

# NOKIA 32



SUPPORT GUIDE FOR  
INSTALLING NOKIA 32

**NOKIA**



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## 1. INTRODUCTION

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This document goes through the settings that are mandatory when installing the Nokia 32 terminal to a Private Branch Exchange (PBX). This document does not contain detailed technical information on fixed line installations. Hints are given on how to avoid problems caused by incorrect installation.

## 2. INSTALLATION

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### 2.1 INSTALLATION ENVIRONMENT

The Nokia 32 terminal should not be installed very close to a metal ceiling. However, under some circumstances the installation is possible with an external antenna. The environmental temperature should be between -10°C...+55°C and the humidity between 20 - 75%.



**Caution:** In order to comply with RF exposure requirements, install the terminal so that a minimum distance of 20 cm can be maintained between the antenna and all persons. If you use an external antenna, install the antenna so that a minimum distance of 20 cm can be maintained between the antenna and all persons, with antenna gain not exceeding 3 dBi.

### 2.2 CONNECTING NOKIA 32 TERMINAL AND PBX / TELEPHONE SET

- The wires from the trunk or extension connector should not be installed close to the antenna or other obstacles that might disturb the audio lines.
- The distance between the PBX (or telephone set) and Nokia 32 should be more than 1 meter. The distance between Nokia 32 terminals should be more than 0.3 m. In case of interference, increase the distance.
- If the multi-pair cable is used, the unused pairs should be grounded from one end.
- Connect only pins 1, 3 and 4 (trunk) and 3 & 4 in extension interface
- Use twisted pair cable to minimize disturbances.
- Use only the RJ11 6/6 connectors.



**Tip:** If the Nokia 32 terminal is connected to a PBX, and the B subscriber occasionally hears part of his/her own speech as an echo, tune the microphone sensitivity and/or voice volume.



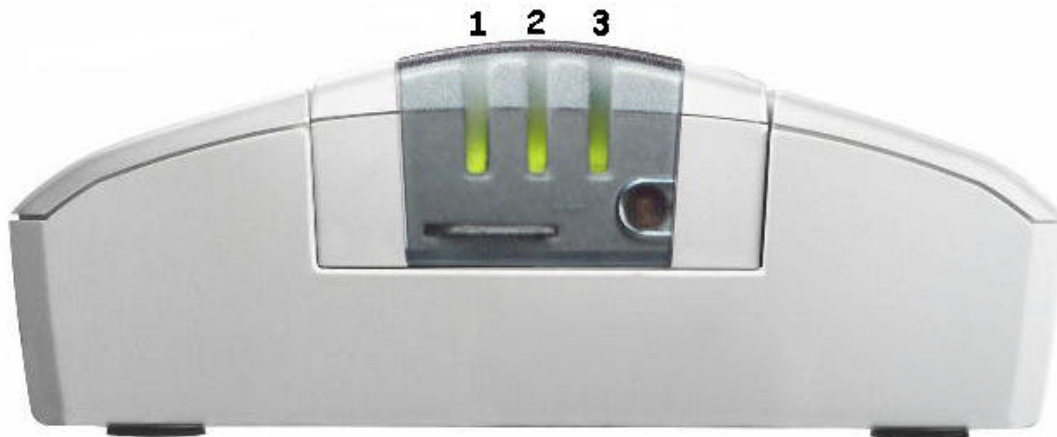
## 2.3 CONNECTING NOKIA 32 TERMINAL TO GSM NETWORK

Check the signal strength on the installation site. If the signal strength is poor, use an external antenna.

**i** **Note:** The terminal shows the signal strength immediately after it has registered to the network (when Nokia 32 terminal is powered up). The signal strength is shown with the terminal LEDs for ten seconds (see the light indicator table for details).

After the Nokia 32 terminal is powered up, check that LED 3 lights up. If not, use the Nokia 32 Configurator software and select the operator manually.

Depending on the PBX interface where the Nokia 32 terminal is installed, check that the corresponding LED will light up. (LED 2 = Trunk mode, LED 1 = Extension mode).



**Nokia 32 light indicators during start-up**

| LED 1       | LED 2       | LED 3      | Description                        |                   |
|-------------|-------------|------------|------------------------------------|-------------------|
| -           | -           | -          | Power off                          |                   |
| Green scan  | Green scan  | Green scan | Power on, connecting to network    |                   |
| -           | Red blink   | -          | PIN query/ new PIN query           |                   |
| -           | Red blink   | Red blink  | PUK query                          |                   |
|             |             |            | <b>Intensity of Field Strength</b> |                   |
| Red blink   | -           | -          | Unacceptable                       | <- 105 dBm        |
| Green blink | -           | -          |                                    | -105 ... -100 dBm |
| Green       |             |            | Weak                               | -100 ... -95 dBm  |
| Green       | Green blink |            |                                    | -95 ... -90 dBm   |
| Green       | Green       |            | Moderate                           | -90 ... -85 dBm   |



|       |       |             |      |                 |
|-------|-------|-------------|------|-----------------|
| Green | Green | Green blink |      | -85 ... -80 dBm |
| Green | Green | Green       | Good | >80 dBm         |

#### Nokia 32 light indicators during normal operation

| LED 1 | LED 2 | LED 3           | Description                         |
|-------|-------|-----------------|-------------------------------------|
| *     | Green | Green           | In service, trunk mode              |
| Green | *     | Green           | In service, extension mode          |
| *     | *     | Green blink     | Call on                             |
| *     | *     | Green blink     | Incoming call                       |
| *     | *     | Green/Red blink | Message received/ Voice mail in box |
| *     | *     | Red blink       | Message storage full                |

#### Nokia 32 light indicators in special situations

| LED 1           | LED 2           | LED 3           | Description              |
|-----------------|-----------------|-----------------|--------------------------|
| Green/Red blink | Green/Red blink | Green/Red blink | Insert SIM card          |
| Red blink       | Red blink       | Red blink       | Failure, contact service |
| Yellow          | Yellow          | Yellow          | Initialising             |

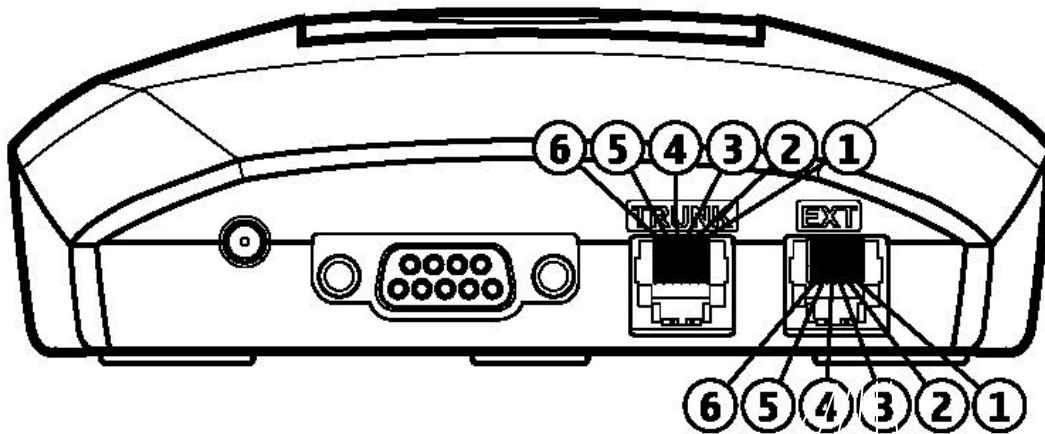


## 3. INTERFACES

### 3.1 TRUNK INTERFACE

An analog trunk interface of a PBX, or an analog telephone set can be installed to the trunk connector.

The pin number 3 and 4 are TIP and RING. The right most pin of the connector is the ground connector (when the connector is looked from outside of the terminal). Connect pin 1 to the ground if the mains voltage might cause interference.



**Note:** The pin numbers equal to the physical connector, not the wire itself. After the installation check with a multimeter the resistance between the ground plate and ground connector of a building. It should be ~0Ω.

**Note:** If you connect a landline phone to the trunk connector, check that only the pins 3 and 4 are connected from Nokia 32 terminal to the telephone set.

#### 3.1.1 To be noted in trunk mode installation



**Tip:** Check also the need of:

- Polarity reversal
- Loop interruption time
- Ringing pattern



**Caution:** Remember to define the appropriate emergency number in the General settings dialog.

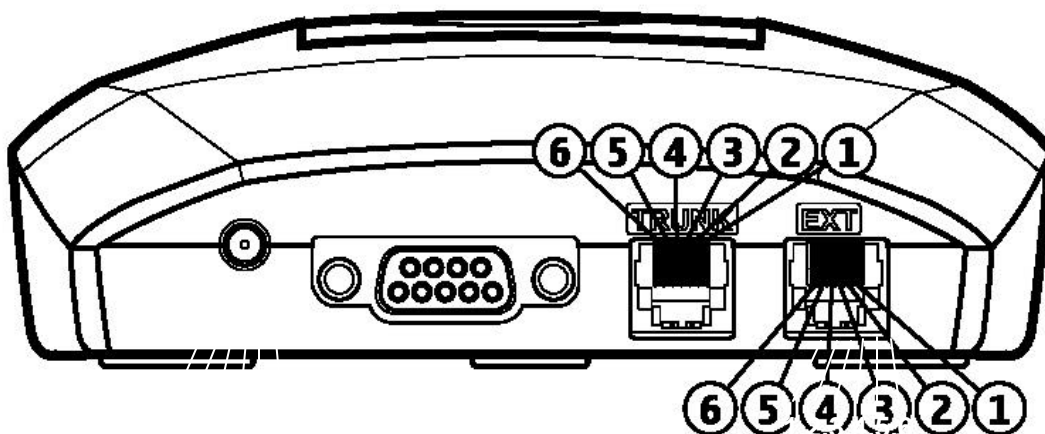


**Caution:** Remember to set the PIN query to ON, OFF or AutoPIN.

### 3.2 EXTENSION INTERFACE

Only an analog extension interface can be connected to the EXT connector.

Only pins 3 and 4 are used as A and B.



**Note:** The pin numbers equal to the physical connector, not the wire itself. After the installation check with a multimeter the resistance between the ground plate and ground connector of a building. It should be  $\sim 0\Omega$ .



**Note:** The line impedance of Nokia 32 terminal is 600 $\Omega$  and the maximum line current is 120mA

There are some settings that should be programmed to the Nokia 32 terminal:

#### 3.2.1 Call monitoring

A PBX uses either a busy tone or silence when informing the Nokia 32 terminal that a call is disconnected. To end the call to the GSM network, set the Nokia 32 terminal to monitor either one of the signals using the Extension mode settings dialog.

As default, the Nokia 32 terminal monitors for the busy tone.



**Tip:** Check the signal used by calling from one extension to another. After the call is answered, the recipient hangs up. Listen whether the PBX provides you a busy tone or silence.

### 3.2.1.1 Busy tone monitoring

The frequency and the cadence of the busy tone varies between different PBX models. The frequency that the Nokia 32 terminal detects is between 360Hz - 440Hz. Since the cadence of the busy tone might also vary, the Nokia 32 terminal has a feature called Tone Teaching. The Nokia 32 terminal can be set to the learning mode during the installation, whereupon it will take samples from the busy tone to learn the exact cadence.

After the Nokia 32 terminal has physically been installed to the final position, and mandatory settings have been configured, the learning mode can be activated:

1. Call the extension where the Nokia 32 terminal is installed.
2. After you get the dial tone from the Nokia 32 terminal, dial  
`**#####1234#88*own_ext_number#`  
(own\_ext\_number is the extension number where you are calling the Nokia 32 from).
3. After the last digit (#), put the receiver down, and wait until the Nokia 32 terminal calls you back.
4. When the phone in the extension rings, pick up the receiver, and listen to the tone:
  - If you hear a busy tone, the learning did not succeed, and you should repeat the steps.
  - If you hear the command query beep (three beeps), the Nokia 32 terminal has learned the busy tone.
5. Set the hook on, and wait for 60 seconds. The Nokia 32 terminal will reboot itself and is then ready for use.



**Tip:** the separate document describing how to make the Nokia 32 to learn the cadence is available at [www.nokia.com/product support](http://www.nokia.com/product support).

### 3.2.1.2 Silence monitoring

If you select the silence monitoring, define also the *Silent time when disconnected*.

### 3.2.2 Other



**Caution:** After the loss of mains power, the Nokia 32 terminal usually powers up faster than the PBX. If the Selected Line adapter is set to Automatic, the Nokia 32 terminal will measure the line voltage in the pins 3 and 4 of the EXT connector. If there is no line voltage available, the Nokia 32 terminal will start up in the Trunk mode. To avoid this, the Nokia 32 terminal should be programmed into the extension mode solidly to maintain the same mode after the mains power loss.



**Tip:** You can also check:

- Incoming Call: Mode A or Mode B (Mode A as default)
- Outgoing Call: Mode A or Mode B (Mode A as default)
- Dialing mode in case of incoming call: DTMF or pulse dialing



**Caution:** Remember to define the appropriate emergency number in the General settings dialog.





**Caution:** In case of an incoming call, mode B is recommended. Otherwise the A-subscriber might be able to select a trunk line and set up a call e.g. to some special tariff number.



**Caution:** Remember to set the PIN query ON, OFF or AutoPIN.



## 4. NOKIA 32 INSTALLATION CHECKLIST

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The purpose of this checklist is to remind of things to do or check when installing the Nokia 32 terminal.

### 4.1 GENERAL

|   | OK | Not OK |
|---|----|--------|
| The SIM card is inserted in the terminal properly.  |    |        |
| The Nokia 32 connects to the network when powered up (LED 3 is lit, the Nokia 32 is in service)<br>The GSM signal strength is strong enough               |    |        |
| The line adapter mode LED corresponds the installation (ext/trunk)<br>Need of grounding   |    |        |
| No interfering telephone lines near the Nokia 32 antenna.<br>Check that no GSM interference can be heard in audio (if yes, an external antenna is needed) |    |        |
| PBX programming works correctly (routing calls through the Nokia 32)  |    |        |
| Check that the emergency number is correct  |    |        |

### 4.2 TRUNK LINE INSTALLATION

|  | OK | Not OK |
|--|----|--------|
| Is there a need to use loop interruption (if yes, is it configured)?   |    |        |
| Is there a need to use polarity reversal (if yes, is it configured)?   |    |        |
| Is there a need for CLI (Calling Line Identification)?   |    |        |
| Is there a need for CAI (Charge Advice Information)?   |    |        |
| Is there a need to tune the audio levels?  |    |        |
| Can the dialling time-out be minimised (PBX buffers the digits first, and then sends them one after another to the Nokia 32, or they are sent immediately when the user dials the digits). |    |        |
| How does the PBX handle incoming calls from analog trunk lines (Nokia 32)? Do calls need to be diverted to the SIM card?   |    |        |
| Country selection  |    |        |





#### 4.3 EXTENSION LINE INSTALLATION

|   | OK | Not OK |
|---|----|--------|
| How does the PBX indicate call disconnection to an extension line (do 'Tone teaching' in case of busy, configure silence monitoring in case of silence, configure PBX in other cases) |    |        |
| How should incoming calls be handled? Mode A/Mode B   |    |        |
| Is the Tone teaching activated, what was the response? Check the Tone Teaching instructions.  |    |        |
| Is there a need to tune the audio levels?   |    |        |

