" configuration program via the context menu (right mouse click) "Execute as administrator":

The configuration program starts with the general settings.
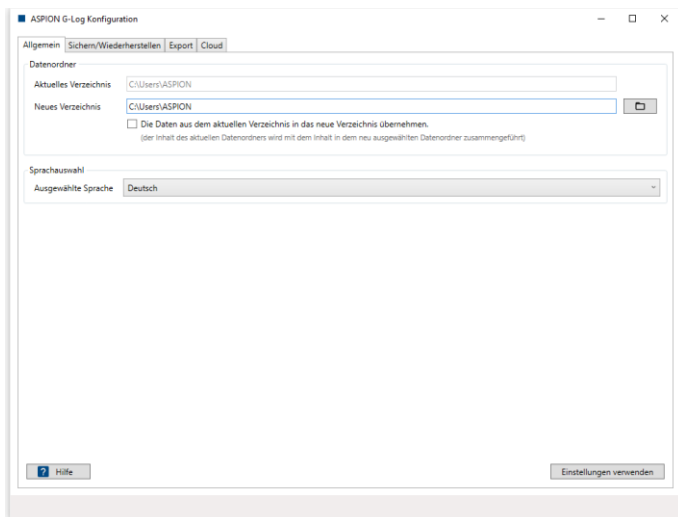
To change the language of the installation, go to the drop-down menu.

With the **Use settings** button, you save all entries made in the currently active area.

Please note: You require administration rights to save the changes.

By clicking the **Help** button, you can access the Configuration user manual.

3. Working with ASPION G-Log Premium

A sensor operated with the ASPION G-Log Premium version always contains the cloud address. This controls the transmissions. After the data has been read out via an App or the PC software, it is transferred to the cloud storage if an internet connection is available. Users can thus access the read-out data in the PC software within a few minutes, regardless of where the sensor is located. Users also receive information about the usage list as soon as an ASPION G-Log 2 has been activated via the App.

3.1 Activation via PC software and card reader

With ASPION G-Log Premium, all sensors are operated with PC software and card reader as with the standard version. Users will not notice any differences when using the sensors.

3.2 Activation via Smartphone App via BLE – only for ASPION G-Log 2 (incl. waterproof)

The ASPION G-Log 2 sensor in delivery state can be written via the Smartphone App using BLE; this option is only available for the ASPION G-Log 2 sensors. This function is very useful if the sensor must be activated independently of the location and time, for example, by a service provider. The sensor can also be written through packaging via BLE. To ensure that data is written securely and with correct settings, please follow these two steps:

Step 1: Create profile settings including instructions (using the PC software ASPION G-Log Manager)
Step 2: Write sensor via App through BLE

Important! It is required that an ASPION G-Log 2 sensor is in the delivery state (corresponds to the state upon delivery) so that users can operate it via App.

Step 1: Create profile settings including instructions (using the PC software ASPION G-Log Manager)

0 Select the **Edit profiles** function from the left area.
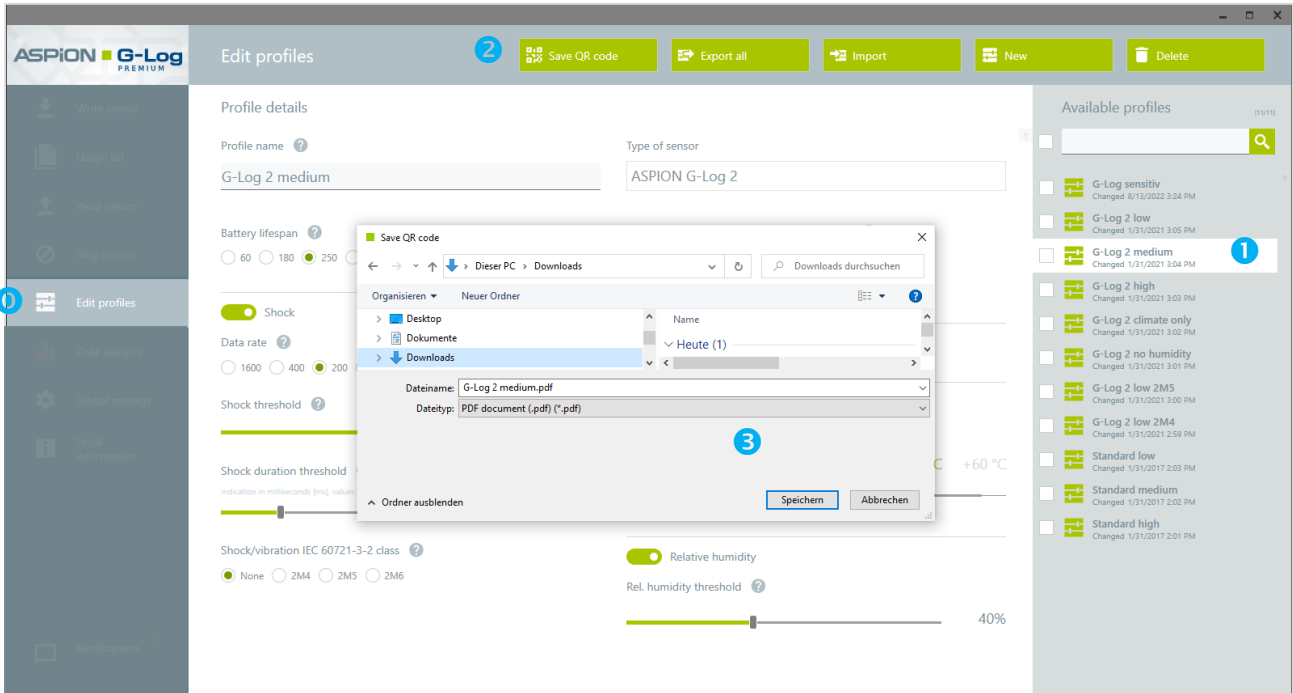
❶ In the list area, select the Profile which you want to be activated via App.

❷ Click **Save QR code** to create the PDF of the selected profile for the App user. The profile settings are stored in the QR code. The code contains all information about how to operate the sensor, including the global settings and cloud address.

> Please note: The **Save QR code** button is only active for the ASPION G-Log 2 profile.

❸ Save the PDF on your local computer on a selected drive. The program automatically suggests the profile name as file name, but users can rename the file. The PDF also contains a description with step-by-step instructions on how the App user can activate an ASPION G-Log 2 sensor.

Step 2: Write sensor via App through BLE
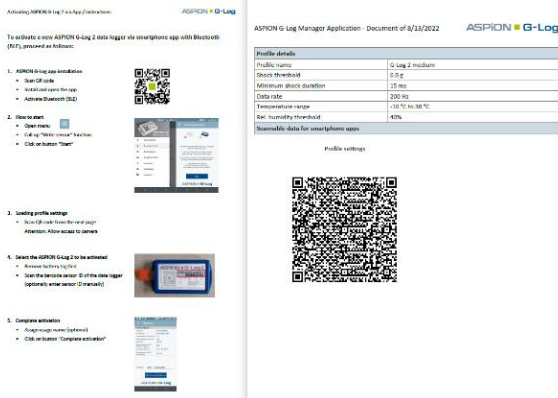
With the description and the generated QR code from the PDF (see step 1), an App user can easily activate an ASPION G-Log 2 sensor. Both the instruction and the App support the App user step by step. You can make this PDF available to the App user, for example, via e-mail. The activation is done within seconds.

As soon as an ASPION G-Log 2 sensor is activated, the user of the PC software receives this activation information including the location as new entry in the usage list via cloud transfer. This puts you in control of the ASPION G-Log 2 sensors which are optionally activated via App.

4.   Transfer of analyses

The users of the Smartphone App as well as users of the ASPION G-Log Manager on a remote PC benefit from the automatic data transfer without further action. The analyses are transferred automatically to the cloud as soon as an internet connection is established. The user can easily and quickly control this process. The following icons are used in the display:

Waiting for cloud upload   Cloud upload successfully executed

The icon for the analysis is either green or blue: new analyses are blue. If the bar graph is displayed in green, the analysis has already been marked as completed or no exceedances have been recorded.

Successful transfer via the Smartphone App

You operate the Smartphone App in the same way as the standard version (→ see ASPION G-Log App for smartphones). But App users benefit from the automatic transfer of data analyses which do not have to be sent by e-mail. The analysis is automatically transferred to the cloud as soon as a data connection is established via mobile phone or WIFI. The App can also remain active in the background. If the data transfer has been successful, it is marked in the menu with the icon via the **Read out data** function.

Tip: You can download a short description of the ASPION G-LOG Premium App for your customers from our ASPION customer portal on our website. You can also complete the template with your individual data.

Preview of the short description for your customers, available in the ASPION customer portal.

Short description for ASPION G-Log   ASPION G-Log 2

Successful transfer via remote PC

Reading out the sensors follows the same steps as with the Standard version (→ see ASPION G-Log Manager – PC software, chapter 8, "Reading the sensor"). But users benefit from the automatic transfer of analyses to the cloud if an internet connection exists. By changing to the **Analyses** function, you can check whether the transfer was successful.

Analyses with [icon] [icon] have successfully been transferred to the cloud.

Analyses with [icon] [icon] have not yet been transferred to the cloud. Analyses that still need to be transferred are transferred automatically to the cloud as soon as an internet connection is established and are marked accordingly.

Contact and support

Manufacturer

If you have any questions or problems, please contact:

ASPION GmbH

76149 Karlsruhe, Germany

www.aspion.de/en

Support hotline: +49 (0)721 / 8 51 49-128

E-mail support: support@aspion.de

For FAQs and more helpful information, please go to our ASPION customer portal at www.aspion.de/en.