



D1073A

TRACK+

TECHNICAL GUIDE

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1 Product overview

1.1 Main functions

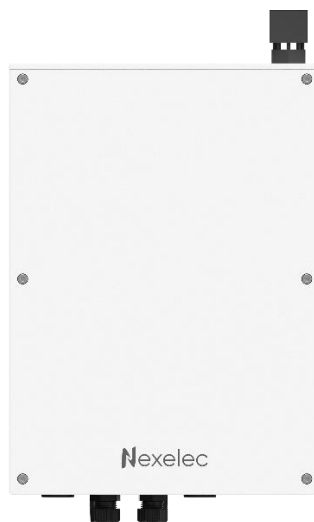
This document describes the technical operation of the TRACK+ outdoor air quality measurement station, connected via LoRaWAN or 4G LTE, powered by battery, mains, DC voltage or solar energy, and configurable via NFC. The station integrates sensors to measure fine particles, temperature, humidity and atmospheric pressure, and offers automatic geolocation via GPS. It is designed for outdoor use, with simplified maintenance.



1.2 Box contents, options and accessories

1.2.1 Station contents

- Main station :



- Pole mounting bracket :



- Wall mounting bracket :



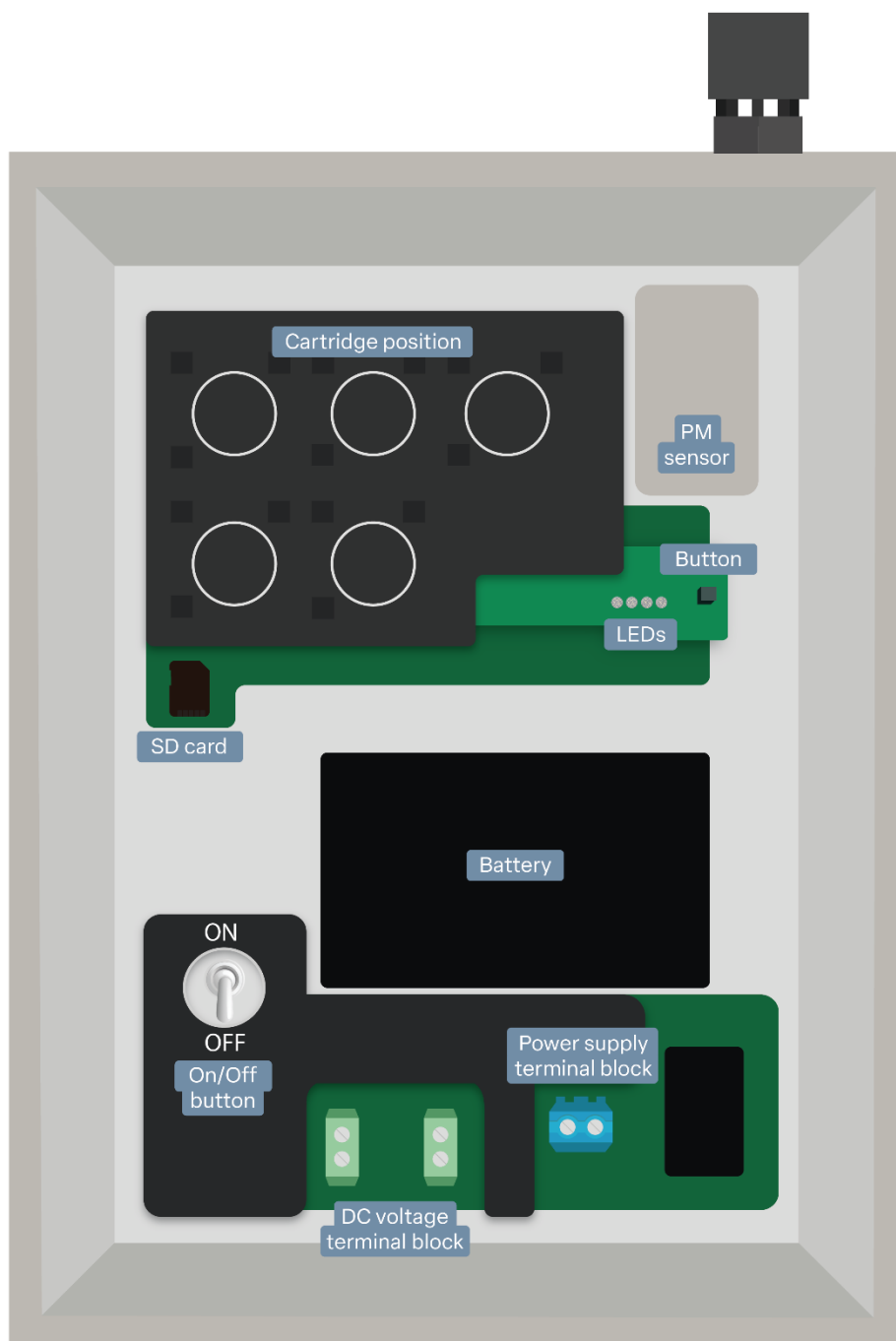
1.2.2 Connectivity options:

- 4G cellular connection, data access via Api / Webhook

1.2.3 Power supply options:

- Solar power kit :
 - o 20Wp solar panel
 - o Solar panel mounting bracket
 - o MC4 power cables

1.3 Product diagram



1.3.1 Dimensions and weight

Length: 32 cm | Width: 23 cm | Height: 10 cm

Net weight: 2.6 kg

1.4 Operating environment and certifications

1.4.1 Product use conditions:

Indoor or outdoor environment

Operating temperature : -20 -60°C

Storage temperature: -20 - 45°C

Battery charging temperature range: 0 - 45°C

Relative humidity: 0% to 95% RH (non-condensing)

Service life of wearing parts :

- Fine particulates: 5 years*
- CO2: 15 years

See 'Maintenance' section for replacement of wearing parts.

*See the 'Operating modes' section for details of sensor life.

1.4.2 Certifications:

Applicable certifications and associated declarations of conformity are available on the Nexelec support website support.nexelec.fr

2 Installation

2.1 Recommended locations

The station is suitable for installation outdoors or in an industrial environment. We recommend

- fix the station in its standard position, i.e. vertically, respecting the up/down direction as shown in the picture;
- secure the station to a solid support
- install the station at least 1.5 meters above the ground to obtain more representative measurements of fine particles;
- out of direct sunlight for good temperature and relative humidity measurements.



2.2 Station assembly

2.2.1 On a pole

You can mount the station on a pole using the pole mounting kit.

1. Screw the pole bracket to the station.
2. Open the clamps and pass them through the bracket.
3. Close the clamps around the post.
4. Tighten clamps securely.

Warning: risk of falling

To prevent the station from accidentally falling, be sure to tighten the clamps. You can check that the station is securely fastened by pressing it down slightly. If it doesn't move, it's sufficiently tightened.

2.2.2 On a wall

The station can be wall-mounted using the wall-mounting kit.

1. Screw the wall bracket to the station using the screws supplied.
2. Mark the location of the bracket holes on the wall.
3. Drill the wall.

4. Install dowels.
5. Screw the station to the wall using the bracket.

Warning: risk of falling

To prevent the station from accidentally falling, please use screws and plugs that are suitable for the wall material and station weight, and tighten them sufficiently.

2.3 Power supply

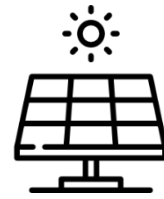
The station is designed to operate with one of the following power sources:



Alternating current



Direct current



Solar panel

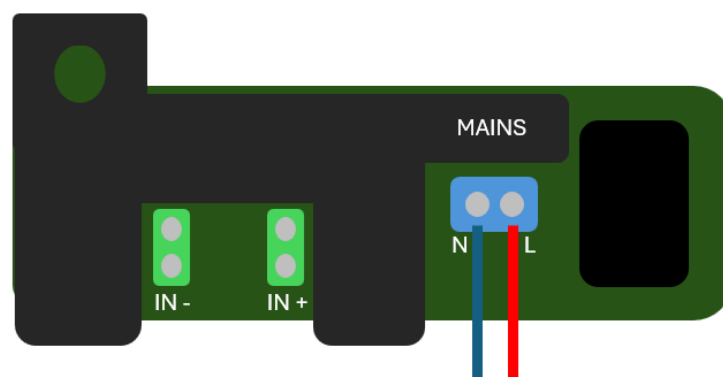
2.3.1 AC

power

supply

TRACK accepts a 230 V/50 Hz or 110 V/60 Hz alternative power supply.

To supply the station with AC power, use the terminal block marked "Mains" and connect the power cable to the mains terminal block, observing the correct polarity: L: Phase N: Neutral



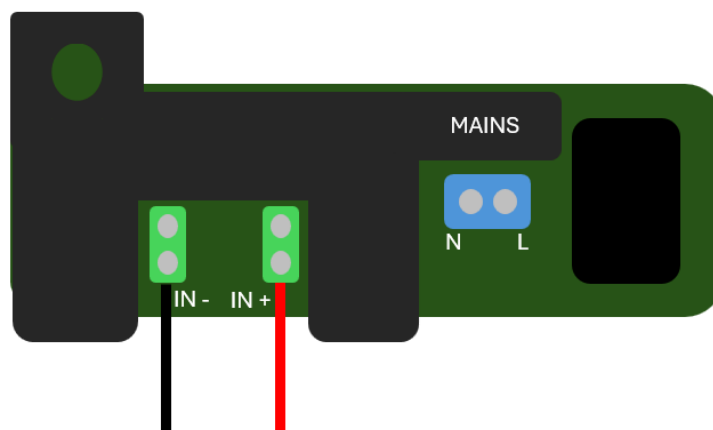
2.3.2 DC power supply

Acceptable voltage range: 9 - 36V DC

To supply the station with DC power, connect it using the :

IN+: Positive polarity

IN- : Ground

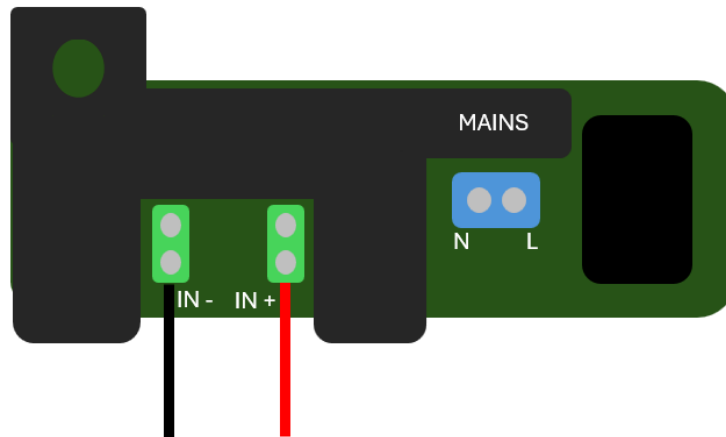


2.3.3 Solar panel power supply

To power the station from the solar panel, connect the solar power cable, observing the polarity indicated:

IN+: Positive polarity

IN-: Negative polarity



This configuration allows autonomous operation all year round under "standard" conditions. To size your solar panel or check that your installation is suitable for stand-alone operation, please refer to Appendix 1.

2.3.4 Internal battery operation

The station has an internal battery, enabling it to operate autonomously. Once the battery is charged, simply switch the product on. Typical autonomy is around 15 days.

This battery is particularly useful for :

- for electrical networks where there is a risk of accidental disconnection,
- for "street lighting" type electrical networks supplied only part of the day,
- for short measurement campaigns without a power supply,
- for use with a solar panel.

The battery is rechargeable and replaceable.

Generally speaking, the product consumes less than 1W and the battery, when charging, consumes 25W. Make sure you supply sufficient power to the product.

The battery takes around 6 hours to fully charge, and operates at temperatures between 0 and 45°C.

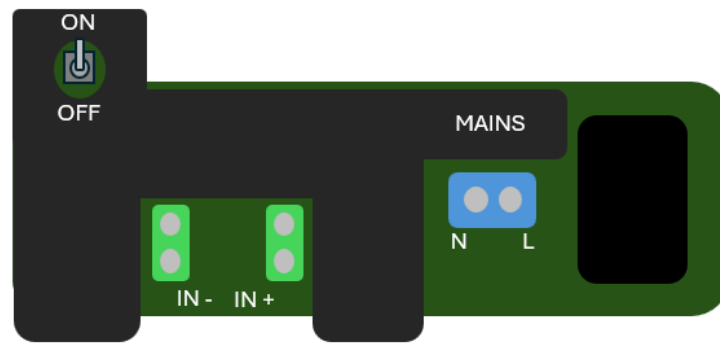
2.4 Commissioning

2.4.1 Start station

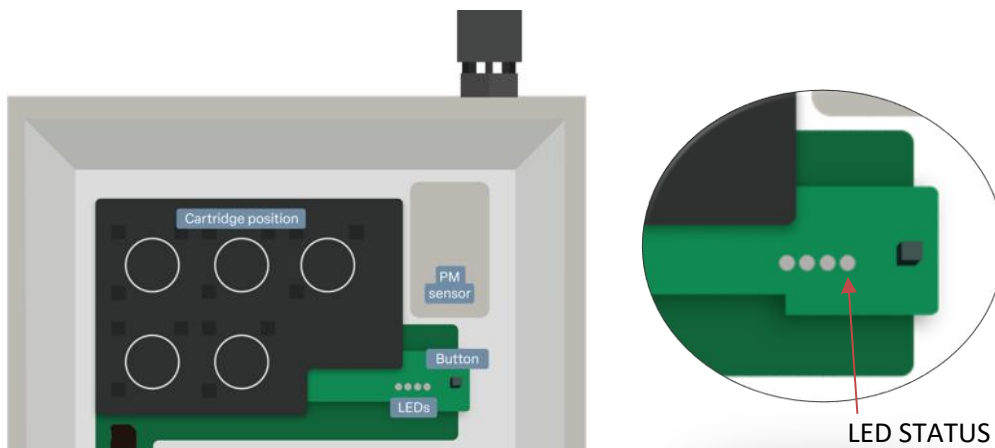
The station commissioning procedure is as follows:

1. Fasten the station to the bracket and supply power to the station

2. Push the ON/OFF switch towards ON.



3. The STATUS LED lights up green and the station initiates its start-up procedure (takes approx. 2-3 minutes):



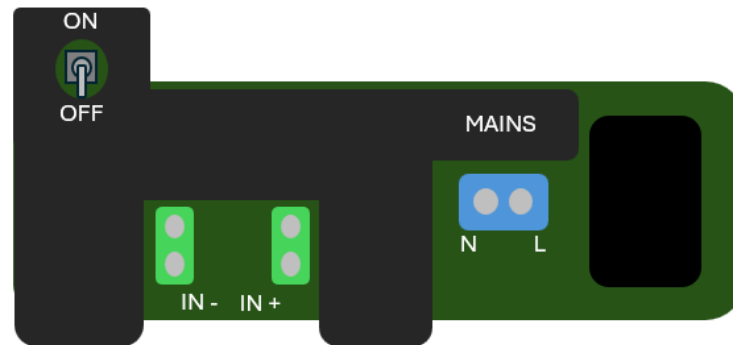
- 3.1 Initiates a connection to the LoRaWAN network
- 3.2 Initiates GPS position retrieval
- 3.3 Initiates a connection to the 4G cellular network
- 3.4 Takes an initial measurement and transmits it
- 3.5 Transmits its status and configuration

Throughout the initialization period, the STATUS LED flashes green. At the end of the initialization procedure, the STATUS LED freezes green. The product is ready for use.

2.4.2 Stop station

To stop the station :

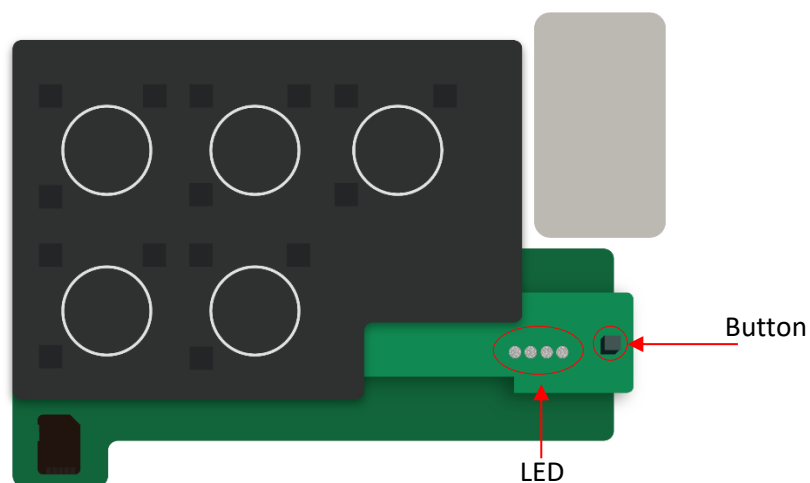
1. Unscrew the screws securing the door.
2. Push the ON/OFF switch towards OFF.



3. The STATUS LED is off and pressing the button does not switch it on

3 Buttons and LEDs

Below is a diagram showing the location of the LEDs and button.



3.1 LED

The product incorporates four LEDs to indicate station status.

	STATUS	LoRaWAN	Cellular	GPS
●	Product OK	Network connection OK	Network connection OK	Known GPS position
●	Preservation mode			
●	Material defect			
Flashing ●	Measures in progress	Network connection in progress	Network connection in progress	
Flashing ●	CO2 calibration in progress			
Off	Standard mode (Press button to light LEDs)	No network connection	No network connection	GPS position unknown

3.2 Button

Support type	Action generated
Short press	Initiates measurement and data transmission Lights LEDs for 5 minutes
Support x3	Manual attempt to connect to LoRaWAN network (join)
Long press	Manual CO2 calibration

4 Sensors and environmental measurement

4.1 Sensors

The station is configurable and upgradeable. It natively integrates the following sensors:

- Temperature
- Relative humidity
- Atmospheric pressure
- Fine particulates :
 - o By mass: PM1, PM2.5, PM10
 - o In numbers, with 5-channel separation according to particle size.

The following pollutants are available as options:

- CO2

Other pollutants can be added on request. Contact us to discuss your needs.

4.2 Measurement accuracy and resolution

Measurement	Unit	Measurement range	Resolution	Precision
Temperature	°C	-30 - +70	0.1	±0.3 °C
Humidity	%R.H.	0 - 100	0.1	±2%RH
Pressure	hPa	300 - 1100	1	±2.5 hPa
PM1 0.3 to 1µm	µg/m ³	0 - 1000	1	*see evaluation report
PM2.5 0.3 to 2.5µm	µg/m ³	0 - 1000	1	*see evaluation report
PM10 0.3 to 10µm	µg/m ³	0 - 1000	1	*see evaluation report
PM channel 1 0.3 to 0.5µm	pcs / cm ³	0 - 3000	1	*see evaluation report
PM channel 2 0.5 to 1µm	pcs / cm ³	0 - 3000	1	*see evaluation report
PM channel 3 1 to 2.5µm	pcs / cm ³	0 - 3000	1	*see evaluation report
PM channel 4 2.5 to 5 µm	pcs / cm ³	0 - 3000	1	*see evaluation report
PM channel 5 5 to 10µm	pcs / cm ³	0 - 3000	1	*see evaluation report
CO2	ppm	0-10000	1	30ppm +/-3% of the total

Fine particle measurement accuracy

Unlike environmental quantities such as temperature, humidity, pressure or gases (CO₂), fine particles comprise several types of airborne particles, often classified according to their size. These particles vary in composition, and precision could only be achieved by selecting a single type of dust under laboratory conditions. This precision would then only be valid for this type of particle, and would not allow us to gauge the sensor's measurement performance in a real environment. It is therefore generally more representative to compare the performance of measurement stations like TRACK+ with laboratory equipment in a real environment, and to analyze..:

- Measurement difference between reference equipment and measurement stations: accuracy ;

- Measurement variation between different stations: intra-model variability or precision ;
- Impact of temperature and humidity on measurement: High humidity in particular has a very significant impact on measurement, and it is important to analyze measurement performance under these conditions;
- Impact of fine particle concentration: it is interesting to gauge sensor performance under conditions of low and high particle concentration.

The sensor used in the TRACK+ station has been tested by an independent body : Air Quality Sensor Performance Evaluation Center. The full reports are available here: <https://www.aqmd.gov/sensors/tera-sensor---nextpm>

Precision, calibration and CO2 measurement :

TECHNOLOGY

The product features a CO2 sensor with NDIR non-dispersive infrared technology.

AUTOMATIC CALIBRATION

CO2 is measured using NDIR infrared technology. This optical technology can cause the measurement to drift over time, which the product automatically compensates for using an ABC (Automatic Baseline Correction) method. This method is particularly effective and reliable in an environment where the product is exposed to "fresh" air (CO2 levels close to 420ppm) at least every 8 days. This is often the case at night and weekends in public areas, and during the day in bedrooms. No maintenance is required. Reliable CO2 measurements are guaranteed throughout the product's lifetime. Note: Automatic calibration is not suitable for enclosed spaces where air renewal is rare or occupancy constant (e.g. hospital rooms, agricultural greenhouses), or for absolute outdoor measurements (e.g. measuring background CO2 concentration in urban centers). Under these special conditions, we recommend that you disable automatic calibration.

MANUAL PRODUCT CALIBRATION

You can calibrate the CO2 sensor manually:

- > Place the product outside or near an open window for 10 minutes.
- > Long press on the button (5 seconds)
- > Main LED flashes orange during calibration process
- > The LED turns solid green, indicating that manual product calibration has been successfully completed. If the LED turns solid red, repeat the operation.

4.3 Operating modes

The product integrates different modes to adapt to different uses:

- Periodic measurement mode: standard mode, optimized for most applications
- Continuous measurement mode: "expert" mode for averaged fine-particle measurements
- Preservation mode: fallback mode for very low battery levels

The product incorporates two fine particle measurement modes to optimize product autonomy and maintenance, depending on the application. In fact, the measurement period has a major impact on the lifetime of the fine particle sensor: if the measurement is taken every minute, the sensor has to be replaced every year; if the measurement is taken every 5 minutes, the sensor has a lifetime of 5 years.

The measurement period has a major impact on the product's power consumption and the autonomy associated with the measurement mode.

The standard "periodic measurement" mode is a compromise between regular measurement and low maintenance. The "continuous measurement" mode favors fine particle measurements, at the expense of increased maintenance and power consumption.

4.3.1 Periodic measurement mode

By default, the product measures and transmits every 5 minutes. The transmission period is configurable via downlink or NFC.



PM

Fine particle measurements are averaged for one minute before each transmission.

PM sensor lifetime: 5 years

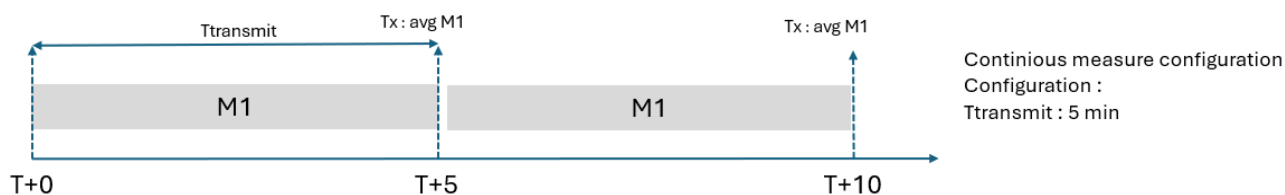
Pa



Temperature, relative humidity and atmospheric pressure are measured just before each transmission.

4.3.2 Continuous measurement mode

The "continuous measurement" mode provides an averaged value of fine particles between two transmissions. By default, the product measures continuously, averages and transmits every 5 minutes. The transmission period can be configured via downlink or NFC.



Fine particles are measured and averaged continuously between two transmissions.



PM sensor lifetime: 1 year



Temperature, relative humidity and atmospheric pressure are measured just before each transmission.

4.3.3 Influence of battery condition on operating mode

At start-up and every 24 hours thereafter, the product monitors battery voltage and incorporates protection and warning mechanisms:

Low battery mode :

When the battery level becomes low, the information is transmitted via a LoRaWAN and cellular message.

Preservation mode (very low battery)

When the product draws power from the battery and the battery level is very low, the product switches to preservation mode, protecting the battery from deep discharge and alerting the user so that appropriate action can be taken. The STATUS LED is orange to indicate that this mode is active. In preservation mode, the product no longer takes environmental measurements. It transmits its GPS position and status on a daily basis, including battery level information.

Normal mode :

When the product is powered from an external source (AC, DC), or when the battery is sufficiently charged, the product automatically switches to "normal" mode.

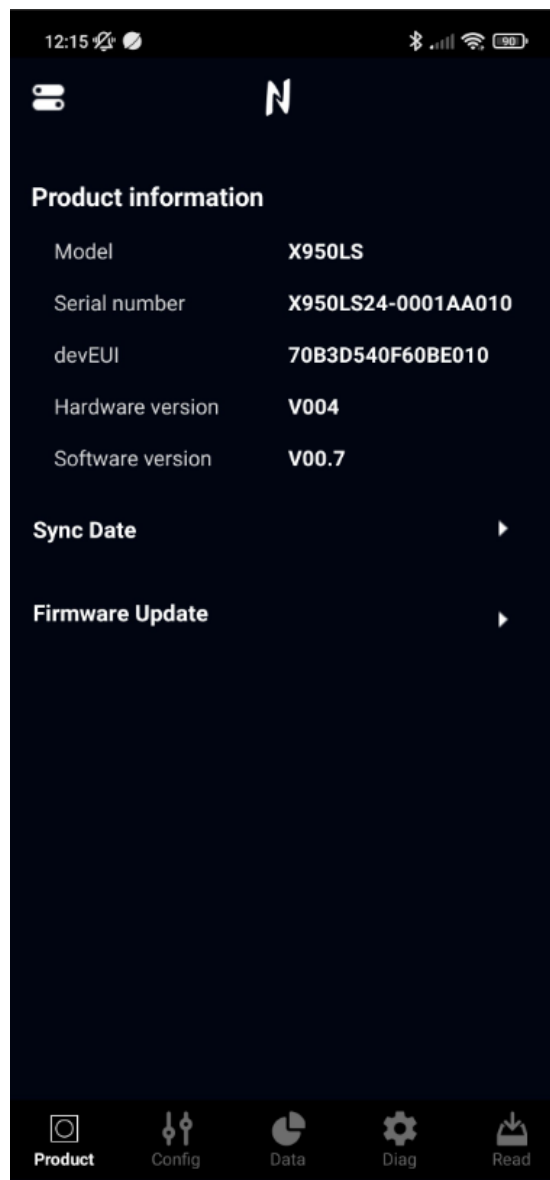
5 NFC access to measurements

The product is equipped with an RX-Only NFC memory that can be accessed using a smartphone or NFC reader. The data measured by the product can be consulted via the NFC TOUCH app available on Android and iOS. This app is particularly useful for :

> Consult the latest environmental measures

> Consult product information :

- Software version, hardware version
- Serial numbers, network identifiers
- Diagnostics (battery level, sensor status, etc.)
- Configuration



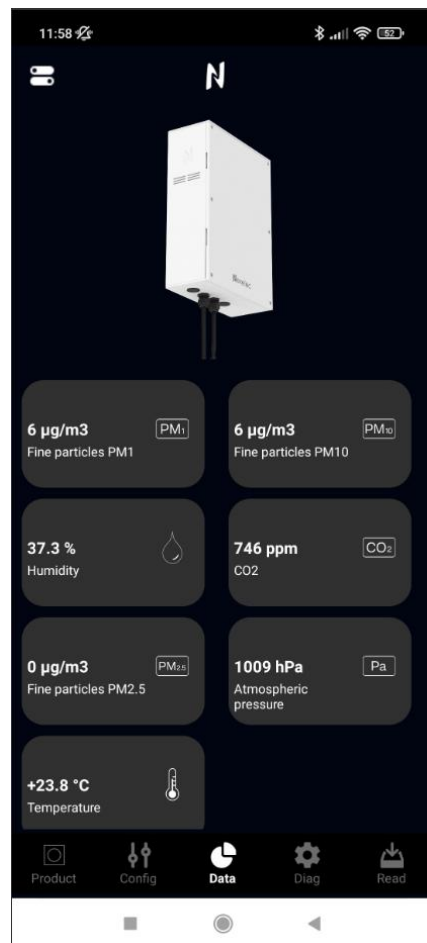
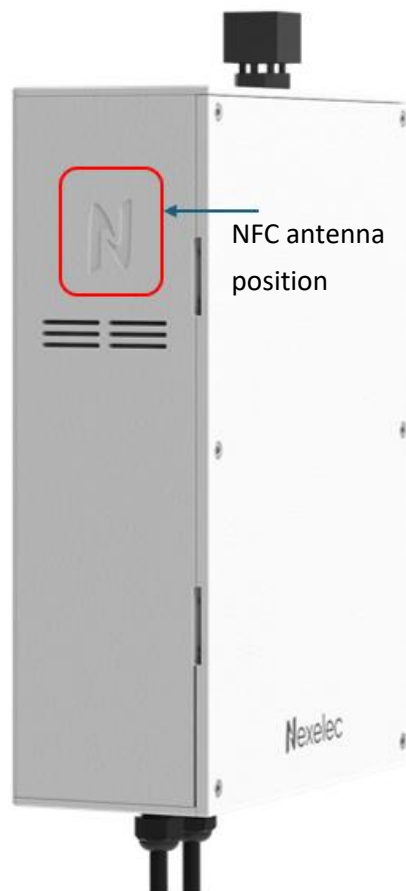
To access data measured by the product via NFC :

> Use the NFC TOUCH smartphone application

> Press the product button

> Bring the phone close to the NFC antenna, located on the top left-hand edge of the product, level with the NFC logo.

> After successful reading, select the "DATA" menu to access the latest measurements.



6 Recording measurements on SD card

Environmental measurements are stored on the sensor's MicroSD card. This function is particularly suitable for analyzing all the product's measurements over a relatively long period, typically from several days to several months, or when the product is installed in an area not covered by cellular or LoRaWAN networks.

A file is created every month, and updated every 30 measurements.

6.1 File creation

Files are identified by serial number, year and month of creation:

Nom	Modifié le	Type	Taille
 X950LS24-0001AA012_2025-01	09/08/2013 16:06	Fichier CSV Micro...	709 Ko
 X950LS24-0001AA012_2025-02	09/08/2013 16:06	Fichier CSV Micro...	465 Ko

Each line of the file is time-stamped and includes all measurements:

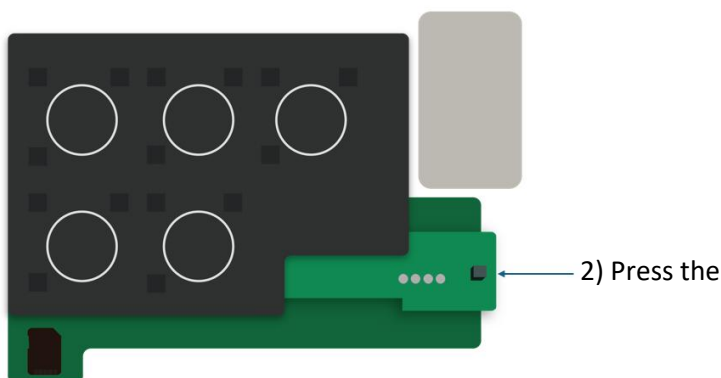
The headers and data format are as follows:

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
1	Serial	Timestamp	T(degC)	H(%)	CO2(ppm)	PM Status	PM1(ug/m3)	PM2_5(ug/m3)	PM10(ug/m3)	PMChannel1(pcs/cm3)	PMChannel2(pcs/cm3)	PMChannel3(pcs/cm3)	PMChannel4(pcs/cm3)	PMChannel5(pcs/cm3)	Pressure(hPa)

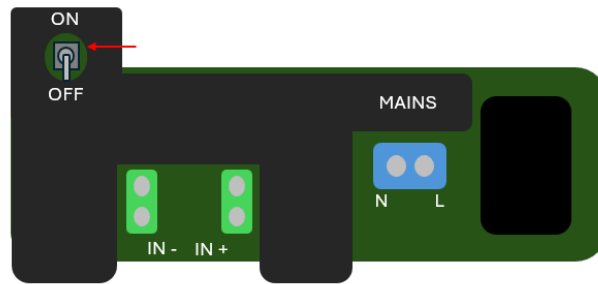
6.2 Collect and analyze measurements

To remove the SD card and retrieve data

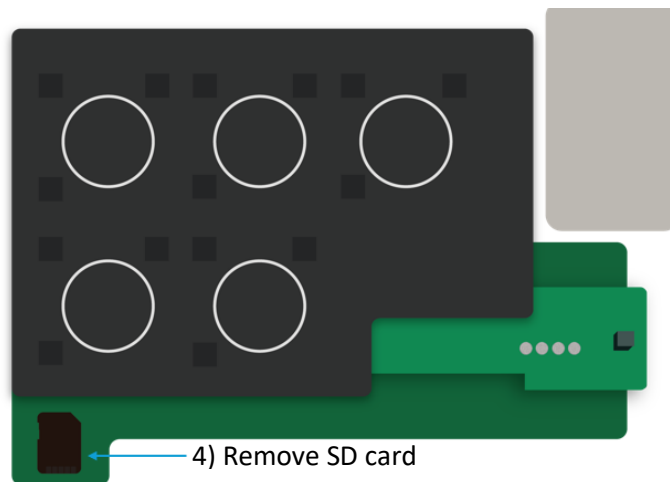
1. Open the door
2. Simply press the button. The product copies the latest measurements to the SD card. This operation takes about 10 seconds. It is important to wait for the STATUS LED to stop flashing before switching off the product.



3. Switch off the product using the power switch.



4. Remove the SD card and recover the data by inserting the SD card into your computer. Files can be deleted or retained on the SD card according to the user's preference.



5. Insert the SD card and switch on the product

7 Geolocation

station integrates satellite positioning (GPS, GLONASS, Galileo, QZSS). Within 10 minutes of product start-up, the station's GPS position is transmitted via LoRaWAN and cellular. A position update is sent every 24 hours.

8 LoRaWAN parameters

8.1 Recommended LoRaWAN parameters

LoRaWAN protocol version: Product compatible with version 1.0.

Regional parameters: Product compatible with parameters RP001 0.3 rev A

Profile: Class A (RX2SF9 or RX2SF12)

Available frequencies: EU868

Join type : OTAA

AppEUI : 70B3D540F10AAD2B

DevEUI: Unique identifier for each product. Information available on the label and supplied when the product is delivered.

AppKey: Security key unique to each product. Information supplied when the product is delivered.

Application port (uplink / downlink): 56

ADR : Yes

8.2 Network connection

AUTOMATIC CONNECTION ON POWER-UP

When the device is switched on, two attempts are made to connect to the network. If the connection is successful, the product will send its configuration and status.

COMMISSIONING STRATEGY IN THE EVENT OF INITIAL FAILURE

If the initial connection process has failed, the product will automatically try to join the network every 24 hours.

PERIODIC VERIFICATION OF NETWORK CONNECTION

The product checks its connection to the network every day by sending the "product status" message via the standardized LoRaWAN "LinkCheck" system. After 3 unanswered attempts by the network, the product will automatically attempt to rejoin the network.

8.3 General description of messages

The different types of messages are described below:

Function details	Message index	Message transmission
Periodic measurements	0x01	Periodic 5 minutes (configurable)
Product status	0x02	At start-up, then every 24 hours
GPS location	0x03	At start-up, then every 24 hours
Product configuration	0x04	At start-up, then every 7 days When changing configuration

8.4 Types of messages sent

8.4.1 Periodic measurements

A measurement frame contains all the measurements taken by the station's on-board sensors. This message is transmitted when the station starts up, then every 5 minutes (configurable). A short press on the button instantly transmits the measurements.

Message structure :

Data	Byte no.	Value
Product ID	0	0 x B5 : TRACK
Message identifier	1	0 x 01 : Periodic measurements
Measure 1	3	Measure identifier (see list below)
	4-5	Measurement value (see list below)
Measure N°2	6	Measure identifier (see list below)
	7-8	Measurement value (see list below)
...	...	...

The table below lists the identifiers, the range and the resolution of the data:

Measurement identifier	Data	Description	Beach	Scale	Unit
0x01	PM1 - Mass	PM1 particle concentration (in µg/m3)	0..1000	0-1000	µg/m3
			65535: Error 65534 : Sensor disconnected 65532-65280 Error status code		
0x02	PM2.5 - Mass	PM2.5 particulate concentration (in µg/m3)	0..1000	0-1000	µg/m³
			65535: Error 65534 : Sensor disconnected 65532-65280 Error status code		
0x03	PM10 - Mass	PM10 particulate concentration (in µg/m3)	0..1000	0-1000	µg/m3
			65535: Error 65534 : Sensor disconnected 65532-65280 Error status code		
0x04	PM channel 2	Particle concentration between 0.5 and 1	0-3000	0-3000	pcs/cm3
0x05	PM channel 3	Particle concentration between 1 and 2.5 µm	0-3000	0-3000	pcs/cm3
0x06	PM channel 5	Particle concentration between 5 and 10 µm	0-3000	0-3000	pcs/cm3
0x07	Temperature	Temperature (°C) with 30°C offset (e.g: 0 = -30°C, 300 = 0°C, 1000 = 70°C)	0..1000	-30..70°C	°C
			65535: Error 65534 : Sensor disconnected		
0x08	Humidity	Humidity (%RH)	0..1000	0..100%RH	%RH

			65535: Error 65534 : Sensor disconnected		
0x09	Pressure	Pressure (hPa)	300-1200	300-1200 hPa	hPa
			65535: Error 65534 : Sensor disconnected		
0x0A	CO2	CO2 in ppm	0-10000	0 -10000	ppm
			65535: Error 65534 : Sensor disconnected		
0x13	PM channel 1	Particle concentration between 0.2 and 0.5 um	0-3000	0-3000	pcs/cm3
0x14	PM channel 4	Particle concentration between 2.5 and 5 um	0-3000	0-3000	pcs/cm3

EXAMPLE

Measurement frame with temperature (3.7°C) and CO2 (2786ppm): 0xB5010701510A0AE2

Data	Byte no.	Value
Product ID	0	0 x B5 : TRACK
Message identifier	1	0 x 01 : Periodic measurements
Measure 1	3	Measurement identifier: 0x07→ Temperature
	4-5	Measured value: 0x 0151→ 3.7°C
Measure N°2	6	Measurement identifier: 0x0A→ CO2
	7-8	Measurement value: 0x0AE2→ 2786 ppm
...	...	...

8.4.2 Product status frame

TRANSMISSION FREQUENCY

- Transmission at product startup
- Transmission every 24 hours, between midnight and 1 a.m. UTC

Offset	Size (bit)	Data	Description	Beach	Scale	Unit
0	8	Product type	TRACK+	0xB5		
8	8	Message type	Product status	0x02		
16	8	Hardware version	Hardware version	0-250	Example: 12 -> version 12	
24	8	Software version	Software version	0-250	Example: 24 -> version 2.4	
32	16	Battery voltage mV	Battery voltage	0 - 8100	0 - 8100	mV
				65535: Error		
48	8	External power supply	External" energy (AC - DC - PV) over the last 24 hours in Wh	0-250	0-250	Wh
56	8	Energy stored in battery	Energy received or supplied by the battery over the last 24 h in Wh Offer of 124kWh Negative value: Energy supplied by the battery Positive value: Energy stored by the battery	0-250	-124 à 124	Wh
64	2	Product orientation	Product orientation analysis (mainly to obtain accurate particle measurements)	0: Correct orientation 1: Incorrect orientation 2 : Information not available		
66	2	Operating mode	Product operating mode	0: Normal 1: Battery low 2: Preservation		
68	1	Power source	Product power source	0: External (AC, DC or PV) 1 : Internal battery		

8.4.3 GPS data frame

Offset	Size (bit)	Data	Description	Beach	Scale	Unit
0	8	Product type	TRACK+		0xB5	
8	8	Message type	Positioning frame ID		0x03	
16	7	Latitude - Degrees	Degrees of latitude	0-90	0-128	16
23	6	Latitude - Minutes	Minutes of latitude	0-60	0-64	1'
29	6	Latitude - Seconds	Seconds of latitude	0-60	0-64	1"
35	7	Latitude - Milliseconds	Milliseconds of latitude	0-100	0-128	10ms
2	1	Latitude - North/South	North=0, South=1	0-1	0-1	1
43	8	Longitude - Degrees	Degrees of longitude	0-180	0-256	1°
51	6	Longitude - Minutes	Minutes of longitude	0-60	0-64	1'
57	6	Longitude - Seconds	Seconds of longitude	0-60	0-64	57
63	7	Longitude - Milliseconds	Milliseconds of longitude	0-100	0-128	63
70	1	Longitude - East/West	East=0, West=1	0-1	0-1	70
71	7	HDOP	Horizontal dispersion (<1: Very good, <2: Fair, Otherwise: Poor)	0-128	0-128	71
78	5	Number of satellites	Number of satellites used to fix and calculate position	1-32	1-32	78
83	2	Mounting type	Type of fix given by the GPS module (normally GNSS fix if OK)	0=No Fix, 1=GNSS Fix, 2=DGPS Fix		

8.4.4 Configuration frame

Offset	Size (bit)	Data	Description	Beach	Scale	Unit
0	8	Product type	TRACK+	0xB5		
8	8	Message type	Product config	0x04		
16	3	Reconfiguration source	Source of the reconfiguration process	0 : NFC 1: Application downlink 2: Product start-up 3: Network 4: GPS 5: Local 6-8 : Reserved		
19	2	Reconfiguration status	Results of the reconfiguration process: Success or failure?	0: Total success 1: Partial success 2: Total failure 3: Reserved		
21	1	Automatic CO2 calibration	Activate/deactivate automatic calibration of CO2 measurement	0: Automatic calibration disabled 1: Automatic calibration enabled		
22	4	Protocol and region	Protocol and deployment region	01: LR-EU868 02: LR-US915 03: reserved 04 : LR-AU915 05: reserved 06: LR-IN865 07: reserved 08: SF-RC1 09-13: reserved		
26	6	Periodical measurements	Periodic measurement transmission period in minutes	5-60	5-60	Minutes
32	1	Measurement mode	Periodic or continuous mode	0: periodic 1: continuous		
33	2	Reserved				
35	5	Time zone	Time zone	-12h/+14h 0: UTC-12 1: UTC-11 ... 12: UTC 13: UTC+1 14: UTC+2 ... 26: UTC+14		

9 Data transmission via 4G cellular network

9.1 Data access

The product transmits measurements, product status and location via a 4G cellular network. Data can be viewed on the Navixis platform operated by Nexelec, and retrieved by third-party services via webhook and APIs. See the support site for more information.

9.2 Network connection

Each time a message is sent, the product automatically connects to the network.

If the transmission fails, two further attempts are made. If these two attempts also fail, the product will try again to connect to the network the next time it is sent.

10 Product configuration and remote control

The product can be reconfigured to best suit each use case. This reconfiguration can be carried out :

- > locally, using a smartphone or tablet via the NFC TOUCH application;
- > LoRaWAN connection interface, or via cellular downlink.

10.1 Measurement-related configurations

The product can be reconfigured by a downlink message in response to an uplink message. The downlink message must be sent on port 56.

10.1.1.1 ACKNOWLEDGEMENT OF RECONFIGURATION

After reconfiguration, the product will send a message with its updated configuration.

10.1.1.2 DOWNLINK MESSAGE STRUCTURE

The first byte is the header: 0x55.

Next, the following bytes can be used to reconfigure the product format: Command ID and DATA.

Note: Downlink functionality is likely to evolve in the future. To ensure backward compatibility, Nexelec recommends sending IDs from the lowest to the highest value.

ID	Length (bytes)	Beach	Values	Description	Default value
0x01	0	-	-	Request forced upload of product configuration	
0x49	1	5-60	5-60 minutes	Periodic data transmission period	5
0x4A	1	1		Product restart command	
0x59	1	0 / 1	0: disabled 1: activated	Activate/deactivate automatic calibration of CO2 measurement	1
0x68	1	0/1	0: continuous 1: periodic	Continuous/periodic mode	1
0x63	1	0-26	-12 .. +14	Time Zone	12(UTC+0)

11 ISED Statement

English: 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.

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

The digital apparatus complies with Canadian CAN ICES-3 (B)/NMB-3(B).

French: Cet appareil contient des émetteurs/récepteurs exempts de licence qui sont conformes aux RSS exemptés de licence d'Innovation, Sciences et Développement économique Canada.

L'exploitation est soumise aux deux conditions suivantes :

(1) Cet appareil ne doit pas provoquer d'interférences.

(2) Cet appareil doit accepter toute interférence, y compris les interférences susceptibles de provoquer un fonctionnement indésirable de l'appareil.

L'appareil numérique du ciem conforme canadien peut - 3 (b) / nmb - 3 (b).

This device meets the exemption from the routine evaluation limits in section 6.3 of RSS 102 and compliance with RSS 102 RF exposure, users can obtain Canadian information on RF exposure and compliance.

Cet appareil est conforme à l'exemption des limites d'évaluation courante dans la section 6.3 du cnr - 102 et conformité avec rss 102 de l'exposition aux rf, les utilisateurs peuvent obtenir des données canadiennes sur l'exposition aux champs rf et la conformité.

This equipment complies with Canada radiation exposure limits set forth for an uncontrolled environment.

Cet équipement est conforme aux limites d'exposition aux rayonnements du Canada établies pour un environnement non contrôlé.

This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

Cet équipement doit être installé et utilisé à une distance minimale de 20 cm entre l'émetteur et votre corps.

12 FCC 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. These limits are designed to provide reasonable protection against harmful interference in a residential installation. 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. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Caution: Any changes or modifications to this device not explicitly approved by manufacturer could void your authority to operate this equipment.

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.

RF Exposure Information

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

Tracking developments

Document review	Details	Date
A	Create	28/02/2025

Appendix

Appendix 1: Sizing my solar panel for TRACK

The station consumes 1W on average, i.e. 720Wh/month. We therefore need to ensure that the solar panel can supply this energy for autonomous operation. The back-up battery can be used during periods when the sun is not shining.

How can I check that my panel is correctly sized?

The screenshot displays the PVGIS web application. The left sidebar contains a map of Europe with a location marker. The main panel on the right is titled 'PERFORMANCE DU SYSTÈME PV COUPLÉ AU RÉSEAU'. It includes a 'Base de données de rayonnement solaire' dropdown set to 'PVGIS-SARAH2', a 'Technologie PV' dropdown set to 'Silicium cristallin', and input fields for 'Puissance PV crête installée [kWp]' (1) and 'Pertes du système [%]' (14). Under 'Options montage fixe', 'Position de montage' is set to 'Position libre', 'Inclinaison [°]' is 35, and 'Azimut [°]' is 0. The 'Prix de l'électricité PV' section includes fields for 'Coût du système PV [votre devise]', 'Intérêt [%/an]', and 'Vie [années]'. At the bottom, there are buttons for 'Visualiser résultats', 'csv', and 'json'.

Use https://re.jrc.ec.europa.eu/pvg_tools/fr/ or equivalent

Enter the address of the installation site and click on "Go!

Indicate system characteristics: For a 20W panel, enter 0.02 in the box requesting peak power.

Base de données de rayonnement solaire*

Technologie PV*

Puissance PV crête installée [kWp]*

Pertes du système [%]*

Tilt: 0° corresponds to vertical, 90° to horizontal. If you are able to choose the orientation of the system, you can try several values. **Optimize the less sunny months** to ensure year-round operation.

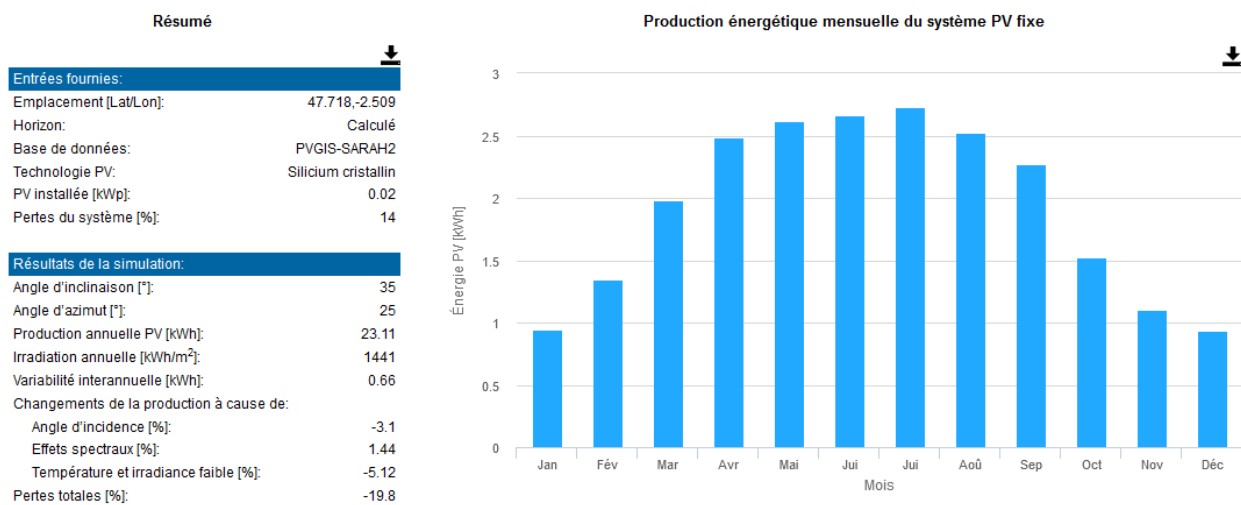
Azimuth: 0 corresponds to south, -90 corresponds to east, 90 corresponds to west.

Position de montage * Position libre ▼

Inclinaison [°] * ☐ Optimiser l'inclinaison

Azimut [°] * ☐ Optimiser l'inclinaison et l'azimut

Select "View results"



If monthly production exceeds 0.6kWh, the system is correctly sized for stand-alone operation. If not, you can use a more powerful panel or change the panel's installation location to a more favorable orientation.