tfk2opr2.frm Page 0 Tuesday, December 9, 1997 11:35 AM

NOKIA PremiCell
Operator's Guide

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1. Introduction

IMPORTANT !

In addition to this Operator's Guide, read the Nokia PremiCell user's guide which provides information about the use of Nokia PremiCell terminals, including important safety information.

Providing telecommunication services through traditional solutions such as copper wires and optical fiber is a slow process in densely populated countries with low telephone densities.

Fixed Wireless is a modern, economical solution for significantly reducing the installation time needed to provide such a service. Moreover, network capacity can be dynamically increased in relation to demand, with no over-capacity in the beginning.

This guide describes the second generation of Nokia PremiCell terminals TFK-2 and TFE-2 for Nokia's Fixed Wireless solution based on GSM 900 and GSM 1800 wireless radio technology.

2. Warnings

2.1 Using This Operator's Guide

This Operator's Guide includes a description and basic information for installing and using a Nokia Fixed Wireless terminal. Read it through carefully before using the Fixed Wireless terminal. Please contact Nokia Mobile Phones if you need help or further information.

2.2 Operating Environment

Operation of any radio transmitting equipment may interfere with the functionality of inadequately protected medical devices. Consult a physician or the manufacturer of the medical device if you have any questions. Other electronic equipment may also be subject to interference. The terminal should not be installed outdoors.

2.3 Emergency Calls

This system operates by using wireless and landline networks, radio signals and an electrical network. Not all connections can be guaranteed in all conditions. Therefore, you should never rely solely on any wireless telephone or radio device similar to the Fixed Wireless terminal for essential communications.

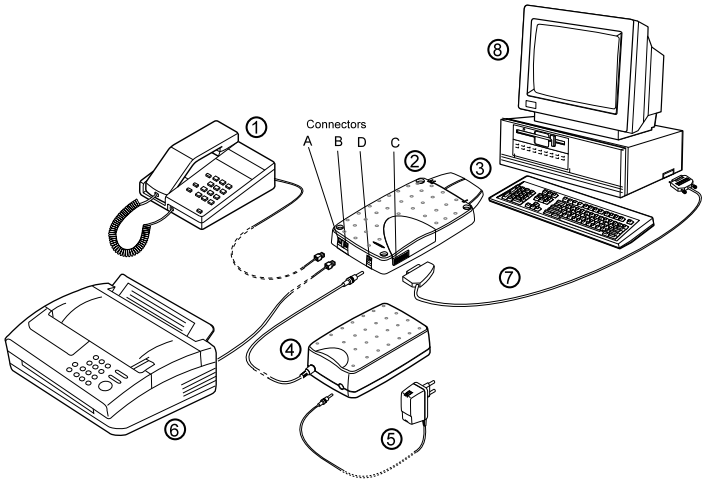
National service and emergency numbers differ from one country to another. Emergency calls may not be possible on all wireless telephone networks or when certain network services are in use. Check with the local telephone operator for details.

3. System Description

The Fixed Wireless terminal is capable of providing one connection at a time to the subscriber.

The service offered is thus either speech, fax or data transmission.

The terminal design supports only small SIM cards.



Picture 1 Overview of Nokia 18 PremiCell and accessories

1. Telephone set *
2. Terminal
3. Antenna
4. Backup battery *
5. Power supply
6. Fax *
7. RS232 data connector cable (AFW-3) *
8. PC *

Note: * Is not included in Nokia PremiCell sales package.

Connectors

A telephone connector

B fax connector (second line in dual number mode)

C service and data adapter connector

D power supply connector

The terminal supports the use of a normal land-line telephone and Group 3 FAX. User data are connected with an AFW-3 adapter and RS-232 data cable or with AFW-1 adapter and DAU-4F cable (cellular data suite use).

The terminal is charged by a regulated power supply. A backup battery concept (BBW-1) is also available.

3.1 PremiCell Fixed Wireless Features

The second generation of Nokia PremiCell terminals present a set of new features including Radio Local Net (RLN), Short Message Services (SMS), Voice Mail, Calling Line Indication (CLI), Charge Advice Information (CAI), RS232 User Data, Dual Number Operation, Automatic Area Code adding (AAC), Intensity Of Field strength (IOF), Faster Call Setup, Modified Emergency call handling and Phase 2 Supplementary Services. All of these features cannot be enabled simultaneously.

3.1.1 Radio Local Net (RLN)

A Radio Local Net is a protocol which is built over a normal short message service. The Radio Local Net can be used for control, checking and configuration purposes in terminal maintenance. Also the network should have a Short Message Service. This maintenance feature allows one to read and manipulate parameters of the terminal, read Field Test Displays (FTD), get hardware (HW) information and read software and RLN versions of the terminal. Special maintenance software is required to be implemented to the infrastructure of the network in order to take advantage of this feature.

It is possible to specify phone numbers which are only allowed as the RLN center number. Otherwise PremiCell will accept RLN messages from any phone number. Settings can be determined by using SIM card memory 40-49. Five different RLN and SMS center numbers can be specified. To specify RLN center and SMS center numbers save the following data to the SIM memory.

Location 40

Alphabet: @RLNOA

Number: Phone number of originating RLN center

Location 41

Alphabet: @RLNSC

Number: Phone number of originating SMS center

Location 42

Alphabet: @RLNOA

Number: Phone number of originating RLN center

Location 43

Alphabet: @RLNSC

Number: Phone number of originating SMS center

Locations 44-49 can be programmed in a similar way.

Locations 40-49 will not be cleared by the terminal after programming.

3.1.2 Short Message Services (SMS)

This feature allows both Mobile Originated (MO) and Mobile Terminated (MT) short message services. The SMS feature is utilized by a user data interface using a PC and Nokia Data Suite program or by using the standard AT-command set in generic communications application. In order to take advantage of this feature, either the Nokia PremiCell RS-232 Data packet (sales package code: 0046100) or the Nokia PremiCell Data packet (sales package code: 0046101) is required.

3.1.3 Voice Mail

PremiCell supports GSM network voice mail service. If networks send indicator SMS of received SMS, the terminal will indicate SMS by LED 2 (see Table 1).

3.1.4 Calling Line Identification (CLI)

This feature allows one to see who is calling by displaying the number of the caller on external calling line display equipment. Three different types of signaling methods are selectable: ANSI (American National Standards Institute), ETSI FSKs (European Telecommunications Standards Institute Frequency Shift Keying) and DTMF signaling. The signaling mode varies depending on the operator and country and may be modified by using Nokia's WinTesla service software.

Frequency Shift Keying (FSK) - a digital binary modulation of the carrier frequency which uses two separate audio frequencies to transmit binary ones and zeros.

Dual Tone Multi Frequency is commonly known as 'touch-tones'. This in-band signaling is made up of two tones (out of a group of 8) and is used to translate dialed digits.

3.1.5 Charge Advice Information (CAI)

The CAI feature allows one to check the cost of the most recent and of the total calls if you have an external tariff pulse counter. The GSM's standard Advice of Charge (AoC) information is converted to Charge Advice Information (CAI) tariff pulse (12/16 kHz) information so that an external tariff counter can be used. CAI settings can be modified by using Nokia's WinTesla software.

3.1.6 User Data

This feature is described in Chapter 4.5

3.1.7 Dual number operation

This feature is also known as an Alternate Line Service (ALS) and it allows two subscribers to use the same terminal for voice calls but not at the same time. When using the dual number feature the FAX and data features are disabled. By this feature it is possible to reduce line costs since both subscribers can use the same terminal, although not simultaneously. This feature can be activated by using WinTesla software. Dual number operation needs an ALS service in the GSM network.

3.1.8 Automatic local Area Code adding (AAC)

This feature is also known as Alternate Line Service (ALS) and it allows two subscribers to use the same terminal for voice calls but not at the same time. With this feature it is possible to reduce line costs since both subscribers can use the same terminal though not simultaneously. Dual number operation need ALS service in GSM network. Dual number is available only with models Nokia 09b PremiCell and Nokia 18b PremiCell.

Note: the second phone must be connected to the port marked FAX.

3.1.9 Intensity Of Field strength indication (IOF)

The IOF indicates the signal strength of the received radio signal. This is indicated by LEDs of the terminal and by the tones from the telephone set connected to the terminal. An IOF can be used to make the installation of the terminal easier, i.e. no service handset is required. The RSSI (Received Signal Strength Indication) feature can be activated from the telephone set by dialing the number 777# and it is automatically deactivated after being placed on hook on telephone set.

3.1.10 Faster call setup

Faster call setup allows a faster call establishment procedure. The ten different last dialed numbers are stored and if the dialed number matches the stored number - then the terminal does not have any delay time before sending the number i.e. the call is established immediately. The faster call setup can be disabled from WinTesla and it is not available with Nokia Access System Networks.

3.1.11 Modified emergency call handling

Instead of the emergency number '112' there are also available five other operator-specific numbers preprogrammed in the SIM card. Five other operator-specific emergency number should be preprogrammed to SIM memory locations 31-35. The terminal will automatically program SIM memory locations 31-35 to the terminal memory and delete SIM memory locations 31-35 after programming. The programmed emergency numbers are valid even if the SIM card is removed from the terminal.

Location 31

Alphabet: Emerg1

Number: Emergency number 1

Location 32

Alphabet: Emerg2

Number: Emergency number 2

Locations 33-35 work in a similar way.

There are also modifications for the emergency calls in the Access Solution mode. Normally all calls (including emergency calls) are handled via the Access Node. If emergency call establishment fails then a normal emergency access establishment is processed to an available network.

3.1.12 Phase 2 Supplementary Services

PremiCell supports following Phase 2 Supplementary Services. See the command descriptions in appendix 2.

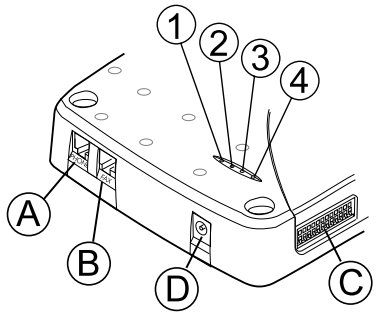
1. Number Identification
2. Call Offering
3. Call Completion
4. In Call Handling
5. Multiparty Call
6. Call transfer
7. Completion of Calls to Busy Subscriber *
8. Fixed Destination Call *
9. Call Restriction
0. Security Options

* Only supported in Nokia Access System networks

4. Terminal Concept

4.1 Transceiver

The transceiver is aluminum with a plastic SIM card cover. There are four indicator lights (LEDs) on the transceiver. See Picture 2. The terminal is ready for use when the first indicator light is on. The use of LEDs is defined in Tables 1 and 2.



Picture 2 Indicator lights and connectors of the transceiver

1. LED 1
2. LED 2
3. LED 3
4. LED 4

A telephone connector
B fax connector (in dual number mode this works as the second telphone connector)
C Nokia Data Card, AFW-1 or AFW-3 data adapter and service adapter connector
D power supply connector

Table 1 The use of LEDs

	ON	**OFF**	**BLINKING**
LED 1 - Service state	In service, ready for use	Power off	Not in service
LED 2 - Call indicator	Voice mail (SMS) received	-	Incoming call
LED 3 - See table below	-	-	-
LED 4 - Information	LEDs 1-3 in special use (See Table 2)	LEDs 1-3 in normal use (As described in this table)	Contact service (See Table 2)

Table 2 LEDs 1-3 in a special use

LED 1	LED 2	LED 3	FUNCTION
Off	Off	Blink	PIN query
Off	Blink	Off	PUK query SIM card is blocked
Off	Off	Off	Hardware failure
On	On	On	Self-test is on
Off	Blink	Blink	SIM card problem
Blink	Blink	Blink	Contact service

Nokia PremiCell has the autopin security feature. Autopin allows the operator to lock the user' s SIM card to the specified terminal and the SIM card cannot be used in any other fixed Wireless terminal or mobile phone. However, other SIM cards can be used with the terminal.

New terminals have the autopin activated. When a SIM card is inserted in a terminal and the PIN code entered, the PIN code is saved in the terminal memory. The SIM card should have the PIN code request activated. After that when the terminal powers up and the SIM card requests the PIN code, the terminal relays the PIN code automatically.

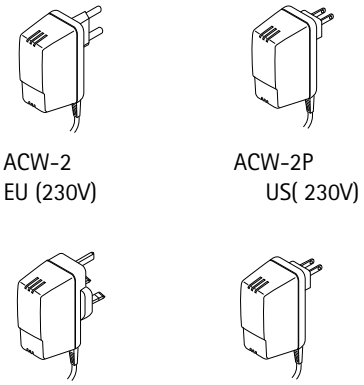
If SIM card usability is restricted by the autopin feature, the PIN code is known only by the operator.

The autopin feature can be deactivated from handset menu 131.

4.2 Power Supply

The power supply included in the sales package (ACW-2) is the basic power supply for a Fixed Wireless termnal. Do not use any other power supplies.

The power supply is connected to the DC jack connector at the bottom of the transceiver. After you have connected the power supply to the transceiver, connect it to the mains AC power outlet. An AC connector is shown in the pictures below.



ACW-2 EU (230V) — ACW-2P US(230V)

ACW-2X UK (230V) — ACW-2U US (110V)

Picture 3 Power supplies for Nokia Fixed Wireless terminal

Power supply connector and backup battery connector

The DC-connector's middle contact has negative (-) polarity and the outer contact has positive (+) polarity.

4.3 Telephone

A normal landline telephone can be used with the Fixed Wireless terminal. Both DTMF and pulse dialling are supported. (Pulse dialling is not supported in Access Systemsn). PIN codes cannot be entered using pulse dialling. For basic telephone opearations such as making and receiving calls the phone is operated as a normal fixed line telephone.

Some telephone sets are more sensitive to radio interference and there may be some audible interference. In these cases please consult Nokia.

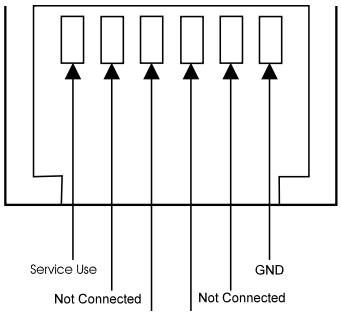
The maximum length of phone cable between terminal and telephone set is 500 meters.

The telephone connector is located at the bottom of the transceiver, and the connector is marked "phone". Push the plug of the cable into the equivalent connector on the transceiver. You will hear a snap when a connector is in its place. When you want to disconnect the cable, push the little spring and simultaneously pull the plug off: hold and pull the plug, not the cable.

Telephone connector

The telephone connector is an RJ11 modular connector (6 pins). Pins number 3 and 4 are in use. Pins 3 and 4 are in the middle of the connector

Nokia PremiCell allows a maximum of three different telephones to be connected parallel to the modular jack. This can be done by using an RJ11 adapter.



Picture 4 Telephone connector modular jack pin order

4.4 Fax

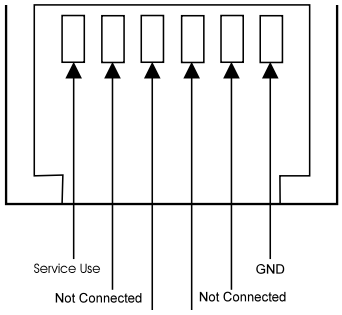
The terminal supports only Group 3 Fax units. Data rates up to 9600 bits/s are supported. If the fax has a phone, the phone cannot be used when the fax has been connected to the fax connector.

When the combi fax has been connected to the fax port the telephone service of the machine cannot be used.
Analogue G3 fax is not available with Nokia PremiCell 09b or 18b models. FAX port can be used for dual line with these models.

Fax connector

The fax connector is an RJ11 modular connector (6 pins). Pins number 3 and 4 are in use. Pins 3 and 4 are in the middle of the connector. A fax is connected to the bottom of the transceiver, and the connector is marked "fax". The fax connector is located next to the telephone connector. A connection is made in the same way as when connecting a telephone.

Note: With Nokia 09b PremiCell and Nokia 18b PremiCell models the fax connector functions as the second telephone connector.



Picture 5 Fax connector modular jack pin order

4.5 Data

There are two different alternatives for providing data connection via the PremiCell terminal.

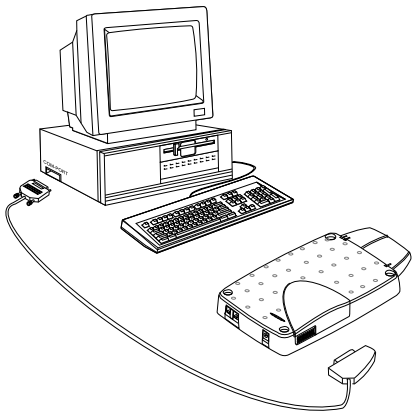
The terminal supports data transmission at data rates up to 9600 bits/s. Details are described in the data user's guides included in the sales packages.

One way to establish a fixed wireless data connection is to use an RS232 cable (recommended maximum length of the cable 2 m) with the AFW-3 adapter (included in the Nokia PremiCell RS232 Data packet). Please note, however, that computer fax applications cannot be used with this direct RS232 data solution.

The other alternative is to use a combination of Nokia's DataSuite -program and the AFW-1 adapter (both included in the Nokia PremiCell Data packet). The Nokia DataSuite can be used to send and receive SMS messages on computer via the PremiCell terminal. The Nokia DataSuite also includes a comprehensive set of other features, these include e.g. fax, file transfer, e-mail and Internet access. You can find more information on DataSuite at our web-site *http://www.nokia.com*.

A normal landline modem is not compatible with the Nokia TFE-2 or Nokia TFK-2, so you cannot connect it to the terminal's "phone" or "fax" socket.

Data features are not available with models Nokia 09b PremiCell or Nokia 18b PremiCell.



Picture 6 Fixed Wireless data connection

5. Accessories

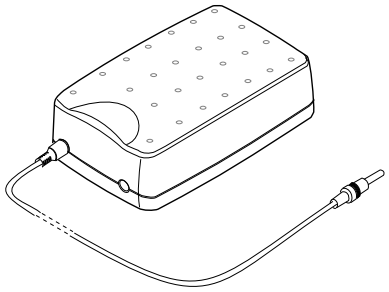
An extensive range of accessories is available for the Nokia PremiCell terminal.
You can select these according to your special communication needs. When you disconnect the power cord of any accessory, grasp and pull the plug, not the cord.

IMPORTANT! Use only accessories approved by the phone manufacturer. The use of any other types will invalidate any approval or warranty applying to the phone and may be dangerous.

5.1 Backup Battery

A backup battery ensures phone calls in situations when the main power fails. The battery backup option does not require any control. It is charged directly from the power supply.

The Nokia BBW-1 backup battery can be used with the terminal. The battery should only be used <N>with an ACW-2 power supply.

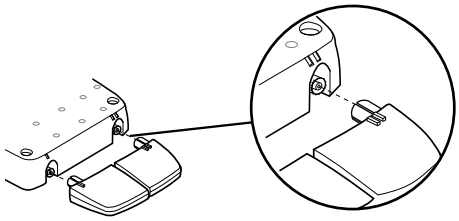


Picture 7 Backup battery BBW-1

5.2 Antenna

5.2.1 Basic antenna

The basic antenna is connected by pushing the antenna towards the terminal as shown below. Notice that the marks I and II both on the terminal and antenna are opposite each other.

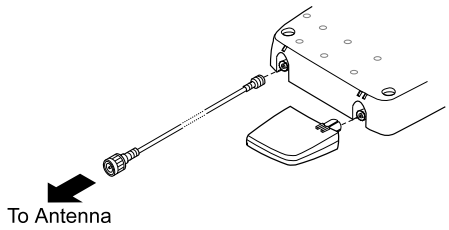


Picture 8 Antenna

If the basic antenna is not sufficient, an external antenna can be used for improved reception and transmission range. Alternative antennas to be used with a Nokia Fixed Wireless terminal are the GSM 900 and GSM 1800 window or directional antenna.

5.2.2 External antenna

If an external antenna is needed, remove the basic antenna, separate it into two pieces, and put the part marked II in place. Connect the external antenna to the antenna connector marked I. See Picture 9.



Picture 9 External Antenna

When selecting an external antenna, please check that the frequency and the gain are suitable. The antenna connector in the terminal is mini-UHF.

The location, as well as the quality of the antenna and its installation have considerable influence on the overall performance of the whole system. Therefore, it is necessary to emphasize some aspects which have often caused unnecessary service work.

The antenna should be mounted in such a position that no part of a human body will normally rest too close to any part of it unless there is an intervening metallic screen such as a metallic roof.

The shorter the antenna cable, the smaller the attenuation and the better the performance of the antenna. The radio equipment must be connected to the antenna by using a non-radiating cable (e.g. coaxial cable).

5.3 Installation Set

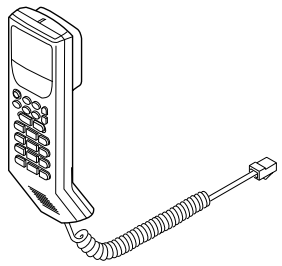
The necessary installation equipment is included in the installation set.

Contents of installation set

HSN - 5K	Service handset
BBW-1S	Installation Backup battery
	Special Modular 6 cable
	Operator's Guide

5.3.1 Service handset

The service handset is for installation and testing purposes. To use the handset you need a Service backup battery BBW-1S and service handset HSN - 5K. The backup battery can be connected to the terminal connector A or B (Picture 2).



Picture 10 Service handset

The Network monitor menu is activated automatically when the service handset is connected to the terminal via the BBW-1S service backup battery and the security code is entered. For further information about the service menu see section 5.3.1.2. For further information about the security code, see section '6.2 Installation Data Management, Security code'. Use the Menu key and arrows to change the menu.

5.3.1.1 Service handset menus

The Service handset menu allows you to check and change the settings for certain functions, e.g. whether they are currently switched on or off. Although scrolling through the menu to enter a function may take longer than using the alternative shortcut (see below), it is often easier to remember.

The menu method

① Press **Menu**.

② Use ∧ or ∨ to scroll forwards or backwards through the list of functions until you find the one you want.

③ Press **M**

④ The current setting of the function is displayed first. Use the ∧ or ∨ key to change the setting.

⑤ Press **M** to store the displayed new setting in the memory.

⑥ Use **C** to quit the menu function if you do not want to change any settings.

The menu is divided into nine categories:

1. Terminal settings
2. Handset settings
3. Memory options
4. Read messages
5. Call divert
6. Security options
7. Call info
8. Network select
9. Network monitor

Menu function	Shortcut	Description
Terminal Settings	**MENU 1**	Antenna selection, terminal security, line adapter
Handset Settings	**MENU 2**	Earphone, mic and tone level
Memory options	**MENU 3**	Calls in memory
Messages	**MENU 4**	SMS options
Call Divert	**MENU 5**	Different call divert options
Security options	**MENU 6**	PIN code options, code changing
Call info	**MENU 7**	Call costs etc.
Network select	**MENU 8**	Auto/manual selection
Network monitor	**MENU 9**	Display used in installation

1. Terminal settings

In the terminal settings menu the options are for landline phone, antenna, terminal security and line adapter.

The scale for earphone, mic and tone levels is from 1 to 5. The default setting is 3. The levels cannot be changed during a call. The power in the handset must be switched off and turned on again before the changes take effect.

The antenna mode can be changed in the *Antenna select* submenu. The default setting is "diversity". Antenna 1 has both receiver and transceiver and antenna 2 only receiver. If "antenna 1" is selected only antenna 1 is in function. When "antenna 2" is selected, the terminal doesn't work properly, because the transceiver cannot function.

Changes for the autopin modes can be made in the *terminal security* submenu. The *autopin state on* is the default for this menu. In this mode, if the PIN code is entered incorrectly the user is asked for the code again. In *autopin retry* mode the terminal will enter the PIN code until it is accepted or the SIM card goes to PUK query state.

The line adapter selection is only for testing purpose.

2. Handset settings

The handset setting menu is mainly for testing purposes. The earphone, mic and tone levels can be changed for the handset. This functions in the same way for the handset as the first menu for the landline telephone.

3. Memory options

In this menu call handling options are available. The memory can be erased call by call or all at once. This menu shows dialed, received and missed calls.

4. Messages

The submenu is for reading and writing SMS messages and changing message settings.

5. Call divert

Different kinds of call divert options can be made in this menu. Five different options are available: divert all, if busy, if no reply, if not available and cancel all.

6. Security options

The submenus in this menu are PIN code request, call barring, change codes and restore settings. If the PIN code request is off, the terminal doesn't request a PIN code. PIN codes can also be changed in this menu.

7. Call info

In this menu call timers and call costs information are available. The cost limit can be set and call information is available.

8. Network select

The network can be selected automatically or manually.

9. Network monitor

This menu is used in installation. There are 27 different displays for testing. In the installation display 01 gives all the necessary data.

5.3.1.2 Network Monitor

When the Network Monitor menu is active, the terminal works in a similar way as without it, except that the arrow keys scroll through the various tests, whereas they would scroll through the short code memory while the field test display is inactive. The test numbers that are not valid are not scrolled.

The network monitor display is located at the end of the main menu loop. It is activated as follows:

-press the Menu button,

-scroll the main menu loop to the NETWORK MONITOR item,

-press the M button,

-enter the index number of the test to be activated at the TEST prompt

Example:

-press the Menu button,
-scroll in the main menu loop to the NETWORK MONITOR item,
-press the M button,
-enter 01 to get first network monitor display (Pict. 15)

During the data display mode, the field test data are visible on the main display. During the help mode, one screen of instructions is shown for each test to make it easier to identify the test in question. The ABC button is used to toggle between these two modes.

5.4 RS232 Data Packet

A transceiver supports data rates up to 9600 bits/s.

The data packet includes:

- an AFW-3 data adapter
- a slotted SIM cover.
- the Nokia PremiCell Data Accessory user's guide.
- the Nokia PremiCell List of AT commands.

5.5 Cellular Data Suite Data Packet

The Nokia cellular Data Suite can be used with PremiCell in Windows NT and 95 environments. A transceiver supports data rates up to 9600 bits/s.

The data packet includes:

- an AFW-1 data adapter
- a slotted SIM cover.
- the Nokia PremiCell Data Accessory user's guide.

5.6 SIM Cover

A colorful collection of SIM covers are available. The standard color is black but the SIM card is also available in turquoise and red.

A slotted SIM covers is required to use data and service accessories.

6. Installation

The Nokia PremiCell terminal should be installed properly before it can be put in use. This chapter has been prepared to provide the basic information necessary to install a PremiCell terminal. This chapter suggests one way of installing the terminal.

The suggested installation concepts provide only general ideas about positioning of the unit. The installer should rely on his own skills and common sense when choosing the location.

6.1 Installation of the Terminal

In the following installation procedure it is presumed that the SIM has the default PIN code which has to be changed, that the PIN code request is activated and that autopin is used.

New terminals have autopin activated. If autopin is used, the terminal does not need autopin activation by the service handset. The terminal automatically enters the pin code to the SIM card after it has been entered once.

6.1.1 Installing the SIM Card

To be able to use your telephone, you must have a valid SIM (Subscriber Identity Module) card inserted into the Fixed Wireless terminal. This terminal uses the small size SIM card. The card contains all the information a GSM 900 or GSM 1800 network needs in identifying a subscriber.

The SIM card is located inside the terminal under the SIM cover. The card can be easily damaged by scratching or bending, so be careful when handling and inserting it.

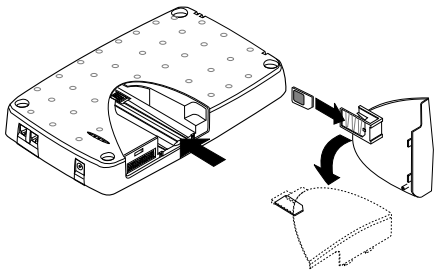
Note: Keep all miniature SIM cards out of the reach of small children.

Always **disconnect the operating power** before the installation of a SIM card.

① Open the SIM card cover by pulling it away and simultaneously pushing it upwards away from the transceiver.

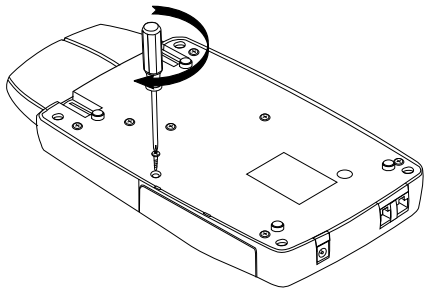
② Install the SIM card in the installation SIM card holder slot.

③ Close the card cover by pushing it towards the transceiver and then downward (Fig. 11).



Picture 11 Installing the SIM card

④ Insert the SIM cover screw. The screw is packed in the installation kit (Fig. 12)



Picture 12 Inserting the SIM cover screw

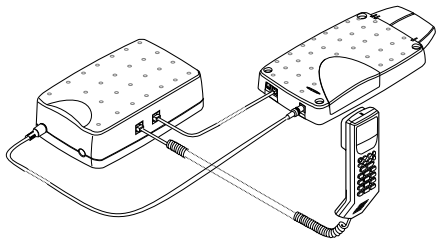
6.1.2 Terminal set up

① Connect the basic antenna by pushing it towards the terminal.

② Connect the BBW-1S Service Backup battery to the terminal's DC connector

③ Connect the XXX modular 6 cable between the terminal and the BBW-1S Service Backup battery

④ Connect the HSN-5k Service Handset to the BBW-1S Service Backup battery



Picture 13 Installation equipment

① Enter the PIN code and press M.

② Enter the security code and press M to enable use of the handset. The security code is calculated from the terminal's IMEI, which can be viewed by pressing the Alpha key while the phone is in the security query state. The terminal goes to the service state. Wait until LED 1 is on.

③ Change the PIN code by using the handset.

- select menu 631
- enter the old PIN code and press M
- enter the new PIN code and press M
- verify the new PIN code and press M

④ Remove the modular cable and backup battery from the terminal.

The terminal is ready for on-site installation.

6.1.3 Normal on-site installation

The best guide for selecting the locations of the units is your own experience, skills and common sense.

Installation of the terminal is done with the help of Intensity of Field indication (IOF). The IOF indicates the received strength of the signal. The strength is indicated with terminal LEDs and the tone from the receiver. Indicators are updated every 1.5 seconds. Calls cannot be established when the terminal is in the IOF state.

The installation location must be clean and dry. The terminal operating temperature range is -10°C ...+55°C.

① Connect the power supply's DC plug to the DC jack connector. The terminal now goes to the service state. Wait until LED 1 is on.

② Connect the telephone to the terminal telephone RJ11 "phone" plug.

③ Move the terminal to the preferred <N>installation location.

④ First check the field strength at the installation location.

- Pick up the receiver.
- Dial 777#
- You have two alternative ways to indicate signal strength: beep tones and LED lights.
- You will hear beep tones from the receiver (NOTE: the terminal must be in the service state). See Table 3 for explanation of tones.

The best installation location for the terminal can also be found by observing the LEDs lights. See Table 4 for explanations of LED lights in installation.

⑤ If the required values are not obtained, move the terminal to a better location and repeat step 4.

⑥ IIf you can't find a place where the signal strength is better than (-90 dBm) i.e. LEDs 1 and 2 are on, installation of an external an-

tenna might be necessary to ensure proper signaling (Figs. 14-15).

⑦ Connect the terminal in the desired location.

⑧ Make test phone calls with the telephone in both directions: send and receive.

The terminal is ready for use.

Table 3: the use of LEDs in Intensity of Field indication

LED 1	LED 2	LED 3	LED 4	FIELD
BLINK	OFF	OFF	OFF	Received signal strenght <-- 106dBm
ON	ON	OFF	OFF	RSSI <-- 96 dBm
ON	ON	ON	OFF	RSSI <-- 74 dBm
ON	ON	ON	ON	RSSI >--73 dBm

Table 4: audio indication of Intensity of Field indication

TONE	FUNCTION	FIELD
Continuous higher frequency beep	No service available	Received signal strenght <-- 106 dBm
One short beep	In service state	RSSI<--96 dBm
Two short beeps	IOF moderate	RSSI <-- 74 dBm
Three short beeps	IOF good	RSSI >--73 dBm

6.1.3.1 Advanced on-site installation

Sometimes when field strength is weak it is easier to install the terminal using special equipment.

The location of the terminal is very important. The best location can be determined with the help of the Service Handset.

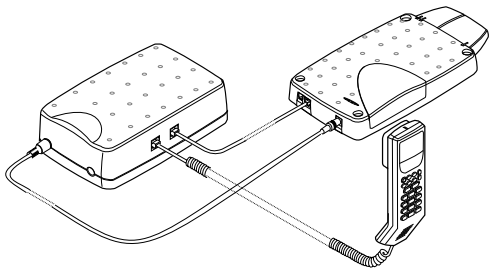
The installation location must be clean and dry. The terminal operating temperature range is -10°C ...+55°C.

The easiest way to move the terminal when selecting a location is to use the installation backup battery. The loaded backup battery can be connected to the terminal without a power supply for this limited purpose (Pict. 14).

① Connect the BBW-1S Service Backup battery to the terminal's DC connector

② Connect the modular 6 cable between the terminal and the BBW-1S Service Backup battery

③ Connect the HSN-5k Service Handset <N>to the BBW-1S Service Backup battery



Picture 14 Selecting location using backup battery.

④ Move the terminal to the preferred installation location.

⑤ First check the field strength at the installation location. The service handset network monitor display no. 01 can be used to view signal strength, Received Signal Strength Indication (RSSI). The RSSI should be between -63 and -90 dBm.

⑥ Check the value of the path loss criterium (C1). The CI value should be greater than 20.

⑦ If the required values are not obtained, move the terminal to a better location and repeat steps 5 and 6.

⑧ If you can't find a place where the signal strength is better than -90 dBm, installation of an external antenna might be necessary to ensure proper signaling (Figs. 18-19)

⑨ Power down the handset.

①⓪Remove the backup battery from the terminal.

①①Connect the terminal in the desired location.

①②Connect the power supply's DC plug to the DC jack connector. The terminal now goes to the service state. Wait until LED 1 is on.

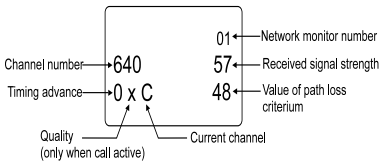
①③Connect the telephone to the terminal telephone RJ11 "phone" plug.

①④Make test phone calls with the telephone in both directions: send and receive.

Note! If the voice level of the telephone receiver is low, you can adjust the volume of the telephone set. If there is no volume control in the telephone set, use handset menu 111.

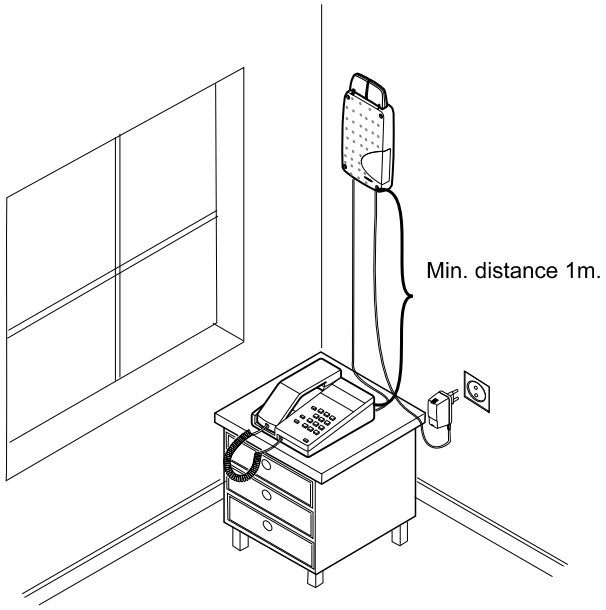
- The menu can be activated by pressing the menu button and entering the desired menu number.
- The volume scale is from 1 to 5

The pre-installation stage can be automated by WinTesla service software. See appendix 1 for details.

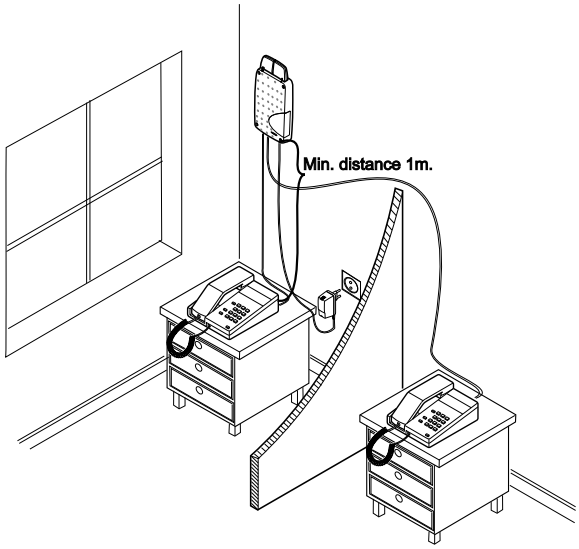


Picture 15 Network monitor display 01

Potential locations and installations

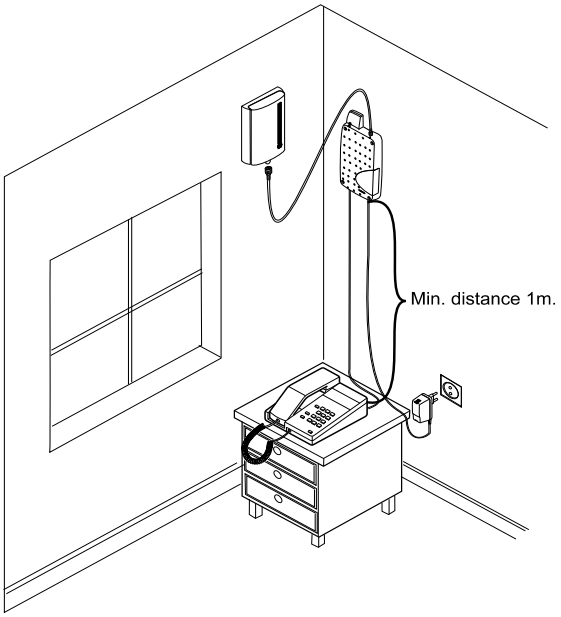


Picture 16 Basic installation

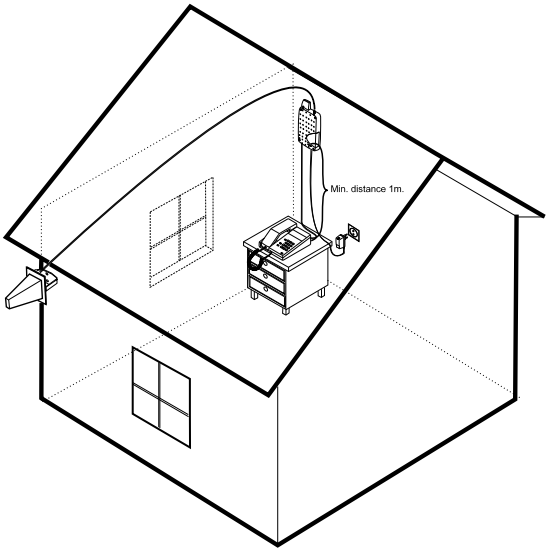


Picture 17 Dual line installation (dual number mode enabled).

Picture 18 External indoor antenna installation



Picture 19 External outdoor antenna installation



6.2 Installation Data Management

The operator should have a list of all the subscriber information including: subscriber identity, PIN code, PUK code and IMEI code.

PIN Code:

The personal identity code (PIN code) is defined by the operator. Once the autopin request has been set, the customer cannot use any other SIM card.

PUK Code:

PIN unblocking key code.

IMEI code:

The international mobile station equipment identity code, which can be found on the terminal. Each terminal has a unique code defined by the manufacturer.

Security Code is also needed:

The security code has to be used when using the handset. The security code can be computed from the IMEI code by using software provided by Nokia.

7. Operation

7.1 Basic Functions

Once the supply is connected, the transceiver will be switched on and the dial tone can be heard from the telephone. Upon first being connected and after a power break, it takes 20 - 30 seconds before the telephone is connected to the network.
Dialing and answering the telephone is similar to using a fixed line terminal. The delay in call processing is longer than with a fixed line due to the internal process of the Fixed Wireless terminal. Dialed digits are first saved into the memory of the transceiver. There is a few seconds waiting time after the last dialed digit. After that, the transceiver assumes that the telephone number is fully dialed, and a telephone request is sent to a network. The waiting time can be adjusted with WinTesla software. Breaks between dialed digits should not be longer than the adjusted time. When faster call setup is in use, there is no waiting time after last dialed digit with the 10 recent used numbers.(see 3.1.10) A howler tone will be heard after a minute, if no digits have been dialed.

When making a call, an area code must be dialed both for local calls and long distance calls (if the network system does not support local area dialing or AAC is not in use (see3.1.8).

Although there are separate connectors for telephone and fax, only one of them can be used at a time.

7.2 Special Wireless Services

These features are often called Network Services. They are special services provided by wireless telephone service providers and differ from one country to another. Check with the local wireless telephone service providers for details.

For more specific information about supplementary services supported by Nokia PremiCell,

see Appendix 1.

7.3 Troubleshooting

Always check the state of the LEDs when problems are encountered. The use of the LEDs is described in Tables 1 and 2 in the System Description.If the Fixed Wireless terminal does not work, it is important to first check that the connections are made. Check the following:

- that the telephone is connected to the transceiver
- that the power supply is connected to the transceiver
- that the antenna is properly connected to the transceiver

① If LED 1 is blinking

The terminal is not in a 'serv' state. This means that either the network is not working, the signal is too weak or the antenna cable is disconnected.

- Place the receiver back on the hook and wait for some time, then try again. If this does not help, try procedure 2.

② If no tone can be heard when the receiver is lifted off the hook

- disconnect the power supply cable from the transceiver and wait for 10 seconds - reconnect the power supply cable to the transceiver and wait for some 30 seconds until the LED 1 state changes from a 'blinking' state to the 'on' state
- pick up the receiver; you should now hear a dial tone

③ Phone call or fax call breaks down immediately after answering

- Check that the antenna is properly connected to the transceiver

If the terminal is still not working, contact the local operator or the nearest Nokia Mobile Phones representative. The personnel there will assist you, and if necessary, arrange for service.

8. Care and Maintenance

The Fixed Wireless terminal is carefully designed and manufactured. The suggestions below will help ensure that this product lasts for many years.

- Do not use or store the terminal in dusty, dirty areas.
- Do not store the terminal in hot areas. High temperatures can shorten the life of electronic devices.
- Do not attempt to open the transceiver. Non-expert handling of the transceiver may damage it.
- Do not drop, knock or shake the transceiver. Rough handling can break internal circuit boards.
- Keep the terminal and accessories out of the reach of small children.
- Keep the terminal dry. Liquids contain minerals which will corrode electronic circuits.
- Do not use harsh chemicals, cleaning solvents or strong detergents to clean the terminal. Wipe it with a soft cloth slightly dampened in a mild soap-and-water solution.
- Do not use the terminal in an environment where strong radiation or magnetic fields may exist.
- Do not cover the terminal.

Special software has been designed to facilitate the servicing of Fixed Wireless terminals. This software can be used to control the terminal, according to the user's wish, merely by entering commands via the keyboard of a PC connected to the terminal.

9. Technical Specifications

9.1 Factory Default Features

Feature	State	Remarks
Short Message Service	Always on	Could be used from data interface
Radio Local Net	Always on	Network requires maintenance software
Charge Advice Information	On, 16 kHz mode	WinTesla for settings
Calling Line Identification	On, ETSI FSK mode	WinTesla for settings
User Data	RS232 mode activated	Requires an AFW-3 adapter
Faster Call Setup	On	WinTesla for settings
Dual Number Operation	Off	WinTesla for settings
Intensity Of Field strength	Always available	Activation by *#7774# string from landline telephone
Modified Emergency numbers	On	Read from SIM card. Memory locations 31-35
Automatic Local Area Code adding	Off	WinTesla for settings
Phase 2 Supplementary services	Always on	Depends on network

9.2 Transceiver

TFK-2 GSM-1800

Dimensions	121x213x28 mm
Weight	800 g
Current consumption (6.8 V)	
Call 1 W	1200 mA
Idle	300 mA
Operating time with optional backup battery (3 Ah)	
Stand-by time	10 h
Talk time	2.5 h
Battery voltage	6.8 V nominal

TFE-2 GSM

Dimensions	121x213x28 mm
Weight	800 g
Current consumption (6.8 V)	
Call 2 W	1500 mA
Idle	300 mA
Operating time with optional backup battery (3 Ah)	
Stand-by time	10 h
Talk time	2.0 h
Battery voltage	6.8 V nominal

9.3 Power supply

Charger type	switched mode power supply
AC Mains plug type	Europe, UK, US
Input voltage	187-264 V
	90-130 V (ACW-2U)
Output voltage	6.8V+/-0.1 V
Output current (max.)	1 600 mA
DC connector plug	5.5 mm DC
Weight	150 g
Volume	100 cm3<D>
Cable length	1500 mm
Protection	output current limiting, min. 1400 mA
	output voltage limiting, max. 6.9V (unloaded)

9.4 Telephones Used in Audio-Type Approval Measurements

1. Audioline 33 (Manufacturer: Audioline Ltd / China)

2. Beocom 2000 (Manufacturer: Bang & Olufsen / Denmark)

3. Danmark II (Manufacturer: Heltel / Denmark)

10. Environmental Specifications

10.1 Temperature Conditions

Normal operating conditions	+15°C...+35°C
Extreme operating conditions	-10°C...+55°C
Reduced performance conditions	-20°C...-10°C +55°C...+75°C
Intermittent operating conditions	-40°C...30°C +75°C...+80°C
Cessation of operation	-40°C and +85°C
Storage conditions	-40°C...+70°C

10.2 Humidity and Water Resistance

Relative humidity range under normal operating conditions	20–75%
Relative humidity range allowed	5–95%

The transceiver is not protected against an ingress of water or liquids of any type.

Nokia PremiCell

Supplementary Services

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1. Introduction

The features mentioned below are called Network Services. They are special services provided by wireless telephone operators and differ from one country to another. Check with your local operator for details. Nokia Access System network commands, which differs from the GSM standard are presented by a or described in their own column.

The Supplementary Service activation, deactivation, interrogation and registration function in the same way as in a wireless telephone. The dialed supplementary service sequence will be executed after 6 seconds dial time-out.

The terminal responds to supplementary service activation, erasure and interrogation in the following way:

① Service activation succeeded, tone "beep"

② Service activation failed, tone "beep beep beep"

③ Interrogation, service activated, tone "beep"

④ Interrogation, service deactivated, tone "beep, beep, beep, beep"

Note: Call Offering Supplementary Service and Call Restriction Supplementary Service cannot be deactivated at the same time.

2. Number Identification

Calling Line Identification Presentation (CLIP)

To activate this function

Service provider activates

Calling Line Identification Restriction (CLIR)

To activate this function

Enter *31#PhoneNumber

3. Call Offering SS

Call Forwarding: Unconditional (CFU)

This function allows incoming calls to be directed from one terminal to another (Network service).

Operating mode	Activation	Deactivation	Interrogation
System	**21*PhoneNumber#	Enter ##21#	Enter *#21#
Nokia Access	*21*PhoneNumber#	Enter #21#	Enter *#21#

Call Forwarding: Busy (CFB)

This function allows you to direct incoming calls to another number when your phone is busy. CFB can be activated by calling the operator service number (Network service).

Operating mode	Activation	Deactivation	Interrogation
System	*67*PhoneNumber#	##67#	Enter *#67#
Nokia Access	*67*PhoneNumber#	Enter #67#	Enter *#67#

Call Forwarding: No Reply (CFNRy)

This function allows you to direct incoming calls to another number when the calls are not answered. CFNRy can be activated by calling the operator service number (Network service).

Operating mode	Activation	Deactivation	Interrogation
System	*61*PhoneNumber#	##61#	*#61#
Nokia Access	*61*PhoneNumber#	#61#	*#61#

Call Forwarding: Not Reachable (CFNRc)

This function allows you to direct incoming calls to another number when the network is not in service or the phone is powered off. CFNRc can be activated by calling the operator service number (Network service).

Operating mode	Activation	Deactivation	Interrogation
System	*62*PhoneNumber#	##62#	*#62#
Nokia Access	Not available	Not available	Not available

4. Call completion

Call Waiting

This function alerts you to another incoming call during a phone call (Network service).

Operating mode	Activation	Deactivation	Interrogation
System	Enter *43#	Enter #43#	Enter *#43#
Nokia Access	Enter *43#	Enter #43#	Not available

5. In Call Handling

The in call handling function allows the user to switch between two phone calls.
The service is controlled by the R (Register re-call) button.

Function	Action
Call in progress, release call waiting	0R
Answer call waiting, release active call	1R
Answer call waiting, hold active call	2R
Switch between active call and call on hold	R
Release active call	1R
Release call on hold	0R
Release all calls	On Hook
Hold active call and set up new call	R number

Nokia Access Networks

Function	Action
Call in progress, release call waiting	R0
Answer call waiting, release active call	R1
Answer call waiting, hold active call	R2
Switch between active call and call on hold	R
Release active call	R1
Release call on hold	R0
Release all calls	On Hook
Hold active call and set up new call	R number

6. Multiparty Call

The multiparty call function allows the user to have simultaneous communication with up to 5 remote parties. The service is controlled by the R (Register recall) key.

The control sequence for joining active and held calls to a multiparty call is to enter 3 followed by the R-key.

Function	Action
Hold active call(s)	R
Creating multiparty call	3R
Release all calls	On Hook
Private line with caller X (multiparty continues with other calls) (X=1-5)	2XR
Switch between active call and call on hold	R
Release X call (X=1-5)	1XR

Nokia Access Networks

Function	Action
Creating 1st remote party	R*71*num
Creating next remote party	R number
Add held party to conversation	R3

7. Call Transfer

This function allows one to transfer the answered call to a different number.

To transfer the answered call to the desired number follow this procedure:

① Hold the active call by pressing R.

② Dial the numbe.

③ Press 4 and the R-button.

④ The call is transferred to the desired number.

8. Completion of Calls to Busy Subscriber

This function is only available in Nokia Access Networks. If the called subscriber is busy, entering R5 will activate the function and the network automatically calls the subscriber when the when the other party has ended the previous call.

Activation	Deactivation	Interrogation	Disable CCBS Calls	Activate CCBS Calls
R 5	#37#	*#37#	*02*37#	#02*37#

9. Fixed Destination Call

This function is only available in Nokia Access Networks.

Activation	Deactivation	Interrogation
*53*PhoneNumber#	Enter #53#	Enter *#53#

10. Call Restriction

This function allows you to restrict outgoing and incoming calls (Network service).

IMPORTANT!

Restricting calls in some networks may restrict the ability to make emergency calls. If this is the case in your network, all users of the terminal MUST be informed by appropriate warning signs on ALL phones connected to the terminal.

The effect of Call Restricting varies among networks, so each operator must provide its OWN warning sign which accurately describe any emergency call restrictions.

Test the effect of Call Restriction on calls to your local emergency number(s) and warn as needed.

Barring of All Outgoing Calls (BAOC)

Operating mode	Activation	Deactivation	Interrogation
System	*33*NetworkPassword#	#33*NetworkPassword#	*#33#
Nokia Access	*34* NetworkPass-word*0#	#34* NetworkPass-word*0#	Not available

Barring Of All International Calls (BOIC)

Operating mode	Activation	Deactivation	Interrogation
System	*331*NetworkPassword#	#331*NetworkPassword#	*#331#
Nokia Access	Enter *34* NetworkPass-word*2	#34* NetworkPassword *2#	Not available

Barring of All Incoming Calls

Operating mode	Activation	Deactivation	Interrogation
System	*35*NetworkPassword#	#35*NetworkPassword#	*#35#
Nokia Access	*35* NetworkPassword#	#35* NetworkPassword*2	Not available

11. Security Options

Change PIN

To change the PIN code:

Enter **04*OLD−PIN*NEW−PIN*NEW−PIN#

α With Nokia access networks service supported only via service handset.

Change PIN2

To change the PIN2 code:

Enter **042*0LD−PIN2*NEW−PIN2*NEW−PIN2#

α With Nokia access networks service supported only via service handset

To change the PIN2 code when the PIN2 is not known:

Enter **052*PUK2*NEW−PIN2*NEW−PIN2#

α With Nokia access networks service supported only via service handset

Unblocking PIN

When the incorrect PIN code has been entered three times the terminal will lock itself and will require the PIN Unblocking Key (PUK) code to be entered. The terminal LED 2 blinks and LED 4 is on when the terminal requires the PUK. Also the PUK request tone can be heard "be be beep"

To enter the PUK code:

Enter the PUK code and press #

Registration Network Password

To activate Barring of supplementary services the user needs the Network Password.

The Network password can be changed by this feature. The Password Control Code (PCC) is needed to change the registration password.

The code can be requested from the network operator.

To change the password:

Enter *03*OLD−NetwPassWord*NEW−NetwPassWord*NEW−NetwPassWord#

α Not available in Nokia Access Networks.

All Barring Service Password

To change the password:

Enter

*03*330*OLD−NetwPassWord*NEW−NetwPassWord*NEW−NetwPassWord#

α No Subscriber registration

Outgoing Barring Service Password

To change the password:

Enter

*03*333*OLD−NetwPassWord*NEW−NetwPassWord*NEW−NetwPassWord#

α Not available in Nokia Access Networks

Incoming Barring Service Password

To change the password:

Enter

*03*353*OLD−NetwPassWord*NEW−NetwPassWord*NEW−NetwPassWord#

α Not available in Nokia Access Networks

NOKIA PremiCell

Using Quick installation
WinTesla Service Software

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1. General

TFE/K-2 WinTesla Service Software is designed to facilitate the servicing of second generation PremiCell terminals. The software has menus for after sales and installation purposes. This document describes the Quick Install features under software and dealer menus. See the TFK-2 and TFE-1 Service manuals for WinTesla service use.

The Quick Install menu underWinTesla is intended to automate the installation procedure of PremiCell terminals. WinTesla Quick Install can also be used for configuration and installation data management.

The software can be used to control the PremiCell according to the user's requirements merely by entering commands via the keyboard / mouse of a PC connected to the phone.

Nokia Mobile Phones After Sales will notify service personnel about future upgrades via Technical Bulletins. Software upgrades will be available from your local Nokia outlet.

1.1 Required Servicing Equipment

See Pictures 1 and 2.

Item	Description
Computer	Intel 386/33 MHz or compatible with one unused serial port (COM1 or COM2*), one parallel port (LPT1), hard disk recommended
Operating System	DOS Version 5 & Microsoft Windows 3.1 or later/Windows 95
Display	VGA based display
PC Locals program	for 3.5" disk (product code: 0774052)
Software Protection Key	PKD-1, product code 0750018
D9/25 RS232 Adapter	product code 4626170
PC/MBUS Adapter	DAU-2T, product code 0750006
Modular 8to6 Cable	
PremiCell terminal	

1.2 Mechanical Connections

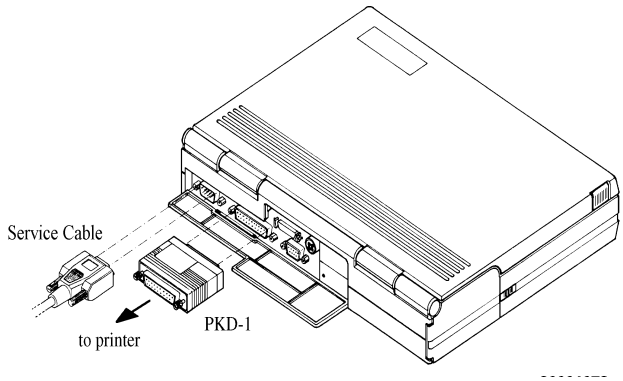
Caution:Ensure that you have switched off the PC and the printer before making connections!

Caution:Do not connect the PKD-1 to the serial port. This could damage the PKD-1 !

The software controls the PremiCell via a separate adapter connected to the serial port of the PC and to the PremiCell's RJ11 connector.

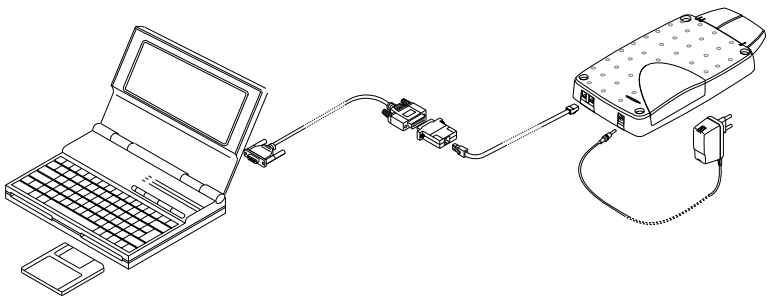
Attach the protection key PKD-1 to parallel port one (25-pin female D-connector) of the PC. Insert the male side from the PKD-1 to the PC. If you use a printer on parallel port one, place the PKD-1 between the PC and your printer cable (Picture1).

The PKD-1 should not affect devices working with it. If some errors occur (errors in printing are possible) please try printing without the PKD-1.



Picture 1 Connecting PKD-1 to the laptop computer

Attach the DAU-2T adapter to the PC serial port, using an RS-232 9-pin to 25-pin adapter. Attach one end of the modular cable to the DAU-2T, and the other end to the fax connector (Picture 2).



Picture2 Terminal connections using WinTesla software

1.3 Installation Procedure for WinTesla Service Software

Start the terminal by connecting the power supply to the TFE/K-2. Switch the PC power on.

To install the software, proceed as follows:

① If WinTesla has already been installed on the PC, skip to step 5.

If not, Insert the WinTesla installation disk into drive A of your PC

② Start the Installation program in Windows 3.1 or later version :

- select **File -> Run** from the Program Manager menu, then type **A:INSTALL** and press the **OK** key.

In Windows 95:

- Select **Start -> Run** then type
- **A:INSTALL** and press the **OK** button

③ Follow the Installation Software instructions.

④ Restart Windows.

⑤ Remember that WinTesla must already be installed before this step.
Insert the TFE/K-2 DLL installation disk into drive A of your PC.

⑥ Start the Installation program in Windows 3.1 or later version:

- select **File -> Run** from the Program Manager menu, then type **A:INSTALL** and press the **OK** key.

In Windows 95:

Select **Start -> Run** then type

A:INSTALL and press the **OK** button

⑦ Follow the Installation Software instructions

⑧ Start WinTesla by double clicking the WinTesla Icon

2. Introduction to the Service Software Package User Interface

This chapter gives a short description of the WinTesla Service Software properties.

2.1 WinTesla Service Software Environment

The Service Software user interface is intended for the Microsoft Windows 3.1x and Windows 95 environment running in enhanced mode. For those who are familiar with the Windows environment this application will be easy to use. Detailed information about Windows and application usage can be found in the Microsoft Windows Version 3.1 User's Guide, chapter one (Windows Basics) and chapter two (Application Basics).

As an ordinary Windows application, the main idea in the user interface is that selections are made with menus, push buttons and shortcut keys. Selections can be made using the keyboard and/or mouse. When phone messages are received, they cause display updating in special display windows. There is always a status bar displayed at the bottom of the main window which contains information about current actions.

Note: If the Service Software is to be run on laptops, the power saving feature MUST be switched off.

2.2 Service Software Executables

Only one executable is needed - WinTesla. For TFE/K-2 there are two DLLs:

- The functionality DLL is TFEK2.DLL
- The user Interface DLL is TFEK2EN.DLL.

2.3 Command Line Parameters

There are NO command line parameters.

2.4 Common Properties of the User Interface

The User Interface is capable of being driven without the use of a mouse, as the service engineer rarely has space on the bench to use a mouse.

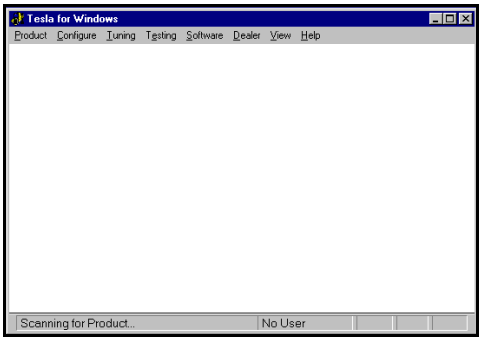
2.5 Login Dialog box

When the Service Software application is invoked, by clicking the Service Software icon, the **Login** dialog box will be displayed on the screen (Picture 3).

Picture 3 Login dialog box.

Command	Description
Login Box edit box (-)	User Login ID edit box, where the user enters his/her faultlog user name.
OK button (default key)	The user name is stored in memory and the dialog box is closed. When the dialog box is closed, the application starts.
Cancel button (ESC)	The dialog box is closed and application is started, but the Faultlog feature is disabled. Press *Cancel*, if you are about to run Quick Install.
Help button (F1)	Activates the Windows Help application and displays context sensitive Help.

2.6 Main Window



Picture 4 Main window

Title bar

The title bar is located at the top of the window.

A title bar contains the following elements from the top left:

- Restore button Application
- Control-menu button
- Name of the application
- Minimize button
- Maximize button
- Close button

Menu bar

The menu bar is below the title bar and contains all available menu selections. The menu bar is a dynamic element and is dependent on the dongle type fitted and on whether a phone is connected. Underlined characters in menu names and options indicate that the menu selection can be made by pressing **Alt+ underlined character.** Options can also be selected by activating the menu bar with the **Alt- key (or F10 key)** and using arrow keys to highlight the desired menu. In that case, selection is made by pressing **Enter.** Menus can also be selected using the mouse.

The Service Software package will have two menu bar configurations. The first is an abbreviated version that contains the minimum number of menus which allow package configurations when a phone is NOT connected. The second is described below. The menu bar MUST only contain the follow menus for the Service Software package when a phone is connected:

- Product*
- Configure*
- Tuning
- Testing
- Software
- Dealer

* - always displayed, even if the terminal is NOT connected.

- View
- Help*

Menu is broken down into sections that are indicated with menu separators. Each sections identifies a logical difference between itself and the other sections, i.e. between transmitter and receiver. Any items that are required to be added to a menu list will be added on the bottom of the appropriate menu section list. If a new item is to be added which is common to two or more phone types, then that menu item will become a common menu item.

The menu lists will use the Microsoft [...] symbol after an item name to indicate that selecting that item will NOT immediately initiate an operation, i.e. a dialog box will be displayed for the user to select options or type in data and press an OK button before the operation is performed.

Status bar

The *status bar* is displayed at the bottom of the Service Software main window. The status bar contains information about the menu selections and events. The left area of the status bar describes the actions of menu items as the user uses the arrow keys to navigate through menus. The status bar texts are explained in detail in each of the command's descriptions. The right areas of the status bar indicate which of the following keys are latched down:

Indicator	Description
USER	Entered Login ID
CAP	The Caps Lock key is latched down
NUM	The Num lock key is latched down
SCRL	The Scroll Lock key is latched down

The menus needed most often are Software, Dealer and Help menus.

Software

The Software menu contains the following menu items:

Phone Identity

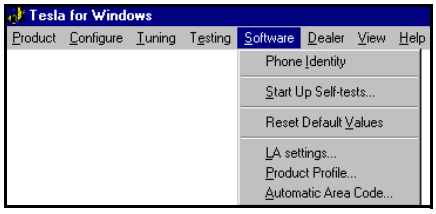
Start Up Self-tests

Reset Default Values

LA settings

Product Profile

Automatic Area Code



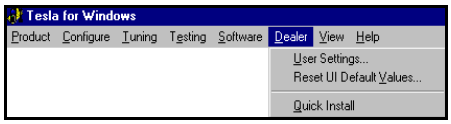
Picture 5 Software -menu

Dealer

User Settings

Reset UI Default Values

Quick Install



Picture 6 Dealer menu.

Help

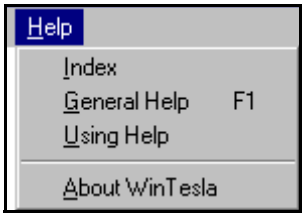
The Help menu contains the following menu items:

Index

General Help

Using Help

About WinTesla



Picture 7 Help menu

2.7 Initialization File

The Service Software has an initialization file which has the extension .INI. The initialization file is TESLA.INI which includes all the following selections (on mentioned menus or dialog boxes) and parameters:

- RF Controls dialog box ([TFE/K-RF])
- Channel (Channel=)
- Continuous Mode Channel (ContModeChannel=)
- Monitoring Channel (MonitoringChannel=)
- AFC (AFC=)
- AGC (AGC=)
- Data Type (DataType=)
- Power Level (PowerLevel=)
- DLL Filenames (TFE-2 and identical TFK-2)
- User Interface (UserInterface=)
- Functionality (Functionality=)
- RSSI Dialog box (TFE-2 LEVELS and identical TFK-2 LEVELS)
- AFC Level (AfcLevel=)
- RSSI Low (RssiLow=)
- RSSIHigh (RssiHigh=)
- AFC Level (AfcLevel=)

3. Using WinTesla Service Software Quick Install

3.1 Operator settings

Operator settings are made by WinTesla software. The operator can specify the necessary features for the terminal by setting the correct values for the software. The WinTesla Service Software "*software*" sub menu offers functions for Mobile Equipment settings for operators. The following settings have to be executed only with first use of Quick Install menu. The settings will be saved automatically with log off. When installing the first terminal, follow the procedure below.

3.2 Installing Automatic Area Code

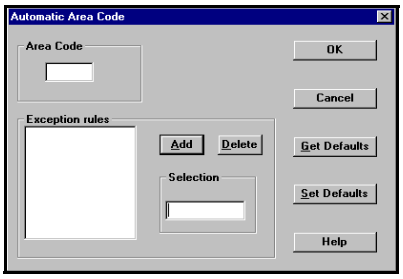
The following **Automatic Area Code** installation must also be done with WinTesla software. This edit box can be used to enter the local Area Code, which is automatically added to outgoing call numbers. This happens if the dialed number doesn't contain any of the *Exception Rules* number prefixes.

Note! The Automatic Area Code can only be used with a system solution network.

3.2.1 Automatic Area Code Command List

Command	Description
Area Code edit box (ALT+C):	This edit box can be used to enter the local Area Code, which is automatically added to outgoing call numbers, which don't contain any of the **Exception Rules** number prefixes.
Exception Rules List box (ALT+E)	This list contains those number prefixes which prevent Area Code Addition to dialed number.
Selection edit box (ALT+S)	Here new Exception Rule can be entered.
Add button: (ALT+A)	This button adds the number on the **Rule** edit box to the **Exception Rules** list.
Delete button (ALT+D)	This button deletes the current selection from the list box.
Get Defaults button (ALT+G)	This button loads the default Automatic Area Code settings from the ini file.
Set Defaults button (ALT+S)	This button saves the current Automatic Area Code settings to the ini file.

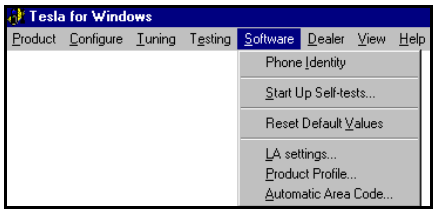
Picture 8 WinTesla Automatic Area Code window.



3.2.2 Automatic Area Code Installation Procedure

① Open the WinTesla Service Software

② Select *Software* -menu



Picture 9 WinTesla Software menu

③ Select Automatic Area Code

④ Set the right area code. (see chapter 3.2.1 and picture 8)

⑤ Click *Selection.*

⑥ Add exceptions.

⑦ If you want to save your settings, press *Set Defaults.*

⑧ Finally click OK.

3.3 Setting Product Profiles

In the Product profile Window it is possible to specify more specific features for the phone. This function opens the following window (Picture10) Look for more specific information about the features mentioned in the dialog box from the Operator's Guide (check boxes in Product Profile window).

3.3.1 Product Profile Command List

Command	Description
Access Node Number edit box (Alt+A)	The number of the access node. Maximum length is 30 digits.
Calling Line Identification drop list (ALT+L)	Mode for Calling line identification, OFF, US, EURO or DTMF.
Charge Advice Information group:	
State list box (ALT+T):	Mode for Charge Advice information, OFF, 12 kHz or 16 kHz.
Charging Pulse Length drop list (ALT+H):	Length of charging pulse in milliseconds, 100-350 at 10 millisecond steps.
Charging Pulse Interval drop list (ALT+V)	Pause between charging pulses in milliseconds, 150-600 at 50 millisecond steps.
Automatic Area Code check box (ALT+C)	The Automatic Area Code operation can be set to ON or OFF by checking/unchecking this check box.
Dual Number Operation check box (ALT+D)	Dual Number Operation can be set to ON or OFF by checking/unchecking this check box.
Fast Call Setup check box (ALT+F)	The Fast Call Setup can be set to ON or OFF by checking/unchecking this check box.

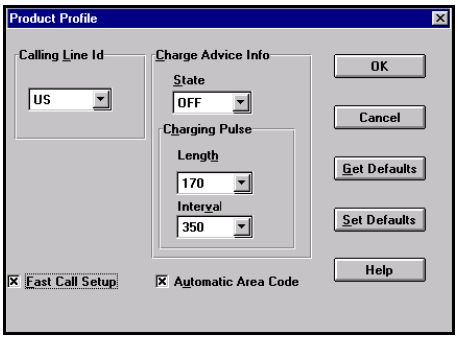
3.3.2 Product Profile Installation Procedure

① Select Product Profile from the *Software* menu (Picture 10)

② Make the necessary changes.

③ Press Set Defaults.

④ Finally press OK.



Picture 10 WinTesla Product Profile window

3.4 Setting Line Adapter Values

This command is used for changing the terminal's line adapter settings.

3.4.1 LA Settings Command List

Command	Description
Dial timeout edit box	The time between users last entered digit and call attempt.
Silent period edit box	Silent period of ring tone.
Ringing period edit box	Ringing period of ring tone.
Howler timeout edit box	Timeout for howler tone, which begins if the user leaves the phone off-hook for a long enough period.
Get Defaults button (ALT+G)	This button loads the default La Settings from the ini file.
Set Defaults button (ALT+S)	This button saves the current La settings to the ini file.

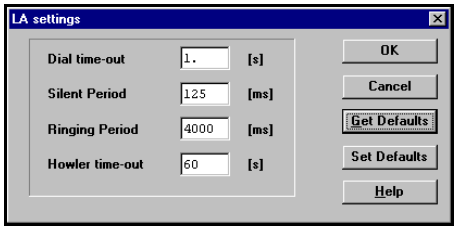
3.4.2 LA Settings Installation Procedure

① Select LA settings from the *Software* menu.

② Make the required changes.

③ Press Set Defaults.

④ Finally press OK.



Picture 11 LA settings window

3.5 Quick Install

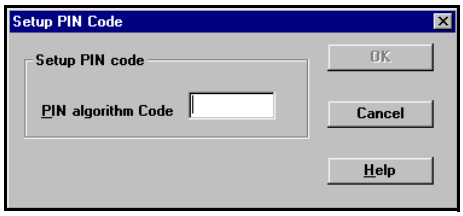
The Quick Install command is the final phase in the terminal installation. Changes made in previous windows take effect only if they are written in the terminal's memory by pressing the *write* button in the Quick Install window.

3.5.1 Quick Install Command List

Command	Description
Write (Enter)	This button registers the phone to MBUS, reads the necessary codes from the terminal, and changes the new PIN code, if the **Change PIN Code** check box is checked. Also Automatic Area Code, Line Adapter and Product Profile settings are written to the terminal according to the check boxes. The Log File is also updated, if it is active. After that the contents of the **Quick View** window are updated.
Close (Esc)	This button closes the dialog box without writing settings to the phone.
AutoPIN check box (ALT+A)	Checking this enables the AutoPIN feature. AutoPIN is a feature which saves PIN code to the phone's EEPROM. In this way the end user can use the terminal, but cannot use the SIM card on other devices, as the PIN code is unknown to the user. **NOTE!** The correct PIN code is needed for correct operation of AutoPIN.
Change PIN code check box (ALT+C)	Checking this enables changing of the PIN code on the SIM card. The new PIN code is calculated according to the terminal's IMEI and PIN Code Calculation Code.
Old PIN edit box (ALT+O)	The old PIN code can be entered in this edit box
Open button (ALT+P)	This button is used to activate/deactivate the log file. When the log file is not active, this button opens the dialog, which asks the name of the log file thus activating the log file. The log file contains the setup date, MCUSW version, terminal type, IMEI, security code, PIN code and IMSI of each terminal setup with Quick Install on one line separated by spaces, example below: 07.01 10:45 2.00 TFK-2 495028/10/023514/0 22135 1111 234883003011005 Pressing the **Open** button while logging is active, stops logging and "no log file active" text is displayed on the **Log file** edit box.
Log file static text	Static text containing the log file name. The log file name can be entered only by pressing the **Open button**. It contains the text "No log file active" when logging has not been enabled.

Command	Description
View Settings... button	This button opens the View Settings dialog box.
Setup PIN code (Alt + U) (Picture 17.)	The user can enter the code, which determines the algorithm for calculating the new pin code from the phone's IMEI. The length of the pin code resulting from this algorithm is always 8 digits. The code is saved to the TESLA.INI file in encrypted form.

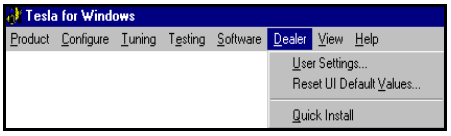
Picture 12 Setup PIN Code dialog box



3.5.2 Quick Install Procedure

① Select Dealer menu

Picture 13 WinTesla Dealer menu

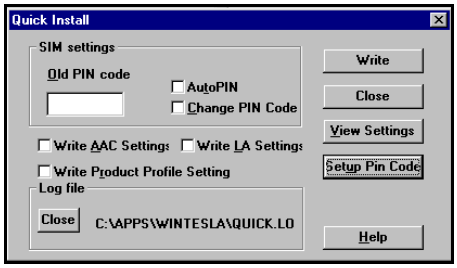


② Select the Quick Install command. The command is used for setting up PIN and AutoPIN settings and values to["on"?] a Fixed Wireless terminal.

③ Enter the operator-specific configurations to the Quick Install menu

- Old PIN code
- Change PIN code
- AutoPIN
- Write AAC Settings
- Write LA Settings
- Write Product Profile Settings
- Log File
- Setup PIN Code
- View Settings
- Write
- Close

Picture 14 Quick Install menu



④ After making the necessary adjustments, click WRITE.

⑤ Finally close the Windows.

When **Write AAC settings, Write LA setting** *or* **Write Product Profile Settings** are selected, WinTesla will write settings from the *Software* menu after clicking the Write button.

This is the final phase. Now the terminal can be disconnected from the computer. When two or more terminals are installed, after the first initialization just repeat the **Quick Install** command.

4. Terminal set up

Here is the abbreviated to-do-list for pre-installation.

① Open the SIM card cover by pulling it away and simultaneously pushing it upwards away from the transceiver.

② Install the SIM card in the holder slot.

③ Close the cover by pushing it towards the transceiver and then downward.

④ Power up the terminal. Connect the power supply's DC plug to the DC jack connector.

⑤ Connect the PC to the terminal.

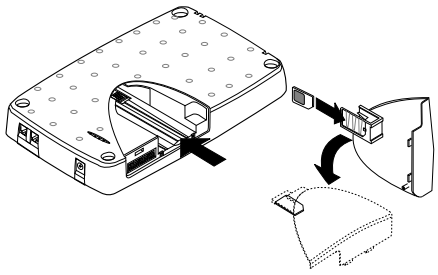
⑥ Press the Write button or wait for the automatic write if it is enabled.

⑦ Remove the power cable.

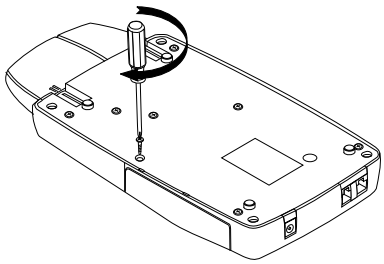
⑧ Remove the modular cable.

⑨ Close the SIM cover and insert the SIM cover screw. The screw is packed in the installation kit.

The terminal is now ready for on-site installation



Picture 15 Installing SIM card



Picture 16 Inserting the SIM cover screw

Please, see further instructions for on-site installations from the Operator's Guide, chapter 6.1.3.