KNOP

User manual
RX901C

Table of contents

Warnings and safety instructions

⚠

- The battery in this product complies with the relevant IEC safety standards for batteries.

- Do not consume or eat the battery, 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.

- Read the intended use before use.

- Batteries should be checked regularly.

- 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.

© KNOP Elektronik A/S

- 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

RX901C is a receiver in the KNOP 901 series.

250 transmitters can be encoded and assigned an optional name.

The last 50 calls are stored in a list where you can see the time of the call, where the call came from, and whether it has been acknowledged.

With RX901C it is possible to divide the residents of a care centre into groups, e.g. in connection with shift schedules, where the night shift has to serve more residents than the day shift.

RX901C is equipped with a position reader, so it can be used in KNOP's positioning system.

With RX901C it is possible to make an emergency call to another colleague with a single touch.

RX901C has several outputs that can be connected to external equipment, such as another pager, a phone transmitter with a call to the mobile phone, or a bed vibrator that can be placed under the pillow when you go to bed.

The controls are menu-driven with a graphical LCD screen and a click pad.
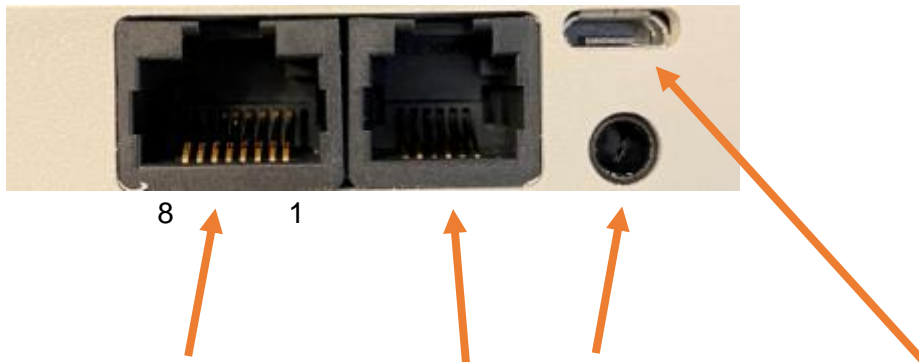
RX901C is powered by either 2 alkaline 1.5V batteries or a 5V Micro USB power adapter.

Cables, power adapters, and other external equipment are not included.

Connections

There are four connections in the product.

1. External relay outputs and external power supply

2. Not used.

3. External vibrator.

4. Charging connector, Micro-USB.

External output/power supply. Not used External vibrator. Micro-USB charger.

1. Minus

2.

3. 8-15V @ 100mA

4. Relay output 4 (NO)

5. Relay output 3 (NO)

6. Relay output 2 (NO)

7. Relay output 1 (NO)

8. Relay common (COM)

Commissioning

Before usage, 2 AA batteries must be inserted into the battery holder.

Remove the battery cover and insert the batteries as shown.

Batteries in the set:

When the product is switched on for the first time, the desired language must be selected.

If the product is switched off, press `Ent` briefly and the product switches on.

Press ⬆️⬇️ to move the green arrow to the desired language.
Press `Ent` to select a language.

NOTE: After the product has been switched on, when it has been switched off, it may display "Low battery" briefly until it has measured the battery.

Start screen

Pressing one of the keys turns on the display and shows the time and date.

The user's name, if encoded, is displayed at the top.

Home screen options:

  The name of e.g. a product or a location can be changed to the desired name.

The current time and date are displayed in white text.

  The clock must be set.

Battery status:

  Battery OK.
It is recommended that the battery is replaced.
The battery is running low and needs to be replaced.

Alarm sound:

  The alarm sound is switched on.
The alarm sound is switched off.

Vibrator:

  The vibrator is activated.
The vibrator is switched off.

Press to see the call list.

Reception of alarms

When the receiver receives an alarm from a coded transmitter, the name, type, and time of the reception and any position are displayed.

Sven	Client's name
Room 10	Optional text if encoded.
TX901	Type of transmitter.
Door	Positioning for the alarm.
1. Green	Button/function type.
Output: 1	Relay output 1

The individual texts are only displayed if they are encoded or known.

Press Ent to confirm the alarm.
Press Esc to reject.

If the alarm call is unanswered, short sounds are heard approximately every five minutes, as notification if not muted.

When a message is received from a transmitter, e.g. with a low battery, the message below is displayed.
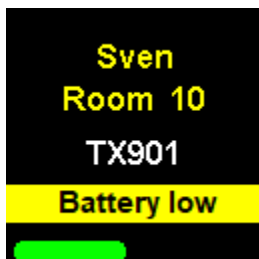
Press Ent to confirm the alarms.

NOTE: "**Last call**" displays a low battery message for the transmitter where the battery needs to be replaced.

Emergency call

It is possible to send an emergency call (or alarm) from the recipient to e.g. other users to indicate "I need help" at a client or as an assault alarm.

The emergency call is activated by pressing the KNOP logo.

However, this requires the receiver to be encoded in other receivers.

Transmitting	Accepted	Failed

Batteryalarm

The receiver indicates the battery status on the display and in case of discharged battery with sound indications.

Battery status:

Battery OK.
Replacing the batteries is recommended.
The battery is next used up and needs to be replaced.

If the symbol changes to red, immediately insert the device into the charger.
At the same time, a few short beeps will be heard about every five minutes, indicating low battery, and the screen below will appear:

Clients and transmitters

Before you can encode a transmitter in the receiver, you must create a client to which the transmitter belongs.

A client can be a person, a room, or something else. For example, the client can be **Sven** (used as an example).

Our examples our client is called **Sven** can have one or more transmitters associated with him.

For example, **Sven** (our client) has a wristband transmitter, a bed alarm, a motion sensor, and other products.

When **Sven** activates an alarm from his products, the display shows that the alarm comes from **Sven** and which product is the sender, so that the cause of the alarm is known from the beginning.

This of course assumes that names etc. are encoded in the desired way.

Clients created under Settings / Client / New client:

Add under Setting / Client / Client (Sven) / Add TX unit:

Main menu

If you press ⬇ and ⬆ at the same time, either when the screen is off or on the home screen, the main menu opens.

The green arrow on the left shows which line in the menu can be selected.

```
Main menu
➤Call list
 Hibernate
 Select Group
 Vibrator: On
 Sound: Low
```
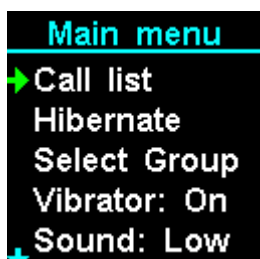
Press ⬆ to move the green arrow either up or to the right in the menu.

Press ⬇ to move the green arrow either down or left in the menu.

Press `Esc` to leave the menu.

Press `Ent` to select the menu item with the green arrow next to it.

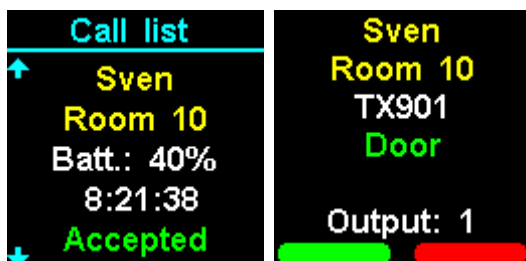*NOTE:* After about 60 seconds of inactivity, the menu closes automatically.

Latest alarms:

```
Main menu          Call list
➤Call list         ➤Sven
 Hibernate          Sven
 Select Group       Sven
 Vibrator: On       Delete all
 Sound: Low
```

⬇ ⬆ Scroll between alarms.

GREEN Means that the alarm was accepted.
RED   Means that the alarm was rejected.
YELLOW Means the alarm went unanswered.

See more information about the alarms:

```
Call list          Sven
 Sven              Room 10
 Room 10           TX901
 Batt.: 40%        Door
 8:21:38
 Accepted          Output: 1
```

`Ent` See the client's position and which transmitter the alarm is coming from.

⬇ ⬆ Scroll through multiple alarms.

```
Call list
 Sven
 Room 10
 Batt.: 40%
 8:21:38
 Accepted
```
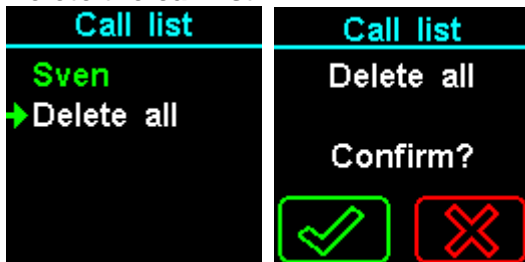
When an alarm is received from a transmitter that has, for example, a low battery, the message is displayed.

⬇ ⬆ to scroll through other alarm calls.

Delete the call list:

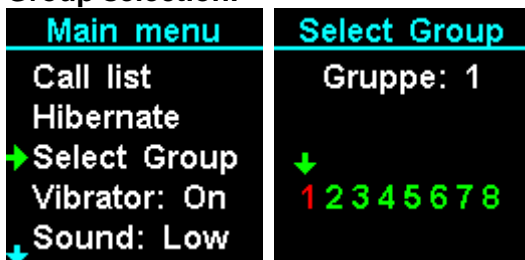| Call list	Call list
Sven	Delete all
➜Delete all	Confirm?

Press **Ent** to confirm.

Suspend/Hibernate receiver:

Main menu	Hibernate
Call list	
➜Hibernate	
Select Group	Confirm?
Vibrator: On	
Sound: Low	

Ent Confirm or **Esc** to reject.

The receiver is switched on by pressing **Ent**.

Group selection:

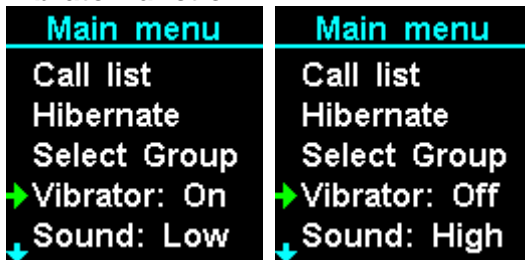| Main menu	Select Group
Call list	Gruppe: 1
Hibernate	
➜Select Group	↓
Vibrator: On	1 2 3 4 5 6 7 8
Sound: Low	

Ent Select or deselect a group.
Esc Return to menu.
⇩ ⇧ Moves arrow to the group you want to change.
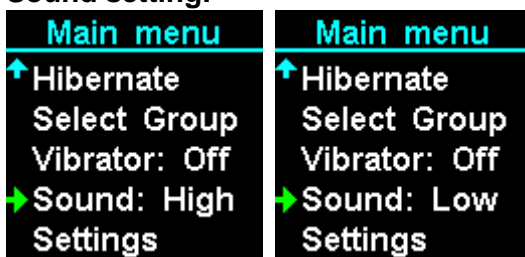
1 Group selected
1 Group deselected

Vibrator function:

Main menu	Main menu
Call list	Call list
Hibernate	Hibernate
Select Group	Select Group
➜Vibrator: On	➜Vibrator: Off
Sound: Low	Sound: High

Ent Activate or deactivate the vibrator function.
Esc Return to menu.

Sound setting:

Main menu	Main menu
↑Hibernate	↑Hibernate
Select Group	Select Group
Vibrator: Off	Vibrator: Off
➜Sound: High	➜Sound: Low
Settings	Settings

Ent Choose between **High**, **Low** or **Off** sound when receiving alarm calls.

© KNOP Elektronik A/S

Settings and encoding:

Main menu	Settings	Settings	Settings
↑Hibernate	Ver: 3.8.1	↑Set clock	↑Passcode
Select Group	ID: 123456	Click: Low	Outgoing
Vibrator: Off	→Clients	Product name	Positions
Sound: High	Edit group	→Passcode	Language
→Settings	↓Set clock	↓Outgoing	→Turn off

Ver: 3.3.14	The software version of the product.
ID: 58651	Serial number of the product.

Add new client:

Settings	Clients
Ver: 3.8.1	→Add client
ID: 123456	Sven
→Clients	All TX's.
Edit group	
Set clock	

Select **Add client** or select client and press Ent.

It will ask for the client's name and optional text.
Remember to add TX devices.

Change client:

Settings	Clients	Sven
Ver: 3.8.1	Add client	Room 10
ID: 123456	→Sven	→TX901
→Clients	All TX's.	Add TX unit
Edit group		Select group
Set clock		Client name

Sven
Room 10
→TX901

Client name.
Optional text, e.g., name of room.
Product already encoded on the client.

Add transmitters:

Sven	Add TX device
Room 10	Activate new
TX901	TX device...
→Add TX unit	
Select group	
Client name	✗
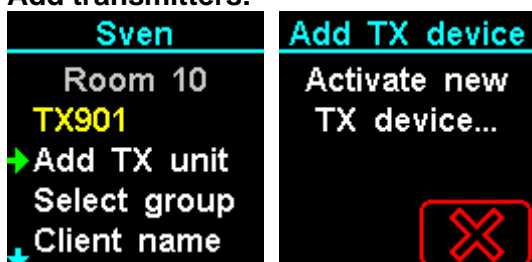
Now activate the desired transmitter.

Add TX device
ID: 35000
TX901
Add?
✓ ✗

Accept new transmitter.
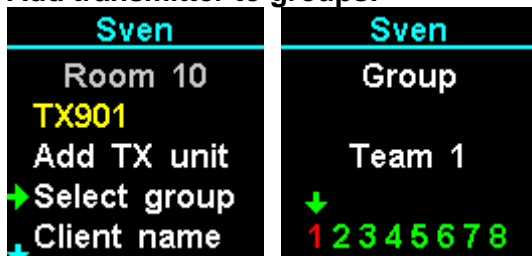
Add TX device
Transfer:
Allan
Confirm?
✓ ✗
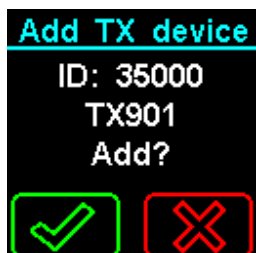
If the transmitter is already encoded, the menu below appears, allowing you to move a transmitter between clients.

Add transmitter to groups:
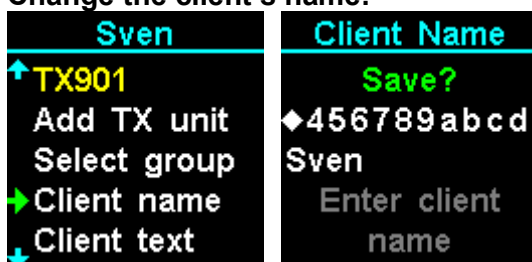
Sven	Sven
Room 10	Group
TX901	
Add TX unit	Team 1
→Select group	↓
Client name	1 2 3 4 5 6 7 8

Ent Select or deselect a group.
Esc Return to menu.
⬇ ⬆ Moves arrow to the group you want to change.

1 Group selected
1 Group deselected

Change the client's name:

Sven	Client Name
↑TX901	Save?
Add TX unit	◆456789abcd
Select group	Sven
→Client name	Enter client
Client text	name

⬇ ⬆ Choose letter.
Ent Select letter.
Esc Delete last letter.
To save the text select symbol ◆ and press **Ent**.

Add/change client optional text:

Sven	Sven
↑Add TX unit	Save?
Select group	◆456789abcd
Client name	Room 10
→Client text	Enter client
Delete	optional text

⬇ ⬆ Choose letter.
Ent Select letter.
Esc Delete last letter.
To save the text select symbol ◆ and press **Ent**.

© KNOP Elektronik A/S

Delete client:

Sven	Sven
↑Add TX unit	Delete:
Select group	Sven
Client name	Confirm?
Client text	
➜Delete	✓ ✗
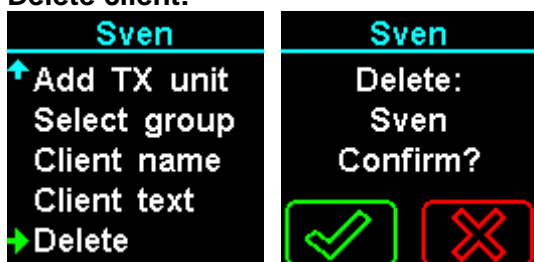
Ent Confirm delete.
Esc Return to menu.

Change encoded transmitter:

Settings	Clients	Sven	Sven	Sven
Ver: 3.8.0	Add client	Room 10	↑Optional text	↑Call texts
ID: 48	➜Sven	➜TX901	Alarm signal	Output
➜Clients	Allan	Add TX unit	Call texts	Call: Normal
Group	All Tx's.	Select group	➜Output	Timer setup
↓Set clock		↓Client name	↓Call: Normal	➜Delete

TX901
ID: 60372
Ver.: 1.0
Batt.: 40%
Signal 1
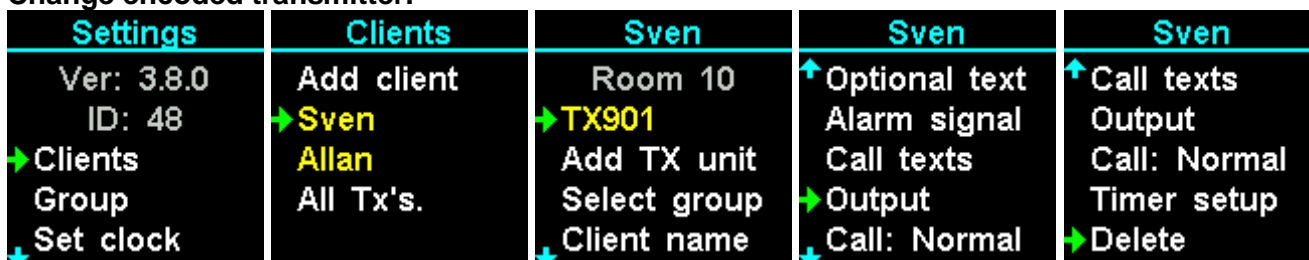
Product name of the transmitter.
Transmitter ID.
The software version of the transmitter.
Battery level in the transmitter (if applies).
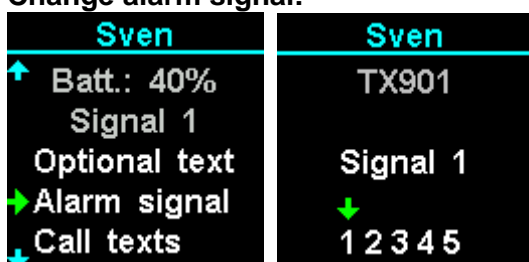Selected audio signal when alarm is received.

Change name of the transmitter:
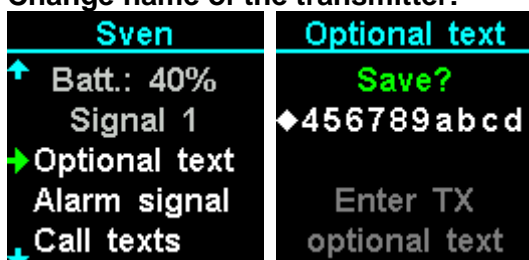
Sven	Optional text
↑Batt.: 40%	Save?
Signal 1	◆456789abcd
➜Optional text	
Alarm signal	Enter TX
↓Call texts	optional text

⬇ ⬆ Choose letter.
Ent Select letter.
Esc Delete last letter.
To save the text select symbol ◆ and press **Ent**.

Change alarm signal:

Sven	Sven
↑Batt.: 40%	TX901
Signal 1	
Optional text	Signal 1
➜Alarm signal	↓
↓Call texts	1 2 3 4 5

⬇ ⬆ Scroll between audio signals.
Ent Select audio signal.

Change call text:

Sven	Edit text	1. Green
↑ Signal 1	➜1. Green	Alarm button
Optional text	2. Red	➜1. Green
Alarm signal	3. Yellow	2. Red
➜Call texts	4. Blue	3. Yellow
↓Output	↓KNOP button	↓4. Blue

This is a TX901 example.
It is possible to change the shown text for a button etc.
In KNOPtool used defined texts can be made.

© **KNOP** **Elektronik A/S**

Reset call text:

Sven	Edit text	Call texts
↑ Signal 1	↑ Extern 2	Reset texts
Optional text	Extern 3	
Alarm signal	Extern 4	Confirm?
→ Call texts	Low battery	
↓ Output	→ Reset texts	✓ ✗

Restore call texts to factory setup.

Relay outputs setting:

Sven	Output	1. Green
↑ Optional text	→ 1. Green	No output
Alarm signal	2. Red	→ Output: 1
Call texts	3. Yellow	Output: 2
→ Output	4. Blue	Output: 3
↓ Call: Normal	↓ KNOP button	Output: 4

Here is a TX901 example.

By default, all alarms and **Low battery** go to output 1.

The different alarm types or **Low battery** from the transmitter can be selected individually.

Accepted alarm types:

Sven	Sven
↑Alarm signal	↑Alarm signal
Call texts	Call texts
Output	Output
→Call: Normal	→Call: All
↓Timer setup	↓Timer setup

Ent Toggle between **Normal** and **All**.

All accepts both types of alarms Normal and Emergency calls.

Transmitter activation timer:

Sven	Sven
↑Call texts	→Timer: Off
Output	Start 1 00:00
Call: All	Stop 1 00:00
→Timer setup	Start 2 00:00
Delete	Stop 2 00:00

Ent Toggle between **On** and **Off**.
⇩ ⇧ Change hour/minutes.
Ent Change selection.

Remove unit from client:

Sven	Sven
↑Call texts	Delete:
Output	TX901
Call: All	Confirm?
Timer setup	
→Delete	✓ ✗

Ent Delete confirm.
Esc Return to menu.

Group settings:

Settings	Setup group
Ver: 3.8.1	Group: 1
ID: 123456	
Clients	↓
➜Edit group	1 2 3 4 5 6 7 8
↓Set clock	

⬇ ⬆ Move between groups.
Ent Select group.

Group activation timer on/off:

Group: 1	Group: 1
➜Timer: Off	➜Timer: On
Group name	Group name
Timer setup	Timer setup

Ent Toggle between **On** and **Off**.
Esc Return to menu.

Don't forget to set the time in "Settings - Set clock".

Change group name:

Group: 1	Group: 1
Timer: On	Save?
➜Group name	◆456789abcd
Timer setup	Gruppe: 1
	Enter
	group name

⬇ ⬆ Choose letter.
Ent Select letter.
Esc Delete last letter.
To save the text select symbol ◆ and press **Ent**.

Change the timer:

Group: 1	Group: 1
Timer: On	Start 07:00
Group name	Stop 15:00
➜Timer setup	

⬇ ⬆ Change hours or minutes.
Ent Select items.
Esc Return to menu.

Set clock:

Settings	Set clock
↑ ID: 123456	2022-10-27
Clients	11:21
Edit group	Automatic
➜Set clock	Year: 2022
↓Click: Low	

⬇ ⬆ Change item.
Ent Scroll between **Year**, **Months**, **Time** and **Date**.

Note: If the receiver receives a clock update from a KNOP product or USB901, the clock is automatically set accordingly.

© **KNOP** Elektronik A/S

Button click sound:

Settings	Settings
↑Clients	↑Clients
Edit group	Edit group
Set clock	Set clock
➜Click: Low	➜Click: High
↓Product name	↓Product name

Ent Toggle between **Low**, **High** and **Off**.
Esc Return to menu

Change the product (user) name:

Settings	Name
↑Edit group	Save?
Set clock	◆456789abcd
Click: High	RX901C|
➜Product name	Enter
↓Passcode	product name

⬇ ⬆ Choose letter.
Ent Select letter.
Esc Delete last letter.
To save the text select symbol ◆ and press **Ent**.

Change passcode:

Settings	Passcode
↑Set clock	
Click: Low	New code
Product name	↓
➜Passcode	Code:123**4**
↓Outgoing	

⬆ ⬇ Select digits (0 to 9).
Esc Delete last digit.

The code must always be 4 digits.

Function of the KNOP button:

Settings	Outgoing
↑Click: Low	➜Call: All
Product name	
Passcode	
➜Outgoing	
↓Positions	

Ent Change function, choose between **All**, **Normal** or **Off**.

Positions:

Settings	Positions
↑Product name	Door
Passcode	➜Show position
Outgoing	Add new
➜Positions	Door
↓Language	

Door
Door

Current position.
Already encoded.

View position:
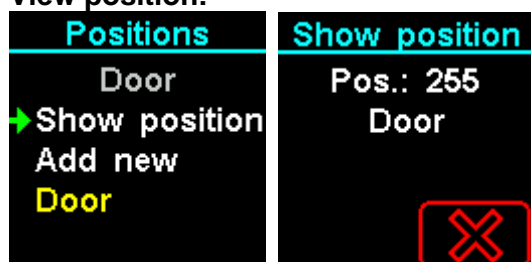
Shows the current position of where you are.

Add position:
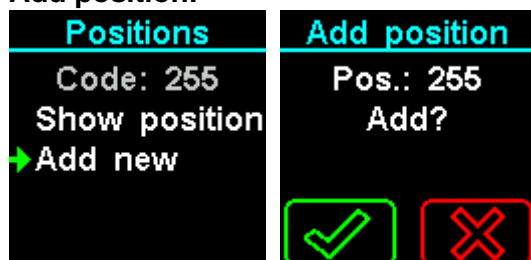
Ent Save new position
Esc Return to menu.

Note that the receiver must be within range of a position field.
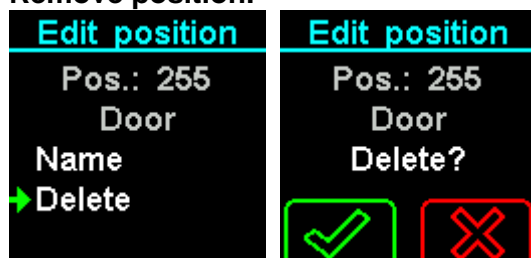
Change position name:
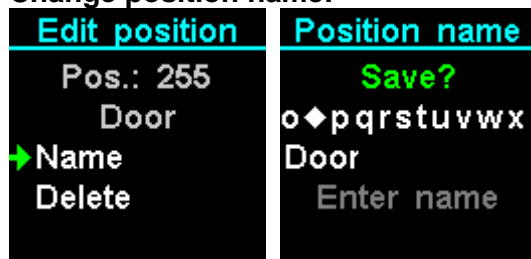
⬇ ⬆ Choose letter.
Ent Select letter.
Esc Delete last letter.
To save the text select symbol ◆ and press **Ent**.

Remove position:

Ent Delete position.
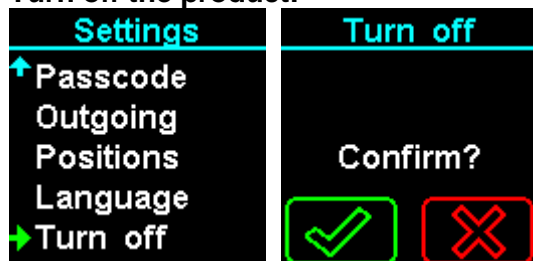**Esc** Return to menu.

Languages:

⬇ ⬆ choose language.
Ent Accept the chosen language.
Esc Return to menu.

Turn off the product:

Settings	Turn off
↑Passcode Outgoing Positions Language ➜Turn off	Confirm? ✓ ✗

Ent Confirm **Turn off**.
Esc Return to menu.

Turn the receiver back on, press **Ent**.

Note: The clock and date are reset.

Maintenance

Update of RX901C
It is possible to update the software of the RX901C, as well as to download and transfer settings with the KNOPtool. For further descriptions, please refer to the KNOPtool manual.

Cleaning

The product can be cleaned with a moist cloth or a wet wipe.

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 2 RX901B [1]
Battery:	2 pcs. AA alkaline batteries
Battery time:	Approximately 180 days with 10 alarms per day (use of vibrator can reduce this).
Charge:	None.
Display:	Graphic LCD.
Menu texts:	3 languages: Danish, Norwegian, and Swedish.
Log function:	Saves the last 50 alarm calls.
Memory:	250 transmitters
	150 position rod POS901
Surrounding environment:	Indoor use. ≤ 90% non-condensing
Ambient temperature:	0°C to +40°C
Type of cabinet:	Colour RAL9001 ABS
Cabinet dimensions:	W: 65mm, H: 120mm, D: 20mm.
Density:	IP20
Weight:	100g

The right to make changes is reserved.

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

© **KNOP** Elektronik A/S

Fabriksvej 20 ● DK-7600 Struer ● knop@knop.dk ● knop.dk ● +45 97840444   25

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
(symbol: do not use if packaging damaged)	The product must not be used if the packaging is damaged.
MD	**Medical Device** Class 1, rule 1
(symbol: manufacturer)	**Manufacturer** KNOP Elektronik A/S, Fabriksvej 20, DK-7600 Struer, Denmark
(symbol: consult instructions)	Read the manual(s) before installation and commissioning at www.knop.dk.
(((•)))	Interference may occur in an environment with equipment marked with this symbol.
(symbol: keep dry)	Must be protected against liquids.
(symbol: temperature limit)	0 °C to +40 °C, temperature limit for transport/storage and use.
(symbol: WEEE)	The product must not be disposed of with normal household waste.
SRN	**Single registration number** DK-MF-000025631
UDI	**Unique Device Identifier** 05744002850489
REF	**Product reference** RX901C, Receiver with relay outputs
SN	**Serial number** Placed on the product
IP	**Ingress Protection Code** IP20