User manual

TX901

© KNOP Elektronik A/S
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Table of contents

Warnings and safety instructions

- The battery in this product must compile with the relevant IEC safety standards for batteries.
- Please read the intended use before use.
- Do not consume or eat the battery, there is a risk of chemical burns.
- Keep new and used batteries away from children.
- If the battery compartment cannot be closed properly, discard the product, and keep it away from children.
- The product is not water-resistant unless noted in product specification.

Contraindications

In general, the product cannot be used if:

- The disabled client/patient is mentally ill.
- The disabled client/patient is critically ill.
- The client/patient is unable to use the transmitters.

Lifetime after mounting of the device

The battery, if applies, must be replaced when the battery replacement information appears on the display and according to the user manual.

Lifetime is evaluated in relation to the pressure button. This is made according to the supplier's specification.

Lifetime battery (products using battery, only)

KNOP calculates the life of the batteries. See specification in the user manual.

Intended use

In general, the different variants of the medical device (transmitters/receiver system from KNOP Elektronik) are made as assistive aid for impaired/disabled patients to be able to call for assistance.

The various variants of the medical equipment consist of a combination of products (transmitter and receiver) designed to call for help to impaired/disabled patients; The transmitter-receiver system can be activated in different ways:

- For example, patients who actively do this and are aware that they are calling for help, such as e.g., people with walking difficulties who need help going to the toilet.
- Or disabled patients who are not aware that they are inadvertently putting pressure on the sendere.g. during a seizure.

- Or patients with intellectual and cognitive deficits who are not aware that a receiver is receiving a signal from their transmitter when they leave a house or room.

The system is not designed for critically or mentally ill persons.

General product description

The products manufactured by KNOP elektronik consist of several variants 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 intended to call for assistance and are used for disabled/mobile people, such as those with walking difficulties who need help going to the toilet. The transmitters are activated, for example, by a sound or by pressure (e.g. by pressure with a finger or a breath through the mouth). The recipient is supervised by health care personnel or lay people in private homes.

The system is not designed for critically or mentally ill people.

Part of product	**Function in the product system**
Transmitter	The transmitter can send the signal obtained from the patient to the receiver monitored by the healthcare personnel or lay person. The transmitter products can be activated by button, sound, blow or movements.
Receiver	The transmitters can be coded into all the receivers and to several receivers at the same time. Some receivers also have a summon button for calling assistance from their coworkers.
Repeatersystem	If it is needed to cover a more comprehensive and larger area a repeater system is used. The repeater system also gives an increased functionality as e.g. that an alarm automatically is received at first at the healthcare person closest to the client.
Positionsystem	If a sender is equipped with a position receiver it can be used in connection with a Position system. Not all product variants include position receivers. Typically, it is seen in connection with nursing homes and security for patients with dementia. The receivers can be portable or stationary.

Product description

TX901 is a transmitter designed to send calls to receivers where the transmitter is encoded.

The transmission is done by pressing a button on the transmitter or by activating an input as described under "External connection".

The product has four buttons that can be displayed as individual calls on RX901 (requires software version 3.1 or later). External inputs can be used, for example, with treadmills or push buttons.

TX901 has a built-in magnetic contact, so it can be used as a door guard or door sensor.

Pay attention to the range as described in the section "Checking the coverage area".

Adapter cables are available as accessories - see www.knop.dk.

When the red button or the pressure plate is activated, the indicator lights green briefly.
When the alarm is received by the receiver, the indicator lights green again briefly, while the indicator lights red if the transmission fails. The product repeats the transmission up to two times at 30 second intervals.

If the LED flashes red every five minutes, the battery needs to be recharged.

It is possible to set the product to send either a panic call or an alarm call with the **KNOP logo** to e.g., staff to indicate "I need help" with a patient or as an assault alarm.

In order to use and set up some of these advanced functions, the KNOPtool and the corresponding USB90X (PC software and USB key) must be used. At the same time, it allows you to update this and other products.

Commissioning

Once the batteries are installed, see the point battery replacement, the product is ready to be used and encoded in the desired receivers.

Some advanced features require the **receivers to be updated to the latest software version**, this update is done with KNOPtool.

Battery alarm

Check the battery regularly, when the batteries need to be replaced it will flash red every five minutes. When the product is activated, a battery alarm is also sent to the receiver's display, where the display may show "Low battery".

Changing the battery

When replacing the battery, the screw on the back of the case is loosened and the top and bottom sides are separated.

2 x 1.5V LR1 batteries are used.

REMEMBER to turn the batteries correctly.

Timer

It is possible to use timers in TX901 that can turn on/off door protection, buttons and/or external input within the same time interval.

If the clock is not set, the timer is switched off.

The timer is set in the KNOPtool.

Set the clock

TX901's clock is automatically set from the receiver with display, USB90X or MR902 (system).

The clock can be set manually:

- Set the clock in a receiver with display (from version 3.4.17).
- Activate TX901 (TX901 must be encoded on RX901) within one hour.

Once the clock is set, the timer and any door protection are set to be active or not active according to the timer setting.

On/Off

It is possible to switch off the product to save power if the product is not used for a long time. However, the function cannot be used when door protection is selected.

OFF: Press and hold the RED button - it flashes green - when it lights up red, the product is turned off.

ON: Press and hold the GREEN button - it flashes red - when it lights up green, the product is on.

Positioning

TX901 has built-in positioning. This requires a system with POS901 from Knop Elektronik. The POS901 sends positioning codes that TX901 can receive.
The positioning system also requires the use of receivers with display.

However, the function must be activated and set via KNOPtool.

External connection

TX901 has both a normal open and a normal closed input.

The jack contact is an input that can be used for e.g. foot pedal switches or push button switches with end function between frame and tip (NO).

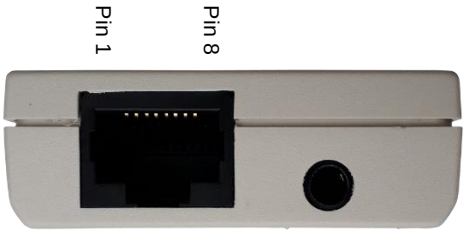
NC is a switching function between normal functions and can be used, for example, for a bed mat to give an alarm when the patient leaves the bed.

The modular RJ45 connector provides external inputs and external power supply.

KNOPtool is required to set up these inputs and their use correctly, see KNOPtool about this. In addition, the receivers need to be updated to the latest software version to achieve full utilisation.

Note that inputs 1 and 2 of the modular connector are the same as NC/NO of the jack connector.

Modular connector
Pin 1: Input 1 (Jack NO)
Pin 2: Input 2 (Jack NC)
Pin 3: Input 3
Pin 4: Input 4
Pin 5: 3V output, **max 20mA**
Pin 6: Input AD 0-10V
Pin 7: External supply 5-14V
Pin 8: GND



TX901 has a standard bed/seat connector function on input 2 of the RJ45 connector or the NC pin of the mini connector. The bed/seat switch from Knop Elektronik fits directly into the connector and the function works undisturbed.

There is an automatic delay of 2 seconds for activation of the alarm.
The delay can be changed in KNOPtool between 0 and 10 seconds.

Also, in KNOPtool the pressure gauge can be switched off so that the input can be used as a normal alarm function.

Note: The cable used must not be longer than 3 meters for the RJ45 and mini-jack connectors.

TX901 as door protection/door sensor:

Mount the TX901 on the sill with Velcro.

Mount the magnet on the door next to TX901 so that the upper edges are flush with each other.

The distance between TX901 and the magnet must not exceed 5 mm.

The magnet can be placed either on the right or left side of the TX901.

Magnet and Velcro are accessories and can be ordered with article number 2301.

Door sensor:

By default, an alarm is sent when the door is opened, but it is possible to change this in KNOPtool to open or/and closed.

In the door sensor it is still possible to use the buttons on the TX901 for alarms.

Door protection:

The door protection works slightly differently than the door sensor. The four buttons 1-4 now control the door protection.

NOTE: It is not possible to use the OFF/OFF function.

GREEN	Turn off the door protection regardless of the timer setting.
RED	Turn on the door protection regardless of the timer setting.
YELLOW	10 seconds delay in case of alarm (flashing green) or alarm off (flashing red).
BLUE	Turn off or on according to the timer setting. The LED indicates whether the door protection is on (red) or off (green).

There are two options for placing the door protection, either on the outside or on the inside of the door.

Settings of the door protection can be made in KNOPtool, including the possibility to use external 1 input instead of the internal switch. It is also possible to disable individual buttons in KNOPtool if the function is not desired.

Activation of internal or external can be done locally by removing the batteries for at least 30 seconds.

- Then press and hold either button 2 (red) for external placement or button 3 (yellow) for internal placement while inserting the batteries.
- The indicator flashes red.
- Do not release the button until the indicator flashes green after about 10 seconds.

If the door protection is to be deleted, this is done with KNOPtool or via the factory settings (all settings are deleted).

Typical use pattern for outdoor placement.

- Press the yellow button before the door opens. The LED will now flash green rapidly.
- Go inside and close the door - within 10 seconds.
- When you want to leave, open the door, walk out and close it behind you.
- Note that the LED is now flashing red.
- Press the yellow button - within 10 seconds to cancel an upcoming alarm.

Maintenance

Update of TX901
It is possible to update the software of TX901. For further instructions please check the KNOPtool.

Check the coverage area

One person activates the product at short intervals, while another person systematically walks around the area and marks on a sketch the building and the area where there is coverage. The map is placed in the office so that anyone who needs to use the system can see where there is coverage. Outside the coverage area, alarms cannot be received.

Coverage can be increased by using KNOP's MR902/RP902 repeater system.

Contact your retailer for more information.

Reset of the product

TX901 can be reset to factory settings.

- Remove the batteries for at least 30 seconds.
- Then press and hold button 4 while inserting the batteries.
- The indicator flashes red
- Do not release button 4 until the indicator flashes green after about 10 seconds.

TX901 has returned to factory settings.

Spare parts and accessories

Spare parts and accessories can be ordered from Knop Elektronik A/S at www.knop.dk.

Technical data

Frequency HF:	869.2125 MHz
Range:	Up to 1500 m between TX901 and RX901B [(1)]
Battery:	2 x 1.5V LR1/N Alkaline (Minimum 800mA)
Battery time:	Approximately 15 months with 5 alarms per day depending on settings.
Low battery indicator:	Approximately 1/3 of the remaining capacity.
External power supply:	5-14V (USB)
Power consumption, off:	< 50uA
Power consumption, sleep mode:	< 1mA
Power consumption, transmission:	< 100mA
Surrounding environment:	Indoor use. ≤ 90% non-condensing
Ambient temperature:	0°C to +40°C
Cabinet type:	Colour RAL9002 ABS
Cabinet dimensions:	W: 46mm, H: 85mm, D: 16mm.
Density:	IP20
Weight:	54g

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[(1)] Measured outdoors with unobstructed view between transmitter and receiver. In buildings the range is reduced.

Explanation of symbols and approvals

CE	**This product complies with:** Directive 2017/745/EU MDR Directive 1907/2006/EU REACH Directive 2011/65/EU RoHS Directive 2012/19/EU WEEE ISO 14971:2019 Risk Management for Medical devices EN 301 498-1 V2.2.3 Electro Magnetic Compatibility EN 301 489-3 V3.1.1 Electro Magnetic 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 + 2015 Electromagnetic compatibility (Medical) EN 62368-1:2020 Electrical safety EN 50581:2012 Hazardous substances
	The product must not be used if the packaging is damaged.
MD	**Medical Device** Class 1, rule 1
	**Manufacturer** KNOP Elektronik A/S, Fabriksvej 20, DK-7600 Struer, Denmark
	Read the manual(s) before installation and commissioning at www.knop.dk.
	Interference may occur in an environment with equipment marked with this symbol.
	Must be protected against liquids.
	0 °C to +40 °C, temperature limit for transport/storage and use.
	The product must not be disposed of with normal household waste.
SRN	**Single Registration Number** DK-MF-000025631
UDI	**Unique Device Identifier** 05744002850434
REF	**Product reference** TX901 Transmitter
SN	**Serial Number** Placed on the product
IP	**Ingress Protection code** IP20