

User manual

PIR901





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Warnings and safety instructions



- Used batteries must comply with the relevant IEC safety standards.
- Read the instructions before use.
- Do not ingest/eat battery(ies), chemical burn hazard. Batteries can cause serious injury or death if swallowed.
- Keep new and used batteries away from children.
- If the battery compartment cannot be securely closed, the product must be discarded and stored out of the reach of children, patients, and animals.
- If the product is damaged and the batteries become accessible, the product must be discarded and kept out of reach of children, patients, and animals.
- The PIR901 uses an 869 MHz wireless transmitter, which in some cases may interfere with other approved equipment with 869 MHz transmitters/receivers, just as the PIR901 may be interfered with by other 869 MHz transmitters.
- The PIR901 **must not** be used for diagnostic purposes!
- PIR901 **must not** be used in cases where a seizure requires life-saving action or medical treatment.
- The product is not water-resistant and must not be exposed to moisture/water.



Notes before use

See also the general instructions for use of KNOP products (see www.knop.dk):

In general, products must not be used if the client (patient) is mentally or critically ill.

Before use, it must be ensured that the patient in question is capable of operating the product.

The product must not be used for diagnostic purposes under any circumstances.

Lifespan after installation/use of the device

The product is designed to have a long service life of at least 5 years.

However, please note that the battery must be replaced when the indicator lights up. See the user manual for more details.

Battery operating time

The operating time of the batteries is calculated by Knop – see specifications in the user manual under technical data.

Intended use

The various versions of KNOP medical equipment consist of a combination of aids (transmitters and receivers) designed to call for help for frail/disabled patients/clients.

The transmitter-receiver systems can be activated in different ways:

- For example, clients who actively activate the device in question and are thus aware that they are calling for help. For example, people with walking difficulties who need help going to the toilet.
- Or clients with intellectual and/or cognitive impairments who are not aware that a mounted receiver receives a signal when the patient leaves a house or room.



General KNOP product description

KNOP Elektronik products consist of several types of transmitters and receivers that can be combined with each other. In addition, these products are used in combination with positioning and repeater systems.

These products are medical devices designed to call for help for people who have difficulty walking and need assistance going to the toilet, for example.

The transmitters are activated, for example, by a sound or a touch (e.g. a touch with a finger or a breath from the mouth).

The receiver is monitored by healthcare professionals or lay people in private homes. The system is not designed for critically ill or mentally ill people.

| Part of the product | Function in the product system |
|---------------------|---|
| Transmitter | The transmitter can send the signal from the patient to the receiver, which is monitored by healthcare professionals or lay persons. A button, sound, breath, or movement can activate the transmitter products. |
| Receiver | The transmitters can be coded to all receivers and to several receivers at the same time. Some receivers also have a call button so that they can call for help from their colleagues. |
| Repeater system | If there is a need to cover an extensive and larger area, a repeater system is used. The repeater system also provides increased functionality, such as an alarm being automatically received first by the healthcare professional closest to the client. |
| Positioning system | If a transmitter is equipped with a position receiver, it can be used in conjunction with a position system. Not all product variants include position receivers. This is typically seen in connection with nursing homes and safety for dementia patients. The receivers can be portable or stationary. |



Product

PIR901 is a transmitter designed to send codes to KNOP's wireless receivers.

Transmission occurs when movement is detected. The PIR901 can be used to monitor movement in several ways, depending on your needs, e.g.:

- If a person moves beyond the edge of the bed
- If the person moves on the floor within range (see next page)
- If the model is equipped with an optional door guard function, the PIR901 can also detect when a door is opened and closed. The magnet for this is available as an accessory.

Note: The door guard function must be purchased separately if this function is required

Please note the range, which is described in the section "Checking the coverage area".

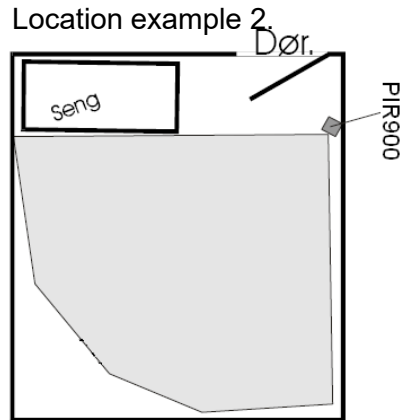
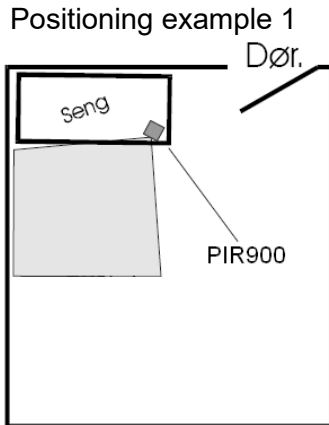
Information:

PIR901 is an update of PIR900, with identical functions and operation. PIR901 can now be updated and configured via KNOPtool. In addition, a tilt detector has been developed and the product has a longer battery life.

IMPORTANT: When the product is switched on   and   will flash for 30 seconds while the detector is being prepared.



Commissioning and positioning of the PIR901

There are three options for placement for correct use in a room.



Once the PIR901 has been positioned, it must be evaluated. This applies to all locations.

Stand outside the activation area.

Move around in the activation area and note that the symbols   flash on the PIR901 each time it is activated.

Location 1 – Placing the PIR901 on the bed

If only a limited area is to be covered and movement is only around the bed.

Position 2 – Placing the PIR901 on the wall or at the base

Place the PIR901 on the wall using the Velcro strips provided or mount it on the plinth to detect movement on the floor.

Position 3 – placing the PIR901 as a door guard if selected.

Mount the PIR901 on the door frame using the Velcro strips provided. The product can be mounted on either the left or right side of the door.

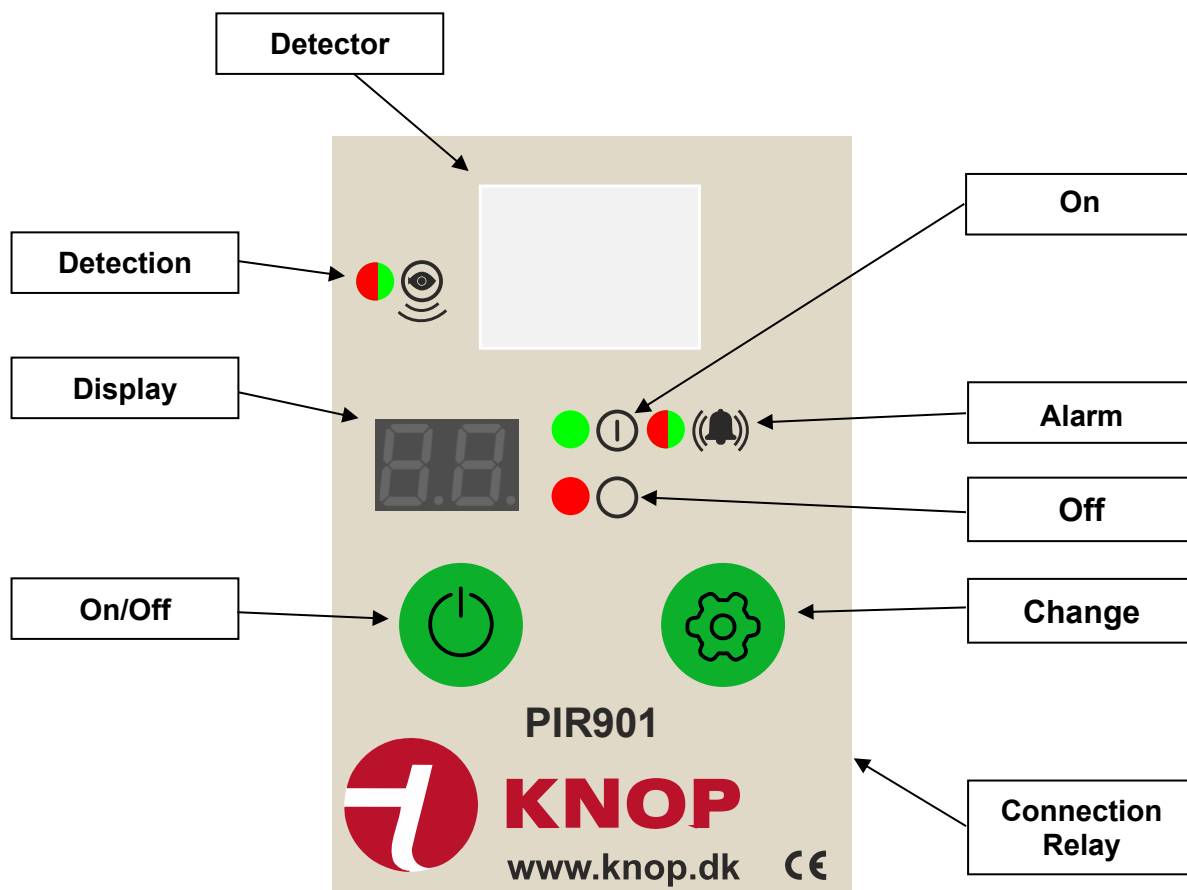
Mount the magnet (accessory) on the door next to the PIR901 so that the upper edges of the magnet and the PIR901 are aligned. The distance between the PIR901 and the magnet must not exceed 10 mm.



Please note that the PIR901 is an infrared detector that reacts to changes in temperature. Therefore, do not place it in direct sunlight, in draughts from open windows and doors, or anywhere else where the temperature may change significantly.

Buttons, indicators, and connectors

Location of buttons, indicators, and connectors.



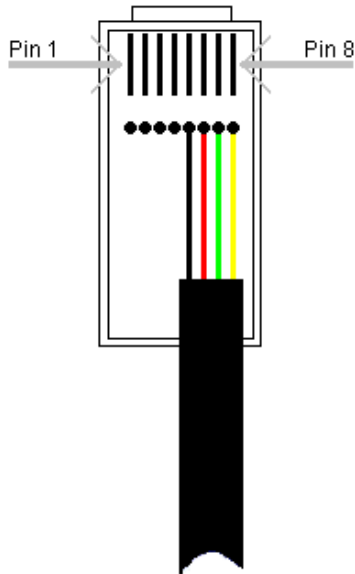
Note: Do not connect anything, other than what is described in this document, to the socket.

Relay output

The relay output on the PIR901 is a potential free output in an 8-pin modular connector (RJ45). If other equipment is to be connected, pins 7 and 8 must be used. E.g. call system, etc.

Various adapter cables are available to order; these are not included.

Max load: 30V/20mA





Operation

The product is a transmitter designed to collaborate with wireless receivers in KNOP's 901 series. Please note the range, which is described in the section "*Checking the range*".

There are only two buttons for daily operation and several possible independent settings/programmes – see the following pages.

The user/staff only need to switch the PIR901 on and off on a daily basis using: 







The PIR901 remembers the settings, even if the batteries are removed.

Note: The door guard function is only available if the product is equipped with this optional feature!

The operation is the same for both bed and door guard.

IMPORTANT: To access the operation, the button must be held down for 1 second, after which it will appear in the display. This is to minimise accidental presses.

The indicators show the status of the transmission in the following ways:



-   Green flashing, alarm sent.
-   Green flashing, alarm received
-   Red flashing, alarm **not** received.




On/off

To switch the product on or off, proceed as follows:

Press and hold  for approx. 5 seconds:




- When the product is switched on, it will flash   and emit a sound.

- When the product is turned off, hold down the button  for 5 seconds and it will flash and beep.  



IMPORTANT: When the product is switched on   and   will flash for 30 seconds while the detector is being prepared.

Switch between bed and door guard function (if purchased)

PIR901 is always delivered from the factory with bed guard as the default setting.

Press and hold the button  and the display will flash either (bed guard)  or (door guard). 

If you want to change to door guard or transmitter guard, press and hold the button until the display stops flashing.

When either  or  is not flashing, the current door/bed guard status is displayed.

Tilt detector

The tilt detector is a new feature in the PIR901, compared to previous models.

If the PIR901 tips over, it sends an alarm to the receiver, provided that it is programmed to receive the signal. If so, you have a short period of time to set it up again.

During this period, the PIR901 emits a beeping sound to indicate that it has fallen over.

If the product is picked up and replaced, the function can be interrupted by pressing one of the buttons.

Note: The tilt detector function must be enabled in the programming settings.





ByPass

If the ByPass function is activated in the programming (see section "Programming instructions"), this function allows you to start a delay. This allows you to move away from the PIR901's activation area before it detects movement. The delay is 10 seconds.

Before sending an alarm after detecting movement, ByPass will count down from 10 in the display.

Similarly, after sending an alarm, ByPass will count down from 10 in the display before the detector is reactivated.

Pressing either  or  will interrupt/cancel the countdown.

Note: The operation is the same in both bed and door guards.

Delay

You can set the delay time in the programming menu.




If the delay is set between d1 and d9, the PIR901 cannot send another alarm until after the set number of minutes of silence in front of the detector, i.e. if there is activity in front of the product, the delay is reset and starts over.

When the delay time has expired, normal detection resumes.

If the delay is set to d0, the delay is turned off.



Programming instructions





Hold down  and simultaneously  for 5 seconds;  will flash during this time.

Note: The product must be switched on!


Release the buttons when the display shows the ByPass setting:

ByPass function:




-   ByPass is switched on.
- or
-   ByPass is turned off.


Briefly press the  button to change the setting.

Briefly press  to go to the next setting.

Heart rate (motion detector) counter:







Briefly press '  ' to change the number of pulses (detections) required to trigger the alarm, which can be selected between 1 and 4 pulses/detections. The default is 2.

Press  briefly to go to the next setting.

LED/display:



-   The LED and display are lit.
- or
-   The LED and display are off.

Briefly press the  button to change the setting.

Briefly press the  button to go to the next setting.





Continued on next page...





Tilt alarm:

The tilt alarm is switched on.



-   Tilt alarm is on.
- or
-   Tilt alarm is off.

Briefly press  to change the setting.

Briefly press  to go to the next setting.

Firmware version:

xml-ph-0000@deepl.internal





Displays the product's firmware version.

Shortly afterwards, the second half will appear.



In this case, the firmware version is 1.0.0.

Briefly press  or , alternatively, wait a moment to complete the programming.

Note: If no selection is made within 15 seconds, programming will be exited and any changes will not be saved.



Battery alarm

It is recommended that the battery be checked regularly for leaks.

When the batteries need to be replaced ● (🔔) will flash every minute, accompanied by a short audible signal.

If a receiver with a display is used, "Low battery" will be displayed when an alarm is received from this product.

Battery replacement

- Remove the battery cover on the back of the product using a suitable screwdriver.
- Insert 2 new **Alkaline LR-6 (AA)** batteries.
- Remember to insert them correctly. See the markings on the bottom of the battery compartment.
- Check that the product is working correctly.



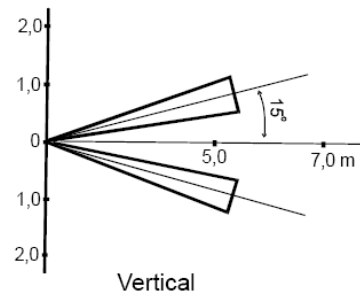
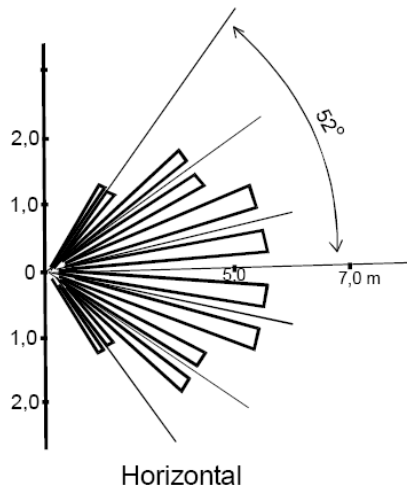
If faulty batteries are inserted, the product will flash the indicators ● (🔔) and emit a beep sound that repeats 10 times.

If the batteries are running low, the indicators will continue to flash as long as there is enough power for the functions. New batteries should be inserted as soon as possible.



Activation range

The PIR901's infrared activation range is $\pm 52^\circ$ in the horizontal plane and $\pm 15^\circ$ in the vertical plane. Straight ahead, 5-10 metres, decreasing at the periphery.





Fault indicators

-  indicator flashes occasionally?

When this is displayed, the batteries need to be replaced.

- No response when pressing either  or  ?

No power - replace the batteries. If this does not help, send the product in for repair.

- If the product flashes and/or beeps when batteries are inserted, this indicates that the batteries are faulty and partially depleted. Therefore, use new batteries.



Typical fault possibilities

- No function. Check that the transmitter and receiver are switched on (PIR901 and receiver, e.g. RX901B).
- The receiver may be outside the coverage area.
- The product does not sound an alarm; check the programming to see if the delay is set to 0.
- The product has been knocked over but no alarm was triggered. Check that the tilt function is switched on and that the receiver is programmed to receive this warning.
- PIR901 detects movement too quickly or too slowly. Check the "Pulse" programming.
- The product is not working, replace the batteries and check again.

For optimal detection, the following checks can be performed:

| Checklist: | Every week | Every month | Not in use |
|---|-------------------|--------------------|-------------------|
| Check that the product is positioned correctly. | X | | |
| Check that any cable on the relay output has not been damaged by a bed rail or other object. | X | | |
| Evaluate the PIR901 together with the receiver. | X | | |
| Keep an eye on low battery levels on the product or receiver. | | X | |
| Try different parts of the coverage area. | | X | |
| Check the programming on the PIR901. | | X | |
| Check that the detection lamp flashes when you walk past. | X | | |
| Inspect and clean the devices with a soft, slightly damp cloth. | | X | |
| Ensure that new employees are thoroughly familiarised with the appliances. | X | | |
| Ensure that the appliances are switched on. | X | | |
| Always remove batteries when the devices are not in use and will be stored for a long period of time. | | | X |



Maintenance

It is possible to update the software in PIR901 via KNOPtool. For a more detailed description, please refer to KNOPtool.

Cleaning

The product can be cleaned with a damp cloth or alcohol wipe.


Checking the coverage area

- Start by looking at the examples of coverage areas on page 7.
- One person activates signals at short intervals, while another person with a receiver registers whether the signals are received correctly and according to the desired settings.
- When using the system in multiple rooms, it is recommended that a floor plan be drawn up indicating the location of the transmitter in each room.

The coverage area can be increased by using KNOP's repeater system MR902/RP902. Please contact your dealer for further information.

Resetting the product

The PIR901 can be reset to factory settings:

- Remove the batteries for at least 30 seconds.
- Then hold down the  button while inserting the batteries. Please note that new batteries must be used.
- The product will beep every second.
- Do not release the button until the indicator has emitted a beep-beep sound after approx. 10 seconds.

The PIR901 is now back to factory settings.

Spare parts and accessories

Spare parts and accessories can be ordered on our website www.knop.dk

Item no.: **Product:**

MK202 Cable, RJ45 6.3 mm mono angled, 3 metres.



Technical

| | |
|---|---|
| RF frequency: | 869.2125 MHz |
| Range | Up to 1500m in clear line of sight to an RX901B (1) |
| Battery type: | 2 x 1.5V LR6/AA/E91 type ProAlkaline |
| Operating voltage: | 3V |
| Operating time (expected): | 12 months at 5 transmissions per day. |
| Expected service life | 5 years |
| Power consumption standby (OFF): | <40µA |
| Power consumption inactive (PIR): | <120µA |
| Power consumption inactive (Door guard): | <60µA |
| Power consumption active: | <40mA average per transmission |
| Environment (surroundings): | Indoor use. ≤ 90% non-condensing. Do <i>not</i> use in oxygen-enriched areas or in conjunction with flammable materials. |
| Ambient temperature: | 0 °C to +40 °C |
| Cabinet type: | White ABS |
| Cabinet dimensions: | W: 65 mm, H: 128 mm, D: 22 mm. |
| Density PIR901: | IP20 |
| Connections: | 8-pin modular plug (RJ45), potential-free relay output |
| Weight incl. batteries: | 145g |

Subject to change without notice















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(1) Measured outdoors with clear line of sight between transmitter and receiver. In buildings, the range is reduced.



Symbol explanation and approvals

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|------------------------|-----|-------------------------|-------|----------------------|------|----------------------|------|----------------------|-----------------------|----------------|-------------------------------------|---------------------|-------------------------------|---------------------|-------------------------------|------------------------|------------------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|-------------------------------|---|---------------------------|-----------------------------|-----------------|-------------------|---------------|----------------------|
|  | <p>This product complies with the following electrical safety and EMC directives:</p> <table border="0"> <tr> <td>Regulation 2017/745/EU</td> <td>MDR</td> </tr> <tr> <td>Regulation 1907/2006/EU</td> <td>REACH</td> </tr> <tr> <td>Directive 2011/65/EU</td> <td>RoHS</td> </tr> <tr> <td>Directive 2012/19/EU</td> <td>WEEE</td> </tr> <tr> <td>Directive 2014/35/EU</td> <td>Low Voltage Directive</td> </tr> <tr> <td>ISO 14971:2019</td> <td>Risk Management for Medical Devices</td> </tr> <tr> <td>EN 301 498-1 V2.2.3</td> <td>Electromagnetic Compatibility</td> </tr> <tr> <td>EN 301 489-3 V3.1.1</td> <td>Electromagnetic Compatibility</td> </tr> <tr> <td>EN 50130-4:2011 + 2014</td> <td>Immunity alarm systems</td> </tr> <tr> <td>EN 300 220-1 V3.1.1</td> <td>Short Range Devices</td> </tr> <tr> <td>EN 300 220-2 V3.1.1</td> <td>Short Range Devices</td> </tr> <tr> <td>EN 300 220-3 V2.1.1</td> <td>Short Range Devices</td> </tr> <tr> <td>EN 60601-1-2:2014 + 1-11:2015</td> <td>Electromagnetic compatibility (Medical)</td> </tr> <tr> <td>EN 62133-2:2017 + A1:2021</td> <td>Battery safety requirements</td> </tr> <tr> <td>EN 62368-1:2020</td> <td>Electrical safety</td> </tr> <tr> <td>EN 63000:2018</td> <td>Hazardous substances</td> </tr> </table> | Regulation 2017/745/EU | MDR | Regulation 1907/2006/EU | REACH | Directive 2011/65/EU | RoHS | Directive 2012/19/EU | WEEE | Directive 2014/35/EU | Low Voltage Directive | ISO 14971:2019 | Risk Management for Medical Devices | EN 301 498-1 V2.2.3 | Electromagnetic Compatibility | EN 301 489-3 V3.1.1 | Electromagnetic Compatibility | EN 50130-4:2011 + 2014 | Immunity alarm systems | EN 300 220-1 V3.1.1 | Short Range Devices | EN 300 220-2 V3.1.1 | Short Range Devices | EN 300 220-3 V2.1.1 | Short Range Devices | EN 60601-1-2:2014 + 1-11:2015 | Electromagnetic compatibility (Medical) | EN 62133-2:2017 + A1:2021 | Battery safety requirements | EN 62368-1:2020 | Electrical safety | EN 63000:2018 | Hazardous substances |
| Regulation 2017/745/EU | MDR | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Regulation 1907/2006/EU | REACH | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Directive 2011/65/EU | RoHS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Directive 2012/19/EU | WEEE | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Directive 2014/35/EU | Low Voltage Directive | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ISO 14971:2019 | Risk Management for Medical Devices | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EN 301 498-1 V2.2.3 | Electromagnetic Compatibility | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EN 301 489-3 V3.1.1 | Electromagnetic Compatibility | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EN 50130-4:2011 + 2014 | Immunity alarm systems | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EN 300 220-1 V3.1.1 | Short Range Devices | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EN 300 220-2 V3.1.1 | Short Range Devices | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EN 300 220-3 V2.1.1 | Short Range Devices | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EN 60601-1-2:2014 + 1-11:2015 | Electromagnetic compatibility (Medical) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EN 62133-2:2017 + A1:2021 | Battery safety requirements | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EN 62368-1:2020 | Electrical safety | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EN 63000:2018 | Hazardous substances | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | <p>Do not use the product if the packaging is damaged.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | <p>Medical Device Class 1, rule 1</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | <p>Manufacturer KNOP Elektronik A/S, Fabriksvej 20, DK-7600 Struer</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | <p>Read the manual(s) before installation and use. Find the manual here: https://www.knop.dk</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | <p>Interference may occur in the vicinity of equipment marked with this symbol.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | <p>Must be protected from liquids.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | <p>0°C to +40°C, temperature limit for transport/storage and use.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | <p>The product must not be disposed of with normal household waste.</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | <p>Single Registration Number DK-MF-000025631</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | <p>Unique Device Identifier 05744002850526</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | <p>Product reference PIR901 Motion Alarm</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | <p>Serial Located on the product</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|  | <p>Ingress Protection code IP20</p> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |