Multi Zone Presence Sensor



Presence Sensor SEN185 KL MZ (Version 1.4)

The Senvolon Multi Zone Presence Sensor locates people up to a range of about 6 m (presence about 4 m). The detection area can be divided flexibly into zones - either as a rectangle or as a freely shaped polygon, drawn or taught on site. Areas that exclude interference signals (from a ventilation system, for example) can be defined as well. Detection works per zone and across the whole area. Up to four people can be detected separately, provided they are far enough apart.

The radar technology used (60 GHz) registers the smallest movements, so that people who keep completely still or are asleep are detected too. A configurable timeout additionally influences when detection is triggered.

The presence sensor joins a Wi-Fi network and can be accessed directly with a web browser. The readings can also be transmitted via MQTT for easy integration into common smart home systems. Alternatively, remote access makes the readings available worldwide.

A switching signal output allows other devices to be controlled directly. The sensor also measures brightness, temperature, humidity and air pressure.

The built-in siren can signal detected presence acoustically. This applies to the whole detection area or to one particular detection zone. The siren can also be controlled through the web browser and via MQTT. 15 sounds are available as the signal, from signal tones to melodies.

How it works

The presence sensor is based on FMCW radar technology and can therefore detect the smallest movements, such as breathing. It is far more sensitive than common infrared motion detectors. Beyond that, it locates people within its detection area.

Please note that this positioning can be influenced by various factors. Possible causes of inaccurate measurements are:

- **Reflections** off walls, furniture and other objects
- **Absorption** of the radar waves by certain materials
- **Interference** from other electronic devices nearby
- **Complex surroundings**, such as rooms with many obstacles or moving objects

To improve the accuracy of the measurement we recommend choosing a position for the presence sensor that avoids direct reflections, has a clear line of sight into the area to be measured, and keeps away from sources of interference such as other electronic devices or reflective surfaces.

If people in the detection area stand too close together, or if one hides another as seen from the sensor, they cannot be detected separately.

Notes

Please read this safety and user information carefully before putting the device into operation. The language of the user interface can be changed under “System”.

The device is designed exclusively for indoor use for the purpose stated in this user information. The housing is not protected against the ingress of water. The ambient temperature must be between 0 °C and 40 °C.

The mounting location must allow all connected cables to be routed safely. They must not be damaged or crushed.

Quick start

The following steps take you to a ready-to-use presence sensor in the recommended order. Details are given in the chapter named in each step. You can fine-tune everything afterwards at any time.

1: Prepare

Have a power supply ready that meets the requirements under “Mounting the presence sensor”, as well as a smartphone, tablet or computer with a web browser. Put the presence sensor into operation temporarily at first.

2: Connect to the Wi-Fi network

Connect to the access point of the presence sensor, enter your own Wi-Fi network and note the IP address shown (see “Joining your own Wi-Fi network”). Then set the language under “System” and switch on the protection with “Login” and “Password”. Change the default password of the access point in the Wi-Fi configuration as well.

3: Choose the mounting location and mount the sensor

The presence sensor can be mounted on a wall, on the ceiling or in a corner of the room; on a wall and in a corner at a height of 1.50 - 2.00 m. The corner is often the best choice: the sensor looks diagonally into the room and, with its beam angle of ±60°, covers almost all of it. If it is mounted higher, directly below the ceiling for example, tilt it slightly downwards (see “Mounting the presence sensor”).

4: Make the basic settings

Under “Settings”, configure “Installation” and, if needed, “Reflect horizontal”. Do this before you create any zones - changing the installation type later resets all zones. For setting up, set “Room timeout” to a few seconds at first so that you see every change immediately (see “Settings”).

5: Learn room

Under “Zones”, in the “Teach room / boundary / zone” section, choose the “Room” and start “Learn room”. The presence sensor turns areas with interfering signals, from a ventilation fan for example, into interference zones (see “Zones”). After the prompt you have 20 seconds to leave the room. During the learning time the presence sensor then creates interference zones (max. 4) for everything it sees, and at the end it reports how many interference zones are set (see “Learn room”).

6: Walk through the detection area

Walk through the whole room several times on your own, along the walls and into the corners as well. The grey area shows which part has been covered so far (see “Setting up the Multi Zone Presence Sensor”). If the view shows people where nobody is, behind a pane of glass, in front of a mirror or in the next room for example, set a “Boundary” around the room (see “Boundary”). If, on the other hand, people keep appearing briefly inside the room itself where nobody is, switch on the “Ghost filter” under “Settings” (see “Settings”).

7: Create the detection zones

Create the detection zones you want, either as a rectangle or as a polygon, drawn or taught on site (see “Zones” and “Teach room / boundary / zone”). Give them meaningful names under “Zone

names” before you integrate the presence sensor into other systems. Then walk through the zones and check that they change colour as you enter them.

8: Add stay zones

Where people stay still for longer (a seat, a bed, a desk), create stay zones and, if useful, bind them to the matching detection zone. Choose a suitable stay time (see “Zones”).

9: Set the timeout

Set the “Room timeout” for normal operation (see “Settings”). If a detection zone needs a different timeout, switch on “Timeout per zone” and set it at the zone (see “Zones”).

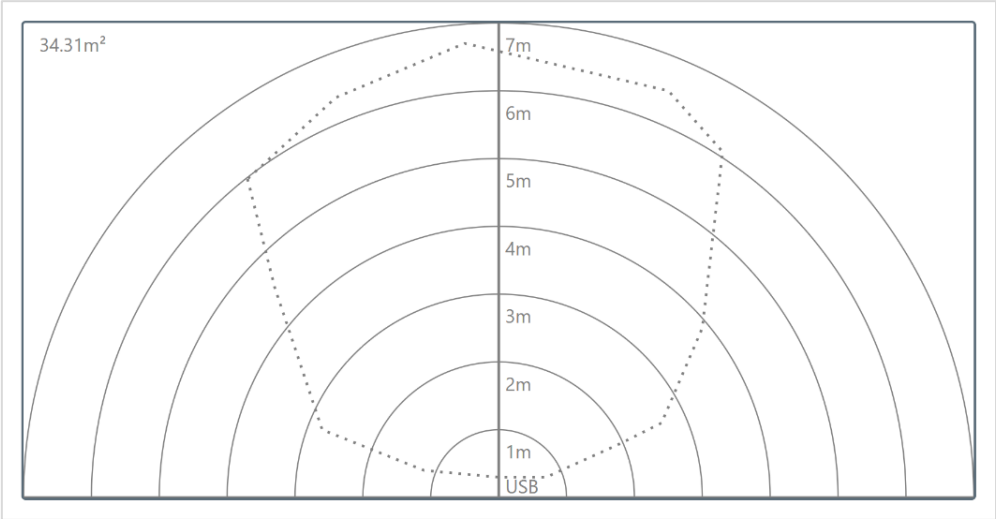
10: Back up the settings

Under “System”, download the configuration and keep the file “config.json” as a backup; it can be loaded again under “Update”. For integration into smart home systems or access while you are away, MQTT and remote access are available instead (see “Connection via MQTT or remote access”).

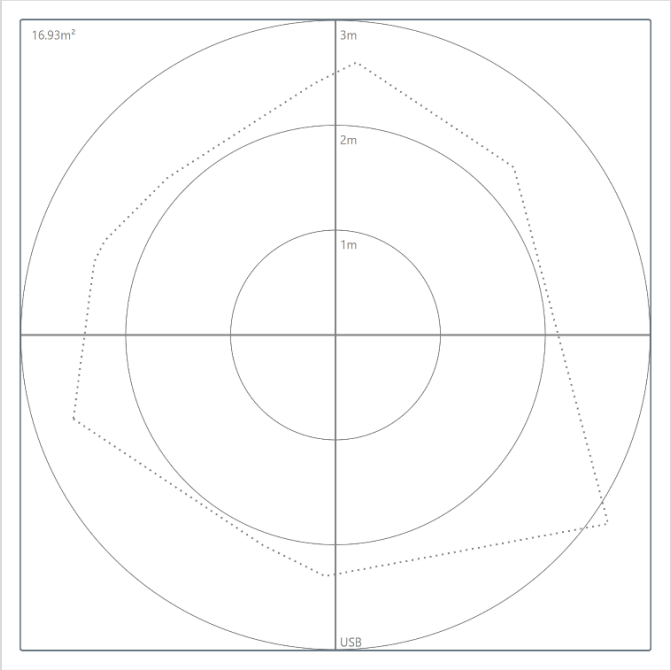
Mounting the presence sensor

Before mounting the presence sensor for good, please make yourself familiar with the sensor and its detection area (see Setting up the Multi Zone Presence Sensor) in order to find the best possible installation site. The illustration below shows an example of the area covered when the sensor is mounted on a wall. Power can be supplied from below or from above. If you supply power from above, the detection area has to be reflected horizontally under “Settings”.
The presence sensor is installed on a wall at a height of 1.50 - 2.00 m. Mounting it in a corner of the room at the same height is possible as well. The sensor then looks diagonally into the room and often covers it more completely.

If the presence sensor is to be mounted higher than 2.00 m, in a corner of the room directly below the ceiling for example, tilt it slightly downwards, roughly so that it looks at chest height towards the opposite side of the room. Do not tilt it more than necessary, otherwise the range at the far end of the room drops. Under “Settings”, “Installation” stays set to “Wall / corner”. Create the boundary and the zones by teaching them (see “Teach room / boundary / zone”). If you change the tilt later, teach the boundary and the zones again. Check the mounting location temporarily first, before you fix the sensor for good.

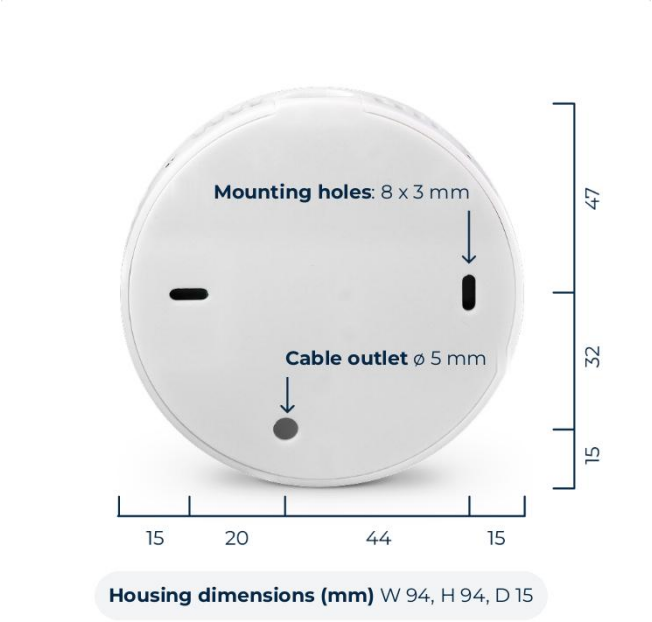


Alternatively the sensor can be installed on the ceiling. The higher the ceiling (2.5 m in the example), the larger the area covered. Reflecting is possible here as well.



The radar sensor sits behind the closed plastic cover and radiates into the room. The type of installation (ceiling/wall) has to be set in the settings.

Power can be supplied either through USB-C or from behind through the connector (JST PH 2.0) inside. The switching signal output is led out through the rear opening as well.



Open the housing by removing the three hexagon socket screws and carefully lifting off the cover. The sensor is mounted on the wall or ceiling with two screws. Afterwards put the cover back on and screw it tight.

Make sure that the Wi-Fi signal at the mounting location is strong enough.

Connect the presence sensor to a power supply, for example with the enclosed cable (USB-A to USB-C). The power supply is not included and has to meet the following requirements: 5 V DC, 2 A to 3 A (max. 15 W), USB-A output, limited power source (LPS), CE marking.

Connections

Inside, the presence sensor has a 4-pin JST PH 2.0 socket. It supplies the presence sensor with 5 V and provides the switching signal that indicates presence.

The connections are labelled as follows:

Label	Meaning
SIG	Signal output (0 V = no presence, 3V3 = presence)
3V3	3V3 output
GND	Ground
5V	5 V input

Resetting to factory settings

To return the presence sensor to its factory settings, press and hold the button labelled “SYS” or “SW3” inside the housing while you connect the power. Please hold the button for at least 5 seconds. The sensor is then back in its factory state.

Joining your own Wi-Fi network

1: Preparations

Make sure that you know the details of your Wi-Fi network, such as the network name (SSID) and the password.

2: Connect to the access point

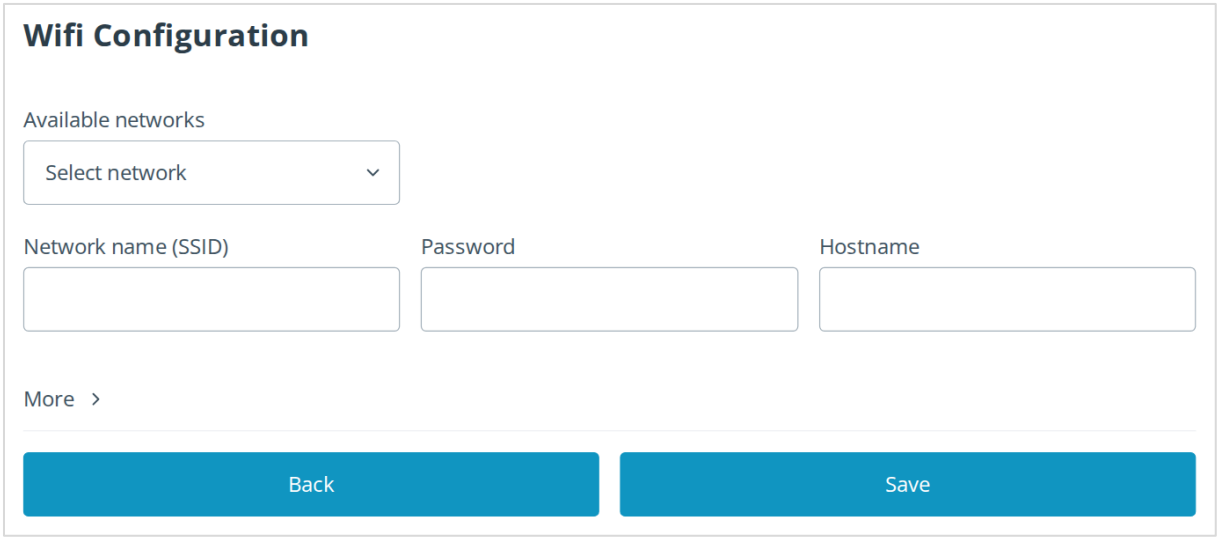
The presence sensor provides an access point of its own, that is, its own Wi-Fi network. On your smartphone, tablet or computer, look in the Wi-Fi settings for the network named “PresenceSensor-xxxxxx” and connect to it. The default password is “12345678”. The access point has the IP address 192.168.4.1.

3: Open the configuration interface

Open a web browser on the device that is connected to the presence sensor. Enter the address “http://192.168.4.1/wifi” in the address bar to open the configuration interface. If it is not shown, please make sure that you are connected to the access point, and on a smartphone or tablet switch off the mobile data connection as well.

4: Wi-Fi settings

Now enter the details of your Wi-Fi network. Select your network or type it under “Network name (SSID)”. Under “Password”, enter the Wi-Fi network key. Under “Hostname”, give your presence sensor a suitable name. All other fields under “More” can be left at their defaults for now. Make sure the information you enter is correct so that the connection succeeds. Store the settings with “Save” and wait a moment while the presence sensor tries to connect to your Wi-Fi network.



5: Check the connection

Once the connection to your Wi-Fi network has been established, the IP address of the presence sensor is shown at the bottom of the page. You can also find the IP address in the configuration area

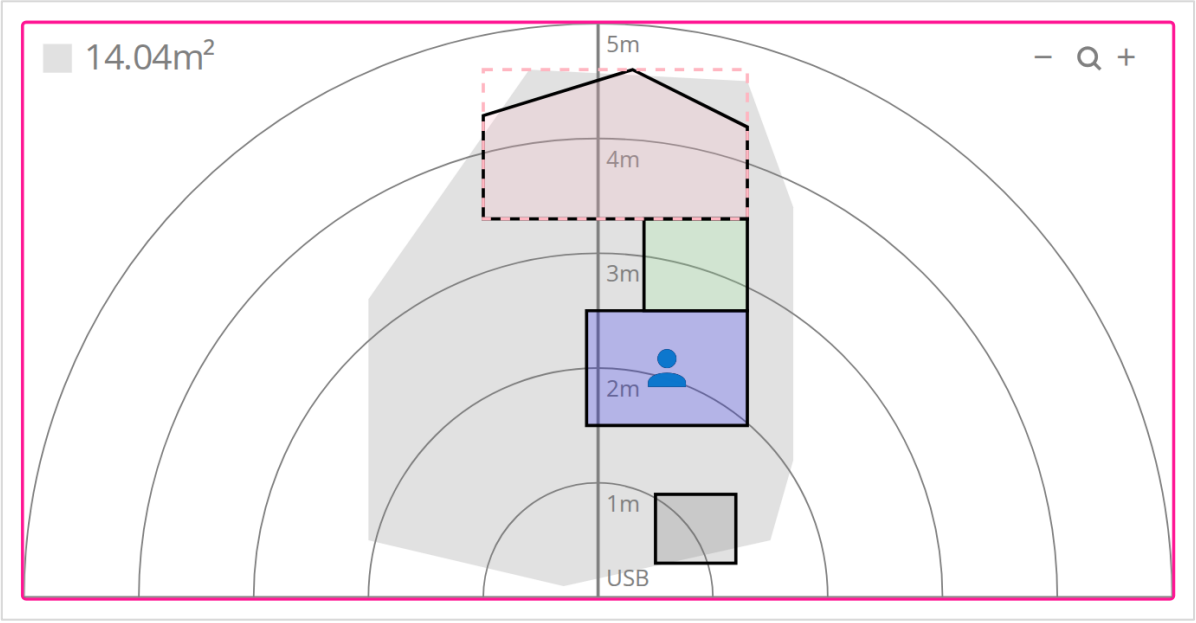
of your router, or use a network scanner on your smartphone to search your network for the name of the presence sensor.

Once the presence sensor has connected to your Wi-Fi network, you can disconnect the device you joined to the sensor's access point and connect it to your own network again. In the web browser you can now reach the presence sensor by entering its IP address. If your router supports name resolution, you can call it up by hostname: http://*hostname* (the name of the presence sensor that you assigned in the previous step). With a FRITZ!Box, for example, you call up "http://*hostname*.fritz.box".

If the presence sensor is available neither in your Wi-Fi network nor in access point mode, disconnect it briefly from the power and check the connection again.

Setting up the Multi Zone Presence Sensor

As delivered, the presence sensor is set to the installation type "Wall / corner". If you have mounted the sensor on the ceiling, change the mode to "Ceiling". The setting "Wall / corner" applies as well when the presence sensor sits in a room corner. The view of the measuring area follows the installation type. With the sensor mounted on a wall it looks like this:



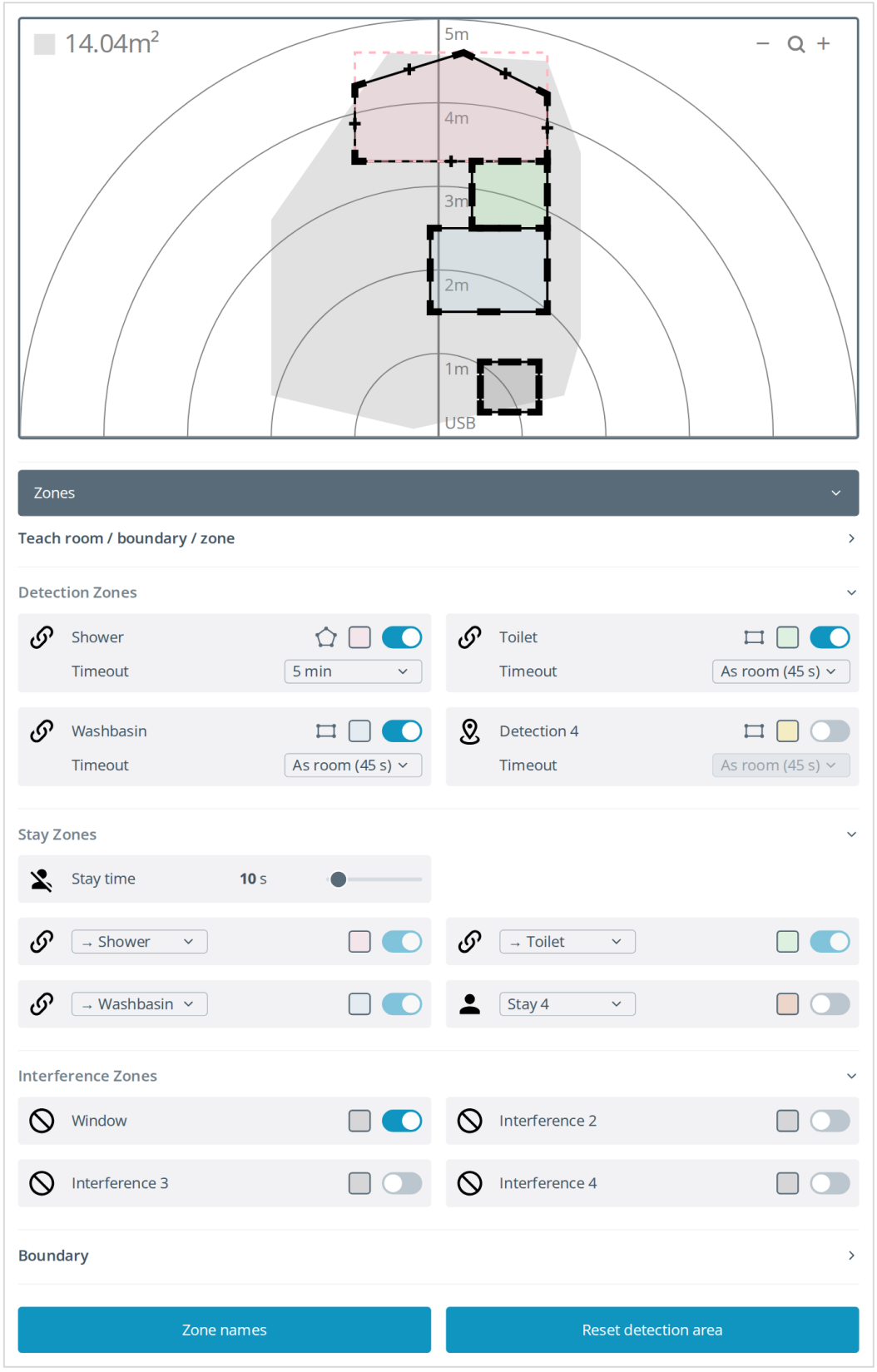
The semicircles show the distance to the sensor in metres. The grey area describes the detection area of the sensor, that is the area where somebody has been detected so far. To make the sensor familiar with its surroundings, walk through the whole room, or detection area, several times. The sensor extends the area by itself as you do. If the room is larger than the detection area, detection ends at the edge of that area. At the top left there is an area figure with a small box in front of it: as long as no boundary is set, it is the size of this area; as soon as a boundary is in place, it is the size of the boundary, and the box then shows its dashed outline. While the detection area is being built up

for the first time, the sensor may show too many people, or the people shown may jump about. If the room to be monitored is not covered well enough, choose a different installation site.

When a person is detected, their position is shown and the frame turns pink. If the person is inside a detection zone, that zone changes colour as well. If several people are in the detection area, they are detected and shown as long as they are far enough apart. At most four people can be detected at the same time.

Zones

Zones divide up the detection area. A bathroom, for example, can be divided into the zones washbasin, toilet and shower. Presence is detected separately for each zone.



To adjust the zones, click “Zones”. The menu opens and the editing mode starts. To leave the mode again, click “Zones” once more.

There are three kinds of zone:

- Detection zones define an area in which people are detected.
- Stay zones describe an area in which presence is to be measured preferentially.
- Interference zones are areas in which no detection may take place.

There are four zones per category. Each zone is switched on or off with a switch. Once switched on, the zones can be positioned and resized by drag and drop. Zones may overlap. You can also place one zone inside another. If one zone lies on top of another, you can hide the upper one by clicking the square next to its switch. The names of the zones are set under “Zone names”.

Detection zones can be created either as a rectangle or as a polygon with up to eight corners. The symbol in front of the field for hiding the zone shows its current shape. Clicking it switches between rectangle and polygon. When switching to a rectangle, the polygon is replaced by the rectangle that encloses it.

You change a rectangle with the handles at its corners and edges. In a polygon you move each corner individually. The “+” in the middle of an edge inserts a new corner there. Clicking a corner marks it; clicking the “X” of the marked corner deletes it. A polygon has at least three corners, and its edges must not cross. An invalid shape jumps back to the last valid one. You move the whole zone by dragging it by its area. On a touchscreen, hold the area for a moment first, until the zone is highlighted.

If the “Timeout per zone” switch is on under “Settings”, every detection zone has a second row “Timeout” in its box. It determines how long the zone stays occupied after nobody is there any more: from “No delay” through 1 second up to 10 minutes. “No delay” means the zone becomes free as soon as nobody is detected there any more. “As room” takes the “Room timeout” from “Settings”, whose value is shown in brackets behind it. The switch is off as delivered; every zone then holds as long as the room.

Stay and interference zones are always rectangles. With “-” and “+” at the top right you enlarge or reduce the view.

Stay zones have an adjustable stay time. It determines how long the sensor waits before it signals that a person is no longer detected. Brief interruptions of the detection are bridged seamlessly this way.
As stay zones often match detection zones, the two can be bound together. After binding, the detection zone also has the stay time that was set. While bound, the stay zone is no longer shown as a zone of its own and can no longer be switched off. To delete a bound stay zone, the binding has to be released first.

If the bound detection zone is a polygon, the stay time applies within the rectangle enclosing it. That rectangle is shown dashed in the colour of the detection zone and can be shown or hidden as needed.

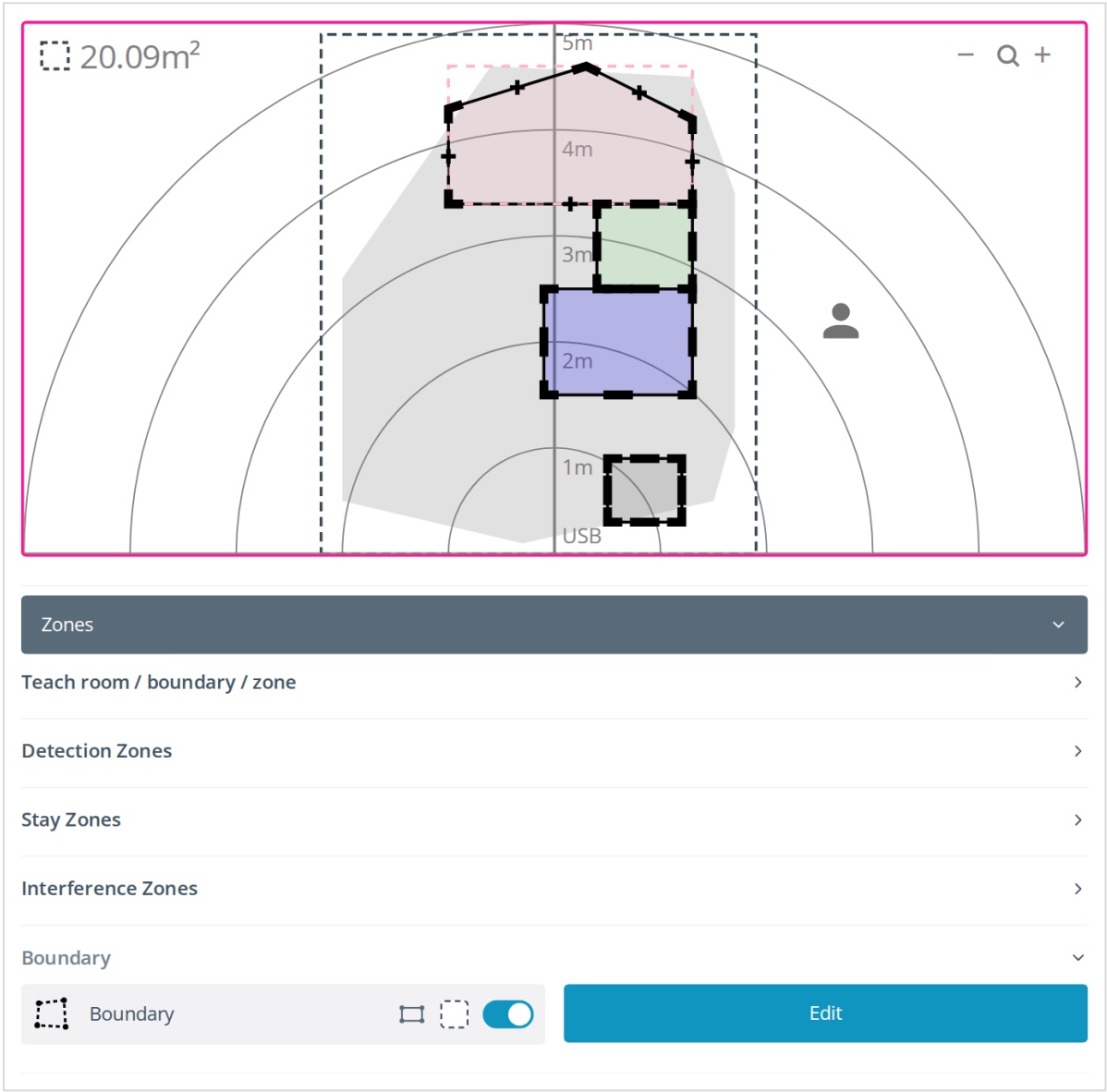
Place stay zones where people actually stay, for example on a seat, a bed or a desk. If possible, do not place stay zones at the edge of the detection area, where people can leave it.

Besides defining interference zones individually, they can also be detected automatically. The function is called “Learn room” and is found under “Teach room / boundary / zone” (see “Learn room”).

The “Reset detection area” function resets the detection area shown as a grey area. A new detection area is then built up automatically.

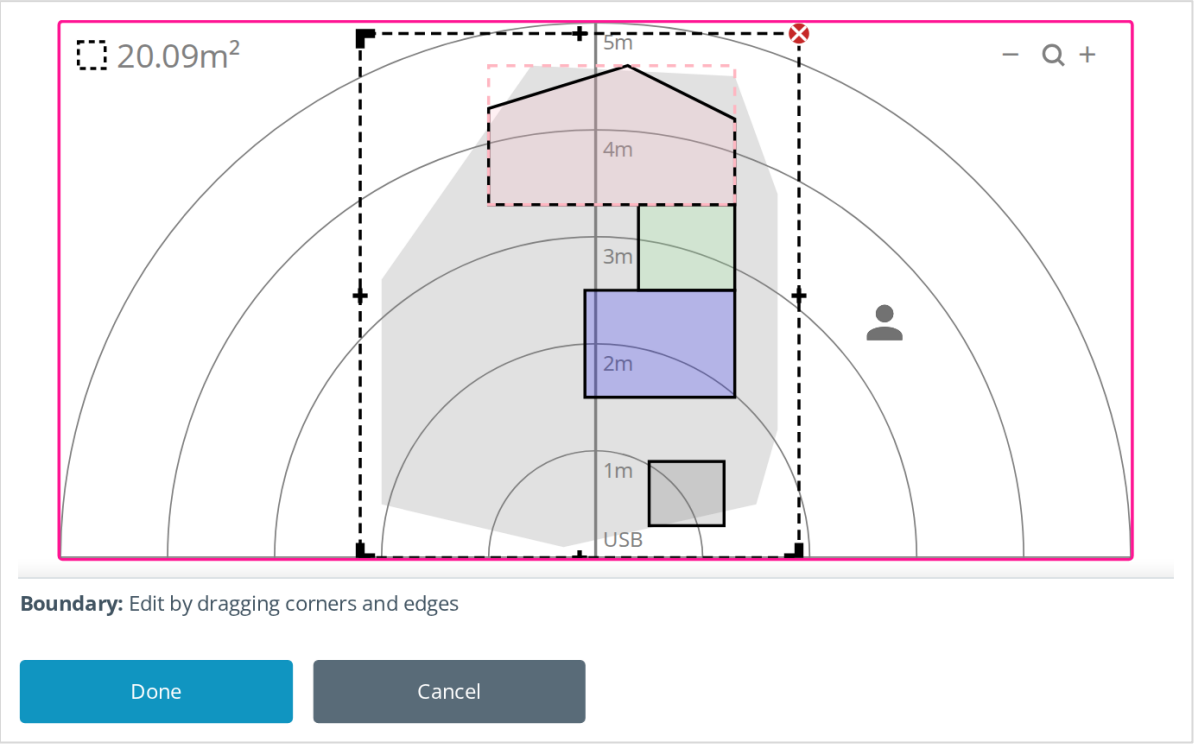
Boundary

Radar waves are reflected by glass, mirrors and smooth surfaces. Because of that the presence sensor can show people where nobody is, behind a window pane or in the next room for example. With the “Boundary” you define where the room ends: targets outside it are not evaluated. They occupy no zone and trigger neither presence nor the siren. They are shown in grey. The boundary is the dashed line. It is fixed: it is drawn or taught and changes only when you edit it.



You edit the boundary in the “Boundary” section. When switched on, the switch creates a rectangle around all active detection zones and opens it for editing straight away. Later you start editing with the “Edit” button. As when teaching a zone, a bar with “Done” and “Cancel” then appears at the bottom of the screen.

The boundary can have up to 16 corners.



Do not set the boundary too tight: if a person standing in the room is shown in grey, the boundary is too far inside at that point.

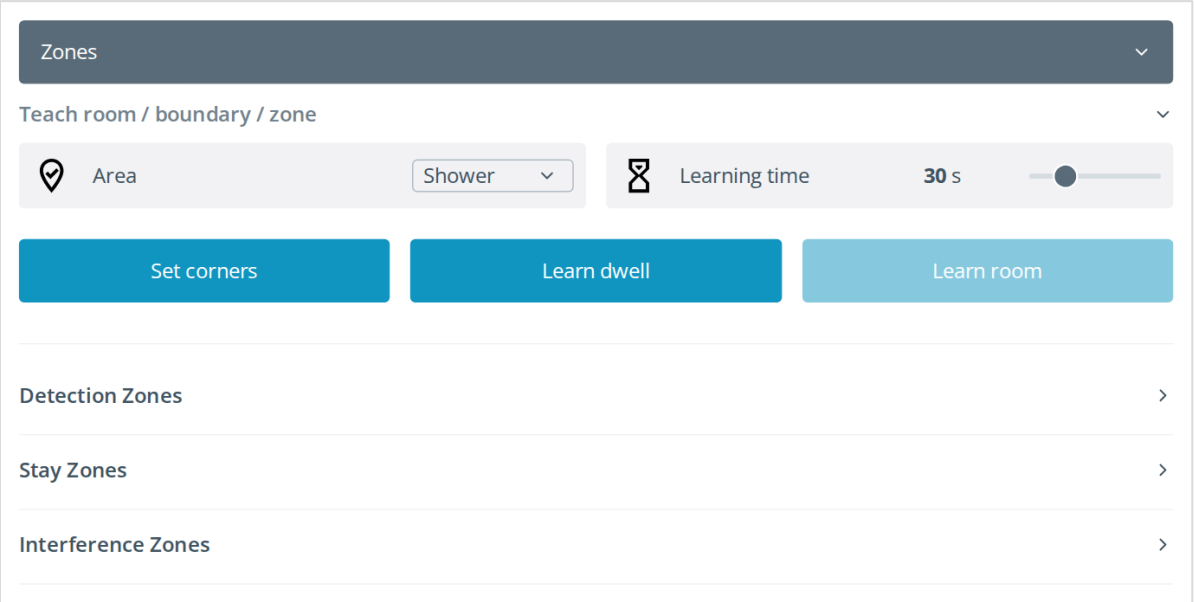
Teach room / boundary / zone

Instead of drawing a zone you can also teach it on site: the presence sensor records your position and creates the zone from it. You find the function under “Zones” in the “Teach room / boundary / zone” section, the topmost one under “Zones”. There, first choose the room, the boundary or the zone under “Area” and then start the method you want. Only the buttons that suit the chosen area are active. Stay zones linked to a detection zone are not offered, because they follow their detection zone.

Learn room

With “Learn room” the presence sensor creates interference zones for sources of interference, a curtain in front of an open window or a fan for example. Choose the “Room” as the “Area”, use the “Learning time” slider to set how long it learns (60 seconds as delivered) and click “Learn room”. A prompt names the 20 seconds you then have to leave the room. After that the presence sensor creates interference zones. The bar at the bottom of the screen counts down and shows how many of the four interference zones are set.

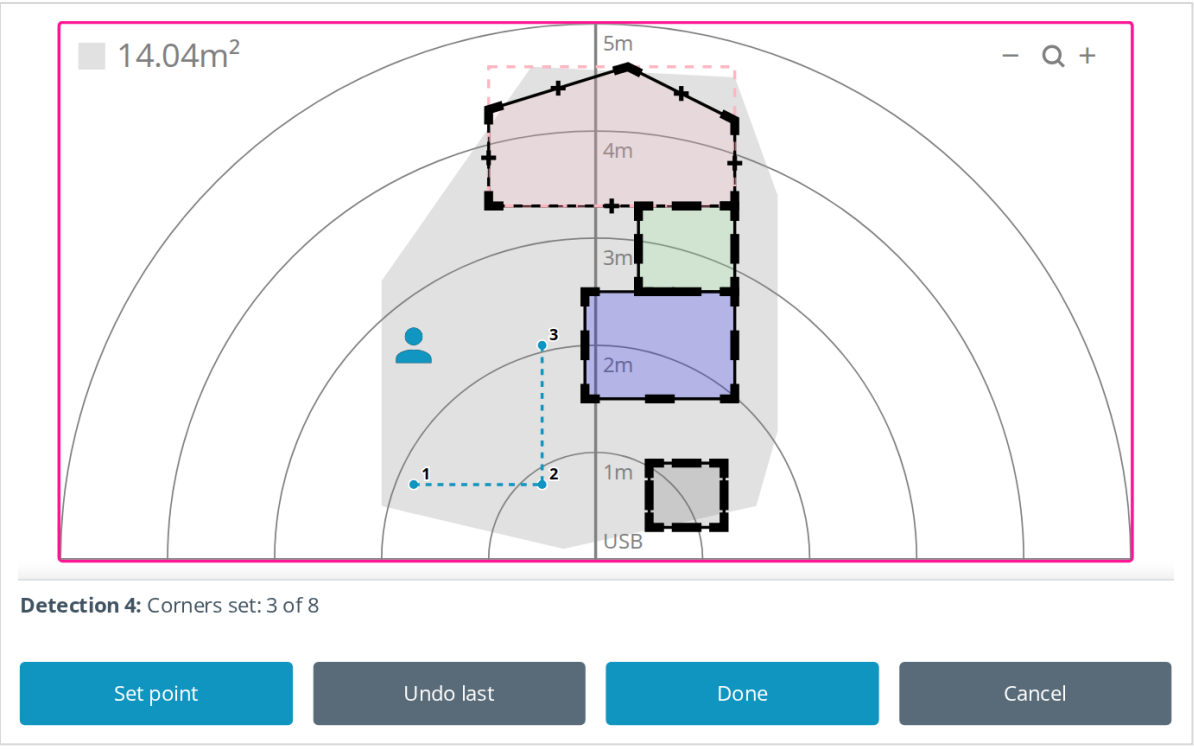
Stay outside the room during the learning time, otherwise a person is learned as a source of interference as well.



While teaching, only one person may be in the detection area. A bar appears at the bottom of the screen with the name of the zone, a note on the next step and the matching buttons. The view of the detection area is arranged so that it is visible together with the bar.

Set corners

This method suits detection zones with clear boundaries. Stand at the first corner of the zone you want and click “Set point”. Stay where you are while the presence sensor determines the exact position. The corner is then shown with a number. Walk to all corners of the zone one after another in this way (at least three, at most eight).



- “Undo last” removes the corner that was set last.
- “Done” stores the zone.
- “Cancel” ends the teaching without changing the zone.

If the position does not settle, the point is accepted anyway after 10 seconds at the latest. If nobody, or more than one person, is detected with this method, the point is dropped and you can set it again.

Teaching the boundary

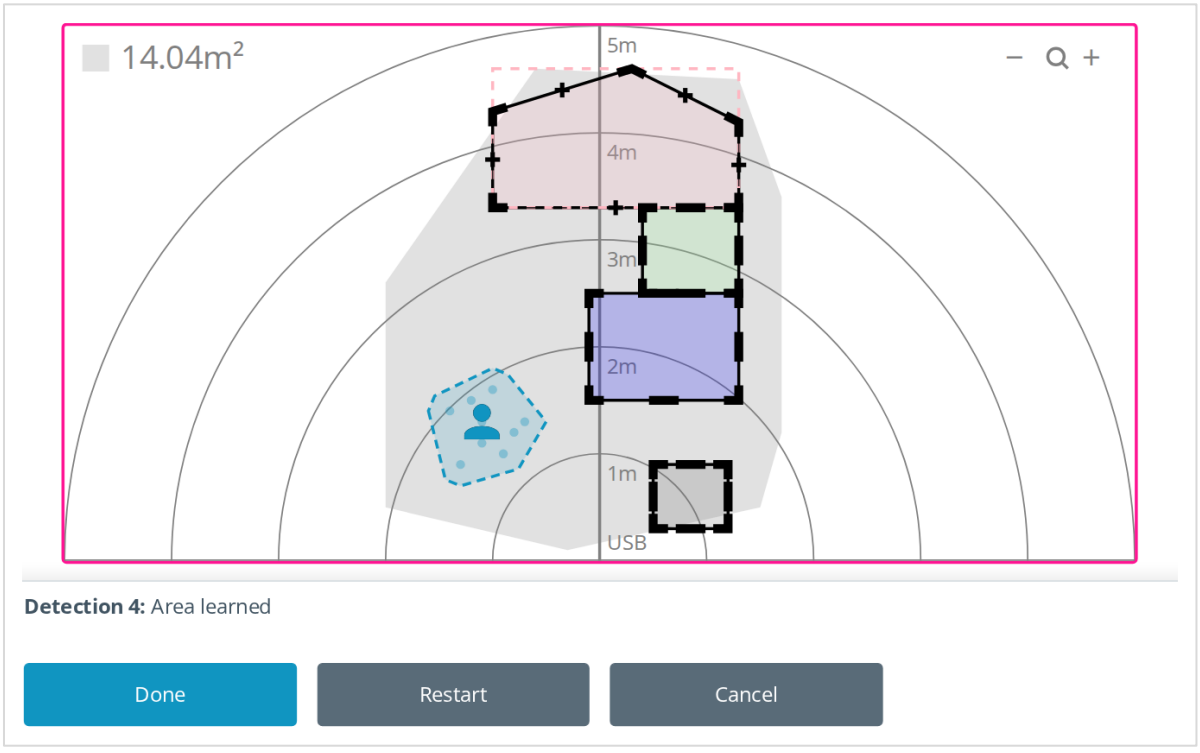
Under “Teach room / boundary / zone”, choose the “Boundary” as the “Area” and click “Set corners”; “Learn dwell” is not available for the boundary. Stand in each corner of the room and set a point there: up to 16 with the sensor on the ceiling and up to 14 with it on a wall. The boundary is placed 30 cm beyond the measured points, so that somebody close to the wall still counts.

With the sensor on a wall, the bar first asks where the sensor hangs. If it sits flat on a wall, choose “On a wall”. The sensor then does not see the corners beside it. So start at a side wall near the sensor, walk the room corners and end at the other side wall. The boundary is closed towards the sensor’s wall; two corners at the opposite wall are enough for that. If the sensor hangs in a room corner, choose “In a corner”. Set a point in every room corner except the sensor’s, once round the room. The boundary is then closed along both walls to the sensor, so that nothing behind the walls counts.

Learn dwell

This approach suits areas in which people stay, such as a seat or a desk, and is available for detection and stay zones. First use the slider “Learning time” to set how long positions are collected.

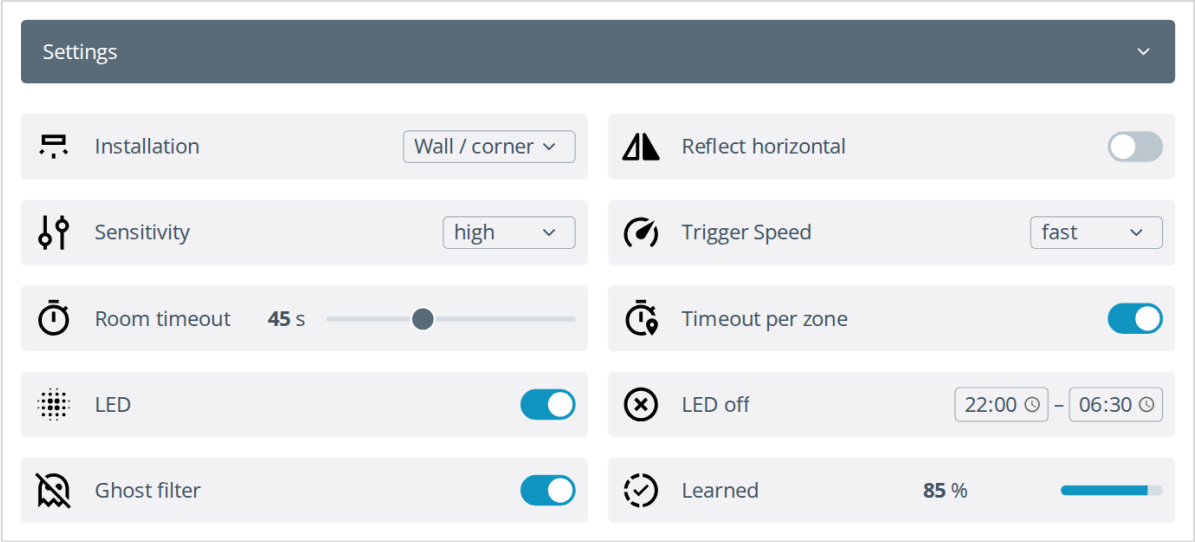
Click “Learn dwell”, go to the place you want and then click “Start”. While the seconds count down, move within the area the way you will use it later, for example sitting or working at the desk. The recorded positions become a zone with a margin, shown dashed. Detection zones are created as a polygon with at most eight corners, stay zones as a rectangle.



- “Done” stores the zone shown.
- “Restart” discards the result and starts recording again.
- “Cancel” ends the teaching without changing the zone.

If nobody, or continuously more than one person, was detected during the learning time, no zone is created. With “Restart” you can try again.

Settings



Under “Settings” you define the main parameters of the presence sensor.

“Installation” determines the type of installation (ceiling or wall / corner). Please note that changing the installation type resets all stored zones, the boundary and the view of the detection area.

“Room timeout” determines how long a presence is kept up after the detection area has been left. It applies to every detection zone as well as long as “Timeout per zone” is off, otherwise to every zone whose own “Timeout” is set to “As room” (see “Zones”).
“Sensitivity” controls how the sensor detects. At low sensitivity it mainly detects movement and no presence. At high sensitivity it registers presence as well as movement.

“Trigger Speed” defines how quickly the sensor responds when detecting people.

With the option “Reflect horizontal” you can swap the right-hand side with the left. This is useful if you have mounted the presence sensor turned by 180°, for example to supply power from above instead of from below.

The “LED” switch turns on the continuous display of the sensor status by a multicolour LED. If the switch is off, the LED is switched off automatically 90 s after the sensor starts.

Under “LED off” you set a time window in which the LED stays dark, from 22:00 to 06:30 for example. This applies to all colours, including the display of presence and siren; the siren itself still sounds. Identical times mean the LED is never off.

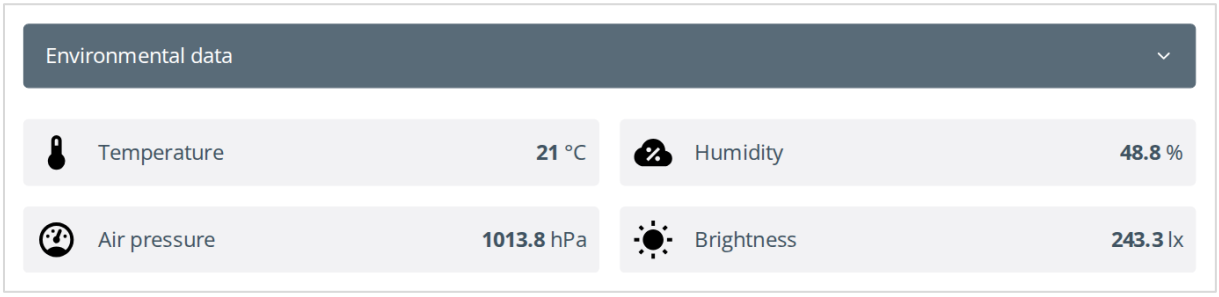
The “Timeout per zone” switch gives every detection zone a timeout of its own, set in its box under “Zones”. It is off as delivered: the “Timeout” row is then hidden and every zone holds as long as the room. Values that have been set are kept when it is switched off and apply again as soon as it is switched on.

Depending on the room and the mounting, the radar may report people at positions where nobody is, so-called ghosts, at a window, at appliances or close beside a walking person for example. The “Ghost filter” switch hides such events.

Depending on the radar model, the filter learns on its own. “Learn room” and a change of the type of installation delete what it has learned.

LED colour	Meaning
White	Start
Yellow	Reset
Cyan (every 10 s)	Access point / no Wi-Fi connection
Blue (every 10 s)	Wi-Fi connected
Green (every 10 s)	MQTT connected
Magenta	Firmware update
Red	Siren active
Pink	Presence detected

Environmental data

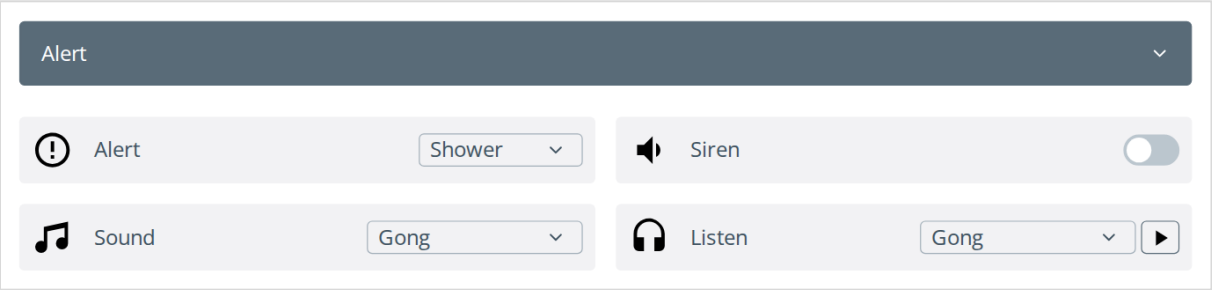


Under “Environmental data” you get current information on temperature, humidity, air pressure and brightness. Please note that after switching the sensor on it can take at least **30 minutes** until the correct values are shown. If needed, the values can be calibrated with an offset under “System”.

Siren

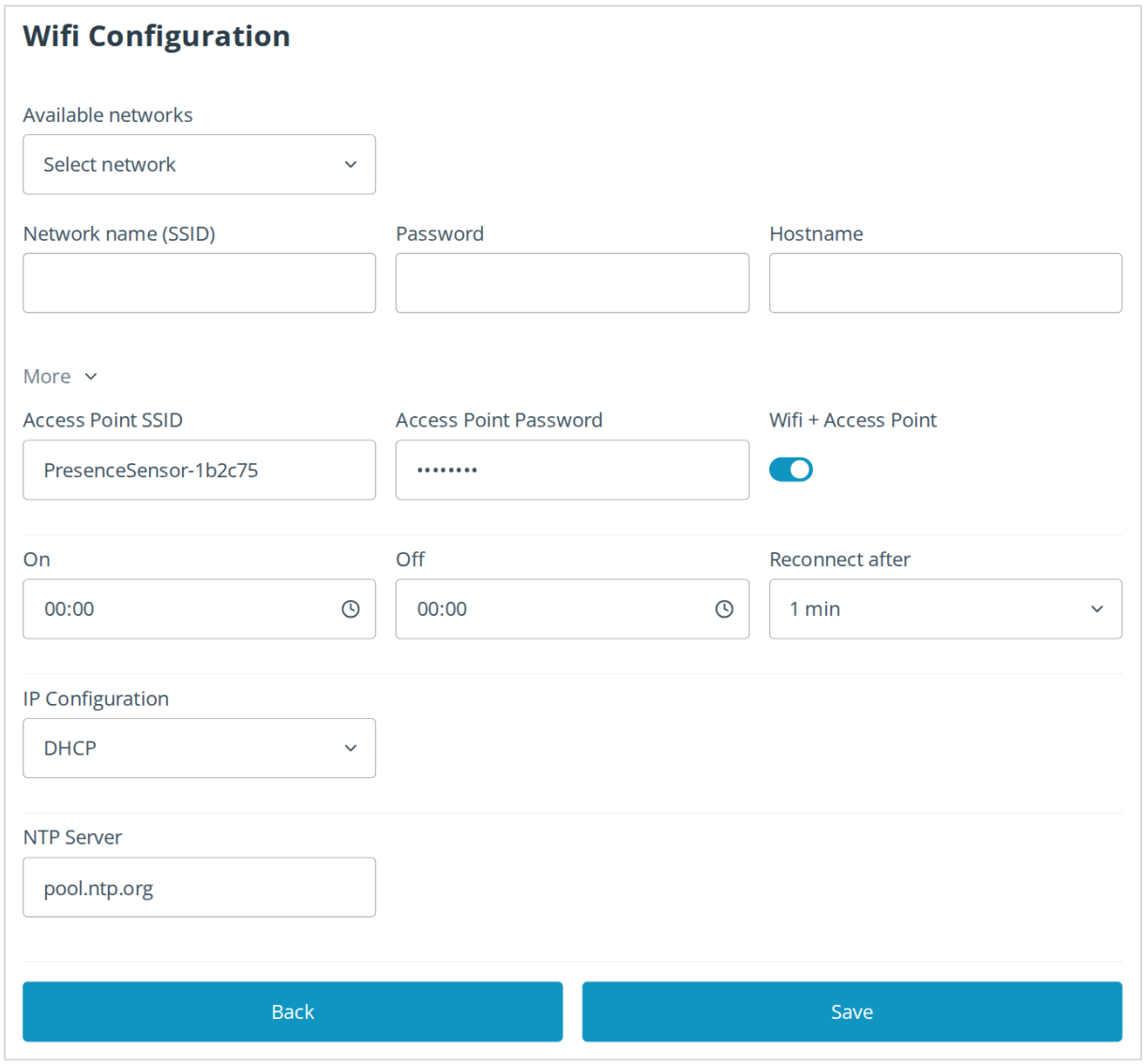
The internal siren can indicate a detected presence acoustically, either in the whole detection area or in a particular detection zone. The trigger is chosen under “Alert”. The “Siren” switch also lets you switch the siren on and off by hand. If it is switched off by hand while presence continues, it sounds again only with the next change of presence. If a detection zone is chosen as the trigger, the siren sounds as long as the zone is occupied - during its “Timeout” too, that is.

Under “Sound” you choose how the siren sounds: signals or melodies are possible. Every trigger under “Alert” keeps its own sound, for example a gong for a zone and the two-tone horn for presence. Under “Listen” the button next to it plays a sound briefly as a test, without storing anything.



Wi-Fi configuration

Besides the credentials for your own Wi-Fi network and for the access point of the presence sensor, a time window for switching the Wi-Fi on can be configured under “More”. For this, the start and end time for switching the Wi-Fi on have to be given. For uninterrupted Wi-Fi operation, set the start and end time to the same value. If the Wi-Fi network cannot be reached, the presence sensor tries to reconnect regularly. The interval until a new attempt can be set as well.



The device joins the network by DHCP by default. Assigning a static IP address is possible as well.

The NTP server is set to “pool.ntp.org” by default. A different server can be entered if needed.

If no Wi-Fi network is available, the presence sensor sets up a network of its own. Its name and password are configurable. The IP address is always 192.168.4.1. The access point can also be made available alongside the Wi-Fi connection.

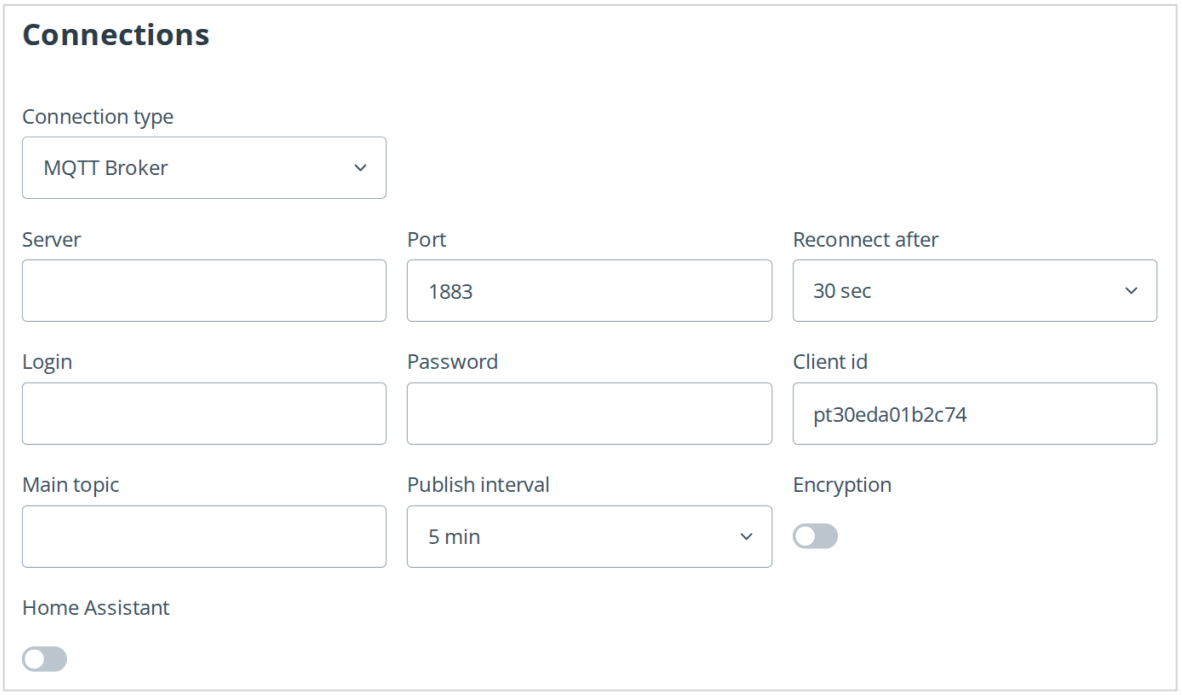
All settings only take effect with “Save”.

Connection via MQTT or remote access

The presence sensor can be connected either to an MQTT broker to exchange data or to Senvolon remote access. Remote access makes the readings available on devices that are not on your Wi-Fi network but are connected to the internet.

MQTT configuration

Under “Connections”, choose the configuration “MQTT Broker”. Besides the name or IP address and the port (default: 1883) of the MQTT broker, the interval after which a new connection attempt is started can be set. If the broker requires a login and a password, enter them here. The “Client id” identifies the presence sensor as an MQTT client and has to be unique for every client.
The field “Main topic” defines the topic under which the data of the sensor is published (for example “PresenceSensor”).
The “Publish interval” defines how often the configuration and status values (with temperature, humidity, air pressure and brightness) are sent to the broker in JSON format.
The connection can be encrypted with SSL/TLS (default port: 8883).



If you switch on “Home Assistant”, MQTT discovery for Home Assistant is enabled. A presence sensor connected to the broker is then found and configured by Home Assistant automatically.

All settings only take effect with “Save”.

MQTT communication uses the Tasmota scheme:

- “tele/{Main topic}/STATE”: sends the current status of the presence sensor as JSON; the field names are in lower case, e.g. “temperature”
- “tele/{Main topic}/LWT”: availability of the presence sensor
- “stat/{Main topic}/*VALUE*”: transmits the state of a particular value. It is sent on connecting and on every change and stored by the broker (retained). Boolean values read “True” or “False”
- “cmnd/{Main topic}/*VALUE*”: sends a particular value to the presence sensor. Boolean values: ON/OFF or TRUE/FALSE

Example:

“cmnd/{Main topic}/SIREN” switches the built-in siren on or off

WIFI_ON, WIFI_OFF and MQTT_PUBLISH_INTERVAL are only found in “tele/{Main topic}/STATE”; they have no stat topic of their own. STATE also contains “zone_names”, “zone_delay”, “zone_delay_on” and “sounds”.

ZONE_DELAY_1 to ZONE_DELAY_4 only take effect while “Timeout per zone” is on; “stat/{Main topic}/ZONE_DELAY_ON” reports this. “stat/{Main topic}/ZONE_DELAY_n” holds the seconds that apply, so with -1 the value of DELAY.

Configuration values/commands

Value/command	Description
WIFI_ON	HH:MM - e.g. 6:00
WIFI_OFF	HH:MM - e.g. 22:00
MQTT_PUBLISH_INTERVAL	In seconds - e.g. 300 = 5 minutes
STAY_LIFECYCLE	Stay time (240 - 6000) - 40 steps per second
DELAY	Room timeout (0-120 s)
ZONE_DELAY_1	Timeout of detection zone 1 in seconds (-1 = as room, 0 = no delay, 1-600)
ZONE_DELAY_2	Timeout of detection zone 2 in seconds (-1 = as room, 0 = no delay, 1-600)
ZONE_DELAY_3	Timeout of detection zone 3 in seconds (-1 = as room, 0 = no delay, 1-600)
ZONE_DELAY_4	Timeout of detection zone 4 in seconds (-1 = as room, 0 = no delay, 1-600)
SENSITIVITY	Sensitivity (0 = low, 1 = medium, 2 = high)
SPEED	Trigger speed (0 = slow, 1 = medium, 2 = fast)
INSTALLATION	Installation (0 = ceiling, 1 = wall / corner)
MIRROR	Reflect horizontal (ON/OFF)
LEDS	LED (ON/OFF)
LEDS_OFF	HH:MM - start of “LED off”, e.g. 22:00
LEDS_ON	HH:MM - end of “LED off”, e.g. 6:30
UPDATE	Sends the current device status (STATE, PRESENCE, DETECTION, ZONES)
ALERT_MODE	Alert (0 = OFF, 1 = presence, 2 - 5 = zone 1 - 4)
SIREN	Siren (ON/OFF)
SOUND	Sound of the alert chosen under ALERT_MODE (0 = Standard to 14 = Fanfare). Rejected while ALERT_MODE is 0.
PLAY	- Play a sound as a test as under “Listen”, without storing: 0 – 14 - ON = the sound of the alert chosen under ALERT_MODE - STOP = stop - {"sound": 5, "duration": 30} repeats sound 5 for 30 s (1 - 600 s)

Readings

Value	Description
PRESENCE	Presence (True/False)
DETECTION	Number of people (0-4)
ZONES/<ZONE>	Presence per zone (True/False; zone name in capitals, empty message for a zone without an area)

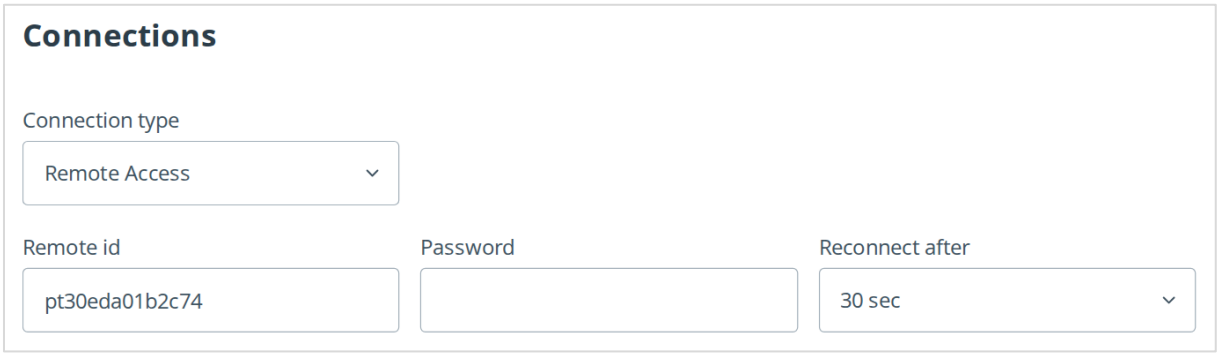
Status

Fields in “tele/{Main topic}/STATE”, in lower case, numbers without a unit; LWT is a topic of its own.

Value	Description
IP	IP address - e.g. 192.168.4.1
SIGNAL	RSSI - e.g. -73 dBm
LWT	Availability - e.g. Online
TEMPERATURE	Temperature - e.g. 22° C
HUMIDITY	Humidity - e.g. 45%
PRESSURE	Air pressure - e.g. 1010 hPa
BRIGHTNESS	Brightness - e.g. 550 lx
LANGUAGE	Language (EN/DE/ES)
VERSION	Firmware version - e.g. 1.0.0 / 1.26.1
BOOT	Start time - e.g. 27.09.2025 20:53
NAME	Name - e.g. Multi Zone Presence Sensor

Remote access

Under “Connections”, choose the configuration “Remote Access”. It works worldwide through “remote.senvolon.de”. To log in you need the remote id shown there and a password of at least eight characters, which you choose yourself.



If remote access cannot be reached, the presence sensor tries to reconnect regularly. The interval until a new attempt can be set.

Web app on iOS

Log in at “https://remote.senvolon.de” in the browser (Safari). As soon as the page with the readings is shown, tap the share symbol. It looks like a square with an arrow pointing upwards and is at the bottom of the screen (on the iPhone) or in the top right corner (on the iPad). Then scroll down in the share menu and choose “Add to Home Screen”. Tap “Add” in the top right corner and you have direct access to the sensor data in the form of an app. You can also switch on push messages for when presence is detected.

Web app on Android

Log in at “https://remote.senvolon.de” in the browser (Chrome). As soon as the page with the readings is shown, tap the menu symbol (three vertical dots) in the top right corner of the screen. Then scroll down in the menu and choose “Add to Home screen”. Tap “Add” and you have direct access to the sensor data in the form of an app. You can also switch on push messages for when presence is detected.

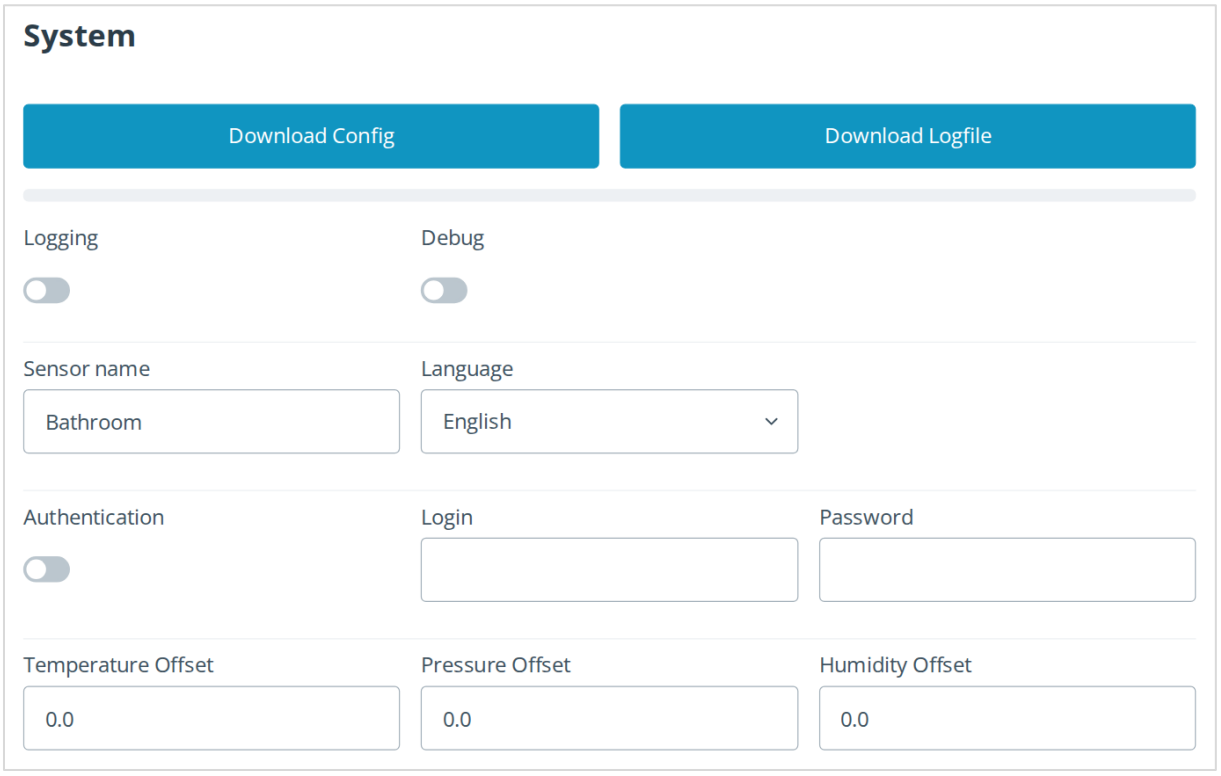
System

Under “System” you call up various information about the operation of the presence sensor. Besides the option to download the complete configuration in JSON format for backup purposes, the log file is available as well. Logging can be switched on and off. If needed, debug information can be written to the log file too. The log file is shortened automatically once it reaches a certain size.

The name of the presence sensor shown on the main page can be changed.
Under “Language” you set the preferred user language.

To protect against unauthorised access, authentication with “Login” and “Password” can be switched on.

For the environmental values temperature, air pressure and humidity, calibration by setting an “offset” is possible. The offset corrects the measured value upwards or downwards.

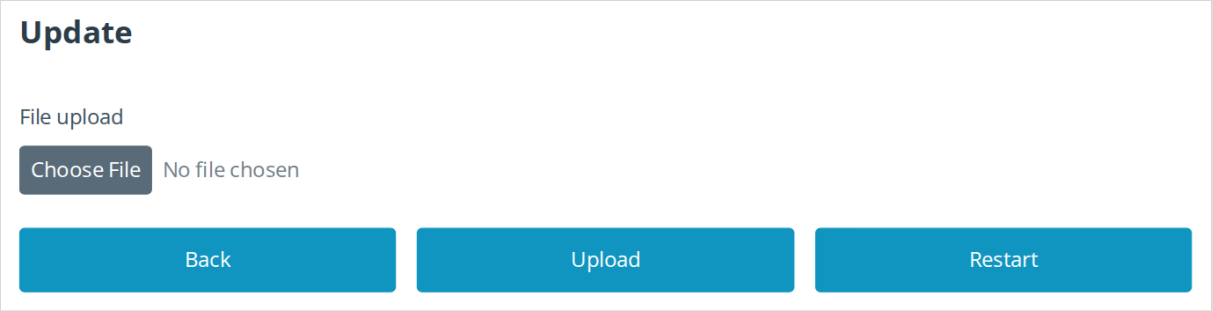


“Restart” restarts the system.
“Reset” returns the presence sensor to its factory settings.

All settings only take effect with “Save”.

Update

The update function offers the possibility to update the firmware. A saved configuration can also be loaded. For this, the file “config.json” of the presence sensor has to be uploaded. First select the file with the button “Choose File” under “File upload” and then click “Upload”.



Reading the measurements over HTTP

Calling up “http://*hostname*/measurements” gives you the current readings in JSON format.

Controlling the siren over HTTP

Calling up “http://hostname/siren?turn=on” switches the siren on, “http://hostname/siren?turn=off” switches it off. The answer gives the current status of the siren in JSON format.

If something does not work

If you have trouble with the Wi-Fi or MQTT connection, or if you want to analyse how the sensor behaves, please switch on logging under “System”. All relevant events and errors are then recorded. You get even more information if you switch on the option “Debug”.

The most recent entries are shown directly. You can also download the log.

In normal operation you should switch both logging and the debug function off, to ensure a long life for the internal flash memory.

Our support will be glad to help you as well, at **support@senvolon.de**.

Technical data

Power supply	5 V DC
Rated current	1 A (power supply: 2 A to 3 A, max. 15 W)
Wi-Fi frequency range	2400-2483.5 MHz
Wi-Fi max. transmit power	20 dBm EIRP
Bluetooth LE frequency range	2402-2480 MHz
Bluetooth LE max. transmit power	7 dBm EIRP
Radar frequency range	57-64 GHz
Radar max. transmit power	20 dBm EIRP
Antenna beam angle	+/- 60°
Modulation	FMCW
Movement detection	approx. 6 m
Presence detection	approx. 4 m
Weight	59 g
Dimensions (dia. x h)	94x15 mm
Zones	4 x detection / 4 x stay / 4 x interference / 1 x boundary

Contact

SENVOLON GmbH
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50226 Frechen, Germany

www.senvolon.de
Email: info@senvolon.de

Conformity

SENVOLON GmbH hereby declares that the radio equipment type Presence Sensor KL MZ (model SEN185 KL MZ) complies with Directive 2014/53/EU.

Radio and radar information

The device contains a millimetre-wave radar for detecting presence in the 60 GHz frequency range.

The radiated power is below the legally defined limits for human exposure. There is no health risk when the device is used as intended. Mount the device so that a distance of at least 20 cm to persons is maintained during operation.

Modifications to the device are not permitted and void its conformity. The device is intended for indoor operation only.

The device also contains a radio module for Wi-Fi and Bluetooth LE in the 2.4 GHz frequency range.

Details of the frequency bands and the maximum transmit power are given in the section “Technical data”.

Bluetooth LE

The device contains two Bluetooth LE transmitters in the frequency range 2402–2480 MHz with a transmit power of at most 7 dBm EIRP. Neither is required to operate the presence sensor.

Disposal information

Disposal of waste electrical equipment (WEEE / ElektroG)

This device is marked with the symbol of the crossed-out wheeled bin. It must not be disposed of with household waste.
Waste electrical equipment has to be handed in separately from household waste at a collection or take-back point.



Data protection

If the device has stored personal data (network or user information, for example), delete it before disposal.

Manufacturer information

Manufacturer: SENVOLON GmbH
WEEE reg. no. DE: 93352512