NurseCall Relay Unit

BOSCH

User Manual

Table of Contents

1   Identification

1.1   Document

Name	No.
User Manual	970.020

Table 1.1   Document No.

Version	Description
v1.2	2008.09	First Edition

Table 1.2   Version Management

1.2 Customer support addresses

TeleAlarm SA Bosch Group
Unterer Quai 37
CH-2502 Biel-Bienne
Switzerland
Phone: +41 32 327 25 40

Bosch Security Systems BV
Postbus 80002
5600 JB Eindhoven
Netherlands
Phone: +31 (0)900 8212499

Bosch Security Systems France
Atlantic 361
361, avenue du Général de Gaulle
F-92147 Clamart
France
Phone: + 33 (0)825 12 8000

Bosch Security Systems nv/sa
Torkonjestraat 21F
B-8510 Marke
Belgium
Phone: +32 (0)56 20 02 40

Bosch Sicherheitssysteme GmbH
Haus-ServiceRuf
Ingersheimer Straße 16
D-70499 Stuttgart
Germany
Phone: 01805-47726724

Bosch Security Systems AB
Vestagatan 2
SE-416 64 Göteborg
Sweden
Phone: +46 (0)31 722 5300

Bosch Security Systems Ltd
Broadwater Park
North Orbital Road
Denham
UB9 5HN
United Kingdom
Phone: 01 895-878088

2   Generalities

2.1   Document

> **NOTICE!**
> The words written in italic in this document are explained in the glossary.
> ▶   See *Section 14 Glossary*, page 59.

2.2   *NurseCall* System

Alarms and *Messages* arriving from *NurseCall Transmitters* are managed and stored by the *NurseCall Main Unit*. This unit is compatible with the *NurseCall Master*.

> **NOTICE!**
> The document "*NurseCall General Overview*" explains the system concept.

2.3   *NurseCall Relay Unit*

This *Receiver Unit* is used to improve the radio receiving range of the *NurseCall* system. It must be connected to a *Main Unit* using the RS-485 bus (Maximum bus length: up to 1200 m).

NurseCall Relay Unit can be connected to other *NurseCall Relay Units*, using the RS-485 bus.

> **NOTICE!**
> Connection of several *Receiver Units* together in one system (Main-Relay configuration), see *Section 4.2.5 RS-485 interface*, page 21.

If an *Alarm* or a *Message* is received by the unit, following information is displayed:

- Identification of *Alarm*/*Message*;
- Floor number / room number / bed number or a single number;
- Date and time;
- Quality of received radio signal;
- Type of storage (*Alarm* or *Event*);
- Identification of the unit receiving the *Alarm*/*Message* (Main / Relay).
- Local position if *Localization Mode* is selected.

The attribution of a floor number / room number / bed number or a single number to a *Transmitter* can be selected (0 to 254). The attribution is programmed in the *NurseCall Main Unit*.

NOTICE!
Attribution of a floor number / room number / bed number or a single number to a *Transmitter*, see document "*NurseCall Main Unit - User Manual*".

NOTICE!
The *NurseCall* system can be equipped with the optional function *Localization*. If an *Alarm* is received by the unit, the actual position of the *Transmitter* is shown on the display.

IS76 Beacons with Ferrite Antennas or IS75 Beacons with wire loop should be installed on door frames or corridors in the building to be supervised. When passing one of these beacons, the *Transmitter* updates its current position. At *Alarm* triggering, the *Transmitter* does not only transmit its identification (who sent the *Alarm*), but also the position of the last passed beacon.

3   Safety Instructions

⚠️ **WARNING!**
The *User / Installer* should read and understand this chapter before any intervention on the *NurseCall Relay Unit*.

3.1   Chapter overview

Safety Instructions for a safe and trouble-free operation of the *NurseCall Relay Unit*.

3.2   Introduction

3.2.1   Principle

ⓘ **NOTICE!**
In case of unclear information, please contact your local representative.

3.2.2   Importance of safety instructions

Each safety and protection instruction in this manual must be adhered to in order to avoid personnel injuries, property damages or environmental pollution.
In a similar manner, the legal bylaws, the measures in prevention of accidents and for the protection of the environment, as well as the recognised technical rules aiming at appropriate and safe working conditions which as applied in the country and at the place of use of the *NurseCall Relay Unit* must be adhered to.

3.2.3   Disregarding safety rules

Disregarding the safety rules, as well as existing legal and technical regulations, may lead to accidents, to property damages or to environmental pollution.

3.3 Environmental conditions

⚠ **WARNING!**
The *NurseCall Relay Unit* must not be located near a water tap or any other source of water.
The electrical safety of the *NurseCall Relay Unit* is only guaranteed if the electrical installation is conform to the national reglementation and if this installation works properly.
The *NurseCall Relay Unit* may not be used in buildings prone to fire and explosion hazards.

CAUTION!
The *NurseCall Relay Unit* may not be used under exposure to the direct sunlight, to heat, to dust or to an excessive humidity (only use the equipment in a clean environment).

▶ Install the *NurseCall Relay Unit* in a dry place, away from any source of heat.

CAUTION!
Interferences
Avoid immediate proximity to other electric devices such as a television.

3.4   General safety instructions

DANGER!
Electrocution
During maintenance operations, when the *NurseCall Relay Unit* is powered and its casing is removed, the *NurseCall Relay Unit* may not be left unattended.

CAUTION!
The *NurseCall Relay Unit* may only be connected to the electrical sources as described in *Section 13.1 Electrical specifications*, page 51.

CAUTION!
Maintenance and repairs may only be performed in conformance with the instructions and by authorized *Technical Personnel* only.
The sole possession of the User Manual does not allow the personnel to perform any kind of repair on the *NurseCall Relay Unit*.
Take into account all the warnings and follow all the instructions displayed on the *NurseCall Relay Unit* and those which are printed in the documentation.
Never try to use replacement pieces other than those authorized by the manufacturer of the *NurseCall Relay Unit*.

CAUTION!
It is mandatory to use the products specified in the present User Manual to clean the *NurseCall Relay Unit*. If you plan to use another product, only do so after having obtained the authorisation of the manufacturer.

WARNING! Electro **S**tatic **D**ischarge
The *NurseCall Relay Unit* contains highly sensitive electronic components. It should be opened only in an **ESD** protected environment with respect to the following precautions:
▶   Discharge yourself from electrostatic loads by touching a grounded conductive surface before opening the unit.
▶   Avoid touching conductive parts inside the *NurseCall Relay Unit* if not absolutely necessary.

CAUTION!

Never let any liquid enter the system. In case of liquid spill inside the *NurseCall Relay Unit*, act immediately as follows:

1. Switch off the *NurseCall Relay Unit* using the main switch under the casing.
2. Unplug the power supply adaptor.
3. Dry up the *NurseCall Relay Unit*.
4. Clean the *NurseCall Relay Unit*.
5. Check its electrical functions.

NOTICE!

For further information, please contact your local representative.

3.4.1 Observation and information

In case of defective operation or any other technical incident for which no remedy is described in this manual, please contact immediately your local representative.

3.5 Special safety instructions

Appropriate safety instructions linked to specific risks are described in the corresponding section of this manual.

4 Description

4.1 General description

4.1.1 Top view
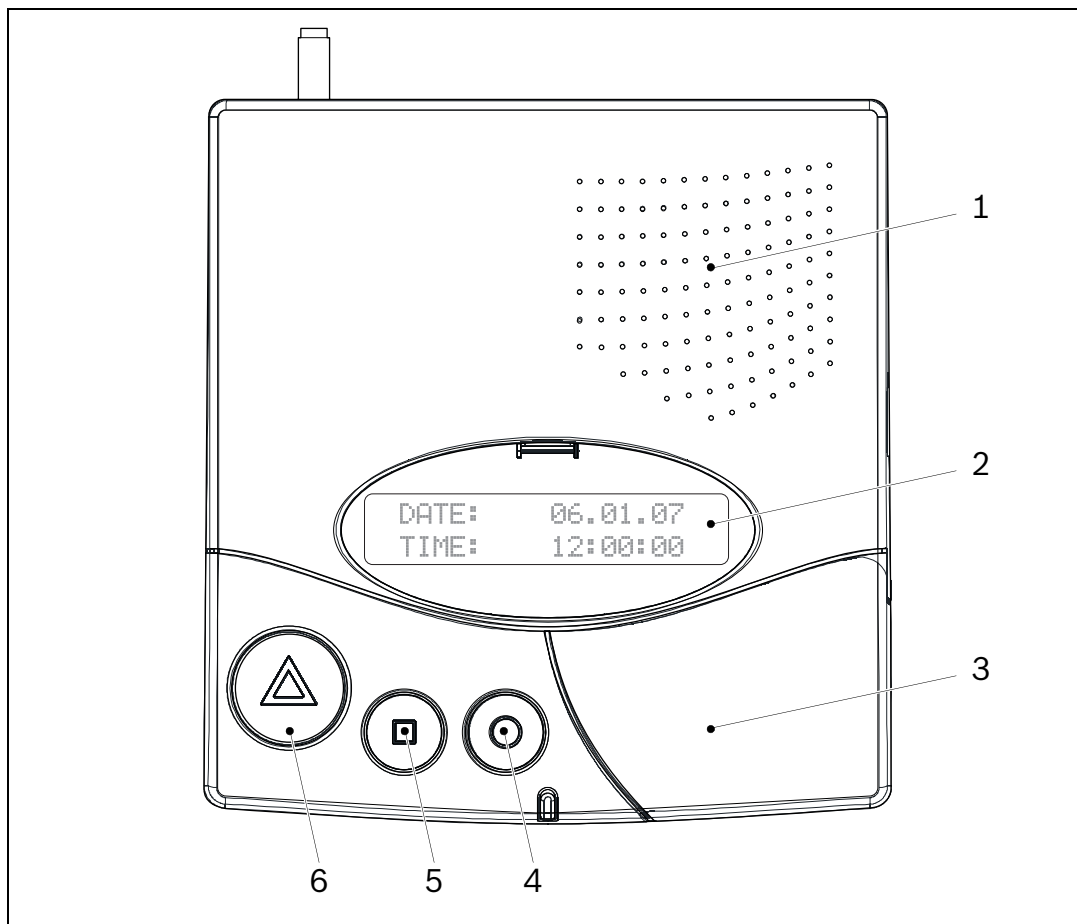
Fig. 4.1 Top view

1. Loudspeaker (See *Section 4.2.1 Loudspeaker*, page 18)

2. Display (See *Section 4.2.2 Display*, page 18)

3. Keyboard (under the cover) (See *Section 4.2.3 Keyboard*, page 18)

4. **Yellow** button
Used to view more details about the *Event* or *Alarm* currently displayed (Date and time, position, etc...).

5. **Green** button
Used to acknowledge an *Alarm* locally (See *Section 8.2.3 Local Acknowledgement*, page 40)

6. **Red** button + light
Used to scroll the *Alarms*. The light is blinking red during an *Alarm*.

4.1.2   Bottom view
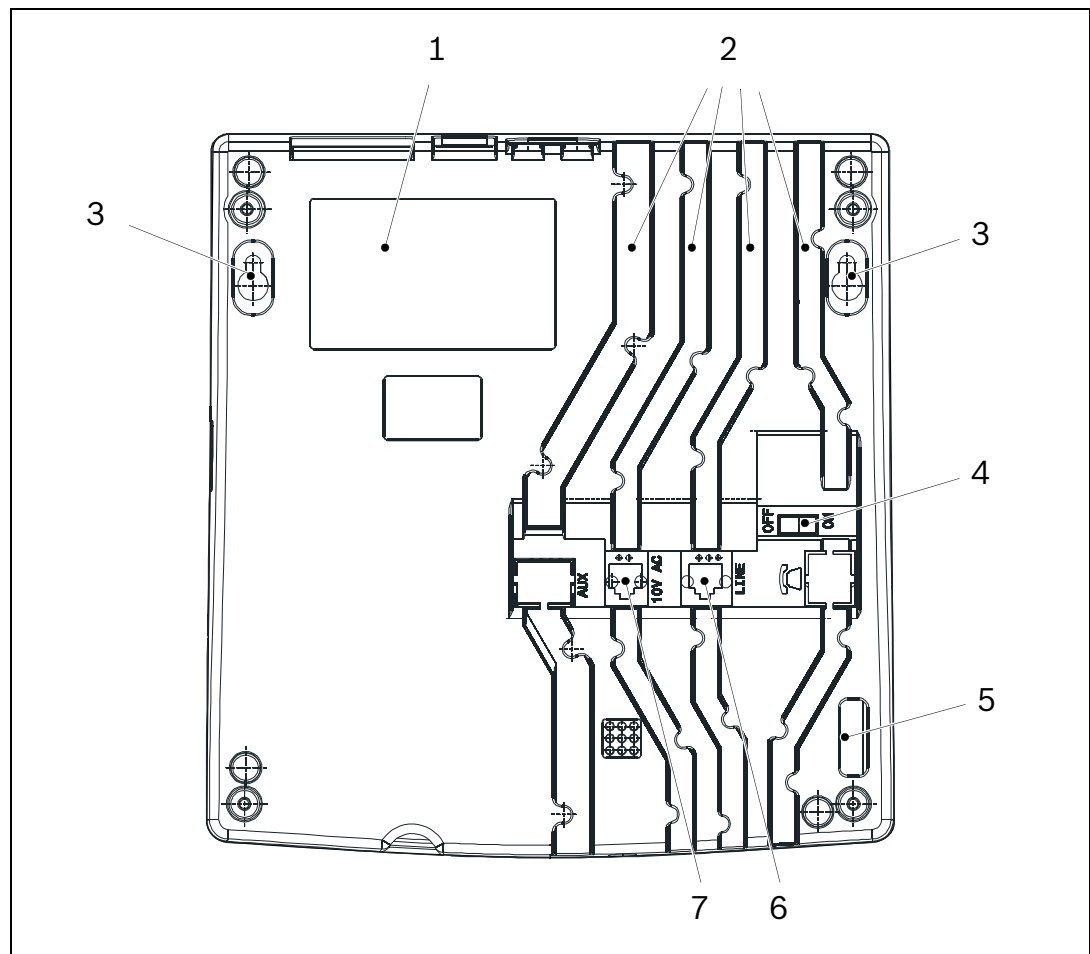
Fig. 4.2   Bottom view

1.   Identification label
▶   See *Section 4.2.4 Identification label*, page 20 for detailed description.

2.   Cable channels

3.   Wall mounting holes (distance between holes, 157 mm)
▶   See *Section 6.2.3 Wall installation*, page 26 for detailed description.

4.   ON/OFF switch

5.   Serial No.

6.   LINE socket (used for firmware update)
▶   See *Section 13.5.1 LINE socket (unit bottom)*, page 54 for wiring.

7.   10V AC socket
▶   See *Section 13.5.2 Power socket (unit bottom)*, page 54 for wiring.

4.1.3 Front view
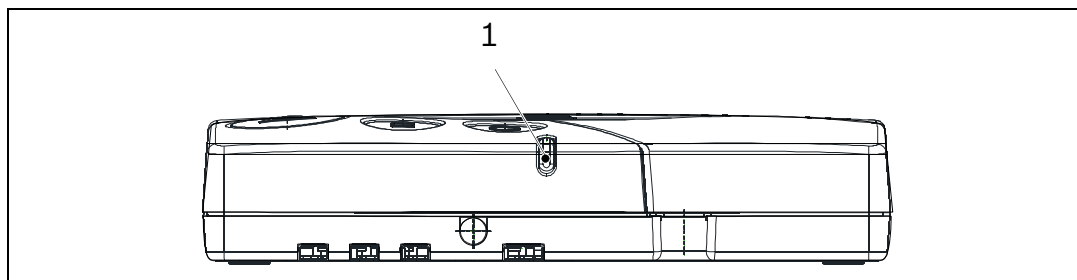
Fig. 4.3 Front view

1. LED Indicator

Status	LED
Standby mode (normal operation)	GREEN (permanent)
Backup battery low	GREEN (blinking)
Power supply disconnected	GREEN (flashing)
Help, Assistance or Fire	RED (blinking)

Table 4.1 LED Indicator

4.1.4 Rear view

Fig. 4.4 Rear view
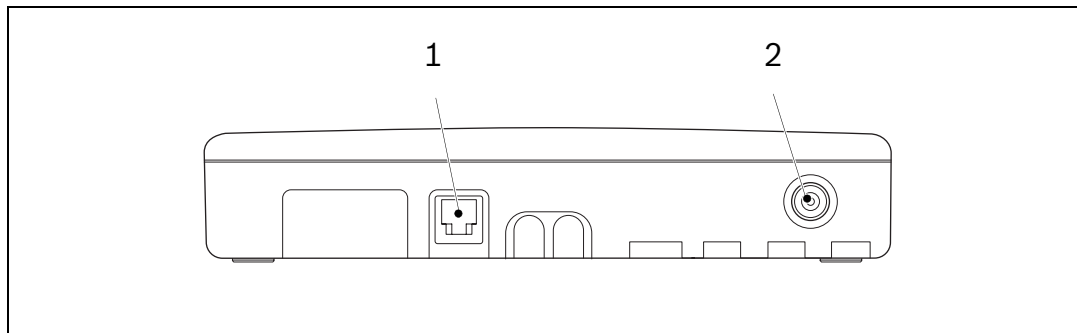
1. RS-485 connector
▶ See *Section 13.5.3 RS-485 (unit rear)*, page 55 for wiring.

2. Antenna connector

4.2 Detailed description

4.2.1 Loudspeaker

When one of the following *Alarms*/*Messages* is received by the *NurseCall Relay Unit*, the internal loudspeaker is activated (until *Acknowledgement*).

Status	Loudspeaker
Power supply disconnected	Dual-Tone beep every minute
Call for Help, *Reserve Call*, *Technical Call*	4 second interval, one tone
Error message	15 second interval, one tone
Disconnection of a *Relay Unit* from RS485-bus	1 minute interval, one tone
Call for Assistance / Fire Alarm	Continuously dual-tone beep
Local Acknowledgement	Short beep

Table 4.2 Loudspeaker

4.2.2 Display

The *NurseCall Relay Unit* is equipped with a 2 x 20 characters display used to display *Alarms* and *Messages* during normal operation.

```
NurseCall Relay Unit
   Software REV C
```

4.2.3 Keyboard

The keyboard has 21 alphanumeric keys. They are used to perform special commands or during normal operation.
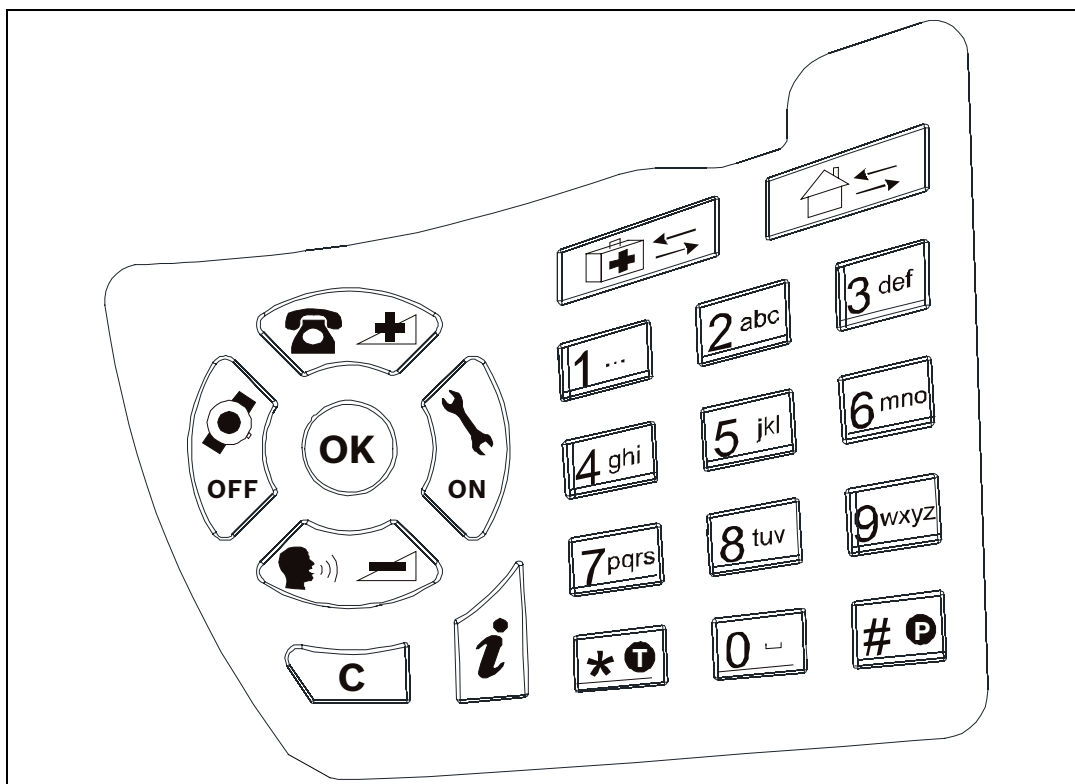

Fig. 4.5 Keyboard
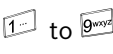
Keys	Function and Reference
☎ +	To increase the volume of the loudspeaker ▶ See *Section 8.1 Loudspeaker volume adjusting*, page 37
📢 −	To decrease the volume of the loudspeaker ▶ See *Section 8.1 Loudspeaker volume adjusting*, page 37
OFF	To scroll down to the previous *Alarm/Event* ▶ See *Section 8.2.1 Switching between Alarm and Event Buffers indication*, page 38
ON	To scroll up to the next *Alarm/Event* ▶ See *Section 8.2.1 Switching between Alarm and Event Buffers indication*, page 38
OK	To confirm a value or a command
C	To cancel an entry or a command.
i	To check the status of the backup battery ▶ See *Section 10.3 Backup battery monitoring and checking*, page 43
⎗⇄	Not used
⌂⇄	Not used
1… to 9wxyz	To enter a value (special codes for example) ▶ See *Section 7.4 Special settings*, page 35
*❶	Not used
0	To enter a value or to launch the *Event/Alarm* display mode ▶ See *Section 8.2.1 Switching between Alarm and Event Buffers indication*, page 38
#❷	Not used

Table 4.3   Keys functions

4.2.4 Identification label

The identification label is located under the unit and permits its precise identification.
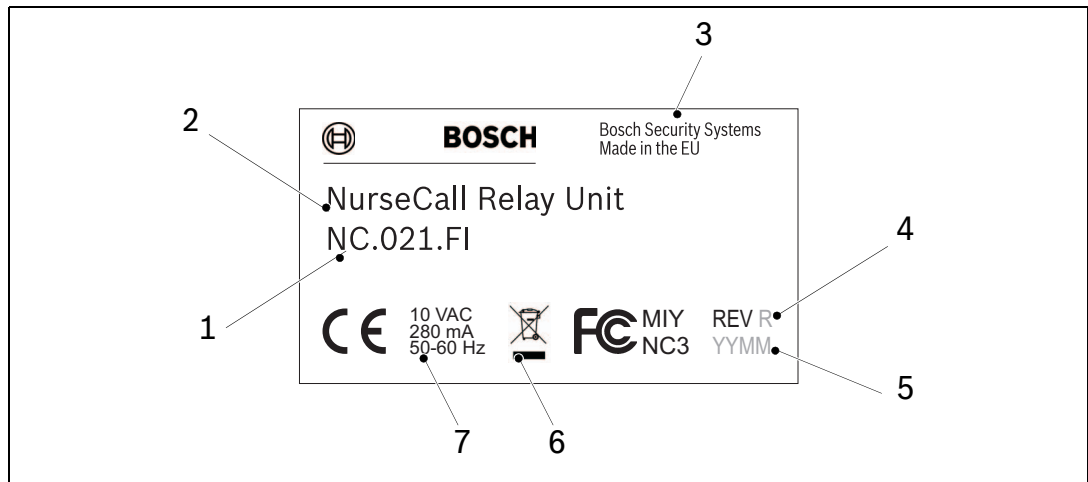
Fig. 4.6 Identification label

1. Identification No. (NC = *NurseCall*, 021 = *Relay Unit*, FI = Finished Product @ 434 MHz)
2. Product name
3. Identifier of origin
4. Revision of software or hardware
5. Year and Month of manufacturing
6. *Crossed-out wastebasket symbol
7. Voltage, current and frequency information

* The *NurseCall Relay Unit* is marked with a crossed-out wastebasket symbol. This means that, at the end of its useful lifespan, the product shall be disposed separately from ordinary household wastes in accordance to the EU Directive 2002/96/EC.

4.2.5   RS-485 interface

One *NurseCall Main Unit* and up to 32 *NurseCall Relay Units* can be connected to a RS485-bus. The bus must be connected to pins 2 and 5 of the RS-485 socket.

▶   For connector wiring, see *Section 13.5.3 RS-485 (unit rear)*, page 55.

CAUTION!

Keep polarity equal when connecting further units to the RS485 bus!

CAUTION!

Maximum RS485-bus length: 1200 m.

▶   Use ***only one twisted pair cable*** for the interconnection.

NOTICE!

The *Receiver Units* located at the two ends of the bus should be terminated with a 100 Ohm resistor.

▶   See *Section 6.2.6 Connecting the RS-485*, page 29 for more information about the jumper setting.

In this configuration, you always should connect the *NurseCall Main Unit* first. The *NurseCall Relay Units* must then be connected to the RS485-bus one by one (not at the same time). You can add a *Printer Interface* to the RS485-bus in order to connect an additional printer or a giant display. In such configuration, the in-house paging system can be combined with a printer without a PC.

Relay output

In the same connector, a potential free contact is available. It is a low current switching contact. The relay (potential free, switching power max. 48 V / 0.5 A) is activated at a *Call for Help*, *Call for Assistance* or *Fire Alarm*. This relay can be set as closing or switching contact (cycle of 10 seconds on / 10 seconds off). This feature can be used to drive a signal lamp for example.

▶   For connector wiring, see *Section 13.5.3 RS-485 (unit rear)*, page 55.

▶   For relay setting, see document "*NurseCall Main Unit - User Manual*".

4.2.6   Antenna

The antenna is connected to the *NurseCall Relay Unit* using the adapter supplied with the unit.

▶   See *Section 6.2.4 Installing the antenna*, page 27.

5   Transport

5.1   Transportation

5.1.1   Domestic
Suitable domestic transportation: by car, by truck, by postal parcel and by train.

5.1.2   International and overseas
For international and overseas transportation, hand the *NurseCall Relay Unit* in its original package to a shipping agent.

5.2   Transportation data

5.2.1   Box dimensions
1.   Length: 39.0 cm (15.35 in)
2.   Width: 33.0 cm (12.99 in)
3.   Height: 6.0 cm (2.36 in)
4.   Weight: approx. 1500 g

6   Installation

6.1   Unpacking

The *NurseCall Relay Unit* is carefully packed for transportation.
The components contained in the box are protected, but should be handled with care.
Store the packaging material for further use (storage or transport).
In case of defective or missing equipment, do not try to install the *NurseCall Relay Unit*.

▶   Contact immediately your local representative.

1.   Take all components out of the box and place the *NurseCall Relay Unit* on the working space.
2.   Check each component in the box, in accordance with the list of contents below.
3.   Check that the *NurseCall Relay Unit* and its accessories have not been damaged during transportation.

6.1.1   List of contents

Reference	Description
NC.021.FI	*NurseCall Relay Unit*
A 058	Power supply adaptor (Europe) 230VAC/10VAC
	or
400-230/10	Power supply adaptor (UK) 230VAC/10VAC UK
	or
400-115/10	Power supply adaptor (US) 115VAC/10VAC
A120	Antenna 434MHz 1/2 L=34 cm FME
A121	Straight adapter BFME-TNC
A122	Right angled bended adapter BFME-ETNC
C1239	2 m Cable FCC 6/4
970.020	*NurseCall Relay Unit* User Manual
970.000	*NurseCall* - General Overview

Table 6.1   Packing list

6.2   Installation

6.2.1   Generalities

▶   Install the *NurseCall Relay Unit* in a dry place, away from any source of heat.

CAUTION!
Interferences
Avoid immediate proximity to other electric devices such as a television.

Tools

–   Torx T20 screwdriver.

6.2.2   Installation on a piece of furniture

It is recommended to place the *NurseCall Relay Unit* on a non-sliding surface. However, do not place anything (blanket, etc.) on top of the unit.

6.2.3   Wall installation

You can fasten the *NurseCall Relay Unit* on a smooth wall surface using two screws (distance between holes, 157 mm).
Power and phone line cords should be placed inside the cable channels on the bottom of the *NurseCall Relay Unit*.

6.2.4 Installing the antenna

NOTICE!

▶ Use the straight adapter (4) for wall installation and the right angled bended adapter (3) for installation on a piece of furniture.

1. Fasten the adapter (3) or (4) on the antenna connector (1).
2. Fasten the antenna (2) on the adapter.
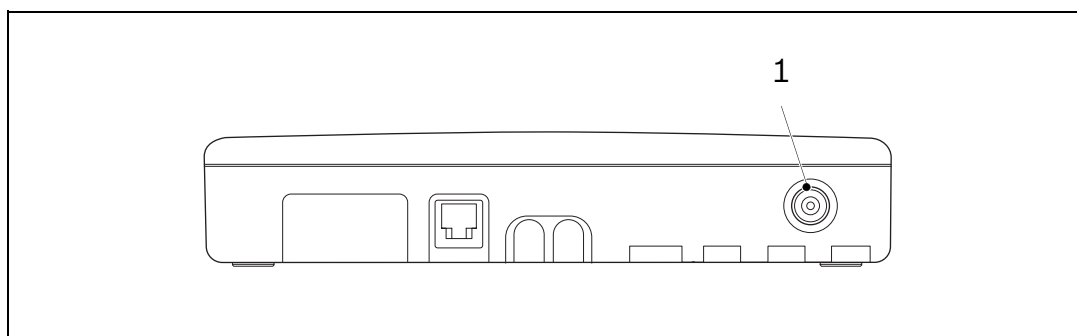
Fig. 6.1   Rear view
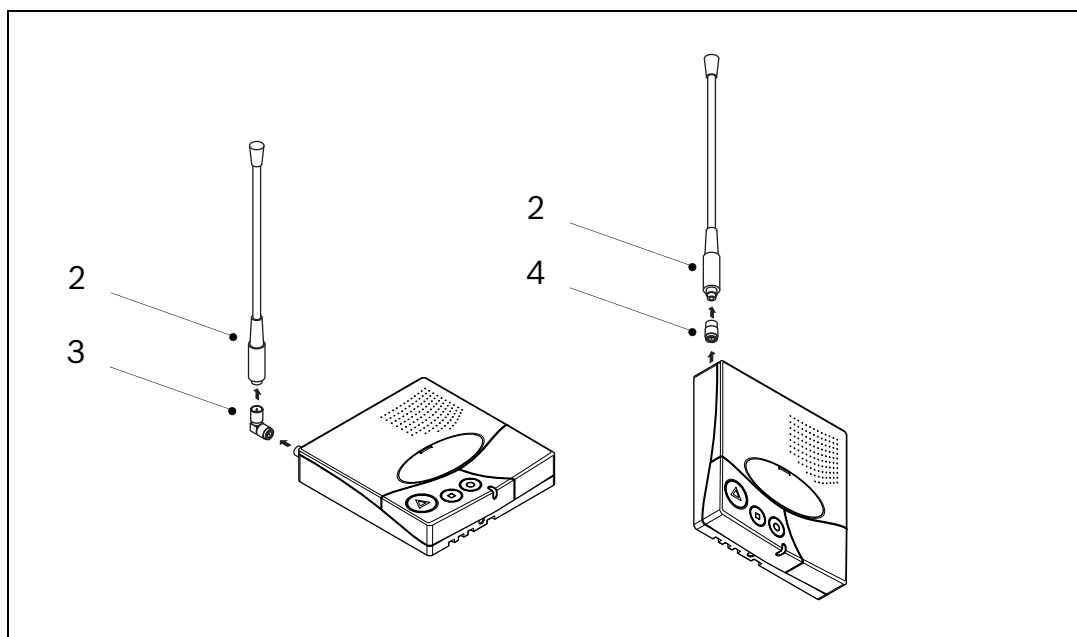
Fig. 6.2   Installing the antenna

6.2.5 Connecting to the mains

The *NurseCall Relay Unit* is powered by an adaptor (230 or 115/10VAC).

CAUTION!

In case of a different supply, the equipment must fulfil isolation requirements according to EN60950 standard (fourth edition or later).

The power adaptor should be plugged in a socket-outlet placed near the unit and should be easily accessible at any time.

The cable is connected to the socket labelled 10V AC (1), under the unit.
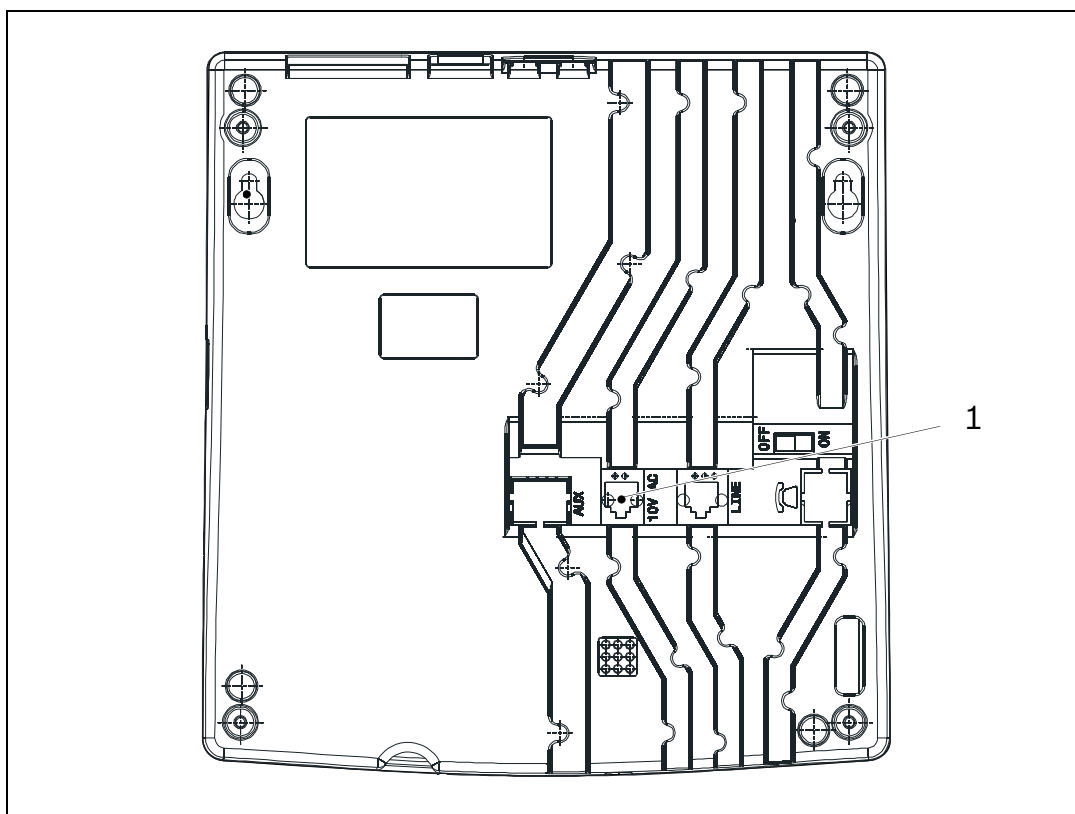
Fig. 6.3 Bottom view

▶   For connector wiring, see *Section 13.5.2 Power socket (unit bottom)*, page 54.

6.2.6   Connecting the RS-485

One *NurseCall Main Unit* and up to 32 *NurseCall Relay Units* can be connected to a RS485-bus.
Please contact a specialist for correct installation.

▶   See *Section 13.5.3 RS-485 (unit rear)*, page 55 for connector wiring.

⚠️ **CAUTION!**

Do not use a star connection for the RS-485 network !

ℹ️ **NOTICE!**

The *NurseCall Main* or *Relay Units* located at the two ends of the bus must be terminated with a 100 Ohm resistor.

▶   See *Section 6.2.7 Setting the 100 Ohm termination jumper*, page 30.
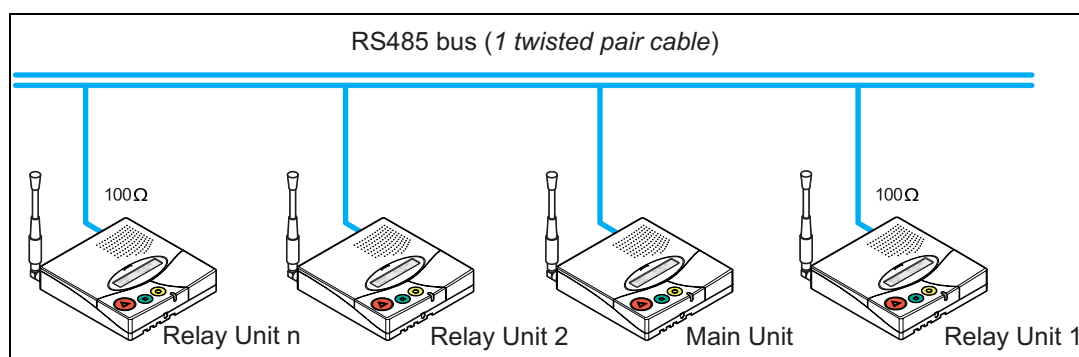
Fig. 6.4   Right connection
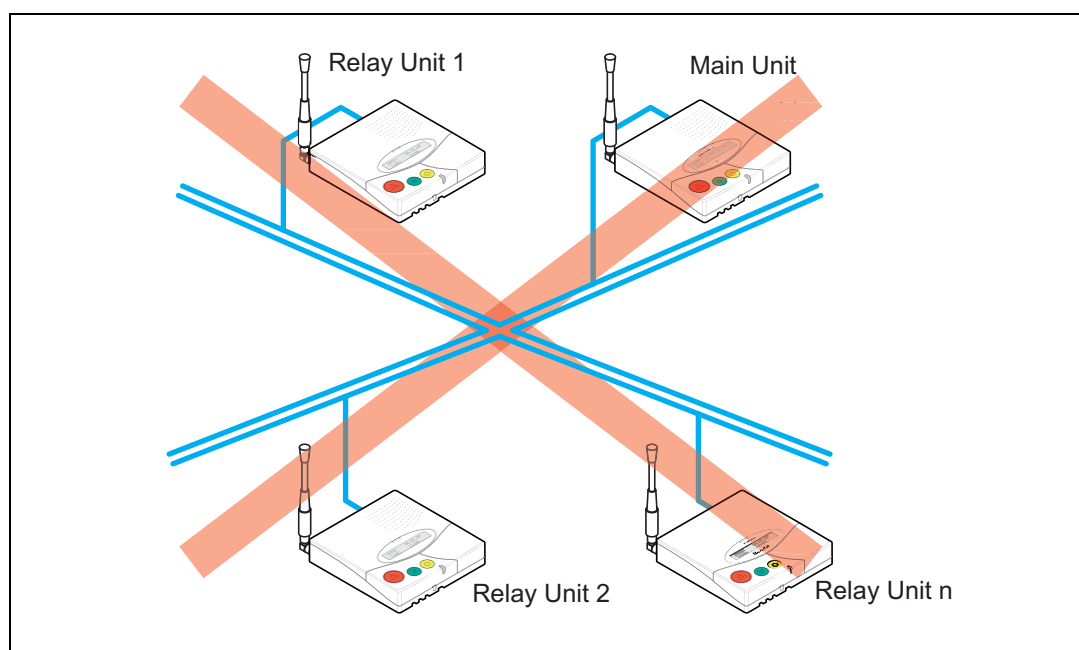
Fig. 6.5   Wrong connection

6.2.7 Setting the 100 Ohm termination jumper

Inside the *NurseCall Main or Relay Units*, the RS-485 interface can be configured with a jumper.

1. Disassemble the unit as described in *Section 10.5.2 Unit Dismantling*, page 44.
2. Remove the serial communication board as described in *Section Serial communication board removing*, page 45.
3. Put the 100 Ohm termination jumper J112 (1).
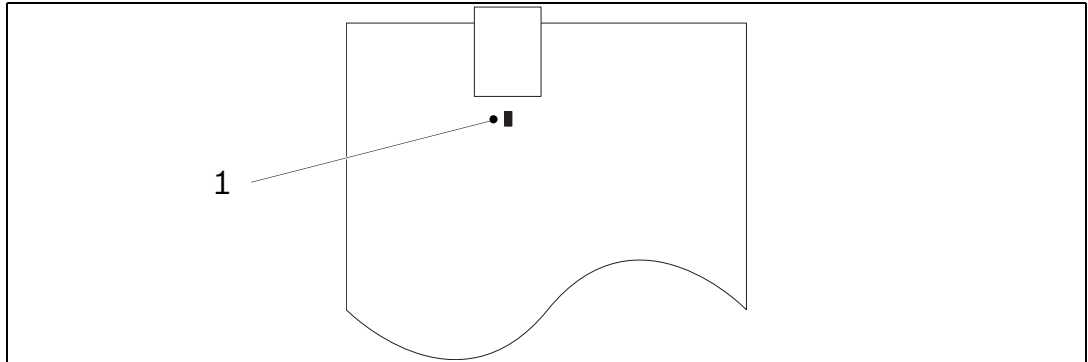
Fig. 6.6   Setting the 100 Ohm termination jumper on the serial communication board

4. Assemble the serial communication board and the unit. This is basically the reverse of the dismantling procedure.

NOTICE!
If you do not want to disassemble the *NurseCall Relay Unit*, you also can short-out the pins 3 and 4 of the connector. This has the same effect as the jumper setting described above.
▶ See *Section 13.5.3 RS-485 (unit rear)*, page 55 for connector wiring.

6.2.8   **Setting the *Localization Mode* and the identification number**

NOTICE!

This setting can be done at the first use or later, after a reset of the *Relay Unit*.

▶   See *Section 7.2 First use*, page 34.

▶   See *Section 7.4.2 Resetting all parameters*, page 35.

▶   See *Section 7.5 Reset of the unit*, page 36.

NOTICE!

The identification number corresponds to the order of connection. The range for this value is (A, B, C, ..., Y, Z, a, b, c, d, e, f) for a maximum of 32 *Relay Units*.

---

1.   Disconnect the *NurseCall Relay Unit* from the RS-485 bus.

2.   Switch the *NurseCall Relay Unit* on with the ON/OFF switch located at the bottom of the unit.

3.   Wait for the message beside.

4.   Switch OFF or ON the indication of the *Transmitter* position (*Localization Mode*) on the *NurseCall Relay Unit* display. It must be the same as in the *NurseCall Main Unit*.

```
LOCALIZATION ?
( OFF / ON  )
```

▶   Press ⟨ON⟩ to activate the *Localization Mode* or

press ⟨OFF⟩ to disable this function.

5.   Wait for the message beside ("x" is the identification number).

```
RELAY UNIT ID: x
( + / - )
```

6.   * While the message is displayed, press the **Red** button.

7.   * The identification number switches to a black field.

```
RELAY UNIT ID: ▓
( + / - )
```

8.   Press (OK) or the **Green** button. The message beside appears.

```
   NurseCall
RELAY UNIT OFF !!!
```

9.   Connect the *NurseCall Relay Unit* to the RS-485 bus. The next free identification number is attributed by the *Main Unit*. The date, the time and the identification number is displayed.

```
DATE:    07.17.07
TIME:    10:43:31   A
```

NOTICE!

* If you need to replace an old unit with a new one, you can set manually the identification

number with the 📞➖ and ☎➕ keys.

---

7   Programming

7.1   Generalities

7.1.1   Using the keyboard

▶   Carefully open the cover and use the keys.
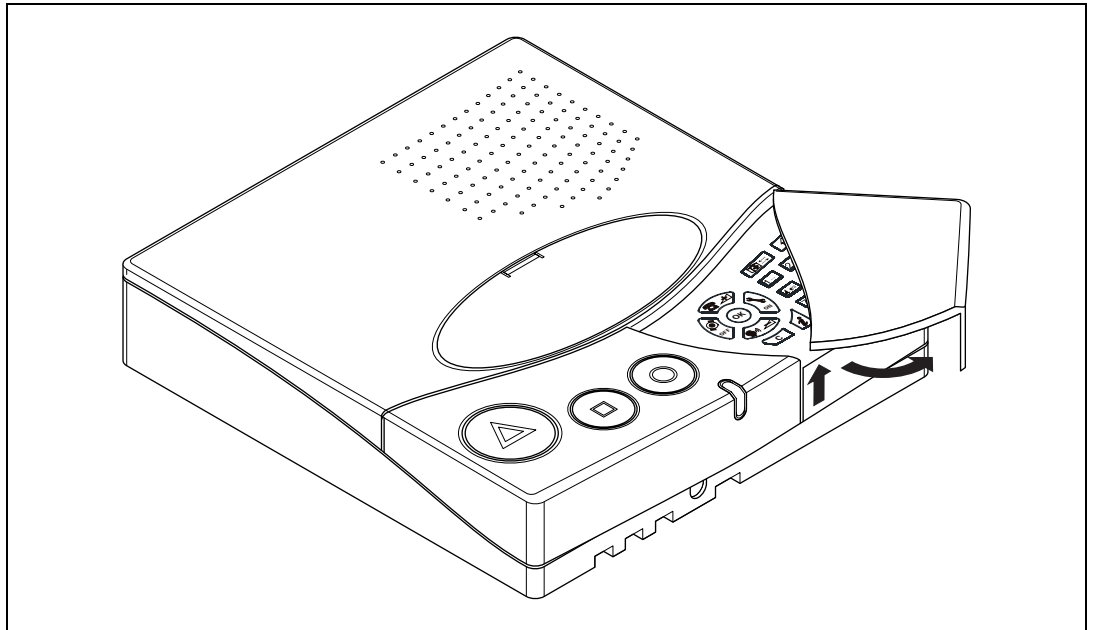
Fig. 7.1   Opening the cover

▶   To access the special settings programming, press the ⬚ key three times quickly.

See *Section 7.4 Special settings*, page 35 for more details.

7.1.2   Cancelling entries or commands

▶   Press the ⬚ key once, or several times.

7.1.3   Key not allowed

▶   If you press a wrong key, a beep is generated.

7.2 First use

At the first use or when you make a reset of the unit, the *Localization Mode* and the identification number must be set.

▶ See *Section 6.2.8 Setting the Localization Mode and the identification number*, page 31.
▶ See *Section 7.4.2 Resetting all parameters*, page 35.
▶ See *Section 7.5 Reset of the unit*, page 36.

7.2.1 List of original factory settings

Parameter	Original Factory Setting	Reference
* Identification number	No value	31
* Localization Mode	Yes (ON)	31
Assistance and fire priority	No	35
Special texts in German	No	36
Speaker Volume	Midrange	37
Display Mode	FL, RO, BE (Floor / Room / Bed)	*Main Unit*
Local Acknowledgement	Yes	*Main Unit*
Access Code for *Local Acknowledgement*	No	*Main Unit*
Output relay function	Switching	*Main Unit*
Output relay mode	Help + Assistance	*Main Unit*

Table 7.1 Original Factory Settings

* A reset of the unit is mandatory to change these parameters.

7.3 Settings that are programmed in the *Main Unit*

The parameters listed below are programmed in the *Main Unit* and also valid for the *Relay Unit*.

▶ See document "*NurseCall Main Unit - User Manual*" for more details about the programming.

– *Display Mode*;
– Interface language;
– Date and time;
– *Local Acknowledgement* setting;
– Output relay setting.

7.4   Special settings

After pressing the ⬜️ key three times quickly, you
can enter the following special codes.

```
┌─────────────────────────────┐
│         Enter Code          │
│                             │
└─────────────────────────────┘
```

7.4.1   Displaying firmware version

1. Type the code *194155*.
2. The version of the firmware will be displayed
   for a few seconds.

```
┌─────────────────────────────┐
│       SOFTWARE REV C        │
│     V1.07 BN111.142.00C     │
└─────────────────────────────┘
```

7.4.2   Resetting all parameters

The following procedure is used to reset all programmed parameters of the *NurseCall Relay
Unit* to the original factory settings.

▶   See also *Section 7.2.1 List of original factory settings*, page 34.

1. Type the code *194156*.
2. After a few seconds, you have to set the *Localization Mode* ON or OFF and set the identifi-
   cation number, as for the first use.

▶   See *Section 6.2.8 Setting the Localization Mode and the identification number*

7.4.3   Assistance and fire priority

This command allows to set the *Assistance Call* and the *Fire Alarm* as a priority.
This means that this type of alarms is displayed first.

1. Type the code *123991*.
2. Confirmation message displayed.

```
┌─────────────────────────────┐
│      ASSISTANCE & FIRE      │
│          PRIORITY           │
└─────────────────────────────┘
```

7.4.4   Assistance and fire non priority

This command allows to set the *Assistance Call* and the *Fire Alarm* as non priority.
This means that the last alarm is displayed (whatever its type). This is the default value.

1. Type the code *123992*.
2. Confirmation message displayed.

```
┌─────────────────────────────┐
│      ASSISTANCE & FIRE      │
│         NONPRIORITY         │
└─────────────────────────────┘
```

7.4.5 Special texts in German

This command allows to set special texts in German. The displayed criteria are BAD/WC instead of TECHNIK and HILFE-2 instead of NOTRUF2.

1. Type the code **123007**.
2. Confirmation message displayed.

```
MULTITONE TEXTE
BAD/WC + HILFE-2
```

7.4.6 Standard texts in German

This command allows to set standard texts in German. This is the default value.

1. Type the code **123008**.
2. Confirmation message displayed.

```
STANDARDTEXTE
TECHNIK + NOTRUF2
```

7.5 Reset of the unit

> **NOTICE!**
> It is mandatory to perform this command if you wish to change the values for the *Localization Mode* and for the identification number.
> ▶ See also *Section 6.2.8 Setting the Localization Mode and the identification number*, page 31.

1. Type the keys 2^{abc} , 3^{def} and 4^{ghi} .
2. Confirmation message displayed.
3. Confirm the RESET with (OK) .

```
RESET ?
(OK) = YES
```

4. After a few seconds, you have to set the *Localization Mode* ON or OFF and set the identification number, as for the first use.
▶ See *Section 6.2.8 Setting the Localization Mode and the identification number*

> **NOTICE!**
> The preset volume is unnafected!

8   Operating Instructions

8.1   Loudspeaker volume adjusting

▶   Press the ☎⁺ key for higher volume.

▶   Press the 🔊⁻ key for lower volume.

8.2   *Alarm-* or *Event Buffer* consulting

The *NurseCall Relay Unit* uses an *Alarm Buffer* and an *Event Buffer* for display indication.
Following *Alarms/Messages* are stored in the *Alarm Buffer*:

–   *Call for Help*;
–   *Call for Assistance*;
–   *Reserve Call* (*Call for Help 2*);
–   *Technical Call*;
–   *Fire Alarm*;
–   Battery Low Message;
–   Error Message;
–   Disconnection of a *NurseCall Relay Unit* from the RS485-bus.

If *Alarms* are repeated, only the "oldest" entry remains in the *Buffer*. The *Call for Assistance*
replaces the *Call for Help*, *Reserve Call* and *Technical Call* in the *Alarm Buffer*.
All possible entries are stored in the *Event Buffer*. Following messages are directly stored in
this *Buffer*:
–   *Acknowledgement* N46 (Sent by N46, S35 or S37);
–   *Acknowledgement* by *Acknowledgement Transmitter* S35 or S37;
–   *Local Acknowledgement* (*Acknowledgement* at the *NurseCall Relay Unit* or *Main Unit*);
–   Daily message check;
–   Personnel Arrival Message (A, B, C and D);
–   Personnel Departure Message;
–   Power outage of a *Receiver Unit*;
–   Return of power at a *Receiver Unit*;
–   Backup Battery Low of a *Receiver Unit*;
–   Interruption of the connection interface RS232 *NurseCall* <-> PC;
–   Return of the connection interface RS232 *NurseCall* <-> PC
–   Connection of a *NurseCall Relay Unit* to the RS485-bus;
–   Transmission of the *Event "Door"* by a RAC *Transmitter*.

> **ⓘ**   **NOTICE!**
> The *Event Buffer* has a capacity of 18 entries.

The *Event Buffer* will normally be filled with the last 18 entries. In the *Alarm Buffer*, only the
active *Alarms* are present.

8.2.1   Switching between *Alarm* and *Event Buffers* indication

(i)	**NOTICE!** The *Alarm Buffer* is indicated by default. If you are in the *Event Buffer*, the unit changes automatically to the *Alarm Buffer* after 1 minute without activity !

(i)	**NOTICE!** If there are no entries in the *Alarm Buffer*, the display shows the actual date and time.

▶   Switch from *Alarm* to *Event Buffer* and vice versa with the ⌞0⌟ key.

▶   Scroll the *Alarms* or the *Events* with buttons (ON) (upwards) or (OFF) (downwards).

▶   Scroll the *Alarms* with the **Red** button.

8.2.2   Display indications

> **i** **NOTICE!**
> With the **Yellow** button, you can switch between three available information blocks.

Following information is displayed at *Alarm/Message* arriving:

First information block
– In case of "floor / room / bed" *Display Mode*:

1. Criterion of the *Alarm/Message*;
2. *Alarm* (A) - or *Event* (E);
3. Identification of the *Transmitter* location; (floor/room/bed number).

```
  1                    2

HELP            A03
FL:012 RO:015 BE:001

  3         3        3
```
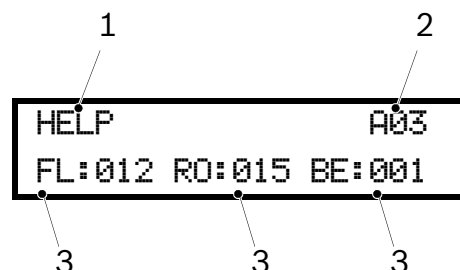
– In case of "single number" *Display Mode*:

1. Criterion of the *Alarm/Message*;
2. *Alarm* (A) - or *Event* (E);
3. Identification of the *Transmitter* location; (three digits).

```
  1                    2

HELP            A03
NU:001

  3
```
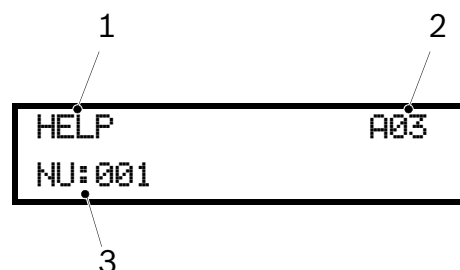
Second information block
– In both *Display Modes*:

4. Date of the *Event*;
5. Time of the *Event*;
6. *Main Unit* (space) or *Relay Unit* (A...f) identification number;
7. Quality of the received radio signal.

```
LOCAL ACK.      E02
06:05:04 13:33:05 C2

   4      5      6 7
```

Third information block
– In both *Display Modes*:

8. Position of the last passed beacon.

```
HELP            A01
POS: 123

        8
```
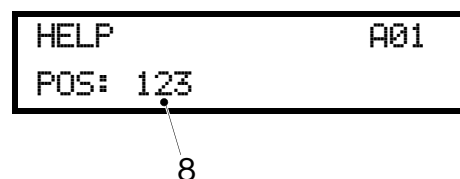
In the *Alarm Buffer*, the total number of entries is indicated on top at the right. You can immediately see how many *Alarms* are active (in our example, there are totally 3 *Alarms* in the *Alarm Buffer*.

```
HELP            A03
NU:001
```

On the other hand, in the *Event Buffer* the position of the *Event* in the *Buffer* is indicated (E01 corresponds to the latest entry in the *Event Buffer*).

```
LOCAL ACK.      E01
06:05:04 13:33:05 C2
```
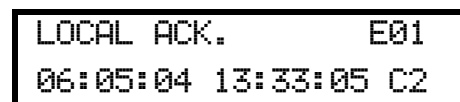
Unit displaying the current date and time

```
DATE:     06.05.07
TIME:     14:44:11    H
```

Unit displaying an active *Alarm*

```
HELP                 A01
NU:001
```

Unit displaying an *Event* in the *Buffer*

```
LOCAL ACK.           E04
NU:001
```

8.2.3   *Local Acknowledgement*

▶   The *Local Acknowledgement* is performed on the *NurseCall Relay Unit* with the **Green** button.

The *Local Acknowledgement* setting is made in the *Main Unit*.

▶   See document "*NurseCall Main Unit - User Manual*" for more details about the programming.

(i) NOTICE!
The *Alarm* receiving an *Acknowledgement* is removed from the *Alarm Buffer*. The *Alarm* and its *Acknowledgement* can then be found in the *Event Buffer*.

8.2.4   *Relay Unit* disconnecting

If a *Relay Unit* stops communicating with the *Main Unit*, an *Alarm* "Relay Off" is generated on the *Main Unit*.

This *Alarm* can only be acknowledged on the *Main Unit* by pressing the **Green** button, followed by the code "45". Thereafter, an Event "No Relay" is generated.

As soon as the *Relay Unit* communicates again with the *Main Unit*, the *Event* "Relay On" is generated.

(i) NOTICE!
This operation is independent of the *Local Acknowledgement* setting.

---

9   Troubleshooting

9.1   The Green button does not work

If you are trying to acknowledge an *Alarm* with the **Green** button without success, the *Local Acknowledgement* is probably disabled.

▶   To activate the *Local Acknowledgement* function, see document "*NurseCall Main Unit - User Manual*".

10   Maintenance

10.1   System checking

▶   Perform periodically an *Alarm* test in order to verify the correct function of your *NurseCall* system.

10.2   Power supply monitoring

In case of a power failure, the *NurseCall Relay Unit* emits a warning tone and the following message is displayed.

```
Main Power
Error
```

The backup battery ensures that the *NurseCall Relay Unit* remains operational even in case of power failure. When fully charged, the battery ensures a power backup of 24 hours. When power returns after a power failure, the battery is recharged and, if it has been completely discharged, it will reach its full capacity after 24 hours of charging time.

10.3   Backup battery monitoring and checking

NOTICE!
The status of the battery is indicated on the top right of the display.

▶   The backup battery voltage is checked with the ⓘ key.

```
Checking
Local Battery
```

NOTICE!
–   At startup, automatic checking.
–   Every 30 minutes, automatic checking.

▶   If the remaining battery capacity drops below 25 %, a warning message is displayed.

```
Local Battery
Empty
```

▶   If the *NurseCall Relay Unit* detects that the backup battery is defective, a warning message is displayed.

```
Local Battery
Failure
```

▶   If the backup battery is defective, replace it as described in *Section 10.5.3 Backup battery replacing*, page 45.

10.4   Cleaning

CAUTION!
Avoid using cleaning products, cleansers or detergents.

▶   Wipe off your *NurseCall Relay Unit* occasionally with a dry cloth.

10.5   Parts replacement

10.5.1   Safety instructions

WARNING! Electro **S**tatic **D**ischarge
The *NurseCall Relay Unit* contains highly sensitive electronic components. It should be opened
only in an **ESD** protected environment with respect to the following precautions:
▶   Discharge yourself from electrostatic loads by touching a grounded conductive surface
       before opening the unit.
▶   Avoid touching conductive parts inside the *NurseCall Relay Unit* if not absolutely neces-
       sary.

CAUTION!
Never try to use replacement pieces other than those authorized by the manufacturer of the
NurseCall Relay Unit.

10.5.2   Unit Dismantling

Antenna removing
1.   Remove the antenna (1) and its adapter (2) or (3).
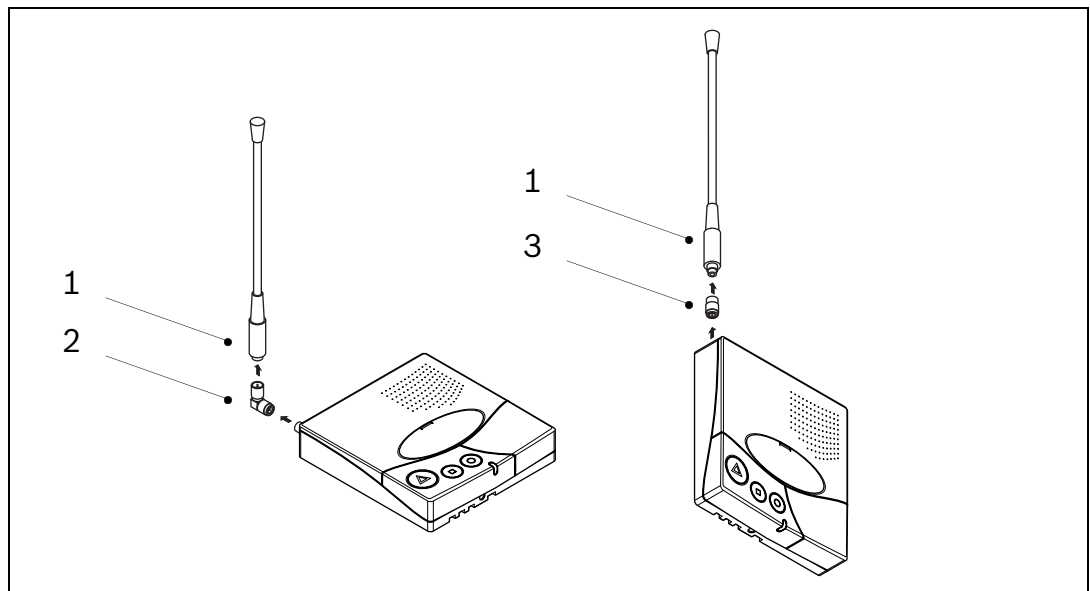
Fig. 10.1   Antenna removing

Serial communication board removing

CAUTION!

▶   Do not damage the battery cable and its connector (7).

▶   Do not damage the serial communication board connectors.

---

1.   Unscrew and remove the 4 screws (4) using a Torx T20 screwdriver.
2.   Unscrew and remove the screw (5) using a Torx T20 screwdriver.
3.   Carefully remove the serial communication board (6).
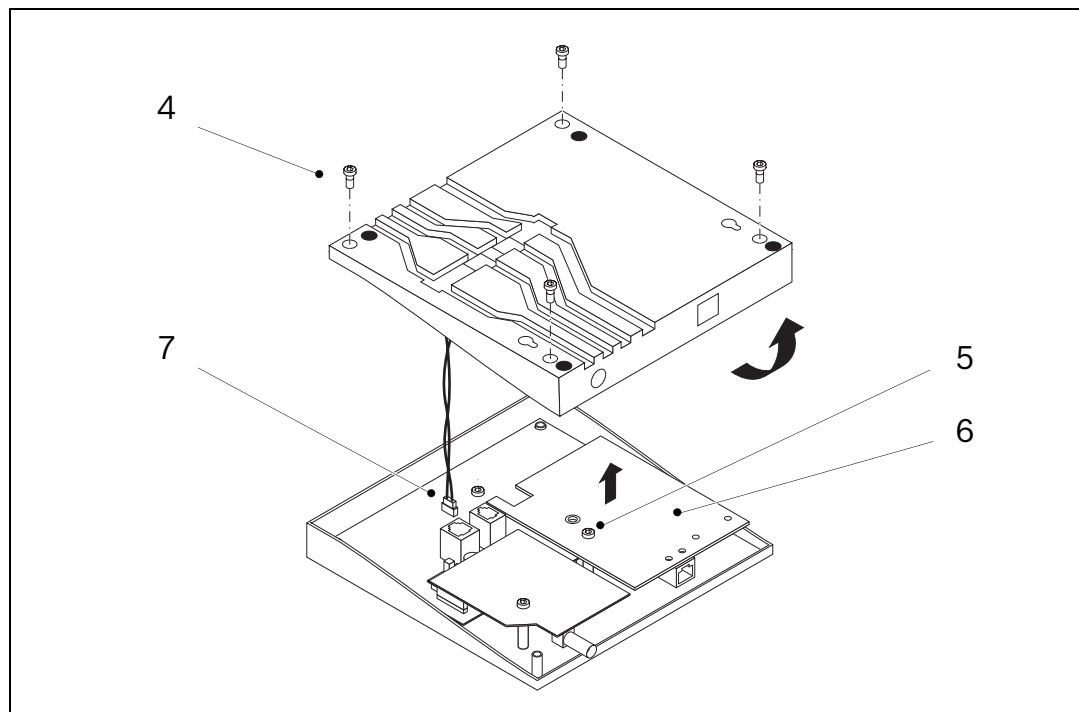
Fig. 10.2   Unit dismantling and serial communication board removing

10.5.3   Backup battery replacing

Important Safety Instructions

The battery shall be fully charged during 24 hours before using the *NurseCall Relay Unit* for the first time, after replacing the battery or after a long "power shortage".

NOTICE!

The battery will charge correctly between +5º C (+41º F) and +45º C (+113º F).

A new battery or one that has not been used for a long time could have reduced capacity the first time it is used.

A rechargeable battery can be charged and discharged hundred of times. However, it will eventually wear out . This not a defect. It is recommended to replace batteries that are not anymore able to ensure a minimum power back-up time of 8 hours (at full charge).

WARNING!
– May explode if exposed to fire;
– Use only original batteries intended for use with your *NurseCall Relay Unit*. Using other type of batteries could be dangerous;
– Do not expose the battery to liquids;
– Do not let the metal contacts on the battery touch another metal. This could damage the battery;
– Do not disassemble or modify the battery;
– Do not expose the battery to extreme temperatures, and never above 60º C (+140º F).
– For maximum battery capacity, use the battery at room temperature;
– Keep out of reach of children;
– Use the battery for the intended purpose only;
– Do not allow the battery to be put into the mouth. Battery electrolytes may be toxic if swallowed.

CAUTION!
There is a risk of explosion if battery is replaced by a wrong type.
The battery should be replaced exclusively by *Authorized Personnel*.
Dispose of used batteries according to instructions and regulations.

NOTICE!
Battery type, 6V Ni/MH

Procedure
1. Disassemble the unit like described in *Section 10.5.2 Unit Dismantling*, page 44.
2. Disconnect the battery cable (1).
3. Carefully remove the defective backup battery (2).
4. Place the new backup battery.
5. Connect the new battery cable (1).
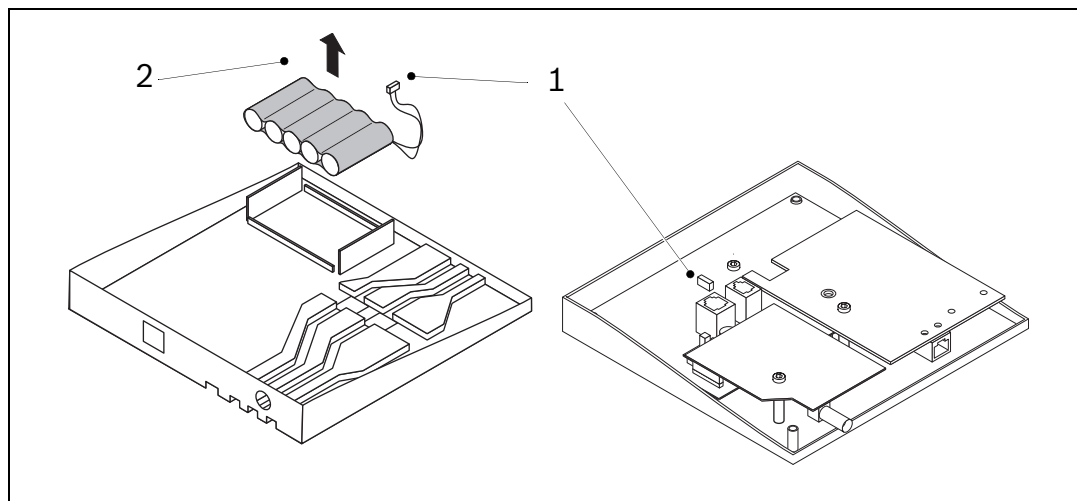
Fig. 10.3   Replacing the backup battery

11   Storage

One can distinguish between long term storage and short term storage.

If the *NurseCall Relay Unit* must be temporarily stored, it may not be necessary to wrap it completely.

However, if you wish to store the *NurseCall Relay Unit* for longer time, for instance in a storage room or any similar location, it is recommended to use original packing material.

11.1   Short term storage

11.1.1   Short term storage conditions

Unwrapped *NurseCall Relay Unit* in a room:

–   Protection against direct sunlight and dust.

11.1.2   Long term storage conditions

NOTICE!

The *NurseCall Relay Unit* does not loose its programmed parameters when the power supply and the backup battery are disconnected.

NurseCall Relay Unit in its original packing material in a storage room:

–   Backup battery removed;

–   Protection against direct sunlight and dust.

12   Disposal

This chapter describes the appropriate disposal of the *NurseCall Relay Unit*.

The *NurseCall Relay Unit* is marked with a crossed-out wastebasket symbol.
This means that, at the end of its useful lifespan, the product shall be disposed separately from ordinary household wastes in accordance to the EU Directive 2002/96/EC.
The product and its accessories shall be delivered to an appropriate collection facility that will permit recycling, treatment and environmentally compatible disposal. This will prevent negative impact on the environment and human health and promotes the recycling of materials.
For more information on available collection facilities, contact your local waste collection service or your local representative.

12.1   Disassembly

Only *Authorized Personnel* is allowed to disassemble a *NurseCall Relay Unit*.

12.2   Local disposal locations

The nearest disposal locations are established in conformance with the currently applicable laws. Ask the local authorities.

12.3   Returning to the manufacturer

If there is no practical disposal place, the *NurseCall Relay Unit* may be returned to your local representative.

12.4 Materials

The *NurseCall Relay Unit* must be returned to an authorized point of recycling.

In order to protect people and environment, the *NurseCall Relay Unit* must be recycled in an adequate manner. Consequently, all applicable laws and bylaws must be respected.

12.4.1 Battery

> **NOTICE!**
> The battery should never be placed in municipal waste. Use a battery disposal facility if available.
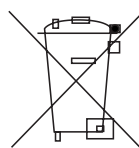

Fig. 12.1 Crossed-out wastebasket symbol

▶ Please check local regulations for disposal of batteries or call your local representative for information.

13   Appendix

13.1   Electrical specifications

Voltage	230 or 115/10VAC
Current	280 mA
Frequency	50/60 Hz
Power	2.8 W max.

Table 13.1   Electrical specifications

13.2   Dimensions and weight

Casing dimensions	**[mm]**
Depth	220
Width	180
Height	40
Antenna	**[mm]**
Height	400
Casing weight	**[g]**
Weight (including antenna and power supply adaptor)	740

Table 13.2   Dimensions and weight

13.3   Environmental conditions

Operating temperature	0 - 40°C

Table 13.3   Environmental conditions

13.4   List of criteria

Criterion	Number transmitted to RS-232	Alarm (A) or Event (E)	Transmitted to DECT/paging systems	Comment
ERROR	00	A	Yes	System malfunctioning. Example: component defective (N46)
PERSONNEL A	01	E	No	Coded key presence (N46)
LOW BATTERY	02	A	Yes	Battery at low level (*Transmitter*)
ACK. N46	03	E	No	*Acknowledgement* (Sent by N46, S35 or S37)
DOOR	04	E	No	Door open or door closed
TECHNICAL	05	A	Yes	*Technical Call* (N46)
PERSONNEL C	06	E	No	Coded key presence (N46)
HELP	07	A	Yes	*Call for Help*
UNKNOWN	08	E	No	Not used
END PERSONNEL	09	E	No	Removed coded key (N46)
PERSONNEL D	10	E	No	Coded key presence (N46)
ASSISTANCE	11	A	Yes	*Assistance Call*
24 HOURS	12	E	No	Daily message check
RESERVE	13	A	Yes	*Reserve Call* (N46)
PERSONNEL B	14	E	No	Coded key presence (N46)
RADIO NOISE	15	E	No	Bad radio transmission (noise)
FIRE	16	A	Yes	*Fire Alarm*
ACK. TRANSM.1	17	E	No	*Acknowledgement* (*Ack. Transmitter* No. 1)
LOCAL ACK.	18	E	No	*Local Acknowledgement* (*Main Unit* or *Relay Unit*)
POWER OUTAGE	19	E	No	*Main Unit* or *Relay Unit* not powered
POWER BACK	20	E	No	Powerer back (*Main Unit* or *Relay Unit*)
COMPUTER OFF	21	E	No	Alarm management PC off
COMPUTER ON	22	E	No	Alarm management PC on
BAT.ACK.TRANSM	23	E	No	Battery at low level (One of the *Ack. Transmitter*)
RELAY ON	24	E	No	*Relay Unit connected on RS-485 Bus*
RELAY OFF	25	A	No	*Relay Unit disconnected from RS-485 Bus*
NO RELAY	26	E	No	*Relay Unit* off acknowledged (*Main Unit*)

Table 13.4   List of criteria

Criterion	Number transmitted to RS-232	Alarm (A) or Event (E)	Transmitted to DECT/paging systems	Comment
LOW ACCU	27	E	No	Accumulator discharged (*Maint Unit* or *Relay Unit*)
ACK. TRANSM.2	28	E	No	*Acknowledgement* (*Ack. Transmitter* No. 2)
ACK. TRANSM.3	29	E	No	*Acknowledgement* (*Ack. Transmitter* No. 3)
ACK. TRANSM.4	30	E	No	*Acknowledgement* (*Ack. Transmitter* No. 4)
ACK. TRANSM.5	31	E	No	*Acknowledgement* (*Ack. Transmitter* No. 5)
ACK. TRANSM.xx	xx	E	No	*Acknowledgement* (*Ack. Transmitter* No. xx)
ACK. TRANSM.32	58	E	No	*Acknowledgement* (*Ack. Transmitter* No. 32)

Table 13.4   List of criteria

NOTICE!
All *Events* are buffered into the *Event Buffer* of the *NurseCall Relay Unit*.
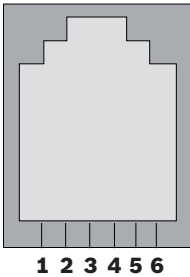
13.5 Connectors

13.5.1 LINE socket (unit bottom)

LINE socket	Wiring
1 2 3 4 5 6	1. Flash Data GND 2. Not used 3. Not used 4. Not used 5. Not used 6. Flash Data IN/OUT

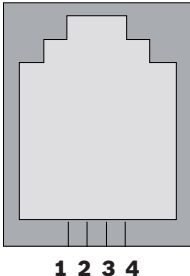**Table 13.5**   Line socket wiring

13.5.2 Power socket (unit bottom)

10V AC socket	Wiring
1 2 3 4	1. NC 2. AC-1 10-12VAC 3. AC-2 4. GND

Table 13.6   Power socket wiring

13.5.3   RS-485 (unit rear)

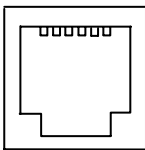| RS-485 socket	Wiring
1 2 3 4 5 6	1. Relay output (a) 2. RS485 (A) 3. Termination = RS485 (A) 4. RS485(A) when jumper end line is placed 5. RS485 (B) 6. Relay Output (b)

Table 13.7   RS-485 wiring

13.6   EC-Declaration of conformity

Security Systems   **BOSCH**

$C\mathcal{E}$ **EC-Declaration of Conformity**

The undersigned, representing the following manufacturer
Manufacturer

TeleAlarm SA, Bosch Group
Security Systems, Product Group Care Solutions

Address:

Rue du Nord 176
2300 La Chaux-de-Fonds
SWITZERLAND

hereby declares that the following product(s)

NurseCall 3 Main Unit
NurseCall 3 Relay Unit

is (are) in conformity with the regulations of the following marked EC-directive(s)
and bear(s) th$C\mathcal{E}$ - mark accordingly

	reference number	title
☒	89/336/EEC	EMC Directive (EMC)
☒	2006/95/EC	Low-Voltage Directive (LVD)
☐	89/106/EC	Construction Products Directive (CPD)
☒	1999/5/EC	Radio equipment and Telecommunications Terminal Equipment (R&TTE), according to annex V
☐	94/9/EC	Electrical Apparatus for Potentially Explosive Atmospheres (ATEX), according to annex IV and VII

The conformity of the product(s) with (above ticked) EC directives is provided by the compliance
with the following standard(s):

Standard(s) / date
EN 60950-1 / 2001 + A11 / 2004
EN 55022 / 1998 + A1 / 2000 + A2 / 2003
EN 300220-1 / 2000
EN 50130-4 / 1995 + A1 / 1998 + A2 / 2003
EN 301489-3 / 2002
EN 61000-4-2 / 1995 + A1 / 1998 + A2 / 2001
EN 61000-4-3 / 1996 + A1 / 1998 + A2 / 2001
EN 61000-4-4 / 1995 + A1 / 2001 + A2 / 2001
EN 61000-4-5 / 1995 + A1 / 2001
EN 61000-4-6 / 1996 + A1 / 2001
EN 61000-4-11 / 1994 + A1 / 2001

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Fig. 13.1   EC-Declaration of conformity, page 1

Place, date:

La Chaux-de-Fonds,
2007.05.21

------------------------------   ------------------------------
Vice President Business Unit   **R+D Manager Business Unit**
Printed name: Printed name:

Bernd Riedemann   Ludovic Stauffer

Document No: _Version:_

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Fig. 13.2   EC-Declaration of conformity, page 2

Annex to CE Declaration of Conformity

Document No: , version:

No of test report(s) /date

14'723 / 2005.09.05
EMC060315SP01 / 2006.03.15
EMC060315SP02 / 2006.03.15
EMC060315SP03 / 2006.03.15
EMC060315SP04 / 2006.03.15
EMC060315SP05 / 2006.03.15
EMC060315SP06 / 2006.03.15
EMC060315SP07 / 2006.03.15
EMC060315SP08 / 2006.03.15
EMC070416JLC01 / 2007.04.16
EMC070416JLC02 / 2007.04.16
EMC070416JLC03 / 2007.05.10
EMC070416JLC04 / 2007.04.16
EMC070416JLC05 / 2007.04.16
EMC070416JLC06 / 2007.04.16
EMC070416JLC07 / 2007.04.16

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Fig. 13.3   EC-Declaration of conformity, page 3

14   Glossary

A

Acknowledgement	Alarm receipt or reset.
Acknowledgement Transmitter	Transmitter used to acknowledge alarms.
Alarm	Signal to warn of a danger.
Alarm Buffer	Memory used to store alarms.
Alarm Management Software	Software installed on a PC to manage alarms or messages.
Alarm Transmitter	Radio transmitter used for alarm triggering (S37 for example).
Assistance Call	Alarm sent to ask for assistance.
Authorized Personnel	Persons who are authorized by their training to perform specific activities with the *NurseCall Relay Unit*. An electrician is designated as *Authorized Personnel* involved with the activities related to the connecting of the *NurseCall Relay Unit* to the electric power supply.

B

Buffer	Memory used to store events or alarms.

C

Call for Assistance	Alarm sent to ask for assistance.
Call for Help	Alarm sent to ask for help.
Call for Help 2	Alarm sent to ask for help (N46, reserve call).

D

Day	Time duration defined between Night end time and Night starting time. During the Night, the alarms are transfered to the paging group 24.

E

Event	Alarm receiving an acknowledgement. The alarm and its acknowledgement are thereafter defined as event.
Event Buffer	Memory used to store events.
Event "Door"	Special event sent when a door is passed.

F

Fire Alarm	Alarm sent in case of fire.

I

Installer	Persons who are authorized by their training to perform the installation of your system.

L

Local Acknowledgement	Acknowledgement at the *NurseCall Relay Unit* or *Relay Unit*.
Localization Mode	Special mode used to send the transmitter position.

M

Main Unit	Receiver unit used to manage and store the alarms and messages arriving from *NurseCall Transmitters* and *Relay Units*.
Message	Signal transmitted to a receiver for information (for example, "DOOR").

N

Night	Time duration defined between Night starting time and Night end time. During the Night, the alarms are transfered to the paging group 24.
NurseCall	Your smart system.

P

Parameter	A user-adjustable value that governs some aspect of a device's performance (Example, Night starting time).

R

Receiver Unit	*Main Unit* or *Relay Unit*.
Relay Unit	Receiver unit used to improve radio reception range.
Reserve Call	Alarm sent to ask for help (N46, Call for Help 2).

T

Technical Alarm	Alarm triggered by activating a contact in the N46.
Transmitter	A device used for the generation of signals of any type and form that are to be transmitted.

U

User	Persons who are authorized by their training to use the *NurseCall* system.