



USER MANUAL

Discreet Body-worn Activity Sensor

The system requires minimal setup and is ideal for research use where physical activity, sedentary behaviour, or sleep are parameters.

The small SENS motion patch is worn discreetly on the thigh

Data can be collected on many participants

Delivers accurate measurements that can be extracted for research

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Terms

In this user manual, a distinction is made between **two different types of users**. The first type of user is the patient/citizen/other who utilizes the SENS motion sensor and thereby generates data. This user is referred to as the **participant** throughout this user manual.

The second type of user encompasses the researcher/healthcare professional/other who helps the participant get started with SENS motion and supervises data collection and the use of data. This user is referred to as **research staff** throughout this user manual.

What is SENS motion?

The SENS motion system measures the physical activity of participants. Data can be collected from many participants simultaneously. Research staff can follow the participants' activity profiles and extract data for analysis.

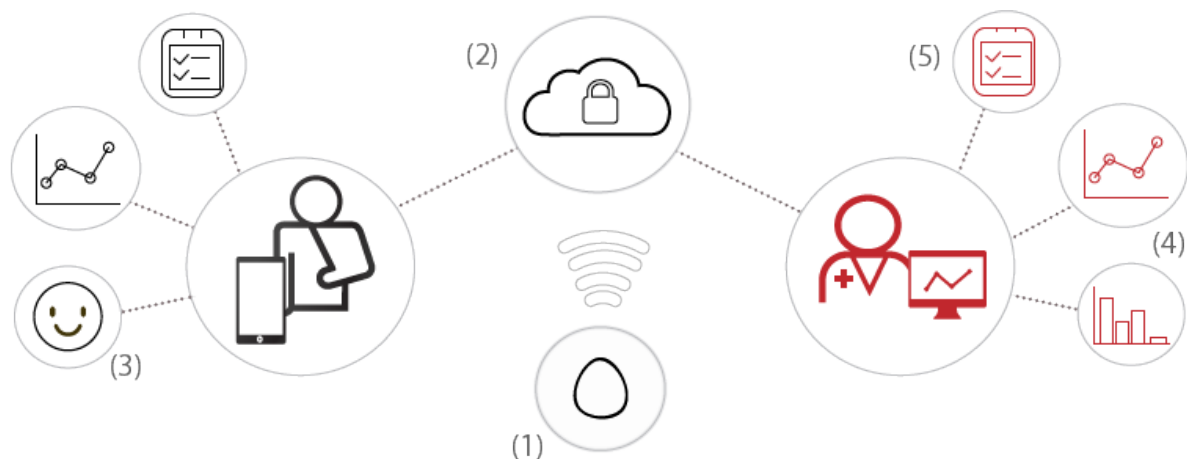
Key features of SENS motion

- Discreet sensor that monitors physical activity
- Skin-friendly patch for the sensors
- The sensor patch can be utilized by participants of all ages
- Quick and easy setup of the system
- 24 hours monitoring for up to 20 weeks
- Data is stored securely in a GDPR-compliant database
- No recharging of the battery required
- Data is safely stored in the cloud locally at the Amazon Web Services (AWS) data center in Frankfurt, Germany.
- Automatic and wireless transfer and processing of data

Material overview	
Product	Part number / model
Sensor – SENS motion PLUS	A01.6
Patch – SENS PATCH	A03
Tablet	A08
Alcohol wipes	A10

What does the SENS motion system consist of?

- The sensor (1) collects activity data by recording acceleration and sends the encrypted data to the database server.
- Server (2) where all the data is securely stored.
- Mobile application (3) which enables the transfer of data from the sensor to the database server.
- Research staff can easily access an overview of activity profiles (4 and 5) through a web browser.



How to get started

Three elements require your attention when getting started:

1. Assemble and position the sensor and patch.
2. Download and install the SENS motion app for smartphone.
3. Using the web application.

These elements are described in sections 1,2 and 3.

1. Sensor and patch

The patch is worn discreetly on the thigh **24 hours a day**. It is compact, waterproof, and flexible. As soon as the patch and sensor are placed and activated, the objective and precise activity measurements are displayed online where the research staff can access the data. The measurement period depends on the purpose, ranging from hours to months. The sensor can measure continuously for up to 20 weeks and locally store up to 10 days of data in case the sensor has not been synchronized with a mobile application and transferred data to the cloud.

The patch should be replaced after 14 days. If redness or irritation occurs during use, remove the patch immediately according to the instructions (1.2).

Before assembling the sensor and patch check that the sensor is active and associated with the desired participant. Note or remember the sensor ID for the participant to be created.

1.1 Assembly and positioning of sensor and patch

First, the sensor and the patch are assembled (1.1.1), then it is placed on the participant's leg (1.1.2).

1.1.1 Assembly of the sensor and patch



Required materials:

A disinfection cloth, a sensor and a patch.¹



¹ Patch type B. If you have patch type C, you can follow the manual till step 3 on the next page, and skip step 4.

Pull down the bottom piece (marked no. 1) of foil/liner to allow the sensor and patch to be pressed together firmly. Do not forget to press the patch thoroughly around the edges of the sensor to secure it.

1.1.2 Securing the sensor and patch on the participant's leg

It is important to place the patch correctly for the sensor to work properly. Read and follow the instructions below.

IMPORTANT:

Place the patch on the **OUTER SIDE** of the thigh above the knee. The sensor can be placed on either the right or left leg. The **round part** of the sensor should point **towards the knee**. See pictures below.



1



2

Clean the skin where the patch is meant to be placed.

Remove the back side (marked no. 2)



3



4

Gently adhere the patch on the outer side of the thigh. Press firmly to ensure it adheres evenly

Only for patch type B: Remove the white edge (marked no. 3)

1.1.3 Factors Affecting Patch Adhesion and Durability

- **Correct Application**
The patch and sensor must be applied correctly according to the official SENS guide. Incorrect application may reduce adhesion and increase the risk of the patch detaching prematurely.
- **Choice of Patch Type**
Different patch types have different adhesion properties. Patch Type C (2-step patch) is generally recommended for children and active individuals, as it typically provides better adhesion. Patch Type B (3-step patch) is recommended for less active or bedridden individuals.
- **Drying Time After Application**
After application, it is recommended to wait at least 24 hours before activities such as swimming, bathing, or intense physical activity, as moisture may weaken the adhesive during the initial period.
- **Water, Sweat, and Activity Level**
Frequent exposure to water, e.g. swimming several times per week, high sweat production, and high levels of physical activity may affect the durability of the patch and increase the risk of premature detachment.
- **Need for Additional Patches**
During periods of high activity or repeated water exposure, it may be necessary to replace or supplement with additional patches during the measurement period.

1.2 Removal after use

When removing the patch, it is recommended to place one hand against the skin to provide support for the skin while the patch is gently pulled off along the leg. Pull along the skin, not away from it. To ease the removal, it is recommended to use skin lotion to loosen the adhesive. The patch typically begins to loosen itself after 10-14 days.

Wear gloves when handling used sensors.

After use, patch material is removed from the sensor. The patch is not reusable and is disposed as normal waste. The sensor can be cleaned for reuse.

Note: Carefully remove patch material from sensor, especially around ID label. If necessary, keep a finger on the label while removing patch material. Should the label fall off, write down the ID and put the sensor aside with a note of the sensor ID.

1.3 Sensor

1.3.1 Reusing

The sensors are reusable. Simply clean the sensors before use with soap and water, 96% alcohol or a propyl alcohol solution.

Important: Before a sensor can be reused, the previous measurement cycle must be over, i.e., the end date of the period must have passed.

1.3.2 Data

All data is securely stored in the cloud. To transfer data from sensor to the cloud, see section 2.2. The data from the sensor is assigned to the participant registered to that sensor. Data assigned to a participant is based on start and end date of a measurement cycle. If the same sensor is used for a new participant, the two participants will not have access to each other's data.

2. Downloading and installing the SENS motion app for Smartphone

The SENS motion app facilitates the connection between the sensor and the cloud server.

2.1 Get the SENS motion app

During the start-up of SENS motion an app is required and needs to be downloaded. The app which connects the data from the sensor patch to the database can be downloaded for iOS and Android by searching for 'SENS motion' in App Store and Google Play shop, respectively, or by scanning the QR code below:



Google Play Store



SENS motion
Health & Fitness

SENS motion app in App Store



App Store

Note that 'Bluetooth' must be switched on the first time the app is opened on the smartphone.

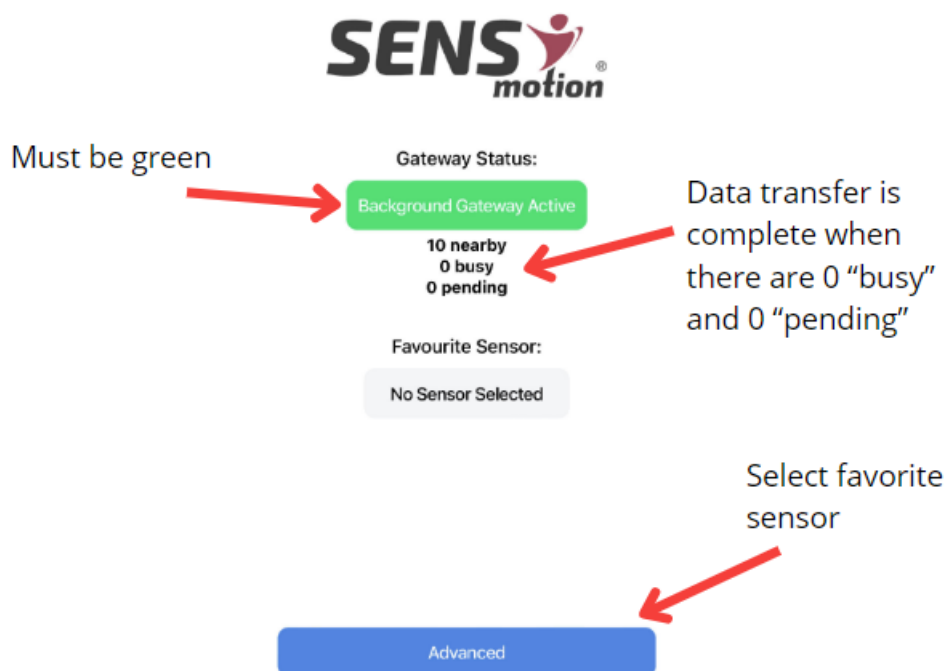
On the main screen, any problems with data collection will appear. Also check that your sensor(s) are counting under 'nearby sensors'. App design may vary on iOS devices.

Collected data is available for visualization and interpretation on the SENS motion® web app. This is described in section 3.

2.2 Transferring data

To transfer data from the sensor to the server, simply open the SENS motion app within 10-15 m of the sensor. The app must be open to transfer data. Data is ready for transfer when the top "Gateway Status" is green as seen below. If the status is yellow or red when opening the app, please restart your phone and ensure that Bluetooth is turned on.

Save a favorite sensor by clicking the blue 'ADVANCED' button. Select the desired sensor and "Set Favourite". The sensor's status will now be displayed on the front page.



Data automatically transfers when the app is open. All data is transferred when there are 0 "busy" and 0 "pending" sensors nearby.

Data transfer may take a few minutes. The data will be available in the web app shortly after data transfer is completed.

NOTE: The sensor can store up to 10 days of data. To prevent the sensor's memory from becoming full, we recommend transferring data at least once a week.

All data must be transferred before turning the sensor off (section 3.3).

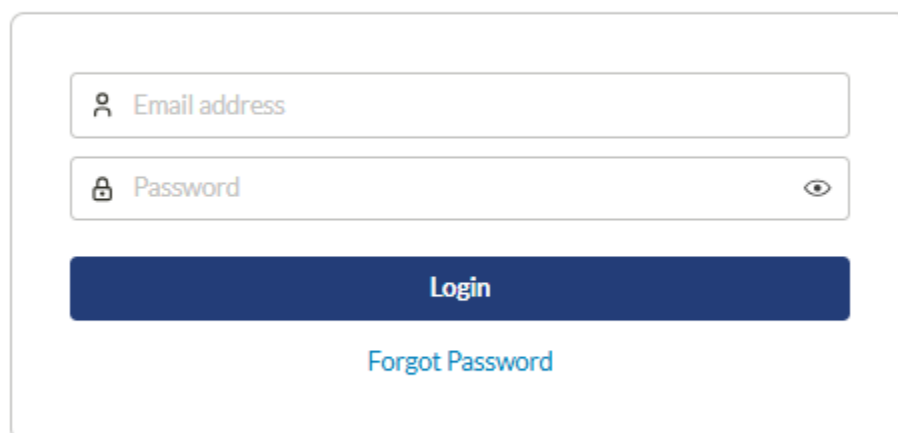
3. Using the web app

SENS motion® web app is an online visualization tool for accessing the participants' data. This is done through an internet browser using this link: app.sens.dk

This tool visualizes the activity data and is the gateway of data export. In addition, the tool provides an overview of sensors and participants.

3.1 Login

A login and a password are required to use the SENS motion® app. These will be received when purchasing the product SENS motion®. If you have lost or forgotten your login, please [contact SENS Innovation](#). The login page is the first page of the web application.

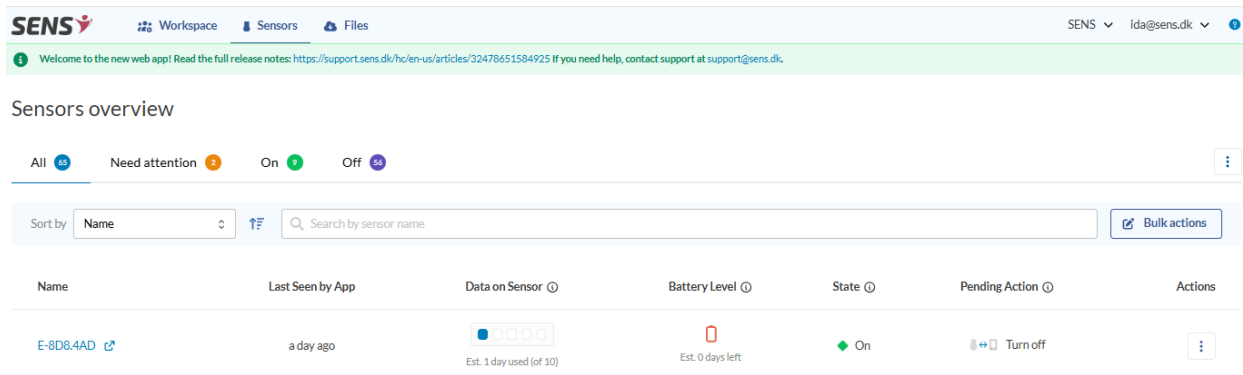


The screenshot shows a login form with two input fields: 'Email address' and 'Password'. The 'Password' field has a toggle icon for visibility. Below the fields is a blue 'Login' button and a 'Forgot Password' link.

v3.9.0-251216

3.2 Sensor overview

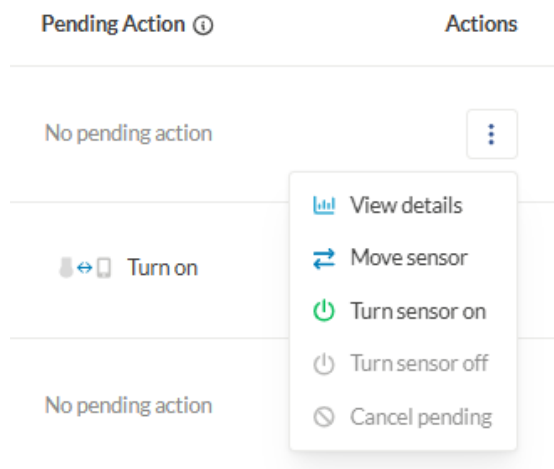
After you have logged in, you will see three tabs, one of which is the sensor overview. It displays information about the sensors, such as their state and battery level.



3.3 Manage sensors – turn sensor on/off

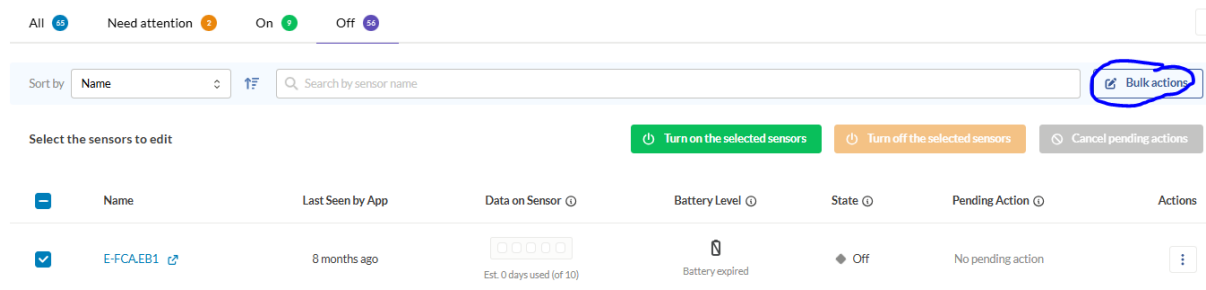
A sensor’s “state” indicates the current status of the sensor. A sensor is powered on and ready to measure when its status is set to “On.” Follow these steps to turn a sensor on or off:

1. Select the sensor you want to turn on by clicking the three dots on the far right and choose “Turn on sensor.”



2. Or, if you want to turn on multiple sensors at once, select “Bulk actions,” click the sensors you want to turn on, and then click “Turn on selected sensors.”

Sensors overview



3. The sensor’s “Pending action” will now change to: Turn on

4. Open the SENS motion app on a smartphone (accept Bluetooth and location services (first time you download it).
5. Shake the sensor a few times to activate it. A connection between the sensor and the server will now be established.
6. Check in the web app that the sensor’s status is “On” and displayed in a clear green colour:



IMPORTANT: A sensor’s status MUST be “On” with a bright green colour to store measurements. If the sensor has any other status, it is NOT measuring!

Follow the steps above when turning the sensor off. When a sensor is turned off, it has the status “Off” with a grey colour:

IMPORTANT: If the sensor’s pending action to turn off Turn off is still displayed, it is still not turned off and is awaiting connection with the app and final data transfer before it can turn off. Keep the SENS motion app open.

If your sensor status does not change to “On” or “Off”, restart your smartphone and repeat the instructions above. Note data transfer can take several minutes.

3.4 Participant overview - Workspace

Clicking on ‘Workspace’ in the top bar, provides an overview of the participants.

For every participant, you can see *Name*, *Start Time*, *Sensor info*, *Data on sensor*, *Last seen by app*, *Status* and *Actions*.

3.5 Add participant

Before adding a new participant, you must turn on the sensor that will be used, see instructions in section 3.3.

In the “Participants” tab press to  add a new participant.

Enter the Participant ID or First Name:





Add Participant ×

Participant ID/First name *	Last Name
<input type="text" value="Rasmus"/>	<input type="text" value="Jensen"/>
Phone Number	Timezone *
<input type="text" value="+45"/> <input type="text" value="88776655"/>	<input type="text" value="(GMT+01:00) Brussels, Copenha"/> × <input type="text"/>
Measurement Method *	
<input type="text" value="SENS Activity & Sleep (Newest) (v5.5)"/>	
Sensor on Thigh *	<input type="text" value="Select a sensor"/>
Start Time	
<input type="text" value="Now"/>	
End Time	
<input type="text" value="Not Defined Yet"/>	
<input type="button" value="Cancel"/> <input type="button" value="Add participant"/>	

NOTE: The participant ID does not have to contain personally identifiable information, and entering the last name and phone number is optional.

Under 'Measurement method' a default algorithm is pre-selected. For other solutions, please [contact SENS Innovation](#).

Under “Sensor on Thigh”, select sensor. The sensor ID is on the sensor label. Select only sensors that are ready to use and are not already associated with another participant.

NOTE: If the sensor is ‘on’ there is a green mark next to the sensor ID:  On 
If the sensor is off, the mark is grey:  Off 

Define the start and end time of the period to be measured:

Start Time

End Time

Cancel

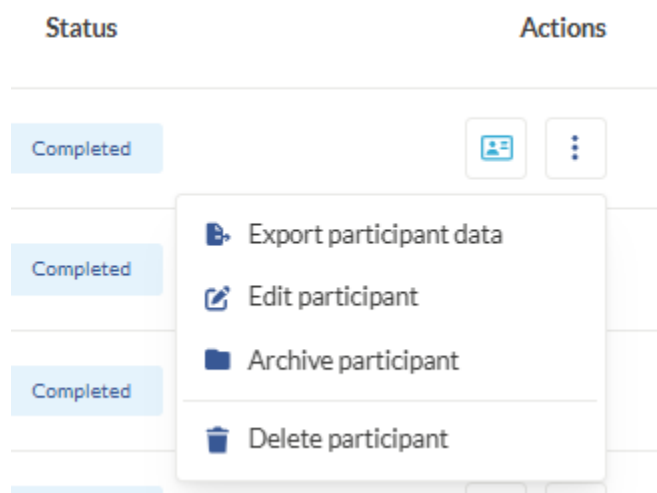
+ Add participant

For start/end time, there are three options; “Now”, “Specific time” and “Not defined yet”. For the end time you can select “Expected period” in addition to the former three.

You can always subsequently adjust the start and end time of the monitor period. Data will be stored on the sensor as long as it is running and adjusting the monitor period will not impact the stored data.

3.6 Editing or deleting participants

To edit participant information such as name, sensor or monitor period, click the three dots on the right of the patient and select ‘Edit participant’. To delete a participant, select “Delete participant”:



3.7 Details about the physical activity of participants

Detailed graphs of a subject's physical activity can be accessed by clicking on the little squared icon on the right, under “Actions” in the Workspace tab:

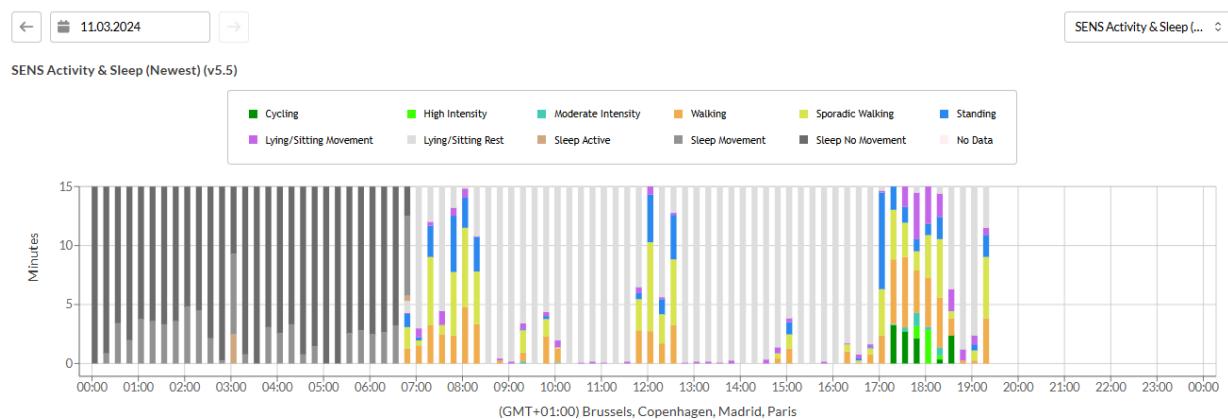
Participants overview

In progress 3 Not started yet Completed 26 All 29

Sort by Creationdate 🔍 ➕ Add participant 📄 Bulk export

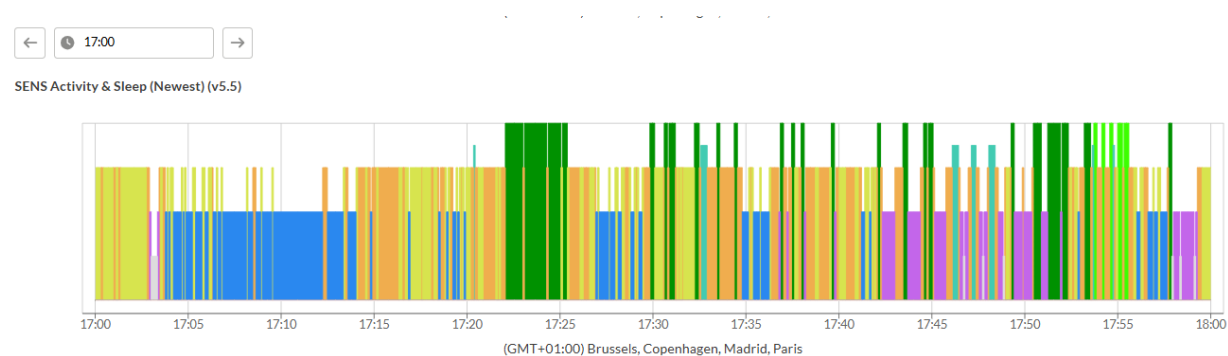
Name	Start Time	End Time	Sensor Info	Status	Actions
Ida test	28.02.2024	11.03.2024	81-1F.99 📶 📍 Thigh	Completed	📄 ⋮

By doing so, details are shown as demonstrated below.



The graph shows physical activity over a period of 24 hours.

You can zoom in to study a specific hour by clicking on an hourly interval in the graph. This opens a zoomed in view of the selected hour as seen below.



To study a specific minute, please click on a minute interval after you have clicked an hour.

3.8 Types of activities

Data is analyzed in 5-second increments, and each interval is estimated to belong to a specific activity category. Various activity levels are denoted by distinct colors:

No data; No data collected.

Lying/sitting rest; Lying down or sitting with little or no movement.

Lying/sitting movement; Lying down or sitting with movement.

Standing; Standing upright.

Walking; Continuous walking.

Sporadic walking; Standing upright, but with few movements. The activity relates to 'Standing' and 'Walking' but is in between and irregular.

Cycling & similar; Cycling.

Moderate intensity; Brisk walking where the activity is higher than 'Walking' and lower than 'High intensity'.

High intensity; Running or other rapid, continuous movements.

Sleep active: Participant is active (up and walking) during sleep period.

Sleep movement: Participant is lying now, sleeping but moving.

Sleep no movement: Participant is lying now, sleeping and *not* moving.

Each hour in the graph is divided into four parts of 15 minutes. The physical activity measured in these intervals of 15 minutes is depicted in the graph vertically with colors depending on the type of activity.

3.9 Battery of sensor

During its period of use, the battery can last at least 120 days when running or up to 2 years when off. The sensor's battery level updates when it connects to the app.

Note that the sensor's battery is not rechargeable. When it is empty, the sensor must be returned to SENS Innovation for recycling or collected as electronic waste.

3.9.1 How to check the battery level

The battery level can be checked by going to the “Sensor” menu and viewing the “Battery level” for the specific sensor. You can see how many days of battery life are expected remaining.

Sensors overview

Name	Last Seen by App	Data on Sensor	Battery Level	State	Pending Action	Actions
E-8D8-4AD	a day ago	Est. 1 day used (of 10)	Est. 0 days left	On	Turn off	

It is recommended to update the sensor’s battery level before attaching it to a participant. This ensures that there is enough battery for the entire measurement period.

4. Exporting data

4.1 Exporting data for a single participant

Exporting data is done within the ‘Workspace’ menu. Data for a single sensor or participant can be exported by clicking the 3 dots next to the participant and then clicking ‘Export participant data’.

Participants overview

Name	Start Time	Sensor Info	Data on Sensor	Last Seen by App	Status	Actions
Ida test test	12.06.2024	00-B1.1D Thigh		7 years ago	In Progress	Export participant data, Edit participant, Archive participant, Delete participant
Amin Rezaei	12.06.2024	71-13.D9 Thigh		a year ago	In Progress	
Miriam Test	20.06.2025	74-4C.BD Thigh		4 months ago	In Progress	

Following options for exporting data are available:

Export data ×

Ida test test

Select an option to export:

Activity Data

Summarised period

1 hour

15 min

Not Summarised

Activity Data - PDF report

Week Overview

Average

Combined

Accelerometer Data

CSV

Binary

After selecting a file format, the 'Files' modal will pop up. Click on the link and you will get to the Files tab (also found at the top of the page next to "Sensors").

Click to download the file to your device.

4.2 Bulk export – exporting data for several participants

It is possible to export data for several participants simultaneously. Click 'Bulk actions' and select the participants you wish to export data for.

Files Overview

All (2) Queued Ready to download (3) Downloaded

Sort by: Created Time ▾ Project: All projects ▾ Bulk actions

Select files to edit Delete files Collect in zip file

! To efficiently cancel multiple file generations:
Ensure that you exclusively choose files currently in progress, excluding those marked as 'failed' or 'cancelled'.

	File Name	Data Type	Project	Data Interval	Created Time	Status	Actions
<input type="checkbox"/>	export_summary1h_ida-test-te...	Activity Data <small>Format: csv</small>	SENS Internal Sleep	12.06.2024 - 18.12.2025	18.12.2025	Expire in 20 days	Download

When the participants have been selected, click

 Collect in zip file

Click to download the files to your device:

 Download

4.2 File formats

SENS motion currently supports 3 different file formats of data: CSV (Comma-separated values), PDF-files and raw accelerometer data. Select the file format that is best suited your project. For details about the different file formats, please refer to this article: [Data export](#).

5. Contact SENS Innovation

If you have any questions, please refer to our support page: support.sens.dk

Here you will find detailed information on different aspects of using SENS. If the support page does not answer your questions or you need further information/assistance, please get in touch with us by sending an e-mail to support@sens.dk

We are more than happy to help!

Thank you for choosing



Technical information

Sensor includes	Patch
Sensor for movement	Medical approved
Sensor for temperature	3M patch
Storage memory up to 10 days	DS/EN ISO 10993-10:2013
Battery life in use 20 weeks	Disposable plasters
Battery life in sleep mode 2 years (within the application period)	Handle as normal waste
2.4GHz low energy transfer	
Transfer time for 1 day's data – Approximately 5 minutes	
Sampling frequency 12,5 Hz	
3D Accelerometer -4G to 4G	
IP68	
Functional temperature 5° – 34°	
Storage and transport temperatures. -30° – 60° at 40-60% humiditet	
Atmospheric pressure range from 700hPa (3000m) to 1060hPa	
Technology: wireless transfer. Frequency band: 2400-2480MHz radiating effect max: 2.5mW (Class 2 transmitter). Can be used without any safety distance to user.	
Versions	
Web app v.3.7.x SENS motion app v.3.0.x	

Dimensions	
Sensor	Patch incl. sensor
Length: 47 mm	Length: 80 mm
Width: 22 mm	Width: 60 mm
Thickness: 4.5 mm	Thickness: 5 mm
Weight: 7 grams	Weight: 10 grams



 SENS Innovation ApS
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Tel: +45 26 23 82 34
Nannasgade 28
2200 København N



General

CE This product is classified as medical equipment, class 1, in accordance with the directives 2002/96/EC (WEEE), 93/42/EEC, 2014/53/EU (RED), 2014/30/EU (EMC) and 2002/95/EC (ROHS). EN60601-1-Medical Device General Safety. The patch is tested for irritation and skin sensitization (DS/EN ISO 10993-5:2013).

FC IC **FCC ID: 2BFOF-A016 IC: 32412-A016**
 This device meets FCC and ISED **radio frequency (RF) exposure requirements** for body-worn operation. It is safe to wear directly on the body with no minimum distance required.



Read the included instruction carefully before using SENS motion plus for the first time



The interchangeable patches can only be used once and should not be re-used. Batteries and other components within the sensor are NOT interchangeable.



Latex free



Compliant with IEC standards for “Type BF Applied Part”



Lead Free and RoHS Compliant.



WEEE – Sensor must be disposed as electronic waste



Keep away from sun

Storage: Keep the product away from heat – storage and transport at -30°C – +60°C.

Operating temperature: 0°C – 34°C.

Service and repair of the equipment is not possible. If issues occur or the equipment does not live up to the specification, please contact SENS Innovation ApS for complaint procedures.

IP68 Water resistant down to 1.5 meters and maximum 1 hour under water.



Data must not be used for potentially harmful medical decisions – consult with your doctor



SENS motion Plus must not be used in an MR-scanner.



Equipment with radio transmitters should not be used close to the SENS motion Plus product and should at least be 30cm away from the product.



If you experience discomfort in correlation with the use of SENS motion Plus, then the patch should be removed immediately.



Follow the instructions when removing the patch.



The surface temperature of the product can rise to 42°C in isolated cases even when the environmental temperature does not exceed the maximum of 34°C.

FCC Compliance Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

FCC Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

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. There is no guarantee that interference will not occur. If this equipment does cause harmful interference to radio or television reception, the user is encouraged to try to correct the interference by one or more of the following measures:

- Increase the separation between the equipment and receiver.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

RF Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. The device is intended to be worn directly on the body and meets the FCC portable exposure requirements with a minimum separation distance of 0 mm.

FCC ID: 2BFOF-A016**ISED Canada Compliance Statement / Déclaration de conformité**

This device contains licence-exempt transmitter(s)/receiver(s) that comply with Innovation, Science and Economic Development Canada's licence-exempt RSS(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'Innovation, Sciences et Développement économique 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.

RF Exposure Statement / Déclaration d'exposition aux RF

This equipment complies with ISED RF exposure limits set forth for an uncontrolled environment. The device is intended to be worn directly on the body and meets the portable RF exposure requirements with a minimum separation distance of 0 mm.