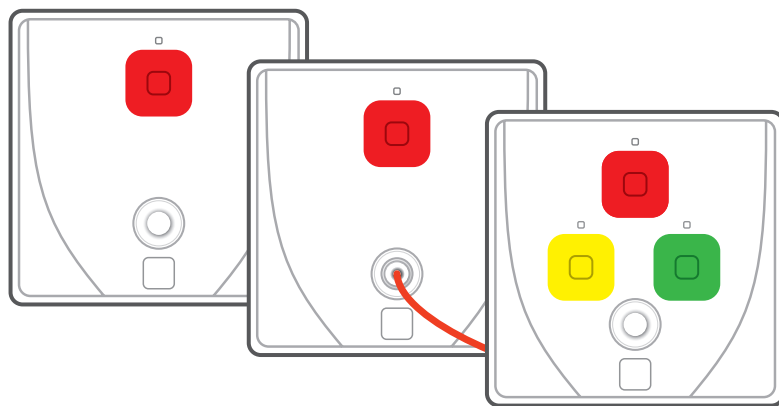




WALL Family Technical Handbook



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1 Introduction

1.1 Intended use

The WALL products are intended for nursing homes and wardens as an I/O operating unit, meaning it receives input either by radio or cable and performs actions, either by sending radio messages or operating an electric relay.

1.2 General

The unit communicates by radio (869.2, 868.7 or 869.4 MHz) and/or by cable with other devices.

In this manual the terms **WALL** or **WALL Family** is used as a common denomination for different variants possible (e.g. PEAR, KEY, PUSH etc.).

The WALL products can be divided into two categories, WIOR Category and ROOM Category. The products in the two categories differ in handling and operation, see "2.2.1 Product variants" on page 6.

1.3 This handbook

Information notes and warnings intended for maintenance personnel and/or users are emphasized in these instructions by the pictogram's defined here.

The Information sign and corresponding text is intended for information which might be useful, but not critical for the reader and/or user.

The Warning triangle sign and corresponding text is intended for critical information to which the user and/or reader should pay special attention.

In the running text certain text is **Highlighted** to emphasize terms etc.

2 Hardware

2.1 General

WALL units can be mounted in an electric coupling box (inset) or on the wall with a wall frame (optional). The unit is designed so that all components and connectors fit into a standard coupling box with cc 60mm between the screws.

The WALL unit is equipped with a radio transceiver as well as cable connectors for physical I/O operation. E.g. a portable transmitter can trig the WALL by radio to activate a relay thus opening a door or a floor mat can be connected to the WALL and when activated the WALL can send an alarm code to personnel.

WALL units are designed to operate in a D-SERVER System.

The WALL unit can be equipped with different types of connectors creating versatile units accommodating different needs. The different hardware configurations results in different product names, see "2.2.1 Product variants" on page 6.

2.2 Front design

The WALL product is versatile product since the cover can be equipped with a variety of connectors, creating a variation of products with specific product names.

2.2.1 Product variants

WALL family products is divided into two categories: WIOR Category and ROOM Category. The difference between the two categories is in the software and programming.

The table below states the category and product names for different hardware variants.

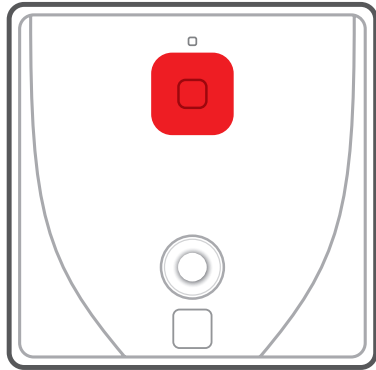
| Product name | LED | Button | Key cylinder | Telejack | Pullcord |
|-------------------------------|-----|--------|--------------|----------|----------|
| WIOR category products | | | | | |
| WIOR | x 1 | | | | |
| PEAR | x 1 | | | x 1 | |
| KEY | x 1 | | x 1 | | |
| PUSH | x 1 | x 1 | | | |
| PUSH+PULL | x 1 | x 1 | | | x 1 |
| PUSH+PEAR | x 1 | x 1 | | x 1 | |
| PULL | x 1 | | | | x 1 |
| 3PUSH | x 3 | x 3 | | | |
| 3PUSH+PEAR | x 3 | x 3 | | x 1 | |
| ROOM category products | | | | | |
| ROOM | x 3 | x 3 | | | |
| ROOM+PEAR | x 3 | x 3 | | x 1 | |

Table 1. Product variant denominations

2.2.2 Difference between WIOR and ROOM category products

In Table 1 the 3Push and 3PUSH+PEAR might seem identical to ROOM and ROOM+PEAR. This is true, but only to the eye. The important difference is in the firmware and how to program the units.

2.2.3 LEDs and connectors



Picture 1. Front cover of a PUSH+PEAR

LED(s)

All variants have at least one LED to indicate function, state etc.

Buttons

The buttons works as pushbuttons.

Key cylinder

A key cylinder allows for a caregiver to “turn on/off” the unit, which can be used to decide what times the unit will be operational.

Telejack connector (6.35 mm)

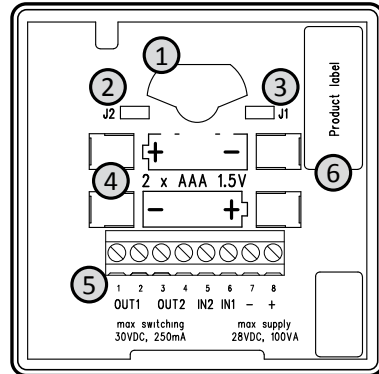
A 6.35 mm telejack creates two ports (Port1 and Port2) for input, e.g. to be used with a pear button.

Pullcord

A pullcord string with a handle for triggering alarms by pulling.

2.3 Backside design

The PCB is identical for all product variants but can be equipped with different connectors depending on the product however in general the PCB looks like below.



Picture 2. The backside of a WALL PCB.

| Number | Denomination |
|--------|--|
| 1 | For 6.35 mm telejack connector/Pull/Key cylinder |
| 2 | Jumper J2 |
| 3 | Jumper J1 |
| 4 | Battery connector x 2 (for AAA) |
| 5 | Screw connector |
| 6 | Data/product label with serial number |

Table 2. PCB connectors denominations

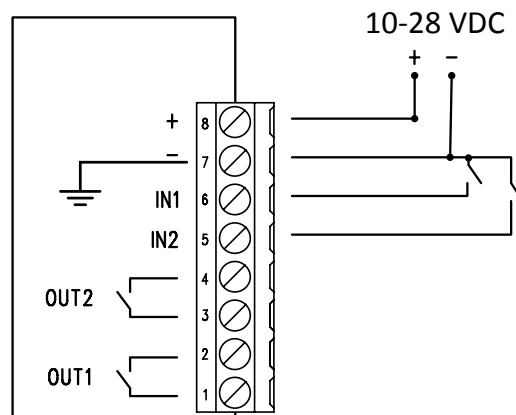


The 6.35 mm telejack connector is not mounted on all product variants.

2.4 The screw connector

The screw connector is for wiring inputs and outputs to the unit.

- Screw head: 3.5 x 0.6 mm (flat blade screw driver)
- Cable dimension: AWG 30-15 (0.05-1.5 mm²)



Picture 3. Schematic layout of the screw connector

| # | Denomination | Meaning |
|---|--------------|-----------------------|
| 1 | OUT1 | Relay output 1 |
| 2 | OUT1 | Relay output 1 |
| 3 | OUT2 | Relay output 2 |
| 4 | OUT2 | Relay output 2 |
| 5 | IN2 | Wired input 2 |
| 6 | IN1 | Wired input 1 |
| 7 | - | Common ground |
| 8 | + | External power source |

Table 3. The screw connectors contact denominations

Power supply

The unit can be powered from 2 pcs of AAA alkaline batteries or from 24 VDC. If using both batteries and 24 VDC, the batteries will work as power backup. 24 VDC is connected to connectors 7 and 8.

The battery status is monitored, see “5.12.4 Battery alarm” on page 34.



If the unit is to be used as radio receiver it must be powered by 24 VDC.



Supply power must not exceed values specified in the technical data, “Appendix A Technical data” on page 47. The unit must only be powered from alkaline batteries of type GP Ultra Alkaline AAA or GP Super Alkaline AAA.

2.4.1 Mains failure/return

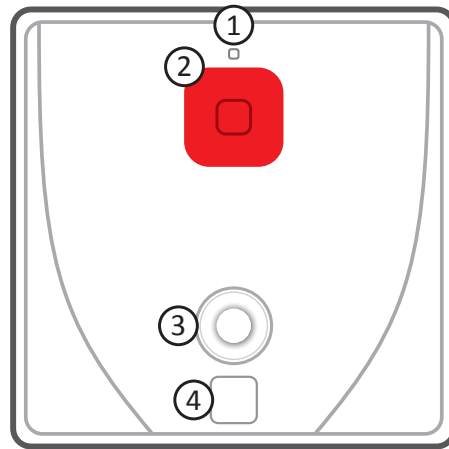
When the unit is configured for and supplied with 24 VDC and batteries are mounted and in the event of power failure the unit sends a **Mains failure** alarm after a randomized time between 30 and 750 seconds. If the power returns before the alarm is sent, no alarm is sent.

When the power returns after the alarm is sent, the unit sends a **Mains return** alarm after a randomized time between 30 and 750 seconds. If there is a mains failure again before the alarm has been sent, the unit will not send any **Mains return** alarm, but instead again wait for the power return.

If the unit is configured for and supplied with 24 VDC and no batteries are mounted, no **Mains failure** nor **Mains return** alarms are sent, the unit is regarding this a regular power off and -on.

3 WIOR Category products

General



Picture 4. PUSH+PEAR unit

| Number | Denomination |
|--------|---|
| 1 | LED1 |
| 2 | Button 1 (Red) |
| 3 | Place for tele jack connector/key cylinder/pullcord |
| 4 | Place for NEAT emblem |

Table 4. Front cover components denominations

LED1 is used for visual indication and can indicate in green, red and yellow colour. The LED is behaving slightly different depending on whether the unit is battery operated or powered by 24 VDC.

When the unit is started the LED1 will flash yellow once.

Transmission

When a radio transmission is sent, the LED1 lights up red during the transmission and turns to green for two seconds after receiving an acknowledgment.



Please note that LED1 will only be active after an event from Button 1, Port 1-2 or IN 1-2. For technical alarms LED1 is not used.

Relay action

When there is an action to one or both relays, the LED1 is lit green for three seconds.

Deactivation indication for KEY

When the Key is set to **Deactivated**, LED1 will light red. However, this requires:

- Jumper J1 must to be mounted
- The unit must be powered by 24 VDC

3.1 OUT1 and OUT2, relay outputs

There are two outputs which will be opened and closed according to action plan or remote activation message. The outputs are galvanic separated from the wired inputs and each other. Each output can be configured to be normally open or normally closed.

After power on, both outputs are opened or closed according to configuration. After power off, both outputs keep their last status.

The outputs can also be controlled by a D-SERVER using group activation codes. This means if the function is enabled in the unit and a D-SERVER sends out the appropriate group activation code, the affected units will activate the output relay according to the action specified in the radio message.



The outputs are not allowed to control voltages or currents exceeding values specified in the technical data, see "Appendix A Technical data" on page 47.

3.2 IN1 and IN2, wired inputs

In the screw connector there are two wired inputs, IN1 (pin 6) and IN2 (pin 5). Both inputs have a common ground (pin 7) and must be connected to potential free contacts. They can both be configured as normally open or normally closed by using jumper J2. They can also be configured by radio configuration. The Input cable length must not exceed 10 (ten) meters.



Please note that input changes are ignored for 10 seconds after power on.

3.3 J1 and J2, jumpers

There are two jumpers for configuring the unit, see below.

| Jumper# | On (mounted) | Off (not mounted) |
|---------|--------------------------------------|-------------------------------------|
| J1 | Radio receiver on, 24V mode | Radio receiver off, battery mode |
| J2 | Inputs (IN1 and IN2) normally closed | Inputs (IN 1 and IN2) normally open |

Table 5. Jumper settings

Jumper J2 can be overridden by the setting in WALL Family Programmer, see "IN1 and IN2" on page 29.

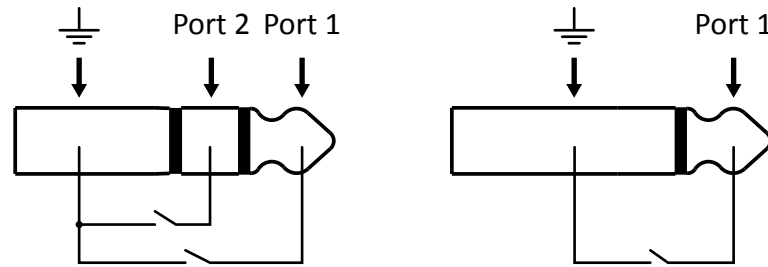
3.4 6.35 mm telejack



Valid only for PEAR and PUSH+PEAR

3.4.1 Port 1 and 2

Port 1 and Port 2 are inputs, available if a 6.35 stereo telejack connector is mounted on the PCB. On a stereo teleplug, Port 1 is the the tip and Port 2 is the ring. If a mono teleplug is used, only Port 1 is available. Both ports have a common ground and must be connected to potential free contacts (see below).



Picture 5. Ports 1 and 2 on 6.35 mm on a stereo teleplug (left) and mono teleplug (right)

3.4.2 Tamper

If there is a plug present into the 6.35 telejack and this is removed, the unit sends a **Tamper** alarm and if the plug is inserted again the unit sends an **Tamper OK** alarm.



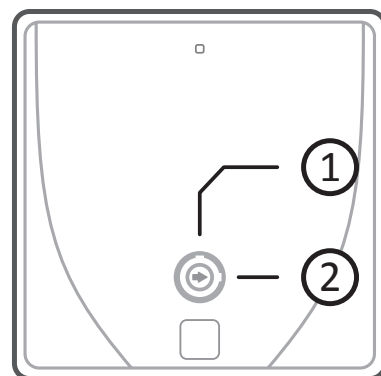
*No **Tamper** alarms are sent if a plug is removed or inserted during 10 seconds after power up.*

3.5 Key cylinder



Valid only for KEY

The key cylinder, used on the product KEY, enables the user to activate and deactivate the unit by switching a key. The key cylinder is connected to Port 2 on the PCB and controls whether IN1 and/or IN2 should be discarded when the unit is deactivated, see "5.9.1 Input type" on page 28.



Picture 6. Key cylinder states

| Number | State |
|--------|-----------------------------|
| 1 | Deactivated - No alarms |
| 2 | Activated - Alarms are sent |

Table 6. Key cylinder states

Manual configuration

These unit can be manually configured regarding adding radio transmitters and how the two relay outputs should act when the added transmitter is activated.

The procedure is in short:

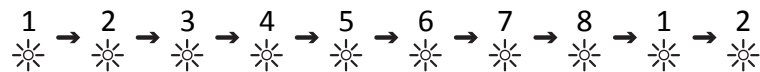
1. Determine what position to activate.
2. Add the radio transmitter.
3. Determine the action when the added transmitter is activated.

Add a radio transmitter



Please read the following instruction carefully before attempting to manually configure a radio transmitter.

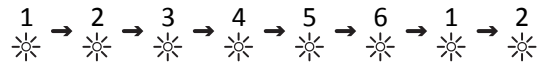
1. Power off the unit (both 24 VDC and batteries must be removed).
2. Remove jumper J2.
3. Power on the unit and replace jumper J2 within 5 seconds from power on.
4. The LED1 will now blink green three times.
5. After the initial “three green blink”, the unit will now start to blink red. The number of blinks indicates the correct radio position, i.e. 3 red blinks equals radio position 3.



Picture 7.

6. To select radio position, press any button.
7. The unit confirms the selection by lighting green for 2 second.
8. Now activate the radio transmitter (e.g. press the red button on an ATOM).
9. The unit confirms the succesful reception of the radio ID code by lighting green for 2 seconds.
10. The unit starts blinking green, allowing the setting the action for relay 1.
11. The number of blinks indicate what action to set.
 - 1 blink = Pulse
 - 2 blinks = On
 - 3 blinks = Off
 - 4 blinks = Toggle
 - 5 blinks = No action
 - 6 blinks = Stop pulse

12. Press any button at the appropriate action blink.
13. The unit starts blinking red, allowing the setting the action for relay 2.



Picture 8.

14. Press any button at the appropriate action blink.
15. If successful LED1 will rapidly blink green for 2 seconds.



At any stage during the manual configuration, if there is an unsuccessful configuration, the LED1 will blink red rapidly for 2 seconds. When this happens the manual configuration is cancelled and it is necessary to restart the procedure.

In the event of inactivity during manual configuration (e.g. a transmitter is not activated after #7 or a port/button is not pressed after #11) the unit waits for 60 seconds and then returns to normal mode. The manual configuraton must then be restarted.

3.6 Remove a transmitter

To remove a transmitter, follow steps 1 trough 7 above. After step 7, remove jumper J2. The device confirms the deletion by rapidly blink green for 2 seconds.

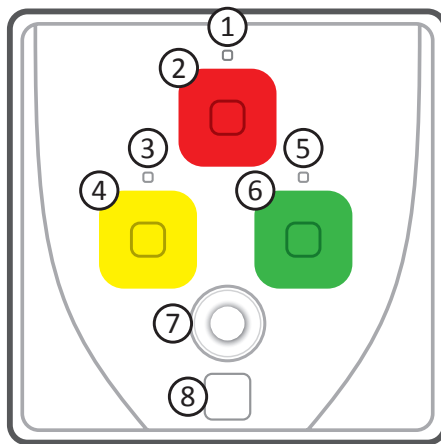
4 ROOM category products

4.1 General

ROOM and ROOM+PEAR can act according to either a built in action plan or it can act on sent radio commands, i.e. **Radio Controlled Mode**. The built in action plan is set in the memory of the unit and can not be altered, but when in Radio Controlled Mode the unit is merely a simple transceiver and performs whatever actions that are sent from a central, e.g. a D-SERVER.

To set a unit to work in Radio Control Mode it must be programmed with a NPU and WALL Programmer, see "5.13.1 Radio parameters" on page 36.

4.2 Hardware



Picture 9. ROOM+PEAR front cover design

| Number | Denomination |
|--------|---|
| 1 | LED1 |
| 2 | Button 1 (Red) |
| 3 | LED2 |
| 4 | Button 2 (Yellow) |
| 5 | LED3 |
| 6 | Button 3 (Green) |
| 7 | Place for tele jack connector (ROOM+PEAR) |
| 8 | Place for NEAT emblem |

Table 7. ROOM and ROOM+PEAR front cover components

Radio Controlled Mode

If the unit is used in an environment with a superior system (such as D-SERVER), it can be used as a “dumb” transceiver where the D-SERVER tells what the unit should do when a certain button is pressed, i.e. the unit is in **Radio Controlled Mode**. The superior system handles all requests and decisions from pushed buttons and/or activated inputs etc.

When the unit is NOT in Radio Controlled Mode there is a default built in action plan, controlling the actions for the outputs when a button is pushed or an input is activated.

4.3 Unit Modes

These units (ROOM and ROOM+PEAR) can operate in four modes and the general idea can be described in a simple workflow:

- Standby mode
This is the default mode when a unit is started.
- Alarm mode
When an alarm has been triggered, either manually by a user or by an attached device, the unit enters Alarm mode.
- Presence mode
A caregiver responds to an alarm and when arriving at the caretaker’s premises the caregiver presses the Presence button, thus putting the unit in Presence mode. The caregiver can either press the Ready button when done or press the Alarm alarm button to ask for help by other caregivers nearby.
- Assistance mode
When in Presence mode and if the caregiver needs further assistance and presses the Alarm button, the unit is put into Assistance mode. To clear the Assistance mode, the caregiver presses the Ready button and the unit returns to Standby mode.

When the unit is in a certain mode the appropriate actions on the outputs are determined by the built in action plan. The built in action plan is also dependent on whether the unit is in One or Two button Presence mode, see below.

4.4 One and two button Presence modes

Depending on the environment and preferences, ROOM and ROOM+PEAR can indicate Presence and Ready in two different ways.

4.4.1 One button presence mode

Presence and Ready is performed by pressing the same button, Button 3. When in One button Presence mode, Button 2 is used to send Service alarms.

4.4.2 Two button presence mode

Presence is performed by pressing Button 2 and Ready by pressing Button 3. Service alarms are not available.

4.5 Autoready

If the user forgets to press Ready when unit is in Presence or Assistance mode, the unit will automatically return to Standby mode after 30 minutes (configurable to 1-255 minutes or Off). An Autoready alarm will also be sent.

4.6 Built in action plan

The built in action plan is stored in the memory and executed if the unit set to Radio Control Mode = No, function off, see "5.13.1 Radio parameters" on page 36.

| Button | Standby/Alarm mode | Presence/Assistance mode |
|---------------------------------------|---|--|
| 1 (Red) | Send User Alarm. Relay 1 is closed. Relay 2 is opened. Go to Alarm mode. | Send Assistance alarm. Relay 1 is closed. Relay 2 is closed. Go to Assistance mode. |
| 2 (Yellow) | Send Presence indication. Relay 1 is opened. Relay 2 is closed. Go to Presence mode. | |
| 2 (Yellow) ² | Send Service alarm. | |
| 3 (Green) | Send Ready indication. Relay 1 is opened. Relay 2 is opened. Go to Standby mode. | |
| 3 (Green) ² | Send Presence indication. Relay 1 is opened. Relay 2 is closed. Go to Presence mode. | Send Ready indication. Relay 1 is opened. Relay 2 is opened. Go to Standby mode. |
| IN1/Port 1 | Send No alarm type alarm. Relay 1 is closed. Relay 2 is opened. Go to Alarm mode. | Send Assistance alarm. Relay 1 is closed. Relay 2 is closed. Go to Assistance mode. |
| IN2 | Send Pull cord alarm. Relay 1 is closed. Relay 2 is opened. Go to Alarm mode. | Send Assistance alarm. Relay 1 is closed. Relay 2 is closed. Go to Assistance mode. |
| Port 2 | Send User defined alarm. Relay 1 is closed. Relay 2 is opened. Go to Alarm mode. | Send Assistance alarm. Relay 1 is closed. Relay 2 is closed. Go to Assistance mode. |
| ² One button presence mode | | |

Table 8. Button actions for the built in action plan

4.7 LEDs

When the unit is started LED1, LED2 and LED3 will flash yellow once in sequence. When the unit is powered by 24 VDC the LEDs will indicate alarm status. Depending whether the unit is using One or Two button Presence, the LEDs are lit differently.

| Mode | LED1 | LED2 | LED3 |
|--|------|------|-----------------|
| <i>One button presence</i> | | | |
| Standby | Off | Off | Off |
| Alarm mode | On | Off | Off |
| Presence mode | Off | Off | On |
| Assistance mode | On | Off | On |
| <i>Two button presence</i> | | | |
| Standby | Off | Off | On ¹ |
| Alarm mode | On | Off | Off |
| Presence mode | Off | On | Off |
| Assistance mode | On | On | Off |
| ¹ After start-up the unit enters standby mode and the LED3 is green | | | |

Table 9. LED schedule when powered by 24 VDC

4.8 Radio transmission

When a radio transmission is sent, the LED1 lights up red during the transmission and turns to green for two seconds after receiving an acknowledgment.



Please note that LED1 will only be active after an event from Button 1-3, Port 1-2 or IN 1-2. For technical alarms LED1 is not used.

4.9 OUT1 and OUT2, relay outputs

There are two outputs which will be opened and closed according to the built in action plan or remote activation message. The outputs are galvanic separated from the wired inputs and each other.

After power on, both outputs are opened. At power off, both outputs keep their status.



The outputs are not allowed to control voltages or currents exceeding values specified in the technical data, "Appendix A Technical data" on page 47

4.10 IN1 and IN2, wired inputs

In the screw connector there are two wired inputs, IN1 (pin 6) and IN2 (pin 5). Both inputs have a common ground (pin 7) and must be connected to potential free contacts. Input IN1 is always normally open. Input IN2 can be configured as normally open or normally closed by using jumper J2. Please note that input changes are ignored for 10 seconds after power on. The Input cable length must not exceed 10 (ten) meters.

4.11 J1 and J2, Jumpers

There are two jumpers for configuring the unit, see below.

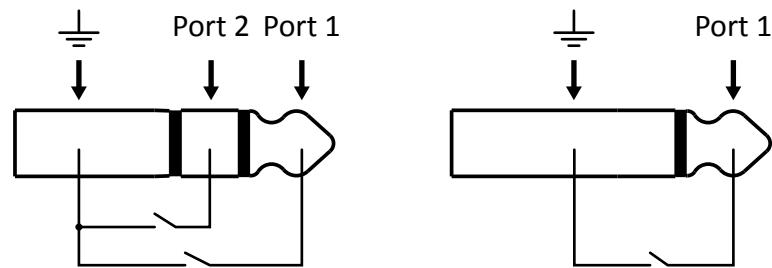
| Jumper# | On (mounted) | Off (not mounted) |
|---------|----------------------------|---------------------------------|
| J1 | Radioreceiver on, 24V mode | Radioreceiver off, battery mode |
| J2 | Input IN2 normally closed | Input IN2 normally open |

Table 10. WALL jumper settings

4.12 6.35 mm telejack

4.12.1 Port 1 and 2

Port 1 and Port 2 are inputs, available if a 6.35 stereo telejack connector is mounted on the PCB. On a stereo teleplug, Port 1 is the the tip and Port 2 is the ring. If a mono teleplug is used, only Port 1 is available. Both ports have a common ground and must be connected to potential free contacts (see below).



Picture 10. Ports 1 and 2 on 6.35 mm on a stereo teleplug (left) and mono teleplug (right)

4.12.2 Tamper

If there is a plug present into the 6.35 telejack and this is removed, the unit will send a **Tamper** alarm. If the plug is inserted again the unit sends a **Tamper OK** alarm.



No Tamper alarm is sent if a plug is removed or inserted during 10 seconds after power up.

4.13 Unit supervision

The unit sends out a **Radio test alarm** every 9 hours (configurable to 1-255h or disabled). By detecting this signal, the receiving system can see that all units are working. After start-up the first radio test alarm will be randomized in the interval between 1-59 minutes.

The source address in the radio message is the Unit radio Id.

If more than 19 (configurable to 1-255) radio test alarm messages are sent without received acknowledge, the unit will stop sending radio test alarms. When in this sleep mode, any other alarm type that is acknowledged will start the radio test alarm function again. If the parameter **Number of missed ACK before sleep** is configured to 0 (zero), the unit will never stop sending radio test alarms.

5 WALL Family Programmer

5.1 Overview

The WALL Family Programmer is a simple yet powerful tool to configure and set parameters for a unit as well as creating a template for batch programming. The programming is performed by using a NPU (NEAT Programming Unit). The NPU is sold separately, ask your distributor for more information.

The screen dumps and configuration examples applies to WALL Programmer software v2 and to devices with firmware 2.0 or later.

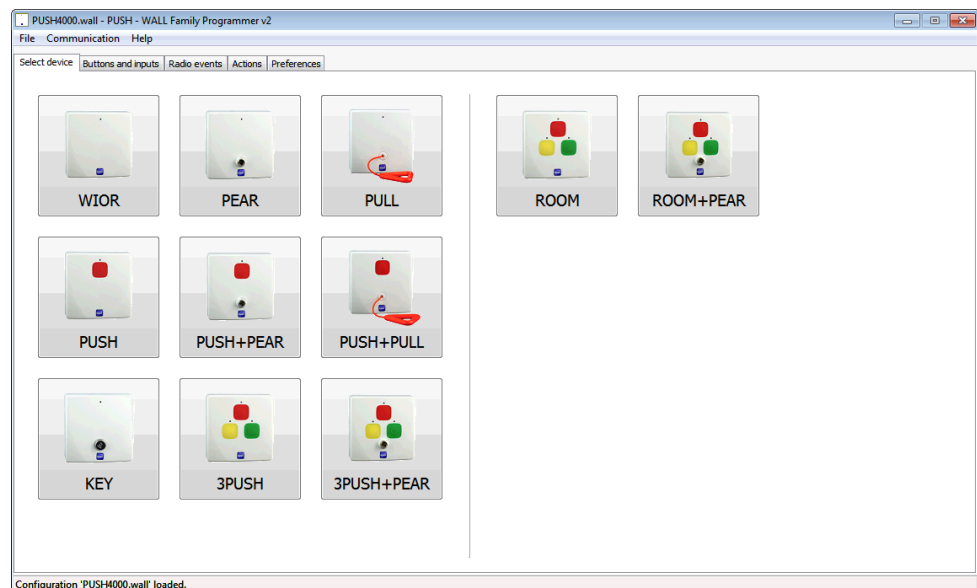
5.2 Installation of the software

The WALL Family Programmer software can be downloaded from our website: www.neatelectronics.se.

The default path for installation is typically
C:\Program Files\NEAT\WALL Programmer

5.3 Software startup

When the software is initiated the default screen looks like below. Click on a product to display the associated tabs.

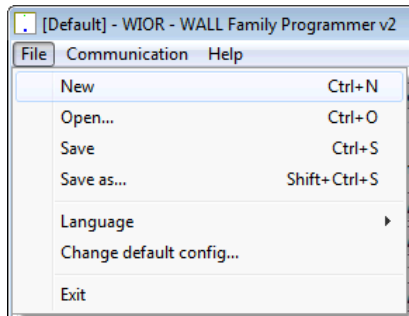


Picture 11. Select product on main screen



*A product must be selected before **Communication** is available.*

5.4 File menu



Picture 12. File menu

New, Open, Save and Save As...

These items are quite self explanatory and is for working with configurations.

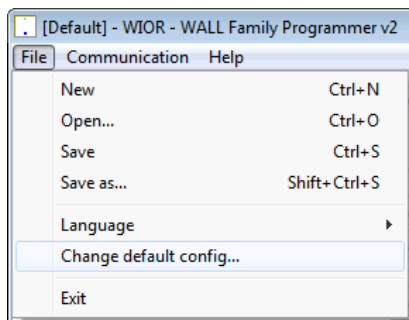
Language

Change the interface language by selecting the desired language. The change is effected immediately.

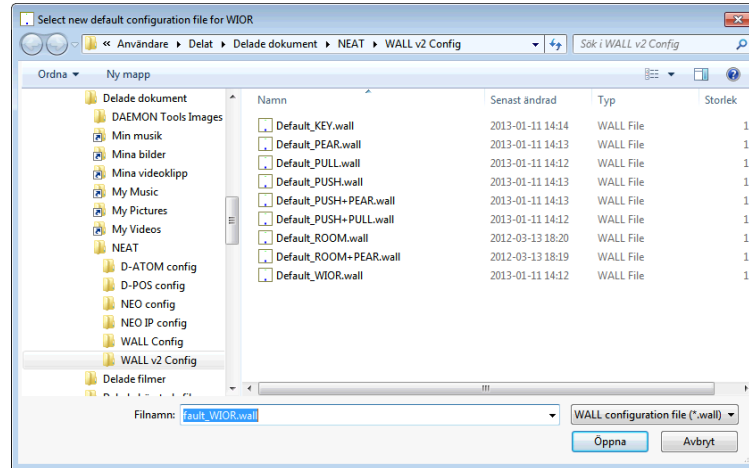
Change default config

When the software is installed, a default configuration named **Default_nnn.wall**¹ is placed in the directory named **C:\Document and Settings\All users\Common Documents\NEATWALL Config** and is the template used when the item **New** is selected. Change the default configuration by browsing to an alternate location or simply select from available configurations in the default installation folder.

¹Where nnn is determined by the product variant selected, see "Table 1. Product variant denominations" on page 6

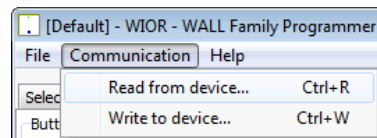


Picture 13. Change default config location



Picture 14. Default configuraton directory

5.5 Communication menu - WIOR Category

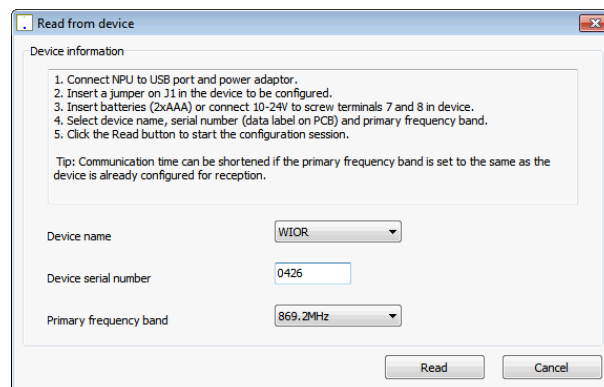


Picture 15. Communication menu

5.5.1 Read from/write to device

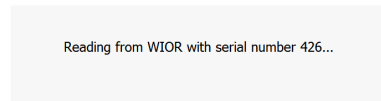
To read/write configurations, follow the general procedure:

1. Connect NPU to USB port and power adaptor.
2. Insert a jumper on J1 in the device.
3. Insert batteries (2xAAA) or connect 10-24V to screw terminals 7 and 8 in the device.
4. Click **Communication|Read from/Write to device** to start the configuration session.
5. Select device name, serial number (found on the data label on the PCB. In this example serial #0426 is used) and primary frequency band.



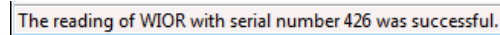
Picture 16. Enter serial number for requested device

6. During the configuration session the below pop up screen is displayed and LED1 blinks green.



Picture 17. Pop up window when reading from the unit

7. If configuration session is successful, the pop up screen is closed and a confirmation is displayed in the lower left of the programmer window. If the configuration session for some reason fails, an error pop up window is displayed.

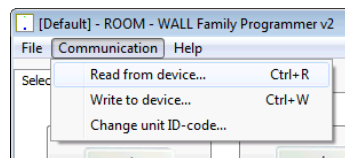


Picture 18. Confirmation notification in the lower left of the programmer window



Communication time can be shortened if the primary frequency band is set to the same as the device is already configured for reception.

5.6 Communication menu - ROOM Category

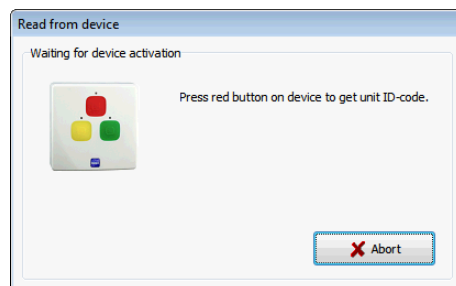


Picture 19. Communication menu

5.6.1 Read from/write to device

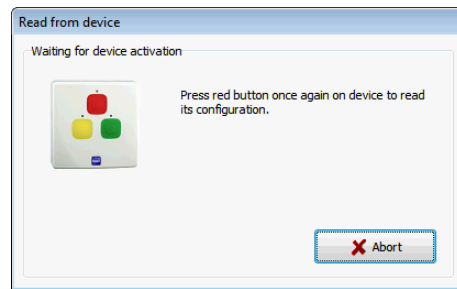
To read/write configurations, follow the general procedure:

1. Connect NPU to USB port and power adaptor.
2. Insert batteries (2xAAA) or connect 10-24V to screw terminals 7 and 8 in the device.
3. Click **Communication|Read from/Write to device** to start the configuration session. First, the software needs to read the unit's ID code, press button 1.



Picture 20. Press button 1 to read the unit ID code

Press button 1 again to read the configuration



Picture 21. Press button 1 again to read the unit’s configuration

The configuration parameters are now read into the software and in the lower left corner a message displays the successful read.

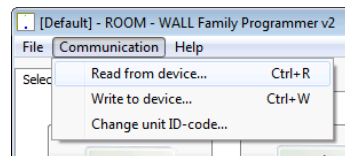


Picture 22. The reading from the unit was successful

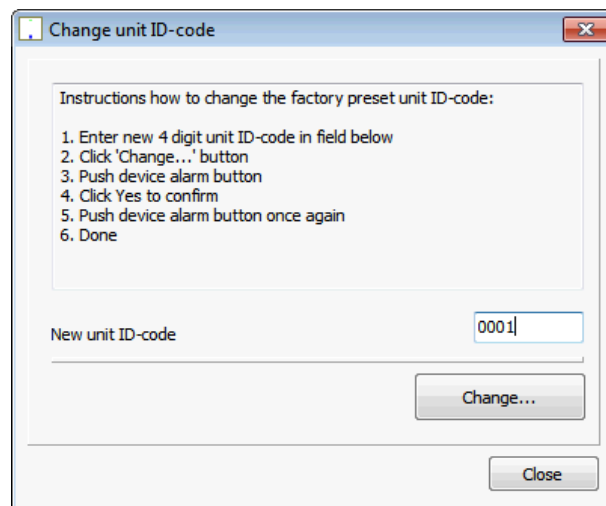
Writing to the device displays corresponding screens.

5.6.2 Change unit ID code

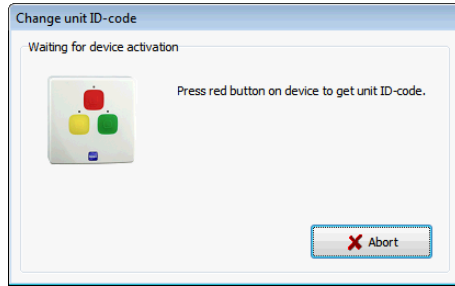
The unit’s ID code is programmed to the unit when manufactured but can be altered here. The format must be four hexadecimal digits (0001-FFFE). It can also be changed from the **Config** tab, see "5.13 Config tab" on page 36



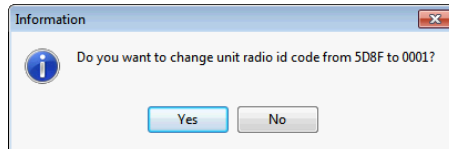
Picture 23. Select Change unit ID-code from the Communications drop down menu



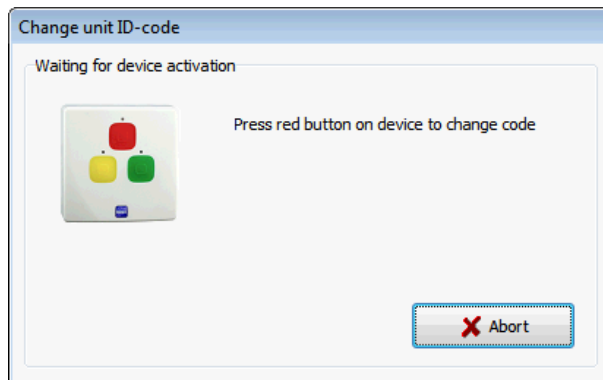
Picture 24. Enter the new radio ID code in hexadecimal form in the box and press **Change...**



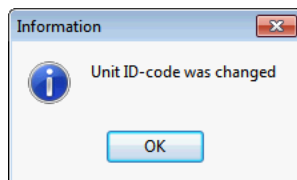
Picture 25. Press button 1 to read the unit's code



Picture 26. Confirm the new radio ID code by pressing Yes



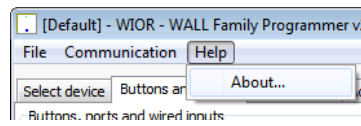
Picture 27. Press button 1 again to start writing to the device



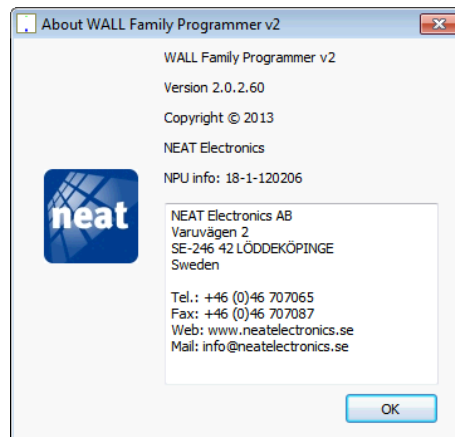
Picture 28. The radio Id code change was successful

5.7 Help menu

The **Help** drop down item displays the **About** box which is read-only information about the WALL Programmer and the NPU software version.



Picture 29. Help menu



Picture 30. About box

5.8 The tabs

Depending on the selected product, different tabs are displayed. The tab **Select device** is always displayed.

| Product | Tab(s) available |
|---------------|--|
| WIOR Category | Buttons and inputs, Radio events, Actions, Preferences |
| ROOM Category | Config |

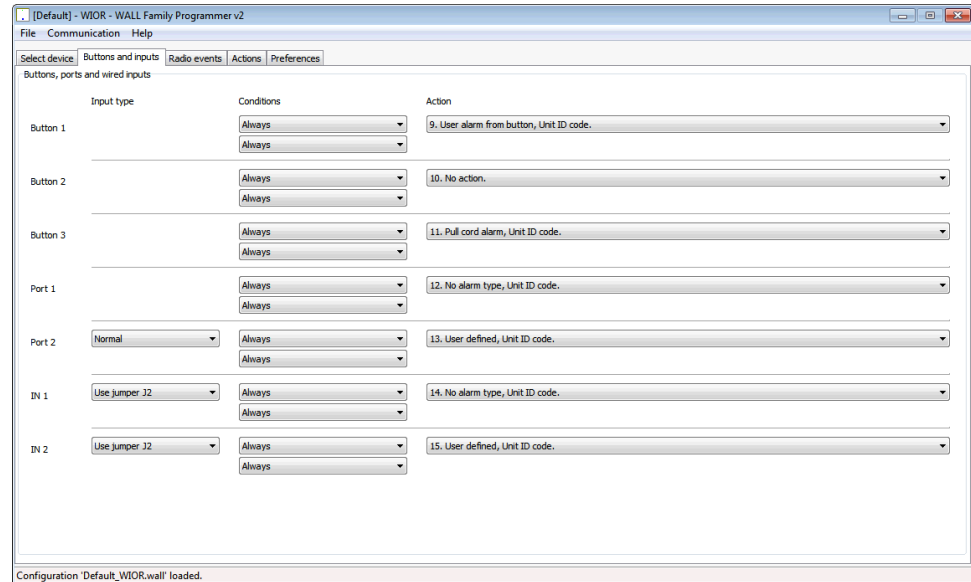
Table 11. Table over what tabs are visible for what products

5.9 Buttons and in- and outputs tab



Available only for WIOR Category devices

This tab enables the user to customize the behaviour when any of the buttons, ports and inputs/outputs are triggered.



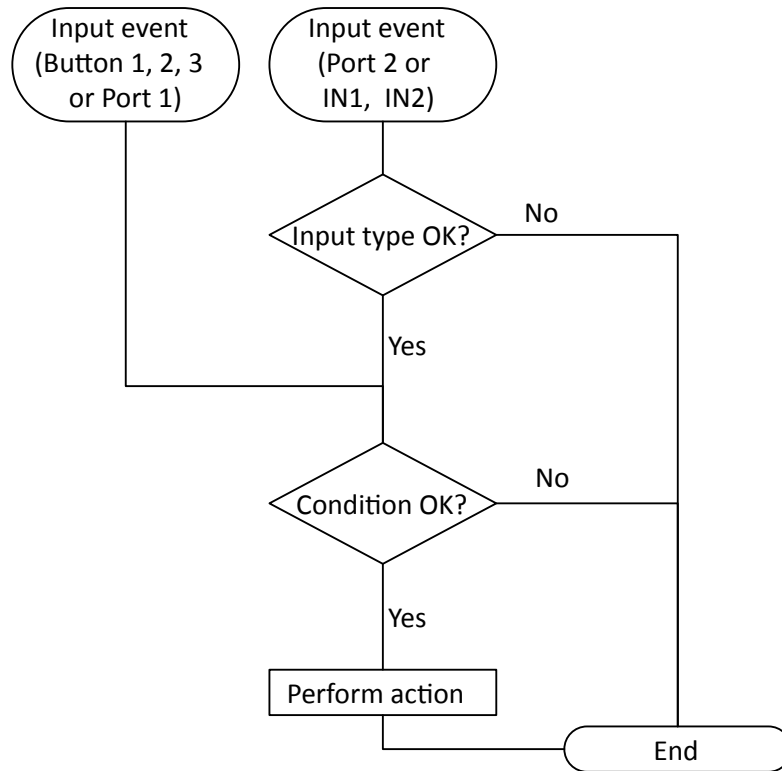
Picture 31. Buttons and in- and outputs tab

Each button, port and input can be assigned its own alarm type and radio ID code. Furthermore the wired inputs can be set to be either normally closed or normally open or set by a jumper on the PCB.

As an idea of how this works it can be viewed as a chain of questions:

1. What input is triggered?
2. Are the conditions met?
3. What action should be applied?

The flowchart below illustrates the process.



Picture 32. Flow chart of the Button/Input event conditions and criterias check

Please note that no input type criteria is checked for Button 1, 2, 3 and Port 1, but for Port 2, IN1 and IN2 since these can be set to different values, see “5.9.1 Input type” below.

5.9.1 Input type

When input types **Buttons 1 to 3** and **Port 1** are triggered the unit looks directly at the selected conditions to determine whether to perform an action or not.

Port 2

Port 2 is by default used by KEY ie. the key cylinder is used to activate/deactivate the unit. The two options, Normal and Bypass, refers to

Values available:

- Normal
- Bypass

IN1 and IN2

When IN1 and/or IN2 are triggered the logic can take a look at either jumper J2 (which determines if both inputs should be normally open or normally closed, previously described in “3.3 J1 and J2, jumpers” on page 11) or use the value selected.

Values available:

- Normally open
- Normally closed
- Use jumper J2 (default)



Port 1 and 2 input types settings are only available on certain WIOR Category devices.

5.9.2 Conditions

Certain conditions can be applied when the the selected button/input is triggered. Both conditions must be fulfilled to apply the assigned action.

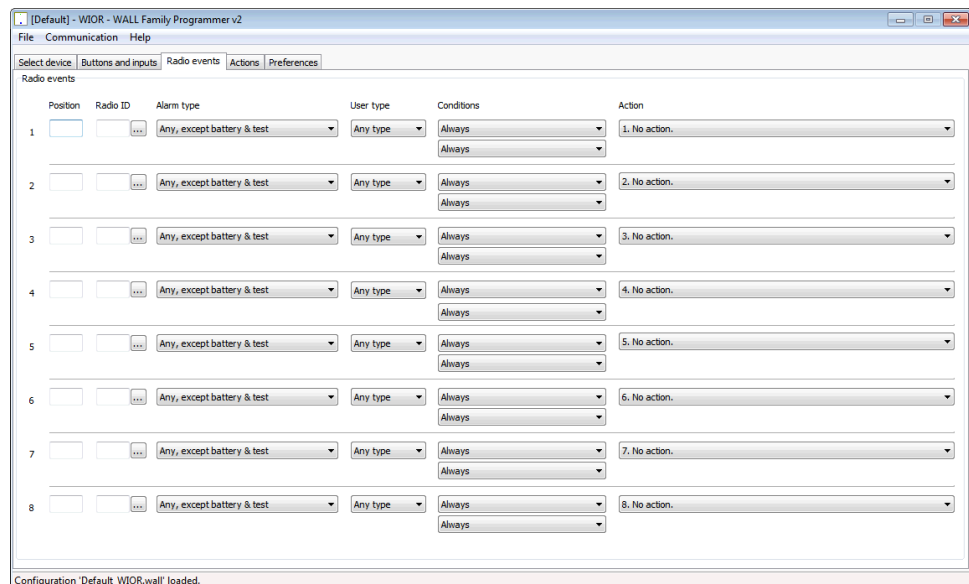
5.9.3 Action

If the condition is met an appropriate action can be assigned. The list of actions is editable on tab **Actions**, see “5.11 Actions tab” on page 32.

5.10 Radio events tab



Available only for WIOR Category devices



Picture 33. Radio events tab

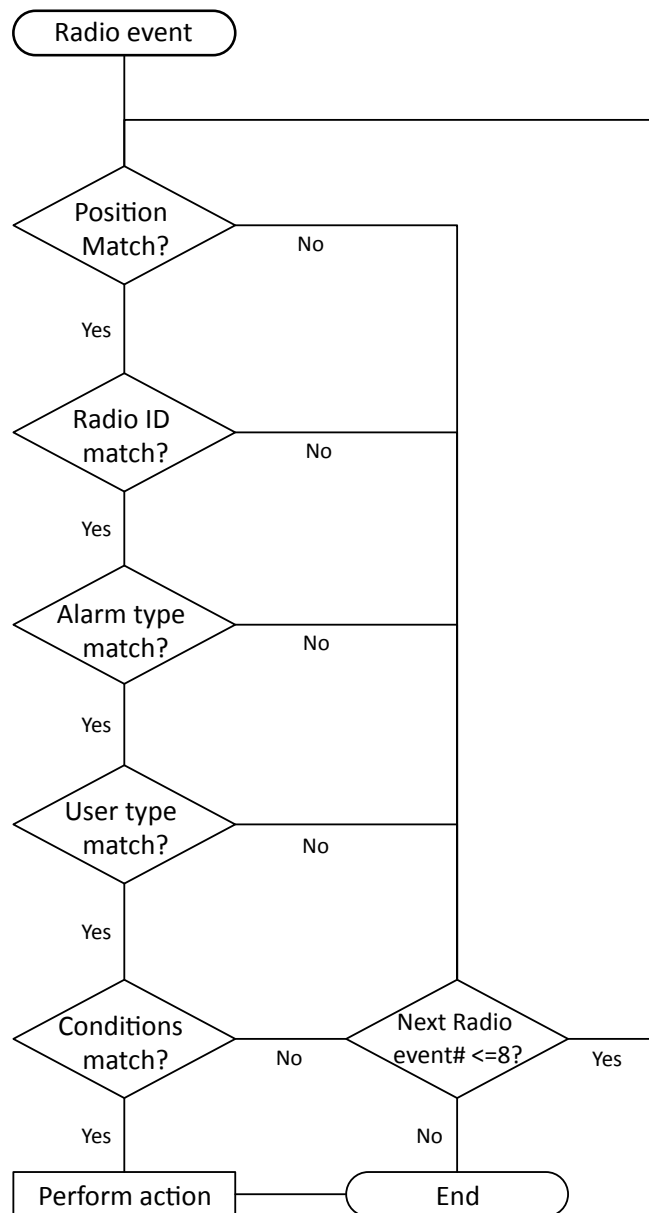
Up to eight radio events can be monitored from the unit and each radio event is programmable to perform certain actions if the criterias and conditions are met.

As an idea of how this works it can be viewed as a chain of questions:

1. What radio event is received?
2. Does the **Radio ID** code match?
3. Does the **Alarm type** match?
4. Does the **User type** match?
5. Does the assigned conditions apply?
6. What action should be applied?

When a Radio event is triggered the logic in the unit looks at Radio event #1 and checks the criterias and conditions. If this first event is not executed (no criteras and conditins are met hence no action is performed) the next Radio event is examined.

If a Radio event action is executed the logic stops from checking further, ie. if Radio event #1 and #2 do not meet any criteria but #3 does, then the logic will not continue to #4.




Picture 34. Flow chart of the Radio event conditions and criterias check

5.10.1 Position

The “Position ID code” can be used with a D-POS Antenna and D-ATOM. E.g. this can be used to open a door when a caregiver approaches it.

Either specify a certain position code by its four digit hexcode, eg. B4C5. To enable a range of position codes add the wildcard * (star). Eg. B4* equals all position codes starting with B5. Or enter *C5 to enable all position codes ending with C5. If no specified position is used, a * must be entered.

5.10.2 Radio ID

The Radio ID code can be directly entered in the box or press the grey  button to the right to receive the Radio ID code from certain device.

Either specify a certain Radio ID by its four digit hexcode, eg. A7B5. To enable a range of Radio ID codes add a wildcard * (star). Eg. A7* equals all Radio ID codes starting with A7. Or enter *B5 to enable all Radio ID codes ending with B5.

5.10.3 Alarm type

Select what alarm type to match this criteria.

The list of alarm types is quite extensive and the most common alarm types can be found in “Appendix B Alarm types”.

5.10.4 User type

Selecting **User type** enables to differentiate between personnel devices (personnel) or care taker devices (dementia) when receiving the radio event.

The types “Dementia” and Personnel” are only applicable when a Position ID code (above) is used.

- Dementia
- Personnel
- Any type (default)

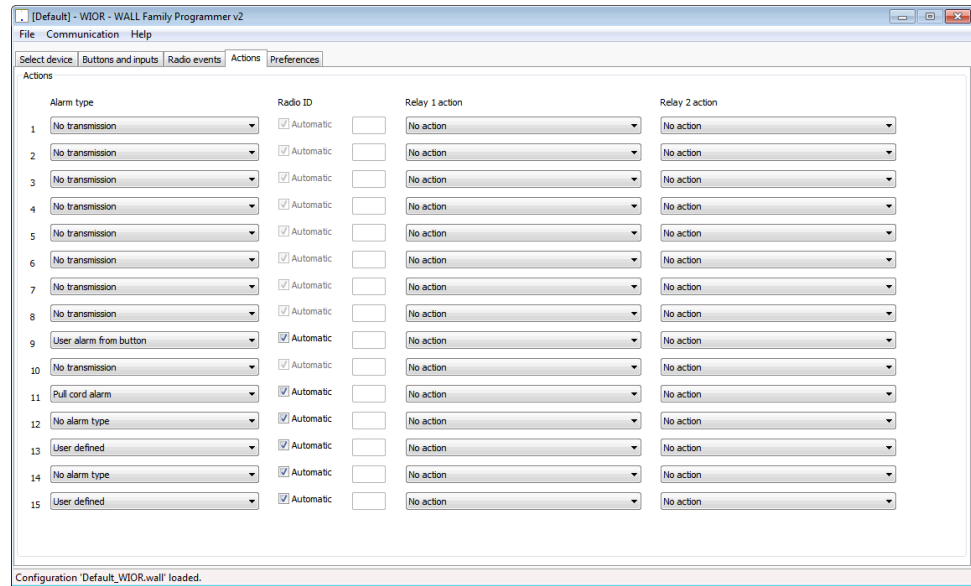
5.10.5 Conditions

Certain conditions can be applied when the the selected button/input is triggered and both conditions must be fulfilled to apply the assigned action.

5.10.6 Action

If the criterias and condition are met an appropriate action can be assigned. The list of actions is editable on tab **Actions**, see “5.11 Actions tab” on page 32.

5.11 Actions tab



Picture 35. Actions tab



Available only for WIOR Category devices

The unit can store up to 15 different actions and each action can be defined to fit desired needs and demands.

5.11.1 Alarm type

This list determines whether a transmission should occur when the action is executed and if yes, what alarm type to transmit.

If “**No transmission**” is selected the Radio ID values, see below, are greyed out.

5.11.2 Radio ID

When an alarm type is selected it’s possible to send either the unit’s pre-programmed ID code (Automatic) or another Radio ID code by unchecking the **Automatic** check box and entering the four digit hex code in the box to the right. The unit’s ID code is available and editable on the tab Preferences in the box “Unit ID code” on page 33.

5.11.3 Relay 1 and Relay 2 action



If Relay outputs 1 AND 2 are set to “No action”, no acknowledge will be returned to the sender.

5.12 Preferences tab

Picture 36. Preferences tab

5.12.1 Radio parameters

Unit ID code

The unit's ID code is programmed to the unit when manufactured but can be altered here. The format must be four hexadecimal digits (0001-FFFE) or can be left blank.

If the field is blank, the unit ID code is not changed during a write session.



Two ore more units must NOT have the same Unit ID code!

Send acknowledge

As a default the unit is set to automatically send acknowledges upon the reception of a radio transmission.

- Yes, function on (default)
- No, function off

Ignore received acknowledge

As default the unit is set to not ignore acknowledges sent by other NEAT radio units.

- Yes, function on
- No, function off (default)

Max number of short transmissions

Default = 3

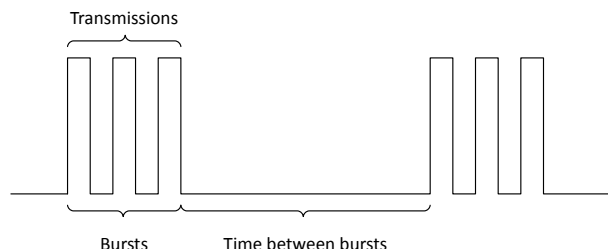
Max number of long transmissions

Default = 3

Max number of bursts

Bursts are repetitions of transmissions. E.g. if short transmissions are set to 3, long transmissions to 0 and number of bursts to 2, it will look like below. Then the device sends 3 short transmissions, waits for a while (the “Time between bursts”) and sends another “burst” of transmissions.

Default = 1



Picture 37. Concept of bursts



To prevent accidental misconfiguration the device automatically uses safe values. If both short and long transmissions are configured to 0 (zero), the device internally uses 3 short and 3 long transmissions. If Burst is configured to 0 (zero), the device internally uses 1.

Time between bursts (s)

Default = 5 seconds

Transmit frequency band

- 869.2 MHz (default)
- 868.7 MHz

Receive frequency band

The device is designed to work both with 869 and 868 MHz units. However, is the unit used in a D-SERVER System, the receive frequency must be set to 869.4 MHz, since this is the transmitting frequency in a D-SERVER system.

- 869.2 MHz (default)
- 868.7 MHz
- 869.4 MHz

D-SERVER system ID (1-65534)

If used in D-Server system, enter the unit’s D-Server system ID here, the format must be five decimal digits (1-65534).



Be sure to assign the unit a unique system ID or else the D-Server system will not be able to differ from other D-Server units.

5.12.2 Relay outputs

Contact type

This setting determines the default state for the output relays.

- Normally open (default)
- Normally closed

Group activation codes (0=disabled)

This setting is only useful when the unit is used in a D-SERVER System. This enables the D-SERVER System to broadcast a specific code designated for units configured to listen for this specific code.

If there is an emergency (e.g. fire) and the D-SERVER wants to tell all doors to open, then the D-SERVER transmit a group activation when received by the WALL unit, it will then perform an action included in the transmitted message, e.g. to pulse the corresponding relay.

Each relay (1 and 2) can be assigned two group activation codes.

Default = 0

Pulse activation time (0.1-6553.5s)

This is the setting for how long a relay will pulse. A group activation or a normal remote activation message from the D-SERVER can override this setting.

Default = 3 seconds

5.12.3 Technical alarms**Radio test alarm interval (h) (0=off)**

This parameter and the next are used to monitor the unit. Every 9 hours (configurable; 1-255, 0=off) the WALL unit sends out a **Radio test alarm** and expects to receive an acknowledgement from a monitoring device. If no acknowledge is received, the unit retries until the "Number of missed ACK" is reached. It then stops sending the **Radio test alarm**, ie. the unit is in "Sleep mode". When in "Sleep mode", any other alarm type that is sent by the unit and acknowledged will restart the "Radio test alarm" interval.

Default = 9

Number of missed ACK before sleep (0=never)

Default = 19

Battery check interval (h) (0=off)

When the unit is powered only by batteries, it can be set to check the status of the batteries at intervals (1-255 hours, 0=off). When powered by 24 VDC this interval is fixed to 2 hours.

Default = 23

Check battery in 24V mode

When powered by 24 VDC and no batteries are present, to prevent the unit from sending Battery alarm, the parameter Check battery in 24 VDC mode must be set to **No, function off**.

- Yes, function on
- No, function off (default)

5.12.4 Technical info

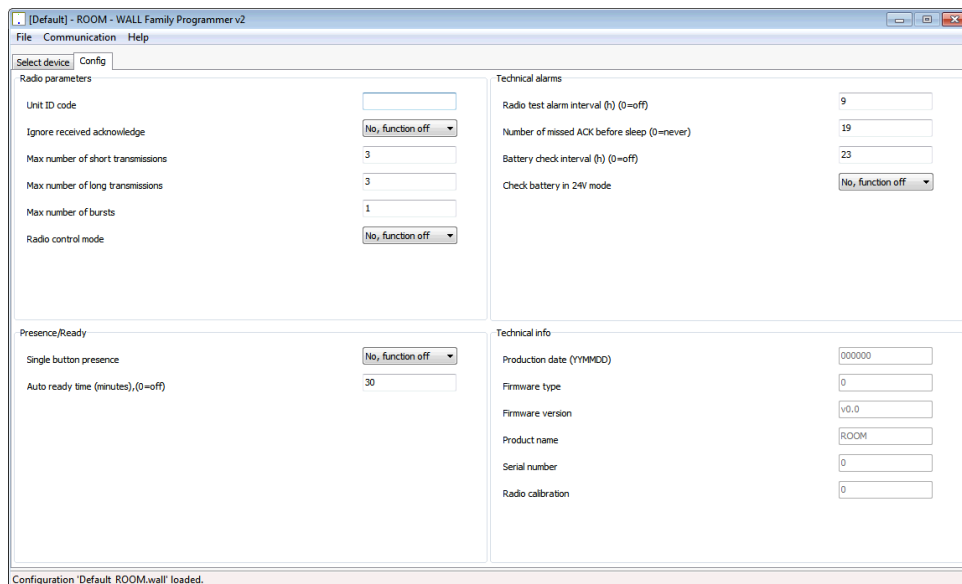
Values in this section are read only.

5.13 Config tab

The Config tab handles settings for the unit and enables the unit to be part of a D-POS system.



Only available for ROOM Category devices.



Picture 38. Config tab

5.13.1 Radio parameters

Unit ID code

The unit’s ID code is programmed to the unit when manufactured but can be altered here. The format must be four hexadecimal digits (0001-FFFE) or blank. If the field is blank, the unit ID code is not changed during a write session.

The unit ID code can also be changed from the Communications menu, see ”5.6.2 Change unit ID code” on page 24.



Two ore more units must NOT have the same Unit ID code!

Ignore received acknowledge

As default the unit is set to not ignore acknowledges sent by other NEAT radio units.

- Yes, function on
- No, function off (default)

Max number of short transmissions

Default = 3

Max number of long transmissions

Default = 3

Max number of bursts

Bursts are repetitions of transmissions. E.g. if short transmissions are set to 3, long transmissions to 0 and number of bursts to 2, it will look like below. Then the device sends 3 short transmissions, waits for a while (the “Time between bursts”) and sends another “burst” of transmissions.

Default = 1

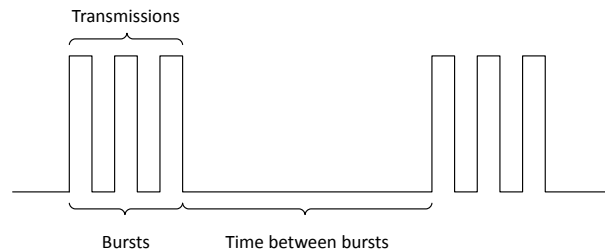


Bild 39. Concept of bursts



To prevent accidental malconfiguration the device automatically uses safe values. If both short and long transmissions are configured to 0 (zero), the device will internally use 3 short and 3 long transmission. If Burst is configured to 0 (zero), then the device will internally use 1.

Radio control mode

- No, function off (default)
- Yes, function on

5.13.2 Presence/Ready

Single button presence

Select if the unit should use single button or double button Presence.

- No, function off (default)
- Yes, function on

Auto ready time (minutes), (0=off)

Enter the time in the interval of 0-255 minutes, where 0=Off.

5.13.3 Technical alarms

Radio test alarm interval (h) (0=off)

This parameter and the next are used to monitor the unit. Every 9 hours (configurable; 1-255, 0=off) the WALLunit sends out a **Radio test alarm** and expects to receive an acknowledgement from a monitoring device. If no acknowledgement is received, the unit retries until the “Number of missed ACK” is reached. It then stops sending the **Radio test alarm**, ie. the unit is in “Sleep mode”. When in “Sleep mode”, any other alarm type that is sent by the unit and acknowledged will restart the “Radio test alarm” interval.

Default = 9

Number of missed ACK before sleep (0=never)

Default = 19

Battery check interval (h) (0=off)

When the unit is powered only by batteries it can be set to check the status of the batteries at intervals (1-255 hours, 0=off). When powered by 24 VDC this interval is fixed to 2 hours.

Default = 23

Check battery in 24V mode

When powered by 24 VDC and no batteries are present the check battery function must be disabled to prevent the unit from sending "Battery alarm".

- Yes, function on
- No, function off (default)

5.13.4 Technical info

These are read only values

6 Configuration examples

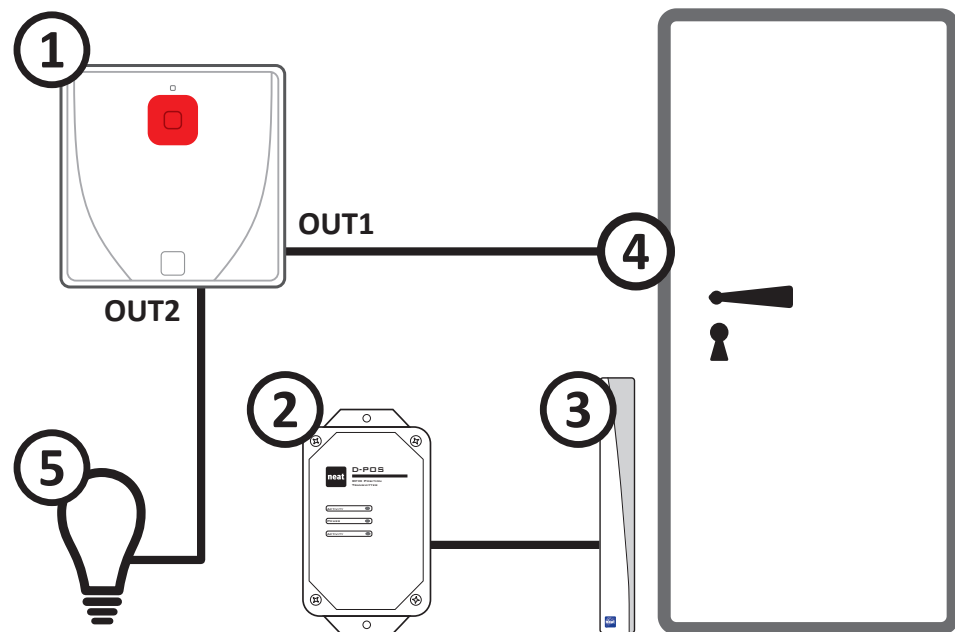
6.1 Exiting a door by pressing a PUSH

In this example the situation is quite straightforward: in a residential home a door needs to be monitored from a reception or similar.

Prerequisites:

- The door is equipped with a door lock mechanism.
- The door must be locked at all times but there must be the possibility to open without a key.
- There is only one caregiver and one caretaker.
- Caregiver and caretaker wears D-ATOMs.
- The door unlocks automatically for the caregiver and the caretaker must press the PUSH for it to unlock.
- When a care taker presses the PUSH button a lamp in the reception is lit to indicate that the care taker is approaching and has pushed the red button.

A D-POS and a D-POS Antenna are mounted on a door post. A PUSH is mounted next to the door post or in the vicinity.



Picture 40. Schematic layout of the installation

| # | Denomination |
|---|---------------------|
| 1 | PUSH unit |
| 2 | D-POS unit |
| 3 | D-POS Antenna |
| 4 | Dorr lock mechanism |
| 5 | Light indication |

Table 12. Hardware used in the setup

General idea about the setup

The D-POS unit (with a connected D-POS Antenna) registers who approaches the door. The caregiver is automatically given permission to open the door (ie. it unlocks automatically when the caregiver approaches the door) while the caretaker must press the red button on the PUSH unit to unlock the door.

When the care taker pushes the button the door unlocks (Relay 1 is activated and unlocks the door lock) and Relay 2 is activated to light the lamp at the reception desk.

In this example Relay 1 controls the door lock mechanism where Relay = Close opens the door and Relay 2 is connected to the light indication where Relay = Close lights up the light indication.

6.2 Setting up the hard- and software

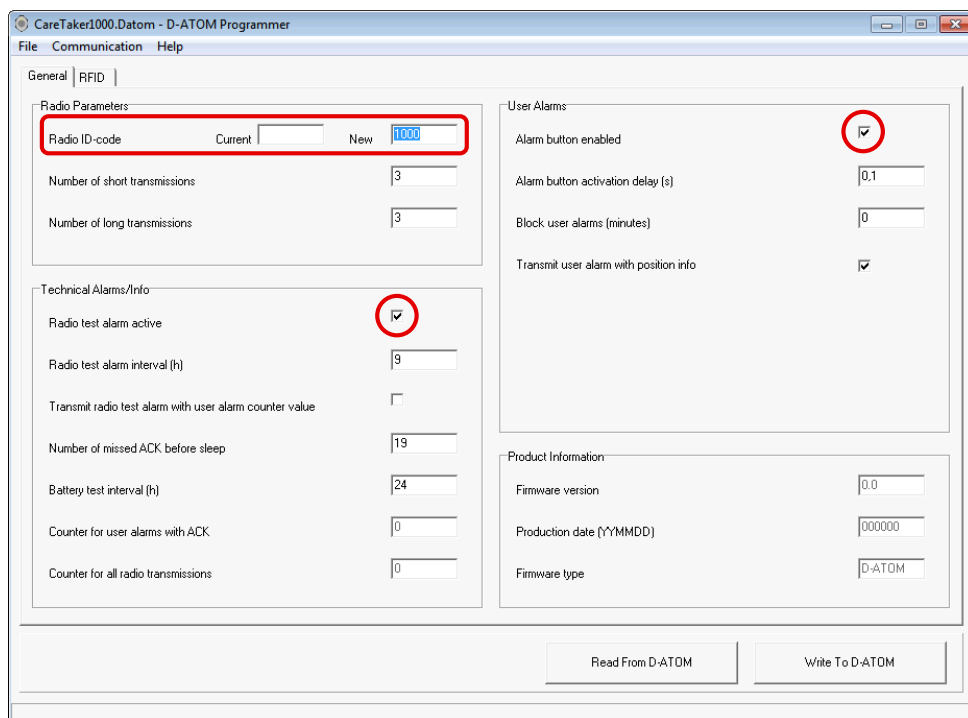
A good approach would be to:

1. Configure the units/parts in the setup
2. Define appropriate actions in PUSH
3. Determine behaviour for Buttons and inputs
4. Determine the Radio events

First configure the D-ATOMs, then the D-POS and lastly the PUSH unit.

6.2.1 D-ATOM Care taker

General tab



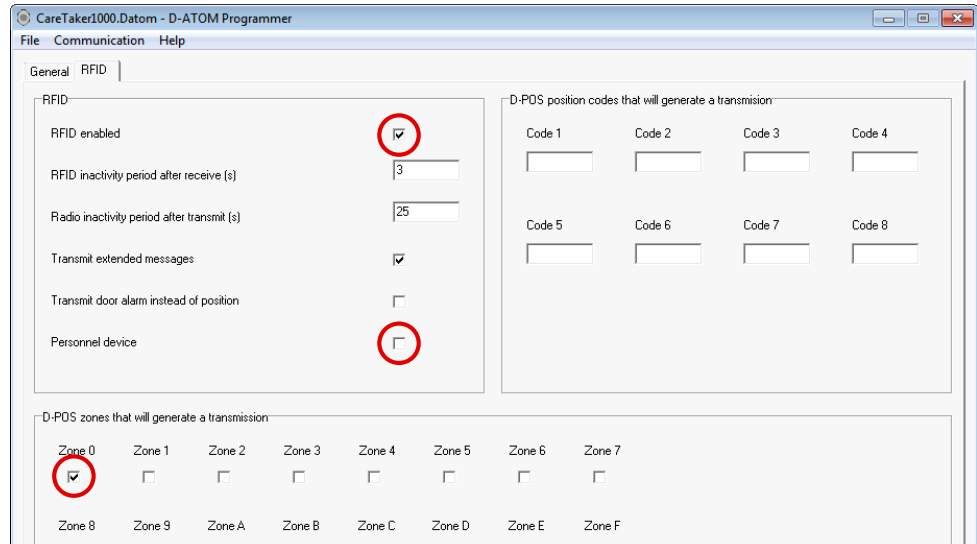
Picture 41. General settings of D-ATOM for care taker

The settings to modify here are:

- New Radio ID code (here we assign Radio ID code 1000)
- Check “Radio Test Alarm Active”
- Check “Alarm Button enabled”

RFID tab

- Check the box “RFID enabled”.
- Uncheck the box “Personnel device”
- Check “Zone 0”, uncheck all other zones.
- Leave D-POS Codes empty

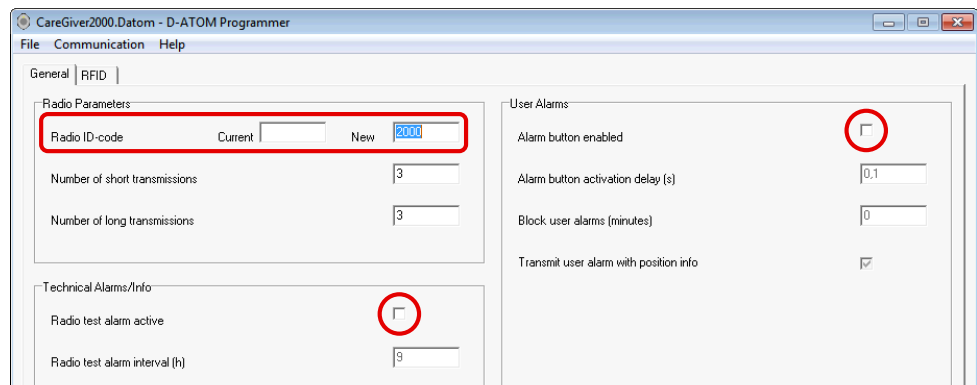


Picture 42. RFID settings of D-ATOM for care giver

6.2.2 D-ATOM care giver

General tab

- New Radio ID code (here we assign Radio ID code 2000)
- Uncheck “Radio Test Alarm Active”
- Uncheck “Alarm Button enabled”

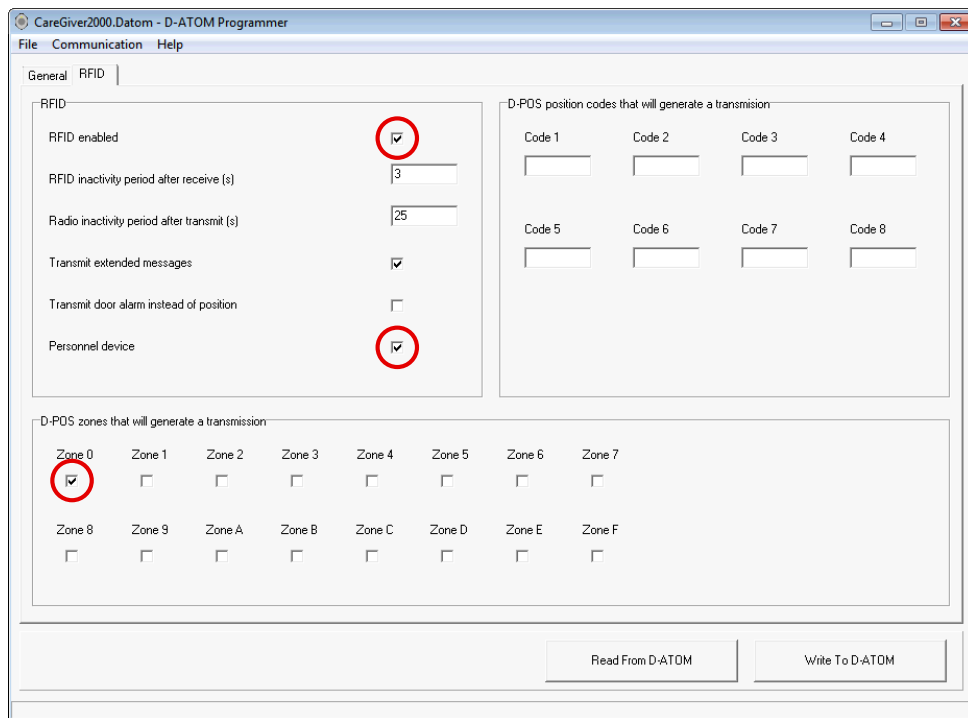


Picture 43. General settings of D-ATOM for care giver

RFID tab

On the RFID tab check **Personnel device** and **Zone 0**. Uncheck any other zones and/or D-POS position codes.

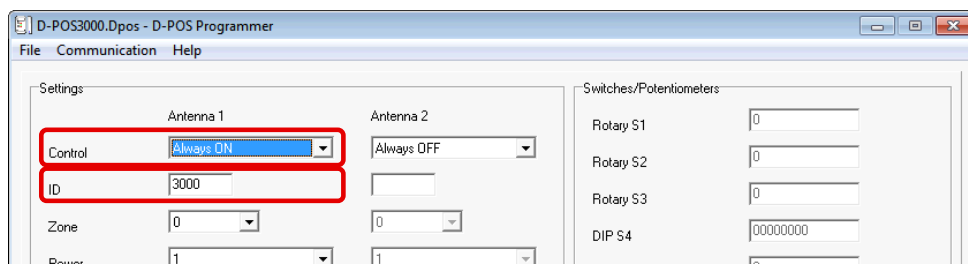
- Check the box “RFID enabled”.
- Check the box “Personnel device”
- Check “Zone 0”, uncheck all other zones.
- Leave D-POS Codes empty



Picture 44. RFID settings of D-ATOM for care taker

6.2.3 D-POS settings

- Set Antenna 1 to Always ON
- Assign ID = 3000



Picture 45. D-POS settings

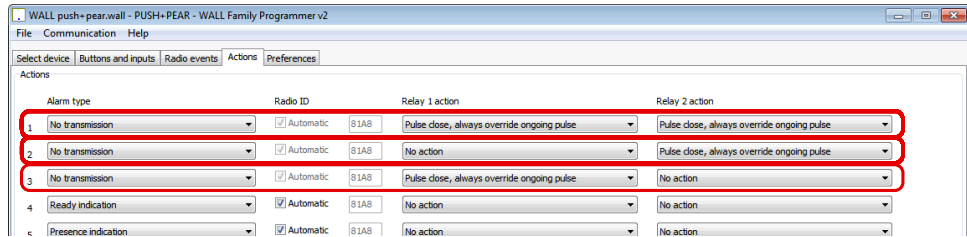
6.2.4 PUSH Settings

When all other equipment is configured it is time to combine everything into the PUSH.

Start by defining the actions since these are used on the tabs **Buttons and inputs** and **Radio events**.

Action settings

Three actions must be defined and when done it should look like below.



Picture 46. PUSH Actions settings

Action #1 settings

Set Action #1 to the following:

| Item | Selected value |
|----------------|--|
| Alarm type | No transmission |
| Relay 1 action | Pulse close, override if ongoing pulse |
| Relay 2 action | Pulse close, override if ongoing pulse |

Table 13. Settings for Action #1

Result: No radio transmission will occur and Relay 1 and 2 will pulse close and override any ongoing pulse.

Action #2 settings

Set action #2 to the following:

| Item | Selected value |
|----------------|--|
| Alarm type | No transmission |
| Relay 1 action | No action |
| Relay 2 action | Pulse close, always override ongoing pulse |

Table 14. Settings for Action #2

Result: No radio transmission will occur, while there is no action on Relay 1 and Relay 2 will pulse close and override any ongoing pulse.

Action #3 settings

Set action #3 to the following:

| Item | Selected value |
|----------------|--|
| Alarm type | No transmission |
| Relay 1 action | Pulse close, always override ongoing pulse |
| Relay 2 action | No action |

Table 15. Settings for Action #3

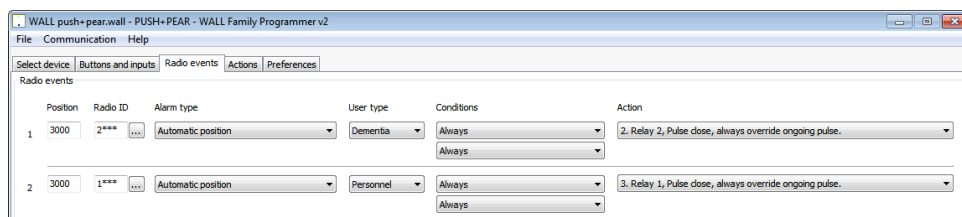
Result: No radio transmission will occur, while there is no action on Relay 2 and Relay 1 will pulse close and override any ongoing pulse.

Radio events settings

Next step is to define the Radio events.

Radio event #1 is defined for action when the care taker approaches the door.

- Enter “3000” in the box **Position**. This is to filter out any other D-POS IDs but the D-POS on the door.
- Enter 1*** in the box **Radio ID**. This is to filter out any other user (D-ATOM) Radio ID except users with D-ATOM Radio ID codes starting with 1.



Picture 47. PUSH Radio events settings

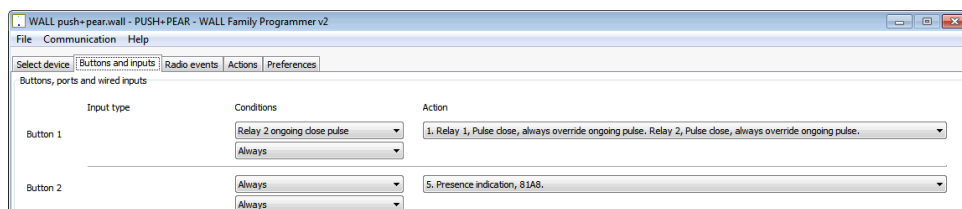
Result:

When the care taker approaches the door, the light indication is lit up.

When the care giver approaches the door, the door is automatically opened without any light indication.

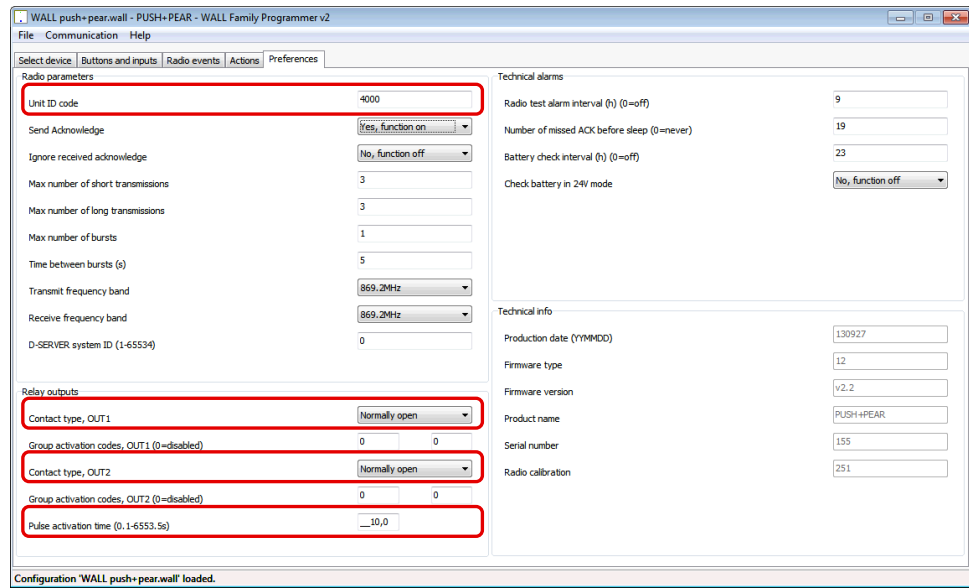
Buttons and input settings

When the actions are defined it’s time to determine what will happen when Button 1 is pushed. Just pushing Button 1 is not enough to open the door, a condition must be fulfilled and in this case the condition can be described as “Is there an ongoing close pulse on Relay 2? If yes, then open the door when the button is pushed and light up the light indicator, otherwise do nothing”.



Picture 48. PUSH Buttons and input settings

Preferences settings



Picture 49. PUSH Preferences settings

The PUSH unit is assigned ID code 4000 and the only value altered from the default configuration is **Pulse activation time** which is set to 10 seconds.

The relays #1 and #2 are set to normally open so when the relay closes, Relay 1 activates the door lock and Relay 2 light up the light indication.

7 Safety and disposal

7.1 Safety notes

- Read instructions prior to use
- Always test the system per instructions prior to use
- This product may not be suitable for all persons
- This product should not be a substitute for the routine visual monitoring protocol by caregiver
- Must not be used in situations where a delay in the arrival of appropriate medical care, could lead to a potentially life-threatening situation
- Check device regularly and replace when necessary
- Do not integrate to other systems other than those specified in this document
- Always keep the device dry. Exposure to excessive moisture can cause malfunction
- The product fulfils the requirements of the EMC-Directive 2004/108/EC. It does not cause electromagnetic disturbances under normal working conditions
- The product can be placed near other products or devices as long as mechanical vibration is not present
- Always check the function of the product after making adjustments
- Please remove batteries if the unit is to be out of use or stored for an extended period of time
- Our units are NOT intended for any life support device, thus intending a device whose malfunction may result in damage to a life.

7.2 Disposal



At the end of the product's use life, please dispose of it at appropriate collection points provided in your country. For disposal or recycling information, please contact your local authorities or the Electronic Industries Alliance (EIA, www.eiae.org). In the European Union, this label indicates that this product should not be disposed of with household waste. It should be deposited at an appropriate facility to enable recovery and recycling or returned to NEAT Electronics AB.

Appendix A Technical data

| Data | Value |
|--|--|
| Dimension (incl. wallframe)(mm) | 86 x 86 x 26 |
| Weight (incl. batteries) | 125 g |
| Frequency _{transmit} | 868.7, 869.2 MHz |
| Frequency _{receive} | 868.7, 869.2, 869.4 MHz |
| Supply voltage _{min} | 10 VDC |
| Supply power _{max} | 28 VDC, 100 VA |
| Battery type | GP Ultra Alkaline AAA or GP Super Alkaline AAA |
| Relay output, switching _{max} | 30 VDC, 250 mA |
| Battery life | 5 years ¹ |
| Button push time _{min} | 150 ms |
| Wired input open/close _{min} | 150 ms |
| Jumper change delay | 3 s |
| Tamper remove/insert delay | 3 s |
| Input cable length _{max} | 10 meters |

¹) Radio test alarm + 4 alarms every day (when battery powered)

Table 16. Technical data

Appendix B Alarm types

| ID (hex) | ID (decimal) | Alarm type |
|----------|--------------|-----------------------------|
| 0x00 | 0 | No alarm type |
| 0x02 | 2 | User alarm from button |
| 0x08 | 8 | Mains failure |
| 0x09 | 9 | Mains return |
| 0x0B | 11 | Battery alarm |
| 0x0E | 14 | Presence indication |
| 0x0F | 15 | Ready indication |
| 0x10 | 16 | Auto ready indication |
| 0x14 | 20 | Assistance alarm |
| 0x15 | 21 | User defined |
| 0x1B | 27 | Wired input/Pull cord alarm |
| 0x1C | 28 | Radio test alarm |
| 0x1D | 29 | Tamper |
| 0x27 | 39 | Service |
| 0x3B | 59 | Tamper OK indication |

Table 17. Alarm types

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