sensio

Author:	Date:	Revision:	Document no:
RNJ	26.07.2024	K	RMD-001

Installation guide, RoomMate

1 INTRODUCTION

This document provides a concise introduction to the installation of the RoomMate sensor. RoomMate is a solution for anonymized visual supervision with automatic alerting and notification in critical situations.

The RoomMate sensor is developed and manufactured by Sensio, which can also contribute to the installation and configuration of the system. Procedures for the entire installation process are described in this document.

2 ROOMMATE VERSIONS

The RoomMate sensor is available in two versions:
- RoomMate 1.0, launched in 2016
- RoomMate 2.0, launched in 2024

Visually and functionally, the two versions are identical. The changes for RoomMate 2.0 are the following:
- RoomMate 2.0 has serial numbers above 25,000. RoomMate 1.0 has serial numbers below 25,000.
- RoomMate 2.0 has a label with the text "CLASS 1 LASER PRODUCT".
- When switched on, there is a single red light on the front of the RoomMate 2.0. This as a contrast to RoomMate 1.0 which has 12 red lights.
- RoomMate 2.0 has a safety function where it switches off the IR lighting if it detects an object closer than about 40 cm from the sensor. This results in the supervisory image disappearing and being replaced by a noise-filled image.
- RoomMate 2.0 uses only about half as much electricity as RoomMate 1.0. The cooling profile at the back of RoomMate 2.0 therefore becomes less warm than for RoomMate 1.0.
- RoomMate 2.0 has a slightly wider field of view than RoomMate 1.0, which must be taken into account when positioning during installation. RoomMate 2.0 may be more sensitive to reflections from objects close to the sensor. RoomMate 2.0 also has a longer range than RoomMate 1.0.

The wall mount, power supply, WiFi dongle and reflective card are identical for RoomMate 1.0 and RoomMate 2.0.

3 NECESSARY TOOLS AND EQUIPMENT

For installation, the following equipment is needed:

RoomMate kit with wall mount and power adapter	The RoomMate device itself
For internet access, one or more of the options below	

Author:	Date:	Revision:	Document no:
RNJ	26.07.2024	K	RMD-001

Installation guide, RoomMate

Netgear A6100 WiFi USB Mini Adapter	WiFi adapter for installations where access to WiFi will be used
D-Link DWR-921 4G LTE Router	4G router for installations where mobile data will be used for internet access
SIM card	SIM card for 4G router where applicable
Ethernet cable, cat 5e or cat 6	Used where RoomMate will be connected to a wired network

In addition, the following **installation materials** may be needed:

Cable conduit	It is recommended to have a range of cable conduit for both DC cable (about 5x2 mm), AC cable (about ø 7 mm) and ethernet cable (about ø 7 mm)
4 mm screws for drywall, wood and masonry (including masonry plugs)	Gypsum anchors are recommended for both single and double drywall
Screws for fixing power supply (Ø 3 - 4 mm)	
Cable coiling strips	
Extension cord and dual connector	Experience shows that it is good to have an extension cord and double socket if it is far from where the RoomMate will be placed to the nearest socket.

Required **tools**:

Stepladder	
Drill + impact drill	
Drillbits for wood and masonry	
Screwdriver with relevant bits	
10 mm wrench (monkey wrench)	For wall mount adjustment
4 mm Allen key	For wall mount adjustment
PC	To be able to see images from RoomMate for adjustment
4G router	Experience shows that it can be useful to be able to connect a PC online without local infrastructure
USB flash drive	For programming login data for WiFi

4   INSTALLATION PROCEDURE

Installation of the RoomMate sensor should take place in cooperation with Sensio to ensure the best possible results, at least the first few times so that you learn the optimal position of the sensor. Sensio participates in this via digital meeting.

For the installation of RoomMate, the following procedure is used:

1.   Necessary equipment has been delivered / acquired.

2. Agree on time for installation with the customer and Sensio. Sensio will be available via Teams or other digital meeting during the installation for guidance.
3. Before installation at the customer, the following is performed:
    a. For installations to connect to WiFi, WiFi information as described in section 12 uploaded to the sensor.
    b. For installations with a 4G router provided by the retailer it should now be connected.
    c. Verify access to RoomMate by opening *roommate[x].no* in a regular browser and log in with your own username and password.
    d. It may need to be verified that the necessary ports are open. This is described in section 12.
4. With the installation itself, the following steps are performed:
    a. Verification of network connection by connecting RoomMate on WiFi, 4G or ethernet and checking access to *roommate[x].no* on PC.
    b. Determine the optimal location of the RoomMate device as described in section 6 in cooperation with Sensio (via web or telephone).
    c. Install the wall mount for Sensio described in section 9. Note that the wall mount can be assembled in two different ways as described in section 8.
    d. Adjust the setting of the wall mount as described in section 10. This is done in collaboration with Sensio by phone. After adjustment, both screws on the wall mount are tightened with wrench and Allen key.
    e. If using, put up the adhesive information signs accompanying the RoomMate sensor described in Section 14.
    f. Employee training. To be agreed with Sensio or the partner.

5 TECHNICAL BEHAVIOR AND LIMITATIONS

RoomMate has a built-in rangefinder that calculates the distance to all parts of the room within the field of view. The distance measurements are based on the sensor emitting infrared (IR) light and analyzing the reflected light signal. In the event of a change in space, for example when a person enters, RoomMate will detect the person and follow it as long as the person moves within the field of view and the sensor's range. The range of the sensor is limited to a maximum distance but is also affected by the light reflectivity of the material that the IR light hits. Materials with little light reflection will reduce the range and examples of this are dark denim fabric, leather and hide. Mirrors, glass surfaces and large TV screens can also cause erroneous light reflections that give RoomMate a distorted picture of the room and reduced function. If you move very close to RoomMate, much of the emitted light will be reflected back and the sensor may be temporarily blinded and have reduced function. Sunlight also contains IR light that the sensor is sensitive to, and in particularly strong sun, the sensor will have reduced function in those areas of the room that are exposed to strong solar penetration.

It is important to understand and know the possible limitations of the sensor so that these can be taken into account as much as possible when installing RoomMate.

6 LOCATION IN THE ROOM

There are many considerations when choosing a location for RoomMate. The most important thing, of course, is that the sensor sees the area of the room where the person normally resides or moves. It is also desirable that the sensor sees a sufficient floor surface as it uses this as a room reference. The location will also be greatly influenced by which functions in RoomMate to use, whether it will only be used for digital supervision or if it will also be used for falls and other alerts. It is good practice to position RoomMate so that it covers the most possible functions in the unit, regardless of which alarms/notifications are to be used at the time it is installed.

The most common is to mount the RoomMate high up on the wall, about 15-20 cm below the ceiling but no higher than 275 cm above the floor. It should not be mounted lower than 200 cm, as this can create disturbances when people, objects and the like get too close to the sensor. Often the best coverage is provided by placing the RoomMate near a corner of the room, but this can vary with the design and furnishing of the room. If the RoomMate is mounted in a corner, then there should be a clearance on min. 50 cm from RoomMate to facing wall as shown inFigure 1.

Figure 1. RoomMate mounted in a corner

Author:	Date:	Revision:	Document no:
RNJ	26.07.2024	K	RMD-001

Installation guide, RoomMate

In general, it is advantageous to mount the RoomMate so that it looks towards the front door rather than mounting it above the front door. This is because the sensor will normally always have a blind spot directly below it and that means that the person will only be detected when it gets further into the room. Another factor is that you want to place the sensor in a place where you do not often get as close to the sensor as when it is directly above the doorway.

If there are large mirrors or window surfaces in the room, it is an advantage to mount RoomMate on the same side of the room so that the sensor faces away from these surfaces. Similarly, it would also normally be better for the sensor to see such surfaces at an angle rather than straight at them.

It is important not to mount the RoomMate so that it is left behind a window if it is opened. It also applies to other objects that they must not stand too close to the sensor in its field of view, such as lamps etc.

7   MULTIPLE SENSORS IN A ROOM

If the size, design or furnishing of a room necessitates multiple sensors to obtain satisfactory coverage, then it is possible. The placement of the sensors must then be done so that they have the least possible overlapping area, as they can affect each other. In addition, the devices must also be configured with different frequencies so that the impact is minimal. Change of frequency must be done by Sensio.

8   WALL MOUNT CUSTOMIZATION

The mount can be assembled in two ways so that the RoomMate can be turned clockwise or counterclockwise when affixed. RoomMate has slots for fastening at both ends and is hooked onto the mount at the end closest to the wall.
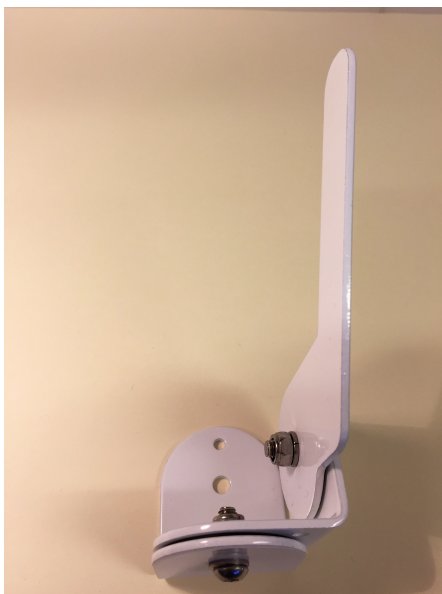

Figure 2. Mount turning clockwise.

Figure 3. Mount turning counterclockwise.

If the attached mount is delivered with incorrect orientation, it must be reoriented by releasing the peg, turning the bracket to the opposite side before the peg is reassembled. It is very important that the peg is mounted on the correct side of the bracket as shown above so that the peg cannot turn forward and the RoomMate sensor falls out.

9 FIXING MOUNT TO WALL

The mount has holes (4 mm) for several mounting options and can be mounted against all common wall materials. It is important that it is fixed in a minimum of 2 points so that the mount cannot turn. RoomMate weighs approx. 800g and it is very important that it is mounted securely to the wall and that you use the right fasteners for the wall in question.

10 ADJUSTMENT AND LOCKING OF FASTENERS

When the RoomMate is in the mount, the angle can be adjusted both horizontally and vertically. To be able to adjust the angles correctly, you must look at the image stream from the sensor via a PC, tablet or phone. After the mount has been adjusted both vertically and horizontally to provide the desired coverage area for the sensor, it is important to tighten both the horizontal and vertical adjustment mechanism sufficiently so that the view does not change over time.

11 LAYING UP POWER CABLE

RoomMate uses the included 24V AC/DC power adapter. Normally, the power adapter is attached to the skirting board with the included holder. The length of the 24V voltage conductor is 4 m and will normally be able to reach the RoomMate. If this is not the case, an extension cord will need to be used on the AC side to position the AC adapter closer.

12 INTERNET ACCESS

RoomMate connects either to the internet wirelessly or via cabled network. RoomMate has a standard RJ45 connector for connecting a network cable. It is sufficient to use a UTP CAT-5 network cable.

For wireless networking, a WiFi USB dongle is required in one of RoomMate's two USB ports. It is important to use an approved WiFi dongle for optimal function. To date, only one WiFi dongle is approved for use:

Netgear A6100 WiFi USB Mini Adapter

RoomMate supports both WPA2-personal and WPA2-enterprise and should therefore be able to connect to most WiFi networks. Network settings are entered into RoomMate using a regular USB flash drive (FAT32 file system).

On the flashdrive create a file named "wifi.txt" (lowercase) with the following contents:

WPA2-personal:

> SSID: web4
> pass: ABC123

WPA2-enterprise:

> SSID: web4
> User: user321
> pass: ABC123

In both examples, the network name is "net4" and the password is "ABC123". For WPA2-enterprise, the username is "user321". Note that these names are examples only and must be replaced with information from the relevant network.

If the network has hidden the SSID, it must be added "hidden: true". An example of this is:

> SSID: web4
> user: user321
> pass: ABC123
> hidden: true

The file must contain plain ASCII text without formatting. As a text editor, "*WordPad*" or *"Notepad"* can be used on Windows or "*TextEdit"* for Mac OS.

When the wifi.txt file is saved to the flash drive, insert it into the available USB port in RoomMate (with the power turned on). After a short time, RoomMate will sign off with a confirmation sound (ding) if it has found the file and that its contents are properly formatted. The USB flash drive can then be removed from RoomMate. *Note that for the WiFi connection to work the WiFi dongle must be inserted.*

There may be several reasons why the receiptaudio is missing:
1. RoomMate is already configured with the same SSID and password as on the memory stick.
2. The USB flash drive is not formatted with the FAT32 file system.
3. The USB flash drive does not contain a "wifi.txt" file located on the root.
4. wifi.txt is formatted incorrectly or does not contain only ASCII text

RoomMate will write a log file (*.log) on the USB flash drive that can be used to troubleshoot any problems.

After the network details have been loaded, RoomMate will attempt to connect to the WiFi network, provided that the approved WiFi dongle is mounted in one of the sensor's USBports.

To work, there are a number of ports in the network that must be open as described below, therefore, check this if the sensor does not connect to the network:

When RoomMate is turned on, it contacts a server at vpn.roommate.no address on port 1194 (UDP+TCP). If this port is not available, port 443 is used. In addition, the RoomMate sensor needs contact with NTP servers on port 123.

RoomMate has a fall-back solution if the server should be unavailable. The RoomMate unit will then send alarms and notifications by SMS via port 443. This happens automatically, but port 443 must be open for it to work.

Author:	Date:	Revision:	Document no:
RNJ	26.07.2024	K	RMD-001

Installation guide, RoomMate

Therefore, the following ports must be open to outbound traffic for RoomMate to work:

- 1194 to vpn.roommate[x].no
- 443
- 123
- 587

*[x] is the number for the correct server installation

13 SWITCHING FROM ONE VPN.ROOMMATE(X).COM SERVER TO ANOTHER

In some cases, it may be necessary to move a sensor from one server to another server. This can be done by connecting a memory stick in the sensor. On the memory stick must be put a file named "server.txt" (lowercase) with the following contents:

> Server: vpn.roommate4.no

This will ensure that the sensor connects to roommate4.

The file must contain plain ASCII text without formatting. As a text editor, "*WordPad*" or *"Notepad"* can be used on Windows or "*TextEdit"* for Mac OS.

When the server.txt file is in place on the flash drive, it should be connected to a USB port in RoomMate (with the power turned connected). After a short time, RoomMate will sign off with a confirmation sound (ding) if it has found the file and that its contents are properly formatted. The USB flash drive can then be removed from RoomMate.

There may be several reasons why the receipt sound is missing:
1. RoomMate is already configured to connect to the same server.
2. The USB flash drive is not formatted with the FAT32 file system.
3. The USB flash drive does not contain a "server.txt" file located at the root.
4. server.txt is formatted incorrectly or does not contain only ASCII text

14 INFORMATION SIGNS

At the entrance to rooms where the RoomMate is installed, an accompanying self-adhesive information sign can be installed. Usually, the sign is placed on the door above the door handle or in close proximity to the door.

Figure 4, Information sign

15 CONFIGURATION AND TEST

RoomMate is very flexible and can be configured in many ways. Sensio support can help to find the optimal setting and configuration for the individual citizen and ensure that alarms and notifications are set up correctly.