USER MANUAL

Nordic ID PL3000

Contents

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Table 1, Identified trademarks used in this User manual

Latest information

For latest information on the PL3000 and on possible changes to this manual please consult our web site at http://www.nordicid.com

EU Declaration of conformity

CE

Nordic ID hereby declares, that the Nordic ID PL3000 handheld computer has been tested according to the standards EN 301 489-1 (v. 1.6.1) and EN 301 489-3 (v. 1.4.1). The equipment conforms with the essential requirements of the Directive 1999/5/EC.

 Salo,   26.9.2006

FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation.

FCC Notice

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

• Reorient or relocate the receiving antenna.

• Increase the separation between the equipment and receiver.

• Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

• Consult the dealer or an experienced radio/TV technician for help.

• Use only the power cord and connector cables supplied by Nordic ID to connect the equipment and power supply.

• Use only shielded cables to connect I/O devices to this equipment.

The PL3000 complies with FCC requirements. The FCC ID information is printed on the back side of the Handheld Computer.

IC Related Information

This equipment complies with RSS-210 of Industry Canada.

Operation is subject to the following two conditions:

- The PL3000 may not cause harmful interference, and
- The PL3000 must accept any interference received, including interference that may cause undesired operation.

1. Introduction

1.1 Nordic ID

Nordic ID develops, manufactures and markets handheld instruments for various industries. Nordic ID's headquarters are located at Salo in the south-western part of Finland.

An increasing part of the company's turnover is invested in Research and Development. The Nordic ID products are characterised by high quality, stylish design and excellent ergonomics with one-handed operability.

1.2 Handheld computers –principle of operation

In general, handheld computers are a class of devices that have either a ¼-, or a half-, or a full sized VGA screen with or without an integrated keyboard. Furthermore, they usually contain a standard package of integrated applications, both wireless and wired connectivity (network) options, and typically also some Windows application interfaces for developers of complete systems.

1.3 Nordic ID PL3000

The Nordic ID PL3000 is a configurable computer that can be equipped with various functionalities. Different functionalities include various alternative auto ID methods, wireless communication methods and other functionalities to make the PL3000 easy and comfortable to use. The Nordic ID PL3000 uses the Windows CE operating system.

The PL3000 is lightweight and features a one hand operated keyboard with a guiding keyboard backlight system and its rugged casing makes it suitable for rough conditions.
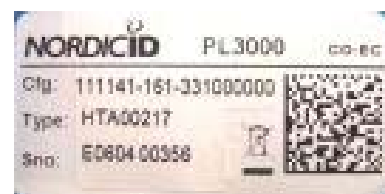
Type label

1.4   Short introduction to typical applications

Typical systems that utilize handheld computers consist of one or more handheld computers connected via a wireless network to a host computer. Examples of different systems are shown in the images below.
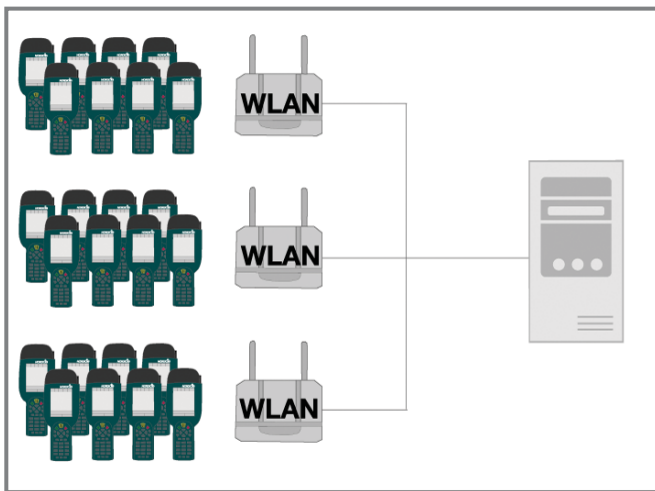
Fig.1 Network over WLAN   Fig.2 Network over GSM/GPRS
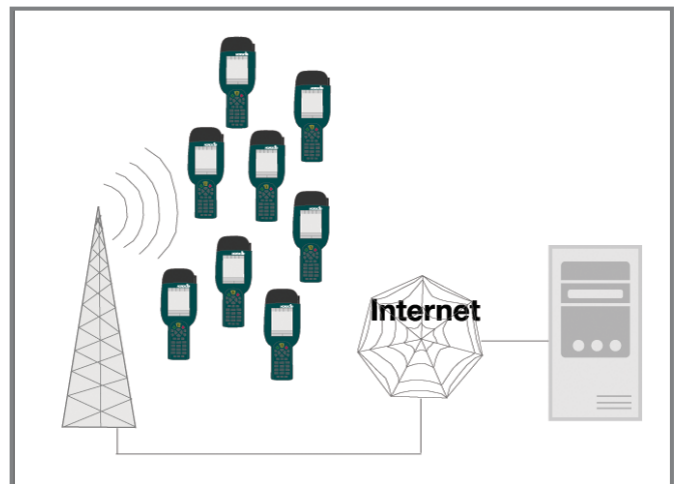
The end user application itself depends on the software solution provided by the system providers, who will be always introducing new IT applications compatible with the Nordic ID PL3000.

The PL3000 platform can be used with web-based, native software applications or with terminal emulation solutions.

1.5   PL3000 configurations

The Nordic ID PL3000 handheld computer can be provided with or without Identification and communication functionalities. For detailed information about the different configurations available contact your nearest Nordic ID sales office.

It is possible to configure the PL3000 with different memory sizes. It is also available in different colours. The PL3000 handheld computer's technical specifications can be found in the Appendix A.

1.6   PL3000 Accessories

There is several accessories available for the PL3000 handheld computer:

- Desktop/Wall mount/Vehicle charger
- USB cable
- Extra battery
- Multiple desktop charger
- Multiple battery charger
- Pistol grip

2   Getting started

2.1   Unpacking the unit

When you unpack the shipping carton containing a PL3000, please check that all items mentioned in the delivery note are included. Make also sure that they are intact (no shipping damage).

Should shipping damage be suspected, please contact your local dealer or Nordic ID. Do not take the equipment in the use.

The box containing the PL3000 includes:

- PL3000 handheld computer and stylus
- Lithium-ion battery pack
- Quick guide
- User manual cd

The additional PL3000 equipment will also include some or all of the following:

- Desktop charger
- Power supply and cable for power supply (European, UK or US)
- USB cable
- Spare battery
- Pistol grip

Other accessories are packed in separate shipping cartons.
Be careful when unpacking the components. In case the product has been stored or transported in cold or

it has been left in cold temperatures for a prolonged time, allow sufficient time for the items to warm up and reach normal room temperature and humidity before taking it into use.

2.2 Preparing the device

The battery in the device is normally fully discharged and must be charged for the first time for 8 hours prior to using the PL3000.

2.2.1 Installing SD/MMC memory card

The SD/MMC card slot is located inside the battery compartment. The SD card cannot be installed when battery is in place.
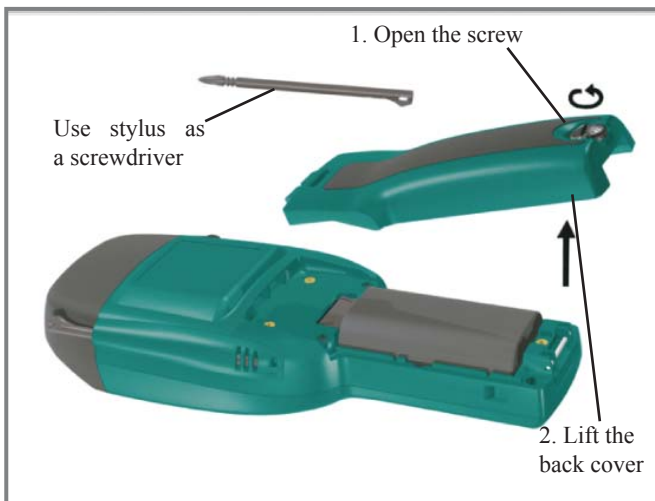
Fig.3 Taking the back cover off

Fig.4 Removing the battery

Open the SD/MMC card slot cover by lifting up the cover and removing the battery. Insert the SD/MMC card so that the copper connectors of the card face down towards the front of the unit. Ensure that the cut corner of the SD/MMC card is facing the upper right corner. Press the card into the slot until it clicks and the card locks into place. You can remove the card by pressing it lightly to release the card lock. A spring in the slot will push the card out of the slot. Close the SD/MMC card slot and replace the battery.

Fig.5 Open the slot cover

Fig.6 Install the SD/MMC card

Fig.7 Close the slot cover

2.2.2   Installing battery

The battery is located in the compartment inside the PL3000 handle. Open the compartment by loosing the screw at the bottom of the device and lifting off the back cover. Place the bottom end of the battery to the bottom end of the battery compartment, as depicted in figure 8. Push it against the battery support foam so that the connectors in the battery face the connectors in the device. Push the top end of the battery into the compartment.

Fig.8 Installing battery

If you are using handstrap, note that it is easier to slip the strap under the holding bar when the battery cover is not closed. Close the battery cover and tighten the screw. If the battery cover is not properly closed the device looses the IP 54 rating.

2.2.3   Handstrap

The hand strap helps you to take a secure grip of the PL3000. In figures 9 to 13 you can see how to install the handstrap to the PL3000.
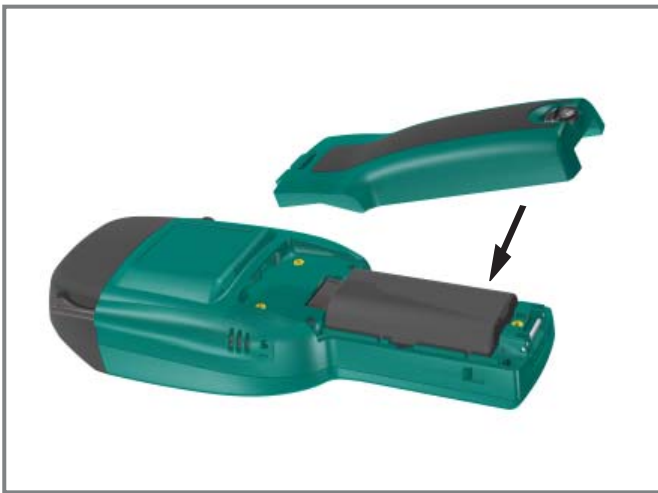
Fig.9 Remove the back cover

Soft part of the handstrap up

2.

1.

1. Thread the metal stick through the loop of the handstrap.

2. Pull the strap through the hole on the upper part of the cover so that the soft part of the hand-strap is up.

Pull the handstrap until the metal stick sets up to its holes.
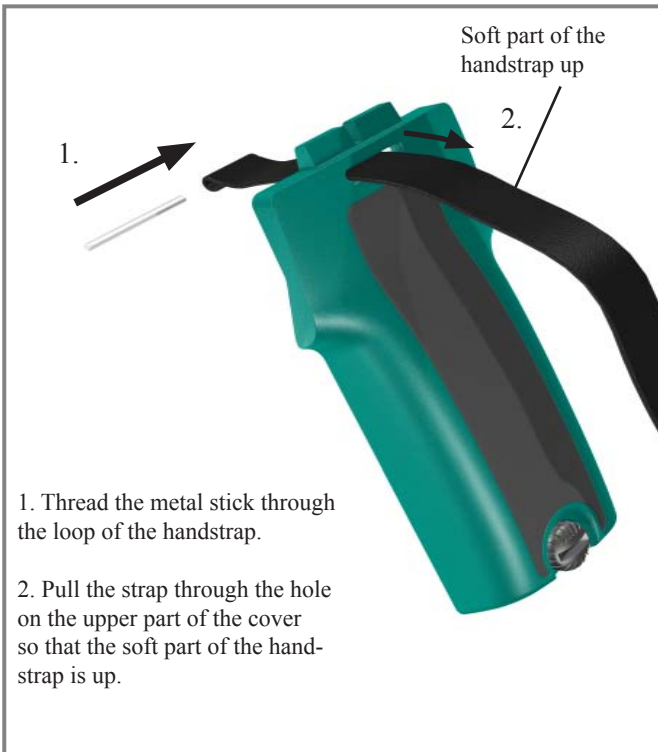
Fig.10 & 11 Installing the handstrap to the PL3000

1.Thread the handstrap under the metal stick on the lower part of the PL3000 body.

2. Close the cover.

3. Pull the handstrap to the suitable size.

The handstrap has a sticker on it. This way it is possible to change the size of the handstrap more than once.
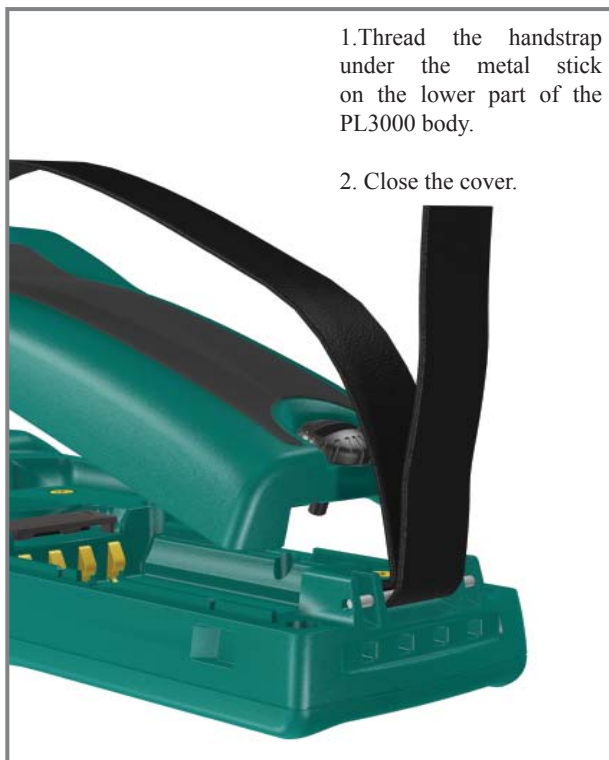
Fig.12 & 13 Installing the handstrap to the PL3000

2.2.4   Installing the charger

Follow the instructions from the Charger Quick Guide to assemble the swivel to the charger body. Connect the power cord to the power supply unit. Connect the power supply to the charger body. There are power cords with different plugs available. Use only a power supply supplied by Nordic Power AB. See the figure 14.

Charger body

Mini USB-Connector

Power connector

Mini USB-cable
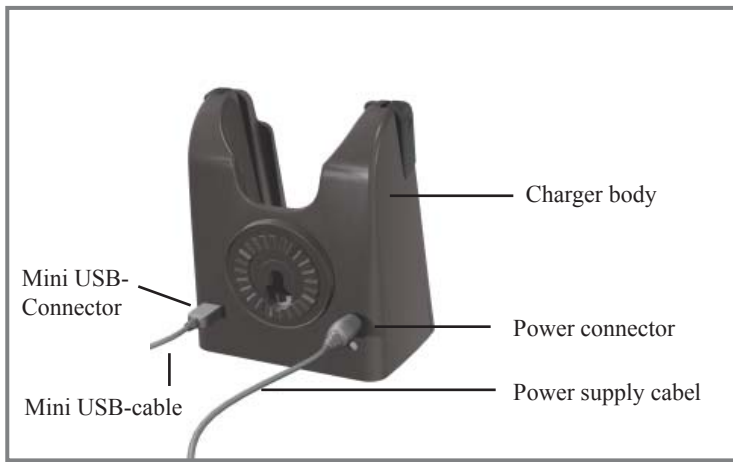
Power supply cabel

Fig.14 Connect the power supply to the charger body

2.2.5   Charging the unit

Place the device into the charger as shown in figures 15. - 17.   An indicator light on the top right corner of the keyboard shows the charging status. When the battery is less than 90% capacity the light is red, when there is 90-100% capacity the light is orange. When the battery is full the light changes to green. The minimum charging time for the initial charging is approximately 8 hours. Normal charging time is about 2½ hours to 90% of the capacity and about 5 hours to full capacity.

Remove the PL3000 from the charger by pressing the release buttons on the side of the charger. The indicator light illuminates only when the unit is switched on or is on suspend mode. If the power level is very low (below about 5%) the red indicator light remains illuminated when the unit is removed from charger. In this case charging should be continued.

Fig.15 Placing the PL3000 to the charger

Red indicator light

Green indicator light

Fig.16 Red indicator light shows that battery has less than 90% of the capacity

Fig.17 Green indicator light shows that battery is full
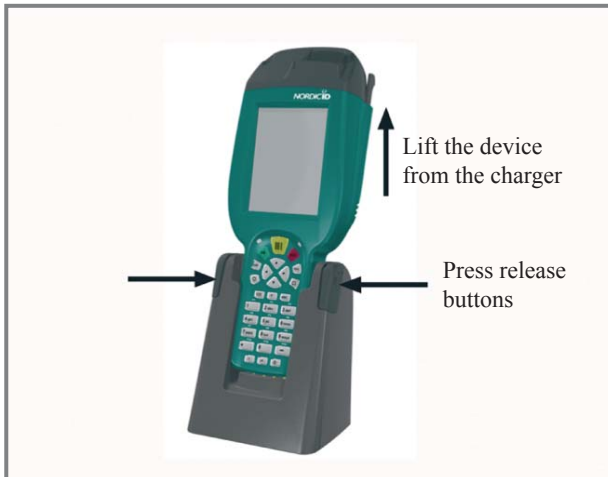
Fig.18 Removing the PL3000 from the charger

2.3   Switching on the power

Switch on the unit by pressing the power-key on the bottom row of the device's keyboard. When the device is turned on the display shows the Nordic ID start-up screen containing the text "loading Windows CE".

Fig.19 Switching on the power

2.4   Testing the device
After the power is switched on and Windows has started you can test the different functions by following the instructions in this User Manual.

3 User interface

3.1 Main parts of the device

The main parts of the Nordic ID PL3000 are shown in the figures 20 and 21.

Fingerprint reader (optional)
Imager (optional)
Stylus holder
Screen
Keyboard
Fig.20

Top cover
Headset connector
Loudspeaker
Handstrap attachment point
Handstrap
Battery cover screw
Handstrap attachment point
Charger connector
Fig.21

3.2 Keyboard

In figure 22 are the explanations of the Nordic ID PL3000 keyboard.

Programmable light
OK key (enter)
Tabulator
Navigation keys
Programmable key
Keypad mode selection keys
Character/ numeric/ function keys
Shift

Charger indicator light
Delete
Escape
Navigation keys
Programmable key
Keypad mode selection keys
Character/ numeric/ function keys
Power key

Fig.22
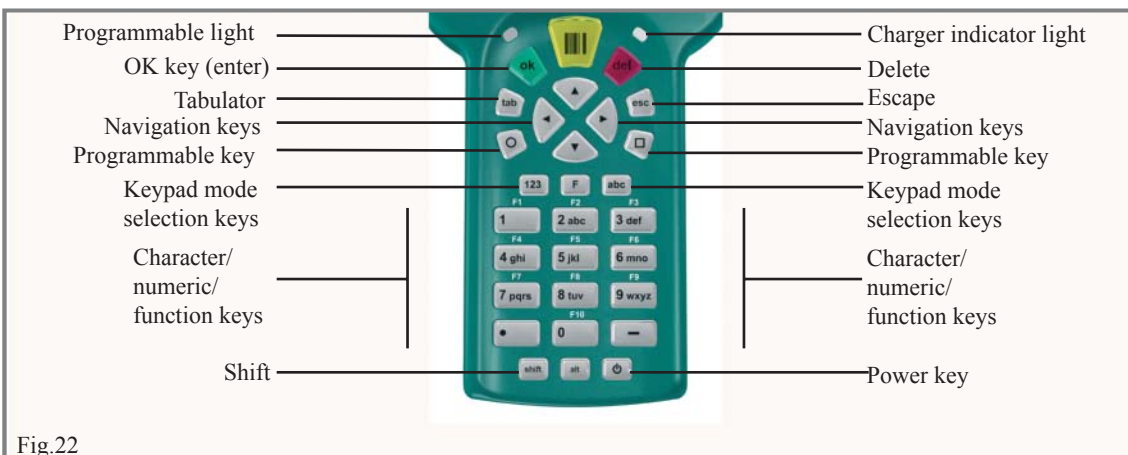
3.3 Indicator lights and connections

The following picture shows the indicator lights and connectors of the Nordic ID PL3000.
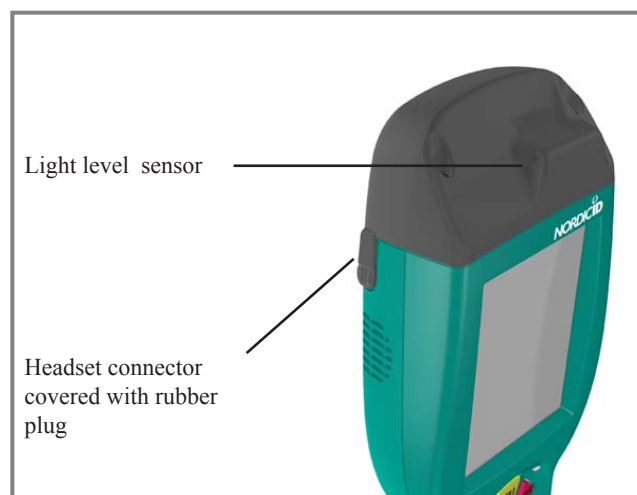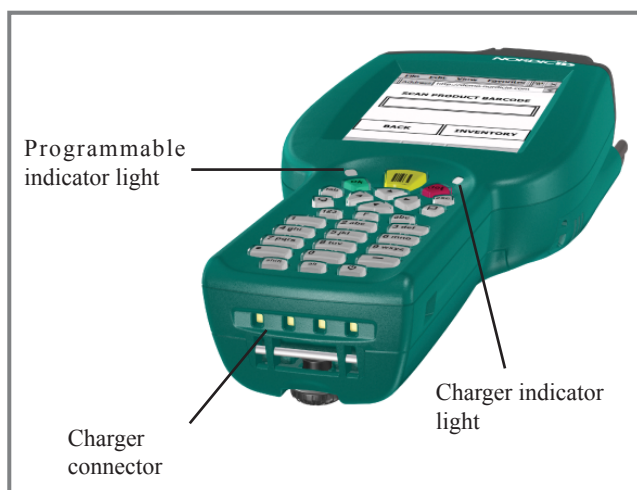
Fig.23 & 24 Indicator lights and connections

3.4 PL3000 casing

The PL3000 casing is ergonomic yet robust in design. This gives a comfortable user experience and yet it is tough enough to survive the hazards of every day use. The PL3000 has been drop tested from a height of 1.5 m onto concrete and has resist against dust and drop water (IP-rating of 54).

3.4.1 Stylus holder

The stylus holder is on the right side of the PL3000. Remove the stylus from the holder by pressing the top of the stylus towards the body of the PL3000 and lifting it out of the holder as shown in figure 25. Place the stylus in the holder with the wing pointing towards the back of the PL3000. In order to prevent loosing the stylus you may wish to connect the stylus with a length of string to the PL3000 body.

1. Press the stylus to the way of the top cover

2. Lift the stylus from the holder
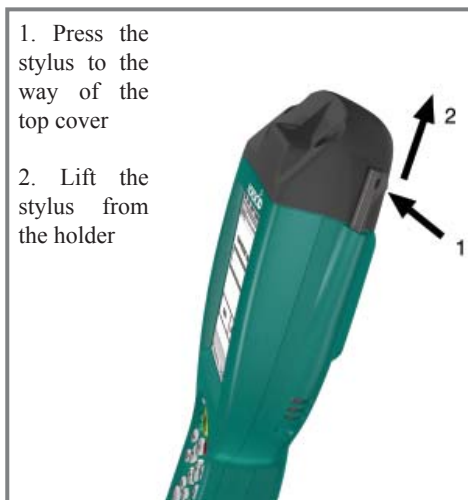
Fig.25 Removing stylus from the holder

4   PL3000 Features

The PL3000 is a configurable platform. The specific features depend on the chosen configuration. In these chapters different features are introduced.

4.1   Equipment features

4.1.1   Processor

- 200 MHz ARM 9225 Processor
- High performance, low power processor for a portable Multi-Media devices
- Wide industrial use guarantees extensive application and development tool support

4.1.2   Microsoft ® Windows ® CE

- The use of the same popular desktop GUI (Graphical User Interface) as in Windows 98se and Windows 2000 will help users to feel comfortable to use the device.
- A large number of extensively tested shareware and freeware software solutions are available. The number of solutions is constantly rising.
- Integrated Internet Explorer 6.0 browser with its support for, among other things, XML.

4.1.3   Memory

- 64 MB (128 MB) of SDRAM of which 32 MB (96 MB) is available to user applications.
- 32 MB of FLASH memory, in which the operating system is stored. The 32 MB version gives the application developer and end-user 8 MB of non-volatile storage space and a non-volatile registry.

4.1.4   Display

- 3,5", 320 x 240 pixel ¼ VGA colour transflective TFT display,

4.1.5   Touch screen

- High-precision resistive film-based touch screen.
- Mouse-like experience for users used to the Windows desktop.
- Virtual keyboard functionality
- Transcriber

4.1.6   Keypad

- 29-key keyboard
- 10 function keys
- 2 programmable free keys
- Key placement suitable for one hand operation
- All keys except the power button are programmable

4.1.7   Keyboard backlight

- Individually guided backlight keys
- Can be used as user guiding keyboard functionality

4.1.8   Imager (optional)

Imager consists of three parts - sighter, optics and optical reader.

The sighter is used for aiming the reader at the barcode to be read. There are two types of sighters available:

- LED-sighter shows green rectangle and blinking red light. The reading area is inside the green rectangle.
- Laser-sighter shows red corners of a rectangle and red dots in the middle of the rectangle. The reading area is in between of the corners.

There are two alternatives for the imager optics.

- High density optics (HD) is used for reading small codes from short distance.
- Standard density optics (SR) is used for reading codes from 5 cm to 50 cm depending the size and density of the code.

There are three alternative decoders for the imager:

- 1D decoder is used for reading barcodes and PDF matrixes.
- Limited decoder is used for reading 1D and 2D codes.
- Full decoder is used for taking photos.

Lightning conditions

The imager is designed to be used under lighting conditions ranging from complete darkness to 100,000 lux. Below 540 lux the reading distance may be reduced. Typical indoor light varies from 1000 to 2000 lux and bright sunlight is 30,000 lux. The imager may not work under conditions of specular reflection.

Reading distance and viewing area

The reading distance varies on the ambient conditions and barcode types. At 23°C temperature and ambient light from 540 to 10,'000 the reading distances for various barcodes may vary from 2 cm to 50 cm. Detailed information of reading distances for different barcodes are in Appendix B.

With a nominal operating distance, the reading angle is 40 degrees. The PL3000 can be rotated 180 degrees, e.g. the imager can read codes upside down. The angle may effect on reading.

The imager functions properly with linear barcode symbols having a minimum reflectance difference (MRD) of 37.5% (10mil symbol, positioned at focus. The minimum MRD for matrix codes is 45%.

Motion sensitivity

The imager will operate with 5 cm/second of lateral motion on a 15-mil linear barcode at the plane of optimum focus.

4.1.9   Vibrating alarm (optional)

The vibrating alarm is used as an alarm signal instead of or alongside the audio alarm. For example to indicate a successful scan.

4.1.10   Automatic wakeup motion sensor

The automatic wakeup motion sensor can be used to prolong operational time by configuring it to keep the unit in operational mode while motion is detected, or to wake-up the device from sleep-mode when motion has been detected.

4.1.11   Battery

- 2200 mAh @ 7,4V
- 4 to 28 hours of continuous use with one battery pack
- Dual battery operation available with pistol grip.

4.1.12   Loudspeaker

- Loudspeaker is used for playing sounds in PL3000.
- Control the loud speaker with Control Panel Sounds and volume application

4.1.13   Headset jack

- 2.5 mm headset jack

4.1.15 13.56 MHz RFID multi-protocol reader (optional)

Frequency:

- 13.56 MHz (CE, EN 300-330, ETS 300-683 European radio FCC Part 15 in some configurations)

Supported tags:

- ICODE
- ISO15693

4.1.16 Wireless LAN (optional)

Compliant with Wi-Fi Protected Access (WPA) and IEEE 802.11i (WPA2)
Authentication support: EAP-TLS, PEAP-MSCHAPv2, PEAP-GTC, LEAP, and EAP-FAST
Encryption support: Static, pre-shared, and dynamic encryption keys 40-bit and 128-bit keys WEP, WPA (TKIP), and WPA2 (AES) encryption methods.

4.1.17 Fingerprint reader (optional)

4.1.18 USB

The type of the USB controller is Client Controller. The USB controller makes it possible to connect the PL3000 to a host controller in a PC and to synchronise the contents of the unit with other applications. However, it is not possible to control other USB devices with the PL3000.

4.2   Accessories

4.2.1   Charger

The PL3000 charger is used for charging the PL3000 without removing the battery. The charger is supplied with desktop- or wall mount version. There is also a vehicle version available.

The charger can be mounted on a desk, a wall, a vehicle,a trolley or other locations by using the swivel mount.

The desktop charger also contains a USB port. See chapters on "USB" and "ActiveSync" to learn more about the USB connection.

Fig.26 Charger of the PL3000

4.2.2   Power supply for the charger

Use only a power supply from Nordic ID for charging the PL3000.

See the chapter 2.2.5. "Charging the unit" for instructions of connecting the power supply and power cable to the power supply.

4.2.3 USB cable

The USB cable is used to connect the desktop charger to the USB port of the PC.

Fig.27 USB connector in the charger of the PL3000

4.2.4 Headset with microphone

A microphone and a headset can be connected to the PL3000 through the headset jack. Nordic ID does not supply headsets; a standard headset with a 2,5 mm connector can be used.

The volume might need to be adjusted because the load impedance of headsets varies between models and manufacturers.

4.2.5 Spare battery pack

One or more spare batteries may be purchased for your PL3000. If you intend to use PL3000 handsets continuously without recharging the battery, Nordic ID recommends that you purchase spare batteries.

5 Handling the device

5.1 Cleaning the device

The PL3000 casing and keyboard should be cleaned with clean, moist, non-abrasive, lint-free cloth. Note that intensive rubbing of the soft rubber part of the top-cover and the back of battery pack cover may harm the rubber coating.

The PL3000 display window and the imager window may be cleaned with a clean, non-abrasive, lint-free cloth.

NOTE: The use alcohol or detergents may harm the casing and is therefore not recommended.

Any moisture inside the battery compartment or in the headset jack may be harmful for the device.

5.2 Using the keyboard

Nordic ID recommends the use of the keyboard. The user friendly keyboard of the PL3000 has 29 large-size keys which are easily operated with a thumb. The keyboard has also a backlight and individual key light activation which will guide the user if needed.

5.3 Using stylus and touch screen

Use the touch screen only with a stylus supplied by Nordic ID, do not use extensive force since it may damage the display's surface. To prevent loosing the stylus, it can be connected to the PL3000 with a string.

Fig.28 Using stylus

5.4 Resetting the device

5.4.1 Software resets

A short press of the power key can start the software-reset process. A shutdown application window will appear on the display of the PL3000.

In the shutdown selection window there are:

- Suspend
- Warm reset
- Cold reset and
- Windows CE reload

Select the type of reset required. The description of the reset type is shown in dialogue box of the shutdown window.

In the suspend mode the display is switched off. When restarted Windows will continue from where it was. Use suspend mode when you want to save the battery life but wish to continue the use of the device from where you were. Suspend should be used in normal use.

Fig.29 Suspend window

In a warm reset the memory and windows registry remains, but all unsaved data will be lost. The installation of software may require a warm reset of the device.

In a cold reset the RAM will be cleared and unsaved registry modifications will be lost. Use the Cold reset when you want to remove installed software.

In the Reload Windows CE RAM memory will be reloaded from FLASH memory. All unsaved data and registry modifications will be lost. Reloading Windows CE is mostly used by software developers when a device image is updated.

Reset with reset switch

The reset switch is located on the left side inside the battery compartment. By pressing the reset switch the device starts the reloading of Windows CE. Unnecessary reset with the reset switch is not recommended.
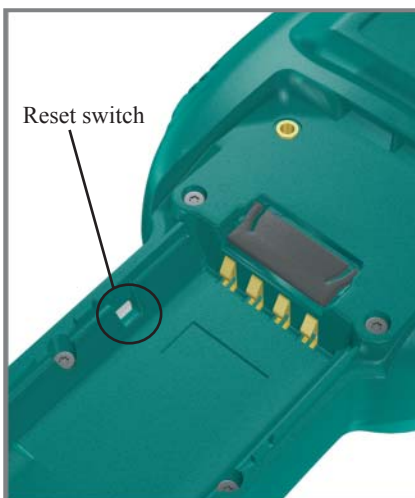
Reset switch

Fig.30 Reset switch of PL3000

Starting the device after reset

The device remains switched off after a reset and starts with loading Windows when the power key is pressed again and the battery cover is in place.

5.4.2   Managing battery power

The battery power and power save functionality can be controlled from the controlpanel's Power properties. See the chapter 6.5.16. for details.

To save the battery power, do not use the keyboard backlight display if not necessary and suspend the device when not in use.

With the Pistol Grip accessory a second battery pack can be taken into use to prolong the battery life.

When longer than normal operating time is required the use of spare batteries is recommended. The PL3000 requires a constant supply of power in order to be operational.
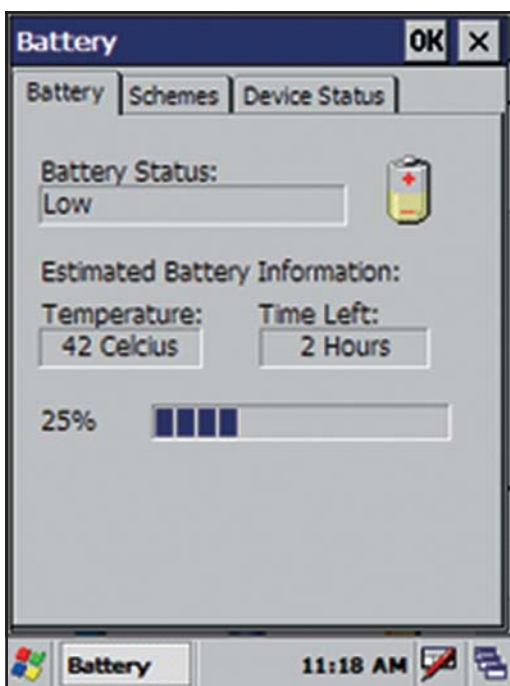
Fig.31 Power properties windows

5.4.3   Changing the battery pack

When the power of the PL3000 battery has decreased to 5% of the full charge, a pop-up window will appear on the display of the device, notifying the user that the battery level is low. This indicates that the device should be placed immediately in the charger.

After this indication you should save all unsaved data and settings, and then change the battery pack or charge the battery.

If at any point the power level drops below the final threshold value (2% of full charge) the PL3000 enters into suspend mode.

When the battery cover is opened the PL3000 performs a file system backup and suspends Windows CE. The memory with all settings and files is maintained with the backup battery for about 2 hours. During this period the main battery should be installed again. The backup battery is fully charged after every 20 hours of use.

The battery is located in the compartment inside the PL3000 handle. Open the compartment by loosing the screw on the bottom of the device and lifting off the back cover.

Place the bottom of the battery to the bottom of the battery compartment. Press it against the support foam so that battery connectors face the connectors in the device.

Push the top end of the battery into the compartment

If you are using a hand strap, note that it is easier to slip it under the holding bar when battery cover is not closed.

Close the battery cover and tighten the screw. If the battery cover is not properly closed the PL3000 IP-rating may be lost.

5.4.4   File System Backup

The File System Backup application allows you to backup all files in the RAM file system of the PL3000 to FLASH memory. At the same time as the backup is made, a monitor file is created in the Windows folder. Every time the device boots up the File System Backup verifies that the file is present. If not, it means either that there has been a power failure that has led to the erasing of the RAM or that a hard reset has been made. In both cases File System Backup proceeds to restore the backed up files to their correct place in RAM. Using file backup system prevents losing programs or data from RAM memory even when the PL3000's battery is removed.

Choose "File System Backup" from the Nordic ID folder under programs in the start-up menu.

Choose "Backup RAM Files"

The device shows the backup progress on the display.
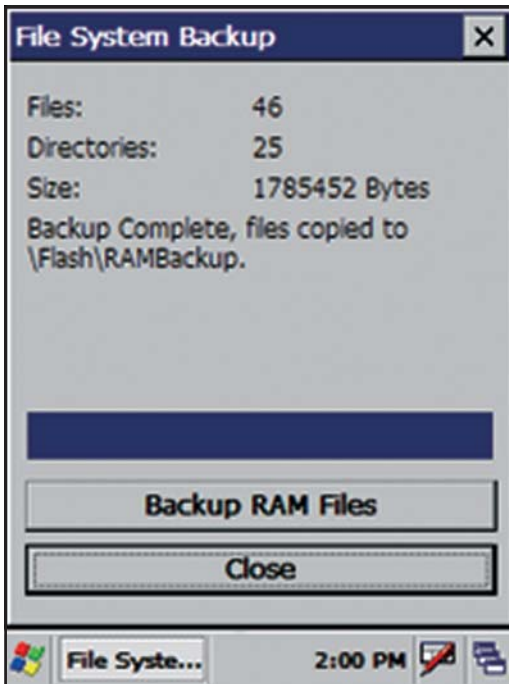
Fig.32 File System Backup window

When the backup is complete, the text "Backup Complete, files copied to \FLASH\RAMBackup" appears on the display.

Close the File System Backup by selecting "Close".

Before closing the file is compressed, this takes a few seconds.

The backup copies of the RAM files are contained in a single file in the FLASH folder:

/FLASH/RamBackup/RamBackup.pak

5.4.5   Saving the registry

Saving the registry saves the PL3000's settings permanently. Save the Windows registry by choosing the program "RegBackup" from the Nordic ID folder under programs in the start-up menu.

Select yes for saving the registry.

When saving the registry, the dialogue window in figure 33 appears on the display. Answer "start" and close the window.
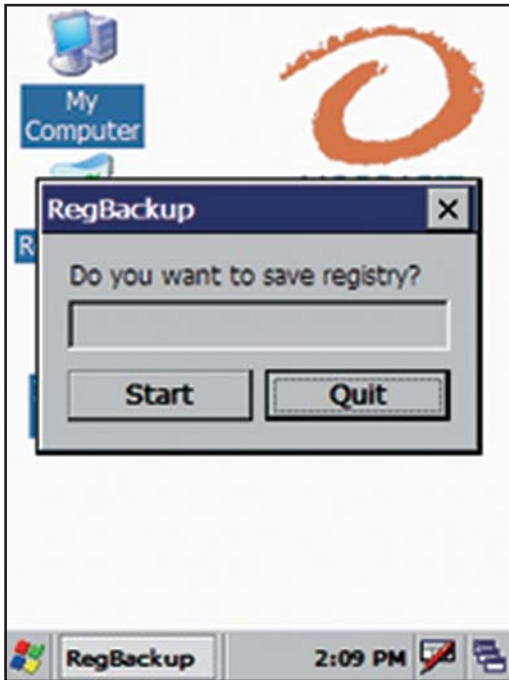
Fig.33 Saving registry window

5.4.6   Setting time and date

Double click the time icon on the bar menu. Set the date and time from the display and select "Apply". Start using the settings by pressing the OK key on the keyboard.

5.4.7   Reading codes

The optimum reading distance varies with the barcode type and size. Typically the optimum distance is about 15 cm. With LED-sighting device a good distance is when the green aiming light covers the code area from side to side. If the code is not read check the reader settings from your system integrator. Reading is fastest when the code is read at right angle to the reader. Start code reading with scan button.

Fig.34 Reading codes

5.4.8   Utilising virtual keyboard

Open the virtual keyboard menu from the control bar's keyboard icon. Select Keyboard from the menu. The keyboard appears at the bottom of the display. The virtual keyboard is displayed in the figure 35. You can move the keyboard by grabbing it from the upper bar and dragging it onto the screen.

Fig.35 Virtual keyboard

Special characters can be chosen by selecting the SHIFT key. Scandic letters and other special characters can be used by selecting the [áü] key.

You can close the virtual keyboard by opening the keyboard menu from the control bar and by selecting "Hide input panel".

6　　Applications & tools

6.1　　Start menu

In the start-up menu there are links to programs, settings and other items you use. In the default mode the items and sub-items are:

Programs

- Demo
    - ImagerStream_Demo
- Nordic ID
    - File system backup
    - IP config
    - RegBackup
    - Rotate
    - Version
- Summit
    - Certs
        - Readme
    - Scu
- Command prompt
- Inbox
- Internet Explorer
- Microsoft WordPad
- Remote Desktop Connection
- Transcriber
- Windows explorer

6.1.2 Demo

This item contains 2 demo software; Imagestream_Demo and QBusting_Demo. The Imagestream demo uses the imager of the PL3000 as a video camera constantly capturing images and displaying them on a screen. The streamer is activated by pressing the Scan-button.

The QBusting –demo introduces the mobile payment system called QBusting.

6.1.3　　Nordic ID

This item contains contains some of the PL3000 related applications and controls.

File System backup

Performs a complete file system backup to flash memory.

NORDIC**ID**
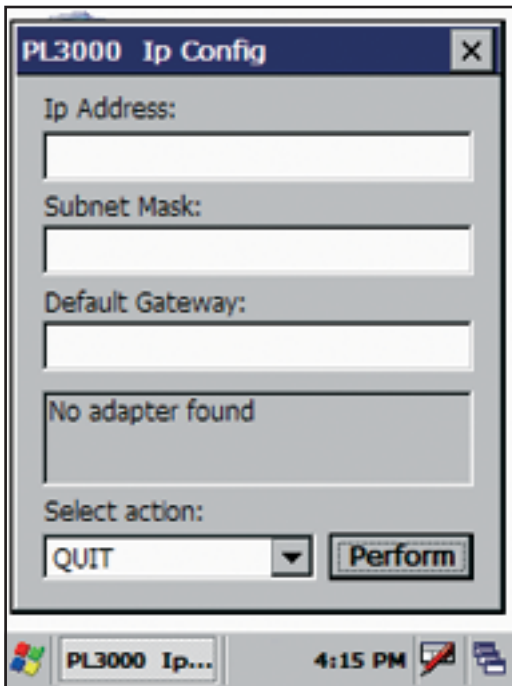
Fig.36 IP configuration window

IP Config

This application shows you the current state of your PL3000 Internet Protocol (IP) settings. If the fields are empty it means there is no connection present that implement an IP stack, or that the existing connections are not operational. If you believe that you have a working network link, yet the IP information is incorrect, you can request new information. Please keep in mind that this works only if you have a DHCP server working on the network where the PL3000 is connected to. Select 'Renew IP' from the action list and tap the 'Perform' button to request a new IP information. The application is started from the Start/Programs/ NordicID menu.

Rotate

With the rotate software you can turn the PL3000 display 90, 180 or 270 degrees counter clockwise. Select the angle and the display rotates. By selecting 0 the display returns to the original position. Press close to close the Rotate software. When the software is closed the display remains at the selected position until the display is rotated again or until the device is reset with warm or cold reset.
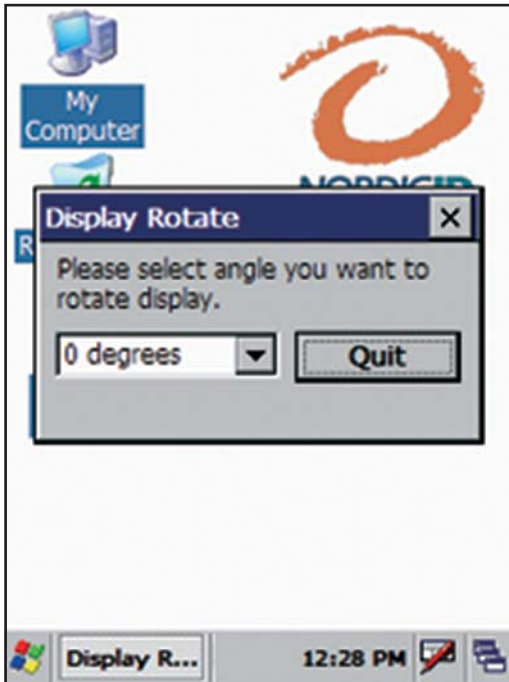
Fig.37 Rotate window

RegBackup

RegBackup is used for saving the Windows registry .

When you install a program onto the PL3000, you are installing more than just files. Most Windows programs also make modifications and additions to the Windows Registry. The registry is kind of a catalogue of settings for all programs, including the operating system. So in order for your installed programs to work correctly, even after a power loss, the registry needs to be stored in FLASH. The PL3000 uses an automatic backup system where all changes to the registry (which is in RAM) are backed up periodically. There are three ways the registry can be backed up:

•   Switching the power off by using the power button. When the PL3000 is switching itself off,
         it also backs up any changes to the registry to FLASH.
•   Leaving the unit on for 5 minutes. Any modifications to the registry are automatically backed up
         every five minutes.

•   Running /Windows/RegBackup.exe. This program triggers a backup of the registry immediately.
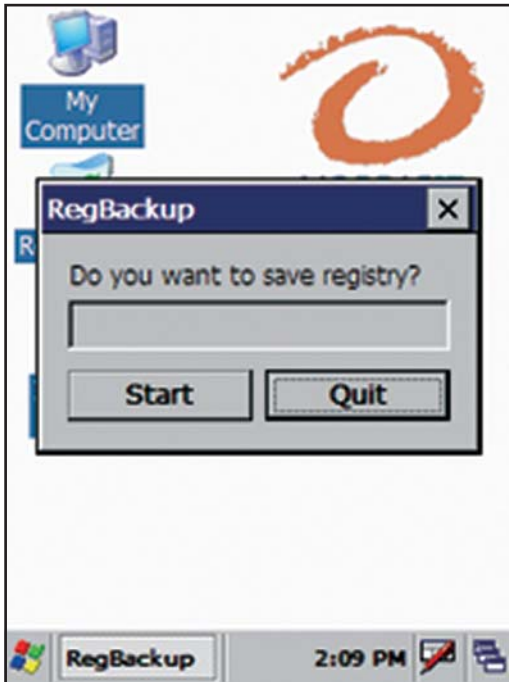
Fig.38 RegBackup window

Version

This tool shows the firmware version of the PL3000 and when it was created. In addition it shows if you have a custom firmware. If the firmware is a custom version, then the name of the version is stated below the firmware version line. In addition to these facts, some of the included software components are listed in the 'Included components' tab. To start the tool, activate its link in the Start/Programs/NordicID menu.

6.1.4   Summit

See the appendix J for instructions how to create WLAN connection for SUMMIT card.

6.1.5 Command prompt

Command prompt opens the command prompt window. Open the Command prompt window from Start menu, Program menu, Command prompt.

Fig.42 Command prompt window

6.1.6 Internet explorer

As default the PL3000 has Internet Explorer 6.0. This is used for browsing the Internet or for utilising web-based applications.

Microsoft Internet Explorer 6.0 for Windows CE

Internet Explorer 6.0 (IE) allows you to view content from HTTP servers and HTML files. These can either be stored in the PL3000 or they may be accessed through a network connection. This browser works very much like its desktop counterpart, so any user familiar with other Internet Explorer versions should feel right at home. Please note that some form of connection to the Internet is needed in order to browse any web pages from the Internet. If your PC has an Internet connection set up, all you have to do is set up an ActiveSync connection, and you can navigate the web with the PL3000. There are also more complicated ways of connecting to the Internet involving WLAN-cards. Contact your network administrator for more information about how such network resources are set-up at your location.

Some of the supported features of Internet Explorer 6.0:

- HTML 4.01, DHTML, XHTML 1.0, MSXML 2.0 & 3.0
- HTTP, HTTPS and FTP
- CSS & CSS2
- ActiveX controls
- SSL 2.0 & 3.0
- JavaScript 1.4
- JavaScript 5.5 & VBScript 5.5
- 40-bit SSL (128-bit is available if required)
- PNG, GIF (Also Animated), JPEG and BMP image formats
- Integration with third party Java virtual machines.

6.1.7   Microsoft WordPad

The WordPad application is a "light" version of the Microsoft WordPad usually bundled with desktop versions of Windows. Microsoft WordPad gives you the ability to view and change WordPad documents. The toolbar can be moved around using the grip-bar next to the font selector in the picture. The toolbar is usually placed beside the menu, and moving it down under the menu (like in the screenshot) will make it easier to use. If you have a standard production release of the PL3000 firmware this software is present

6.1.8   Transcriber

With the transcriber most of the keyboard and mouse functionalities can be executed with the stylus and touch screen. When you start the Transcriber software a dialogue window with instructions opens and a transcriber icon appears on the task bar. Closing the window does not close the transcriber.

When the transcriber is active the icon appears with dark background, when the transcriber is not active the icon is without background.

When the transcriber is active the stylus movement is displayed on the display. Note that the using the transcriber may slow down tapping. Functionalities and delays in the actions appear as a jammed display during the delay period.

By double clicking the transcriber icon you can open the transcriber menu. From the selections, and options and Letter Shape Selector you can change the visual, vocal and their settings in the transcriber.

Close the transcriber completely by choosing close transcriber from the transcriber menu. Transcriber cannot be used while display is rotated.

Fig.43 Transcriber window
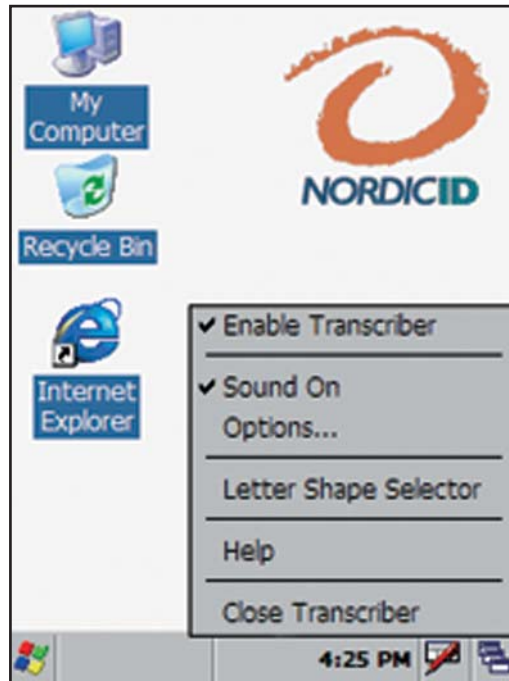
Fig. 44 Transcriber menu
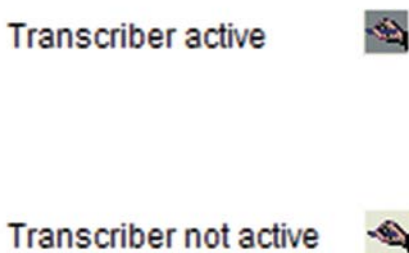
Fig. 45 Transcriber icons

6.1.9   Windows Explorer

With the Windows Explorer you can browse files and folders stored in the PL3000 and perform actions with files and folders.

Document icon opens File, Edit, View, Go and Favourite menus. Button icon opens quick buttons for file and folder actions.

6.2   The task bar

The task bar is located to the bottom of the display. You can hide or display the task bar from start menu -> settings task bar -> start menu.
When the task bar is hidden you can open it by tapping the bottom of display with the stylus.

The hidden task bar can be opened also with the keyboard:

Fig.48 The Task bar

- Close all the windows,
- Press esc for removing all selections
- Press tab for selecting taskbar
- Press "OK" for opening the task bar

Task bar items

Startup icon. Single click opens the Windows start menu.

Alphabetic icon. The [A] icon shows when the capital letters mode is selected.

Time Icon. Double click opens the calendar and clock of the PL3000. See the chapter "Setting on the time and date" for instructions.

Virtual Keyboard Icon. Single click opens the virtual keyboard menu. See the chapter on "the virtual keyboard" for instructions.

Desktop Icon. Single click brings desktop on the display.

6.3   Pop-up menu

Open the pop-up menu by pressing an icon on the display for one second. This corresponds on the right key click of the PC's mouse. From the pop-up menu you can, for example, see the properties of the selected item.

6.4   Shutdown menu

A short press of the power key opens shutdown window. A shutdown window appears in the display of the PL3000.

In the shutdown window there are:

*   Suspend
*   Warm reset
*   Cold reset and
*   Windows CE reload

Select the type of reset from menu. The description of the selected reset type is shown in dialogue box within the shutdown window. See chapter 5.4. for details.

Fig.49 Shutdown window

6.5   The Control Panel

The PL3000 control panel contains subprograms that allow you to configure how the unit should work. These subprograms are represented by the icons in the image on the left. The subprograms available and their functionalities are explained below.

Open the control panel from Start menu, Settings and Control panel.

6.5.1   Aironet Client Utility

Aironet
Client Utility

The Aironet Client Utility is used to configure the Cisco Aironet 350 series 802.11b Wireless LAN Cards. Unless such a card is present in the PCMCIA slot of the PL3000 this program will only allow you to check the version of the driver. This is done by starting the program and clicking the 'About…' button; this will bring up a dialogue showing the version of the driver. If the firmware of your card is too old to work with the installed version of the driver, an error message will appear upon inserting the card. In this case you need to acquire a compatible firmware image file for the card from Cisco and update your card. You can also contact your Nordic ID reseller for help in acquiring the firmware. Please note also that in most cases the firmware version of the card and an access point should be upgraded hand-in-hand. This can be verified by reading the release notes of the new firmware file.

The Program Dialogue

The figure 45 shows the main window for the ACU. If the buttons are displayed grey there is no WLAN card in the PL3000 or the card is not correctly installed. With a card present the following functions are available to you:
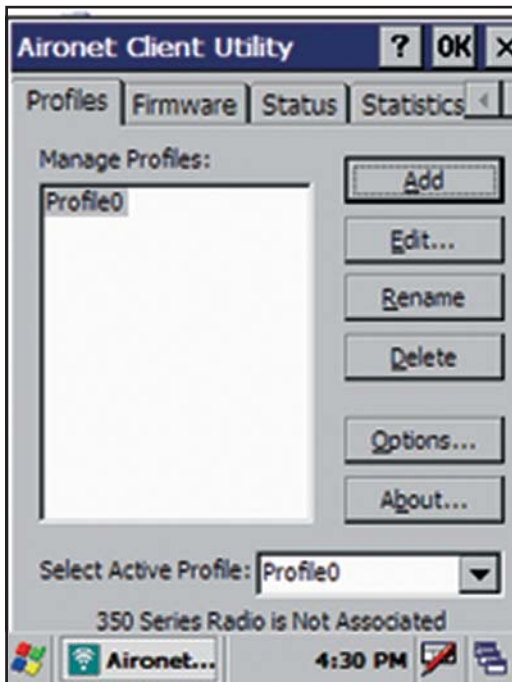
Fig.50 Main window for the ACU

ADD/Edit/Rename/Delete Profile

The profile editor is where you configure an existing profile or create a new profile to allow you to connect to an 802.11b network. The factory default values are correct for a Cisco 350 or 1200 series access point with default settings.

If you are attempting to connect to other access points you must check the correct settings from your network administrator. The first is whether or not Infrastructure or AdHoc mode should be used. Usually if you are connecting to an access point you are using Infrastructure Mode. If you are connecting to your laptop PC you will most likely be using AdHoc. Configure the 'Infrastructure Mode' setting accordingly. After this you will need to configure at least the SSID value.

Most networks today are encrypted. In this case you will need to configure the encryption before the link will work. When running AdHoc with some access points, static WEP keys are used. Configure the WEP key as necessary. All other settings on this page should be left alone unless you know that for your network they should be configured differently. Especially the power saving feature should not be modified. The factory default setting of 'Fast PSP' offers near maximum radio coverage and transmission speed. It also improves battery life significantly. If you set this to 'CAM' (Constant Awake Mode) the battery life of the unit drops from around five hours to two hours constant power on usage. You will, however, get about 10% better signal and faster transmission.
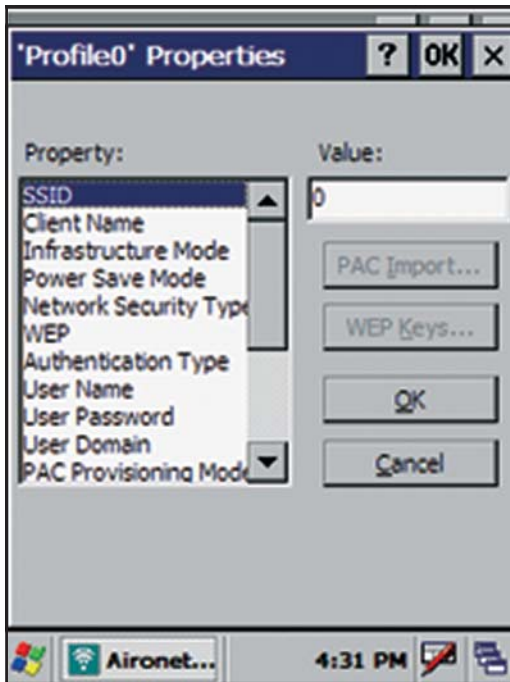
Fig.51 ACU Profile Properties

You can create and save several profiles for use with different networks. You can choose the active profile with Select Active Profile menu.

Options

From options you can chose whether the signal strength is displayed in percentage or as dBm.

About

About displays the version of the Aironet Client Utility that is installed on the PL3000.

Firmware

On the firmware tab, it is able to load a new firmware image into the Aironet card. You can accomplish this by copying the new firmware image file to the PL3000 by any method available to you. (ActiveSync transfer, SD Card, Browser Download, etc.) Once the file is present in the unit you can click the 'Browse…' button under on the firmware tab page. Then proceed with selecting the firmware image file; the upgrade will proceed automatically once this is done. Do not upgrade the firmware unless you know it is necessary! If everything is working as it should, never upgrade.
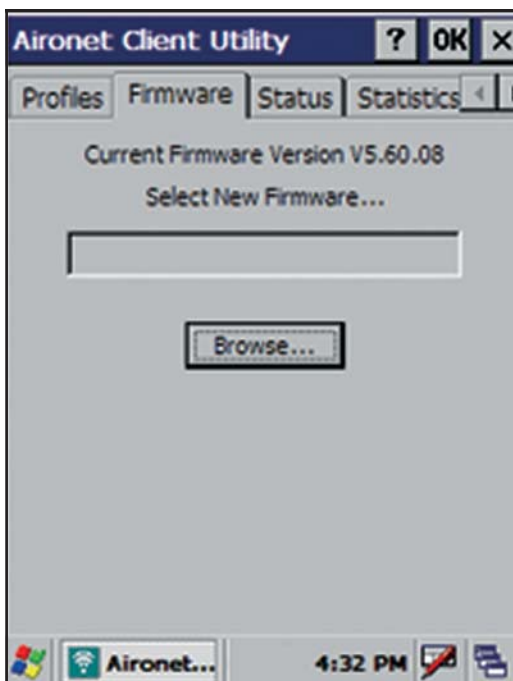
Fig.52 ACU Firmware window

Status

The status page gives you the signal strength and quality information as well as information of the driver and firmware versions. If the strength and quality bars are empty it means there is no 802.11b network to connect to, or the settings are incorrect and the card cannot therefore establish a connection.

Statistics

This tab page shows you a summary of the traffic that has occurred since the last hard reset. You can view either received or transmitted data statistics by choosing the alternative from the category menu.

Survey

Use the tab page to investigate radio coverage for the sites you wish to use 802.11b wireless networking on.

6.5.2   APN Manager

This tool allows you to configure the APN (Access Point Name) of the GPRS base station you are using. The name of the APN is usually 'internet', and if your service provider uses this you will not need to modify this setting. This tool affects the Option Globetrotter GPRS or Combo card only, and has no effect on other vendors' cards.

6.5.3   Bluetooth Device Properties

With this tool opens the NID Bluetooth Manager. You need to have a Bluetooth version of the PL3000 in order to use this tool.

The Nordic ID Bluetooth manager is an application that improves the usability and brings some new features to the standard Windows CE Bluetooth manager. The application consist of 4 tab-pages; General, Scan, Services and Hardware.

General

The General -tab page contains the information about the BT identification such as device name and type. The device name is a friendly name of the device that is usually used in the BT communication.

Device type can be chosen as handheld, PDA, laptop and desktop. The type is usually displayed at the remote device with the name as a graphical indicator.

At the bottom of the window are the two radio buttons; Advanced and Apply. The Advanced-button displays the advanced settings-tab where the Discovery-radio button sets the device as discoverable/not discoverable.
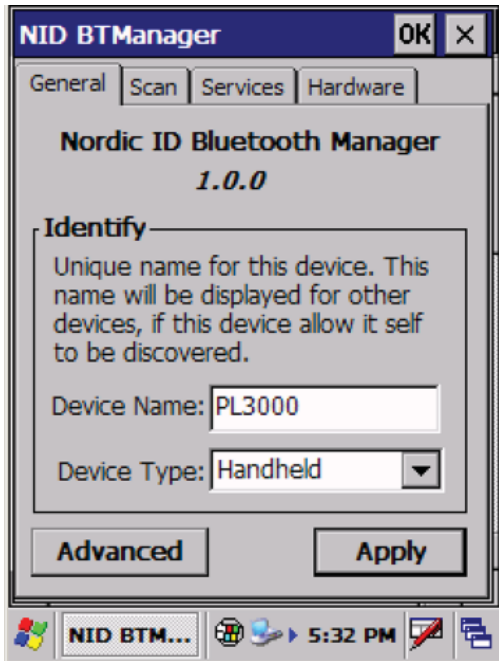
Fig.53 NID BT Manager General -tab page
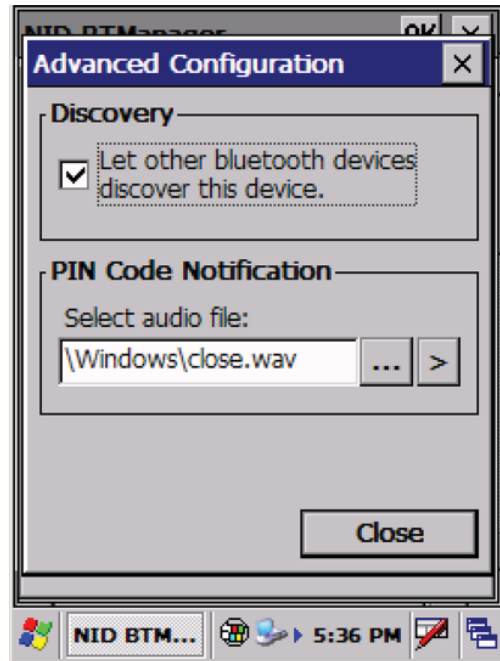
Fig.54 General -tab page advanced options

The device can be set to play a sound when requested a PIN-code authentication by a remote device. The sound can be chosen by pressing the … -button and browsing the appropriate wave-file from the opened file selection dialog. The selected file can be played by pressing the > -button by the file selection dialog –button. Close closes the Advanced –window.

The changes are taken into use by pressing the apply-button.

Scan

The Scan -tab page contains the tools for discovering the devices and services in it. The "Scan devices in range" –button scans the discoverable devices into range of the PL3000. The scanning may take a while and the devices within the range are shown at the Devices: -window. The devices are shown by their type and their friendly name. The information of the status of the connection to that device is shown after the friendly name of the device.
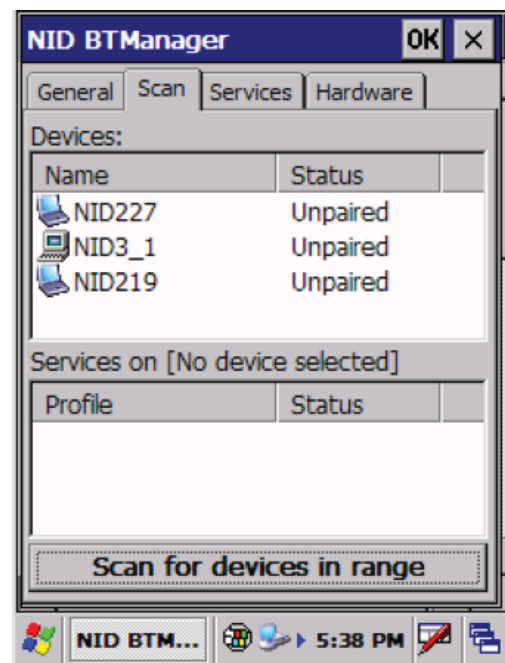
Fig.55 Scan -tab page of the NID BT Manager

By selecting the device at the "Device:" -window the NID BT-manager scans the services in that device. The services found are displayed at the Services –window. Currently the NID BT-manager shows only the Serial Port –service.

When tapping the name of the device into Device-window the additional selection window pops up. Select Pair to set up a secure connection to the device. Note that the PIN-number set to same for both devices.
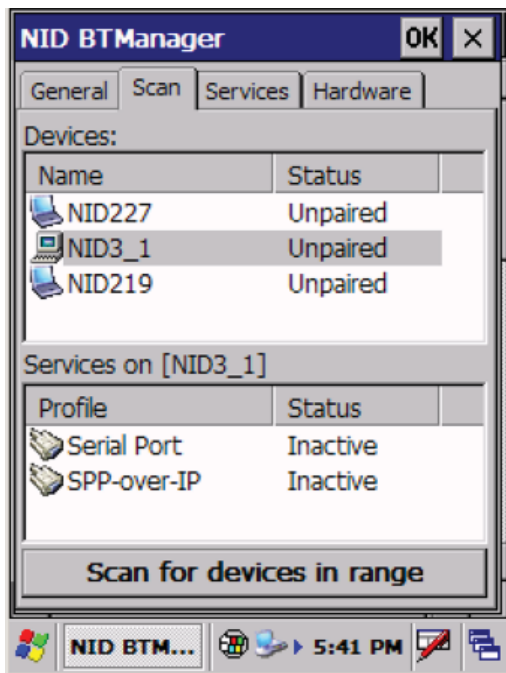
Fig.56 Services found on discovered device   Fig.57 Service properties
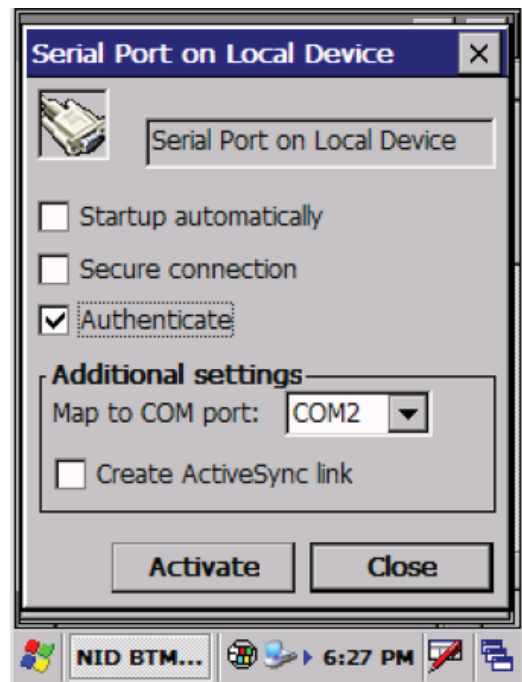
The Bluetooth PIN code is 1-8 bytes long (8-128 bits) Personal Identification Number. However, most devices use PIN sizes of 4 decimal digits.

By selecting the service by tapping it, the PL3000 opens the configuration window for that service. The service configuration window includes the checkboxes for automatic startup after power up, secure connection and authentication.

The additional settings of the Service configuration -window includes the Com port mapping to the service. The serial port profile can be set to create Activesync link. Link creation is explained at Services chapter.

Services

This tab-page shows the discovered services in the local and remote devices. The services at the remote devices are shown at the Client services –window. The Local services –window shows the services on the PL3000.

The local services can be added by pressing the add-button. The Nordic ID BT manager currently supports Serial Port service for the local device. The serial port service can be mapped to a virtual COM-port which can be used for applications that support the COM-port communication.
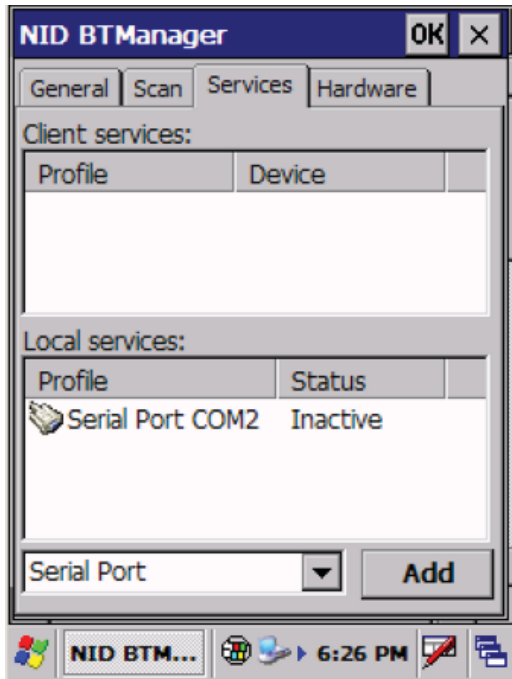
Fig.58 Services on a local machine
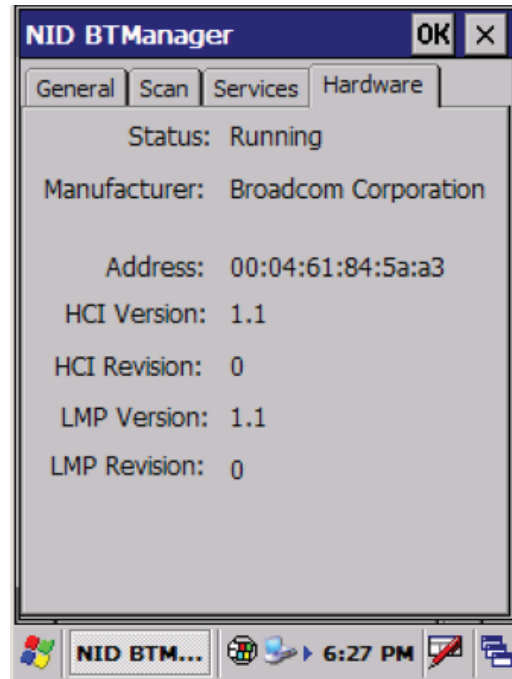
Fig.59 Hardware properties of the BT chip

Hardware

The hardware tab-page contains information about the Bluetooth HW status, chip manufacturer and the 48-bit Bluetooth address (in hexadecimal form).

6.5.4 Certificates

Certificates

This tool allows you to register security certificates to the PL3000. This is only necessary if your PL3000 solution is to work with a remote host that uses certificates, such as a secure WWW site.

The certificates dialogue allows you to import a new certificate from a certificate file, view existing certificates and remove unwanted ones. There are three available certificate stores; one containing trusted authorities, one containing your personal digital certificates and one containing other authorities. You access these stores by selecting the one you want from the control.
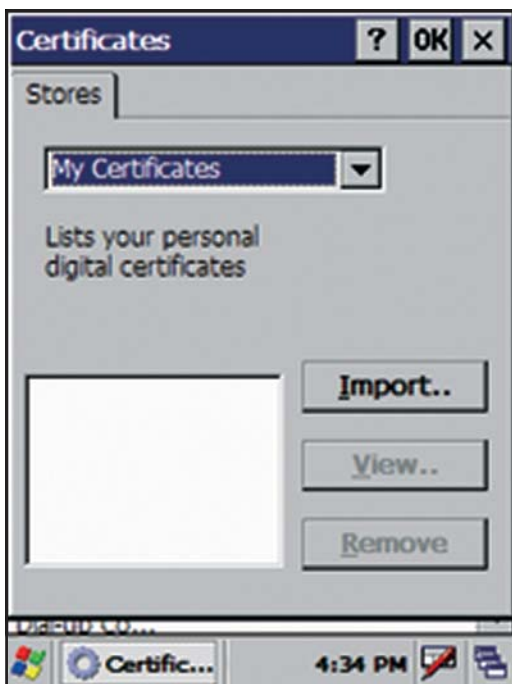
Fig.60 Certificates window

6.5.5   Date and Time

Date/Time

The date and time settings are quite straightforward to configure. If you intend to use Simple Network Time Protocol (SNTP) you must set the time zone for the device. Otherwise the timeoffset that is received from the SNTP server will be wrong, resulting in an incorrect time.

6.5.6   Dialing

Dialing

The dialling properties dialogue allows you to configure country and area code dial string settings. These settings are used by modem PCMCIA cards, if no modem is available these settings have no effect. If you are using an Option Globetrotter GPRS or Combo card supplied by Nordic ID, you should not need to change any settings in this dialogue as the factory default settings are correct for those cards.

6.5.7   Display

Display

The display settings dialogue allows you to set the background image of the desktop, change the appearance of the operating system and set the backlight power saving timers. The background image can be changed to any BMP-type image file resident in the PL3000 file system. For best performance, the image should have a resolution of 320x240 pixels, and a bit depth of 4 or 8 (16 or 256 colours). The backlight timer is also configurable in the power configuration dialogue, along with more power settings.

6.5.8   Input Panel

Input Panel

In addition to selecting which keyboard to use, you can enable stylus gestures. This option allows you to enter symbols such as space by tapping the virtual keyboard and dragging to the left. Similarly backspace works by tapping and dragging to the right. Stylus gestures can be difficult to use as accidental taps and drags are also processed.

6.5.9   Internet Options

Internet Options

The internet options dialogue allows you to configure all settings related to Internet Explorer. This same options dialogue is accessible in Internet Explorer, by selecting View and Internet Options from the menu.

Page 1: General Options

Here you can set the default start and search page addresses. The start page is the first page that is loaded when Internet Explorer starts, the default is to load no page. The cache size is also configurable on this page. The cache is used to store pages you have accessed previously. Thus speeding up the reloading time when you access the same page agein. A larger cache will hold more pages, but will also reserve memory that the browser needs. If the browser becomes starved of memory it will load pages more slowly. You can also disable page caching completely by setting the size to zero. This will force Internet Explorer to always load the page from the remote host.

Fig.61 General Options Window in Internet Options
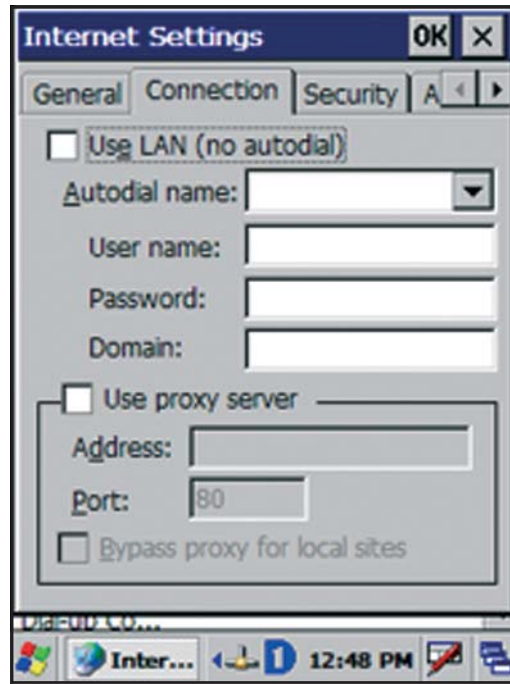
Fig.62Connection Settings Window in Internet Options

Page 2: Connection settings

On this page you can configure autodialing and proxy settings. When you type a web page address into the address bar of the browser and hit enter, the browser will check if there is an open connection. If so, the browser proceeds to try to load the requested page over that connection. If there is no connection available, the 'Use LAN' checkbox tells the browser how to proceed. If it is checked, the browser will assume that the LAN connection is down and gives up. If it is unchecked the browser will dial to the connection selected in the 'Autodial name' control. If your service provider or local network topology requires or recommends use of proxy server, check the 'Use a proxy server' box and enter the address and port of the server.

A proxy server performs a similar task as the cache mentioned on the General Options page. But instead of storing pages that you have accessed locally, a proxy server stores pages for all the users of that server. The proxy server is usually located physically close to you, or it can at least provide a very fast link to you. When you request a page that the proxy server already has stored in, it will be sent to you by the proxy server instead of the actual host. This leads to pages loading faster and reduced Internet traffic.

Page 3: Security settings

These settings affect the kind of pages Internet Explorer is allowed to load and display. Their importance is usually low compared to desktop PC's as the PL3000 Internet Explorer is usually restricted to a controlled set of pages, and usually only one server. But if you use the PL3000 Internet Explorer to view pages from servers not under your control, or whose operators' intentions cannot wholly be trusted, then modifying these settings can provide you with additional security. The implications and explanations of these settings are beyond the scope of this manual and also depend on the host you are going to use.

Page 4: Advanced options

The advanced options allow you to control what elements of a page to load. When browsing the Internet this can improve performance quite a bit, as most pages made for desktop PC's can be quite heavy to handle for the browser of the PL3000. When developing your own browser based solution it can helpful if the browser informs you about every scripting error on the page. Although the link underlining setting allows you to choose to underline links on hover, this has the same effect as setting it to never. This is because of the stylus pen input does not allow hovering over a link in the same sense as a mouse cursor does.
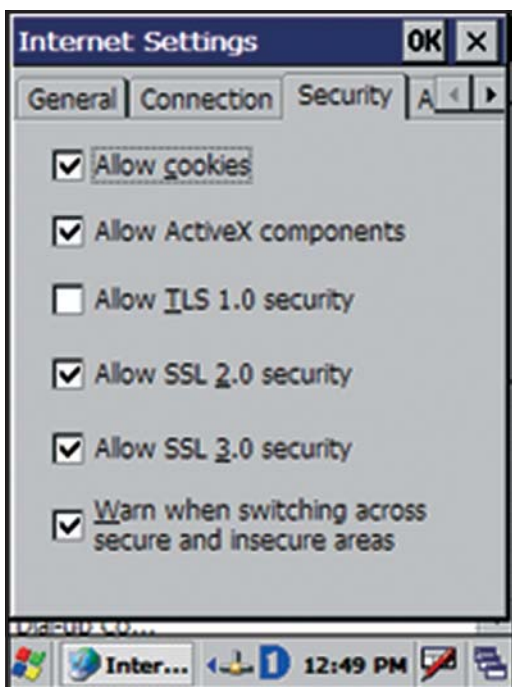
Fig.63 Security Settings Window in Internet Options
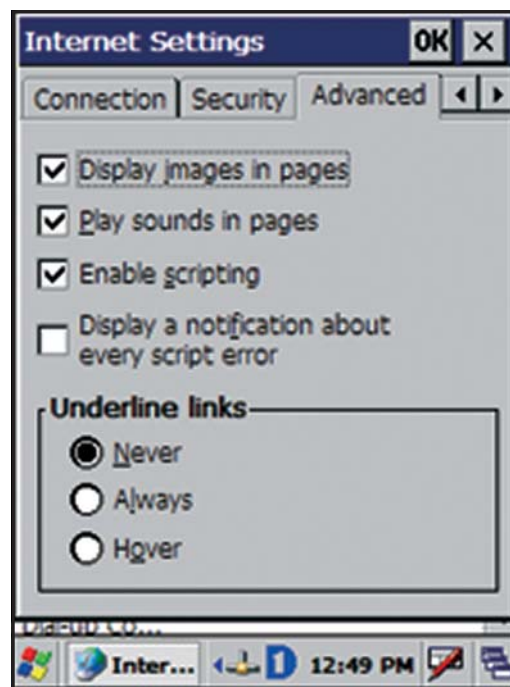
Fig.64 Advanced Settings window in Internet Options

Lock

The lock options usually go hand in hand with the full screen options on the previous configuration page. With default settings in use, resetting or pulling the battery out of the unit will show the user the Windows CE desktop, once the unit has restarted. This can be undesirable for a browser based application as it can confuse users, require additional training and may be a security hazard. For this reason you can configure the unit to always launch Internet Explorer when the device starts, and to start it in locked mode. Locked mode means that Internet Explorer covers the entire screen, and there is no way for the user to get out of this mode, except for pressing the unlock key and entering the unlock code. When the automatic start option is in use, Internet Explorer starts by ensuring that the network link is up and running, before loading the start page. This means that if you use for instance a Cisco Aironet 350 or Option Globetrotter GPRS card, the browser will wait for these to re-establish their connection before proceeding. During this time the keyboard and touch screen is disabled, so the user cannot interfere with this process.
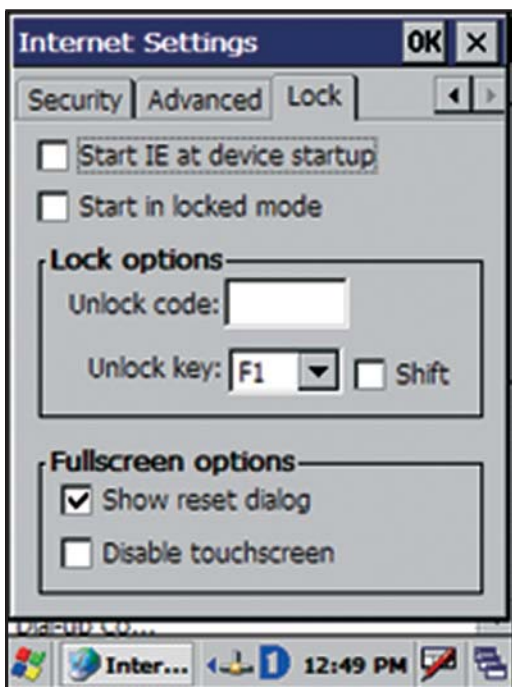
Fig.65 Lock window in Internet Options

6.5.10 Keyboard

Keyboard

The keyboard properties dialogue allows you to enable or disable the character repeat function for the keyboard and set the repeat delay and rate. The character repeat function means that when you hold a keyboard key down, that keystroke will be sent repeatedly to the application. The repeat delay value defines how long it takes after a key press before repeat function is triggered. The repeat rate value defines how fast new key down events are sent once the function is triggered.

6.5.11 Mouse

With this function you can calibrate the speed and accuracy of the double tap function of stylus . For details see the chapter 6.5.21.

6.5.12 Network and Dial-up Connections

Network and Dial-up Co...

This dialogue contains all active network and potential dialup connections that have been configured. To activate a connection, doubletap it. To configure a connection either tap the connection once and select properties from the 'Connection' menu or hold down the 'alt' key and tap the connection and select properties from the menu that appears. You can create new connections by doubletapping 'Make New Connection'. By default, there are usb and GPRS connection defined. The first is used when forming an ActiveSync connection to a host PC. The GPRS connection is predefined for use with the Option Globetrotter GPRS or Combo card, and will work as is in most countries and with most operators. If your operator requires a different dialstring to '*99#' or a AP name different to 'internet' this profile will not work without defining any neccessary operator specific settings first.

6.5.13   NID Backlight

This is a tool for backlight configuration. The configuration program allows to adjust the level and mode of the backlight. There are 3 modes available; constant off, constant on and Auto on/off.

6.5.14   NID Indicators

This tool is for setting the battery and wireless connection status bars on display. The indicator bar can be set to display battery level and/or signal strength on a five step scale. The indicator bar can be set to display on either side of the display. If the indicators are set visible, those can be hidden/displayed by pressing the circle -button.

Note that when displayed indicators are always on top and may hide a part of the active window.

6.5.15   NID Keymap

This tool opens the Keyboard configuration program. With this program it is able to create and save the custom keyboard mappings for the PL3000.

Any key of the keyboard can be set to launch a program or be mapped to function as key of the standard qwerty- keyboard. Also the combination of <shift>,<alt> or <function> with any key can be mapped on any key of the PL3000 keyboard.

Note: This application can configure all the keys of the PL3000 keyboard EXCEPT the power-key and the external trigger key on the pistol grip.

The actions to the keys are set from Mapping-tab below the Actions. There are 50 action identifiers and each of them can be set to launch an external program. First set and action id number (1-50) and the browse the selected action. The parameters can be written after the selected executable.

The key mappings are made from below the mappings. Choose the key to be mapped from the key -listbox.

Then choose, if desired, the action id number. Modifier (shift, alt or function) and virtual key to be mapped to. The misc –tab has controls to the input mode selection (123, abc or ABC), Scan mode –selection (and the control of the lights of the input mode keys.
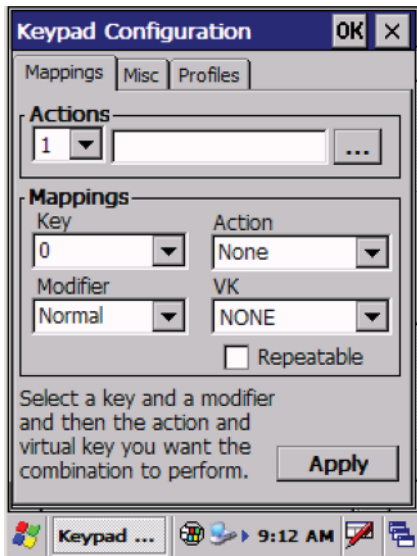
The actions to the keys are set from Mapping-tab below the Actions. There are 50 action identifiers and each of them can be set to launch an external program. First set and action id number (1-50) and then browse the selected action. The parameters can be written after the selected executable.

Fig.66 Mapping-tab

The configured keymappings can be saved as a profile or to system default.

6.5.16 NID Power Button

NID Power Button

Power button configuration program is for configuring the power-key behavior. The default function of the power-key is to open the shutdown menu but it can be mapped to execute any program. After the holding the power-key for a "hold time" (in milliseconds) the PL3000 goes to suspend mode.

The power-key can also be mapped to function as any virtual key.

The configured power-key behavior can be saved as a profile or to system default.

6.5.17 NID Scanner

NID Scanner

The scanner configuration –program is for configuring the scanner functions. The program has 4 tab pages; Codes, Misc, Scan and Profiles.
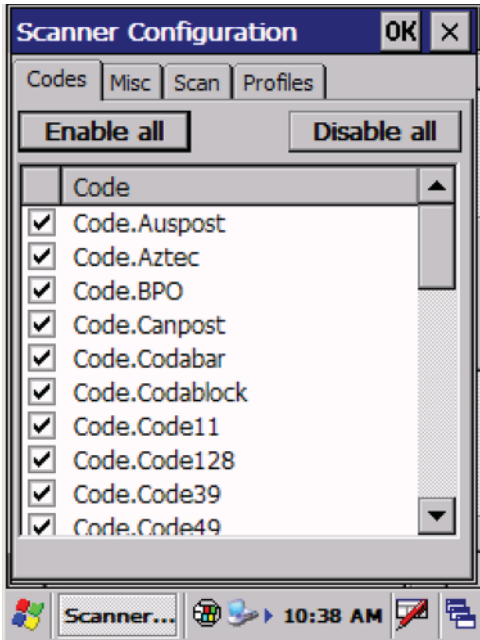
Fig.67 Codes -tab in the Scanned Configuration program
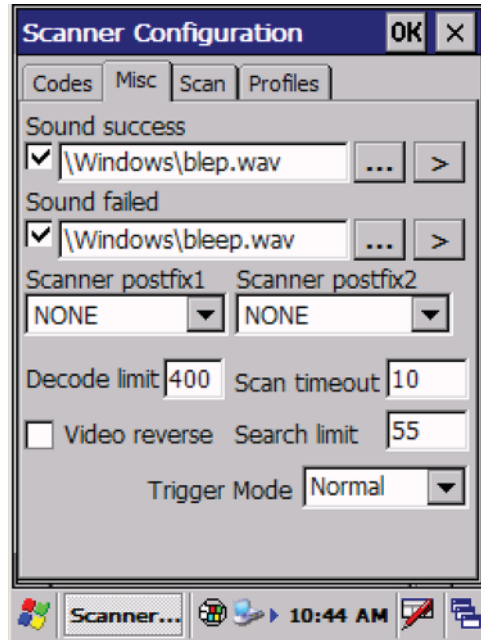
Fig.68 Misc -tab in the Scanned Configuration program

The Codes tab includes the information about symbolism decoding. The enabling or disabling of the symbolism can be selected by tapping the name of the code. Enabled codes are marked with

The Misc –tab includes the controls for sounds of the successful / unsuccessful decoding, postfix symbols after the scanned code, decode limit time (the max time of decoding the symbolism from one image in ms), scan timeout time (max time to scan the images in sec before the timeout), search limit time (max time to search symbolism in image in ms) and video reverse checkbox (on/off).

Scan –tab can be used as a test area for code decoding. After scanning the symbolism the decoded info is displayed on Result string –textbox. The information about decoding is shown in the Result info –textbox. Also the AIMSI –information is shown below the result –textboxes.

In the Profiles –tab the selected changes can be saved as profiles or system defaults.

6.5.18 NID Tilt Switch

NID Tilt
Switch

This configures the internal motion sensor to wakeup the device and/or keeping the device on. If Wakeup automatically –option is checked, device wakes up to active mode when sensing motion.

The Keep alive –checkbox enables the keep alive –option which resets the timeout timers when sensing motion.

6.5.19 NID Touch Screen

This allows to disable the touchscreen. Also the profiles can be created by the touch screen rule.

6.5.20 NID Trigger Button

Trigger Button configures the external pistol grip button behavior. The trigger button can be mapped to function as any key of the keyboard and/or execute any program.

6.5.21 Owner

In this configuration dialogue you can enter personal information about yourself, or the intended user. Some applications available for Windows CE can then use this information automatically. You can also enter a default network identifiaction and domain, which can speed up accesses to network resources with the PL3000 since you do not need to enter this information again at every connection attempt.

6.5.22 Password

With this configuration dialogue you can password protect your PL3000 from unwanted users. Do not forget the password once you have entered one, there is no way to retrieve it. The unit will have to be reset to factory defaults to clear the password if you forget it, and this will destroy all user information and programs in the unit. If you enter a password you can also choose when the password will be asked for. The options are at power on and when a screensaver terminates, the password will always be queried after the device has been reset.

6.5.23 PC Connection

This dialogue shows you what type of connection is currently selected for communication with a Windows PC using ActiveSync. The factory default is to use the USB cable. In order to form a connection between your PC and the PL3000 you will need to have ActiveSync 3.5 or later installed on your PC. In addition, you will need to have the PL3000 USB driver installed if you wish to use the USB cable. You can download driver from PL3000 SDK.

6.5.24   Power

Power

The power settings dialogue allows you to view the power status of the battery, to manage the power saving profiles and to view the power state of device drivers in the PL3000.

Page 1: Battery

This page displays the status of the battery. The top part of the dialogue windows indicates the current charge level of the main battery.

The bottom of the dialogue indicates the battery status and estimated operation time left.

Page 2: Schemes

The power schemes control when the PL3000 hardware features are automatically switched off. There are three timers that make up the scheme. These are the user idle timer, the system idle timer and the suspend timer. They respectively control when the backlight is switched off, when the display is switched off and when the unit is switched off. The timers are reset every time user interaction occurs, either from the keyboard or by the touch screen.

If the user idle timeout reaches its goal, the backlight is dimmed and the system idle starts counting down. When the system idle timeout occurs, the display is switched off and the suspend timeout starts counting down. If it reaches its goal, the device enters hibernate mode. This conserves a lot of power yet preserves all programs' states. Any PC Card in the device is powered down at this point, which means the 802.11b, Bluetooth or GPRS connection will need to be re-established when the device wakes up. Once in hibernate mode, only three things can wake the device up. The first is the power button, which is always enabled. The two other wake-up sources are the motion sensor and the real time clock alarm. Both of these are optional, and are not in use by default .

Which power scheme is in use depends on whether or not the PL3000 is connected to the charger or not. As the names indicate, the battery power scheme is active while no charger is connected. The AC power scheme is used while connected to the charger.

Page 3: Device status

This page displays the power state of the active device drivers in the PL3000. Only those drivers that implement power management are displayed. This page is for information purposes only and no user interaction is possible here.

6.5.25 Regional Settings

The regional settings specify which geographical region the unit is being used in. The settings made here can affect time, date, currency and language options in other programs. For instance the Simple Network Time Protocol determines, from the settings in this control panel application, how much to shift the Greenwich Mean Time value that is provided by the time server.

6.5.26 Remove Programs

The remove program dialogue allows you to uninstall programs you have previously installed. Please note that if you have used the File Backup System tool, the removing of programs will not remove the backup copies of them. So next time the device is reset the programs will be back, unless you backup the RAM memory after the programs are removed.

6.5.27 Storage Manager

The storage manager displays the info about the memory installed to the PL3000. By default the FLASH memory information is displayed.

When an SD or MMC memory card is installed the information of the card is displayed.

The storage manager can be used for formatting, mounting, scanning and defragmenting the memory.

6.5.28 Stylus

Stylus

The stylus dialogue allows you to calibrate the touch screen of the PL3000, and set the double tap interval. There is a simple method to determine how accurately your PL3000's touch screen is calibrated. Close all programs so that only the desktop is visible. Then tap and hold the stylus to the screen in an area of the desktop where there are no icons or any other controls. Move the stylus so that the selection box becomes visible. You can tell the accuracy of the calibration by how close the corner of the selection box is to the tip of the stylus pen. If the corner of the selection box is above the pen tip, you will probably experience difficulties in selecting the taskbar at the bottom of the screen. If the selection box is a millimetre or two below the pens tip it does not require recalibration, it might actually help a bit when accessing the taskbar. The sensitivity of the touch screen is also controllable, but not in this dialogue. See the chapter "6.5.24 Touch screen" for the sensitivity setting .

6.5.29 System

System

The system dialogue allows you to view system details such as operating system version, processor type and amount of memory installed. You can also set the name of the device. The name is used, among other programs, by ActiveSync to recognise the device. The most important setting in this dialogue is the memory division dialogue. Of the RAM present in a typical PL3000 half is by default used as execution memory for programs, the other half is used to store files and installed programs. All software installed onto the unit after the production reside in the storage part of the RAM memory. You might want to modify the default division based on your actual usage environment. If you for instance use only Internet Explorer, and have not expected to install any 3rd party software, you could set the division to enable larger portion to be used by program memory. This gives the browser a lot more memory to work with, which should increase the execution speed when handling complex pages. Do not remove all storage memory as the operating system can allocate temporary files dynamically, and among other things cookies from the browser are stored in the storage memory.

6.5.30   UMTS Configurator

UMTS configurator is used for displaying and changing the settings of UMTS connection.

6.5.31   Touch screen

Touchscreen

The touch screen sensitivity might require tuning for some specialised applications. If your solution intends to use the PL3000 touch screen for signature capture, the sensitivity will probably need changing. The factory default setting is intended for normal tap, double tap and dragging operation and it is tuned so that accidental taps or double taps are not easily recognised. This setting makes the touch screen too insensitive for signature capture. Modify as needed, but it is not recommended to modify these settings unless you are experienced in sensitivity problems while using the stylus.

6.5.32   Volume & Sounds

Volume & Sounds

This dialogue allows you to manage the sound profile of the unit. You can select for what event you wish to have sounds played, and what sounds to play as well as the volume of the played sound.

6.5.33   LinkWatchdog

Introduction

A common problem with many Wireless applications is that the network connection may be lost without it becoming immediately apparent. More importantly, there may not be any straightforward way to re-establish a lost network link. It is also not something that the end user should have to deal with. To solve this problem the LinkWatchdog solution was created. It basically works by periodically checking that it is able to access one or more predefined servers. If it is unable to do this, it will attempt to restart the network connection in order to re-establish it. The solution is made up of three components; there is the LWD service which actually monitors the link status, there is a Control Panel applet for configuring the LinkWatchdog and finally a user interface program that is run by the LWD service when the connection is lost.

The Control Panel Applet

Configuration and Control over the LWD service is done trough its control panel applet. The applet is divided into four pages. The first one is for enabling / disabling the service and configuring it, the second two are for configuring the user interface executable. The last page is for viewing and saving the LWD service log.

Page 1 : Service Configuration
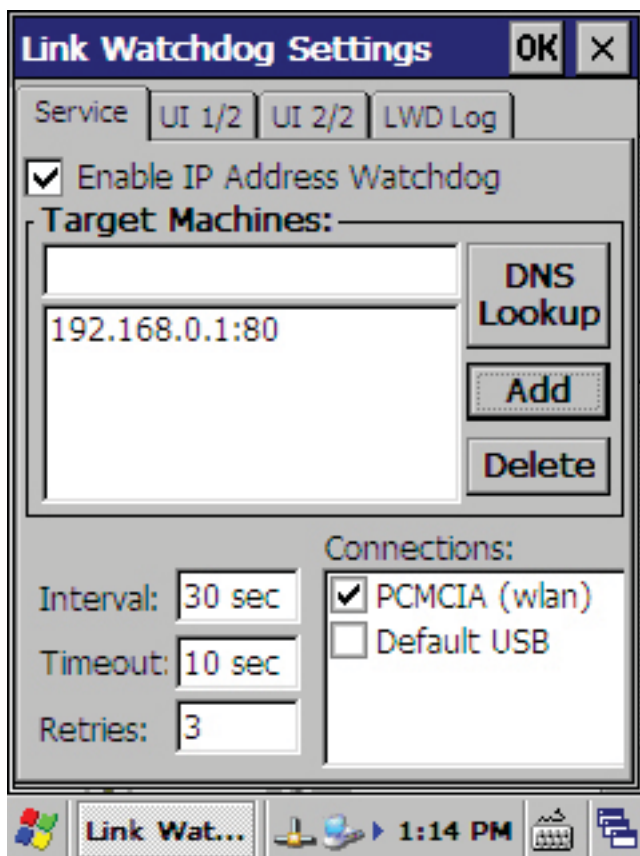
Before configuring the LinkWatchdog, you need to enable it by checking the "Enable IP Address Watchdog". When the dialog box is closed, this checkbox is used to determine if the LWD service should be started or stopped.

LinkWatchdog works by periodically attempting to connect to one to five predefined target machines. The target machines are specified by entering their ip-address and port number separated by a semicolon. An example of a valid target machine address is "194.168.100.1:8080". No other address format is accepted. You cannot use domain names because they usually resolve to more than one ip address. For this reason there is a built in Domain Name Service lookup function. To use this, enter the target domain name in the target machines field, and hit DNS lookup. Provided you have a working network connection you will be presented with a list of ip addresses to which the domain resolves. You may then select which of these addresses you want to use as target machines. When you approve your selection with OK, you will be asked to enter the port number for each target machine. Please keep in mind that the port you enter must be open and accessible to the PL3000. Firewalls and NAT devices between the PL3000 and your target machine(s) may prevent you form connecting, if they are configured to do so.

Once you have specified your target machines, you can set up the behaviour of the LWD service. It may be best to try using the default settings before any other settings are tried. The interval value specifies how often the LWD service should attempt to contact the target machine(s). Values shorter than half a minute should be considered carefully. If you have a solution containing many units, you may cause a fair amount of traffic over the network if this value is set too low. LinkWatchdog does not actually send any data to the target machine, but it does attempt to open a link to the specified port. This requires a few IP packets to accomplish. A too large interval value will lower the benefit of using LinkWatchdog as the connection may be lost, and no corrective action will be taken for a long time. A suitable value needs to be determined on a case by case basis.

The timeout value specifies how long the LWD service should wait for a reply from a target machine before giving up and determining that the target machine does not respond. The retries value specifies how many times the LWD service should attempt to contact a target machine before giving up and determining the machine is not currently accessible. The LWD service contacts all target machines in the list concurrently, and if any one of the connection(s) succeed the LWD service determines that the link is up. If all retry attempts on all target machines fail, the LWD service will attempt to re-establish the connection. It does this by disabling the connections that you have checked in the "Connections:" list and re-enabling them again. For PC-Cards this means cutting the power from the card, and re-enabling it again. This causes the card and driver to reload in a similar manner as if the device was reset. For RAS (GSM, GPRS and EDGE) connections, this means hanging up and redialling the connection.

When closing the dialog box with OK, the configuration you have made is immediately applied. This means that the LWD service is loaded and started or stopped and unloaded according to your settings at this point. Keep this in mind when viewing the LWD service log on Page 4. If the service is not running, you cannot read its log.

Page 2 : User Interface Configuration 1 of 2
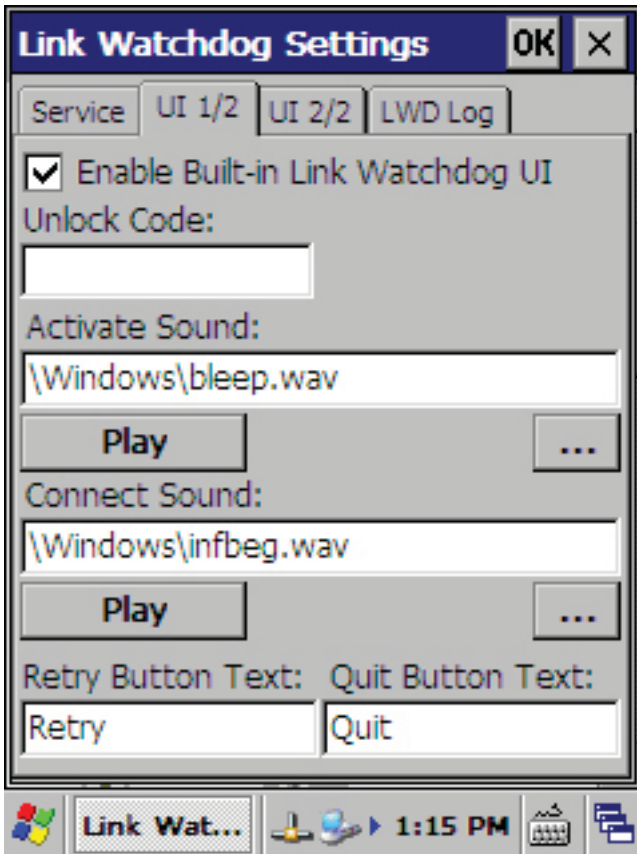
The "Enable Built-in Link Watchdog UI" specifies whether or not the Link Watchdog user interface program is allowed to run. If enabled, it is launched automatically by the LWD service when the service determines the link is down. This is to inform the user of the device what is happening. It is critical for totally online applications such as terminal emulation and Internet Explorer. If the user attempts to use a browser based application without a working network link some form of connection error page will be shown. End users typically do not know how to behave in this situation. The LinkWatchdog User Interface component locks the device down, so that it cannot be used while the link is re-established. The UI component also displays status information to the user. The only case where the UI component would be undesirable is if your application is tailor-made to communicate directly with the LWD service, thereby rendering the default user interface component unnecessary and disruptive.

Connection Lost!

Your network connection has been lost. Press the button below to attempt to reconnect. If you are unable to reconnect, please contact your administrator.

Not Connected.

■ ■ ■ ■ ■ ■ ■ ■

| Retry | Quit |
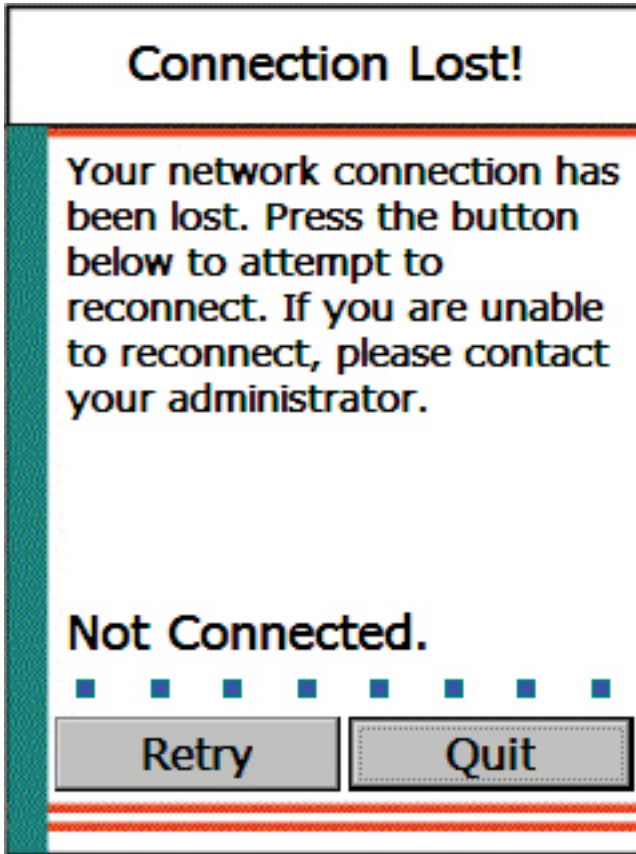
The Activate Sound field specifies a wave file that will be played when the LWD service launches the UI application. The Connect Sound is played when the LWD service determines that the network link has been re-established.

The Retry and Quit button text fields specify what button labels appear on the retry and quit buttons in the UI application. This is so that you may customize the user interface to use your local language. The appearance customization settings continue on page 3.

The Unlock Code field allows you to specify a text string password that must be entered by the user in order to dismiss the LinkWatchdog User Interface component. If the LWD service manages to re-establish the network link, the UI program will automatically shut down and disappear. No password is needed in this case, and the user may continue using the device normally. If the network link is not re-established the UI application will show a message informing the user that the network is currently down. There is a "Retry" and a "Quit" button that the user may press in this state. If you specify an unlock code, the user must enter that text string correctly in order to close the UI application. To disable the unlock code, clear the field so that it contains no characters.

Page 3 : User Interface Configuration 2 of 2
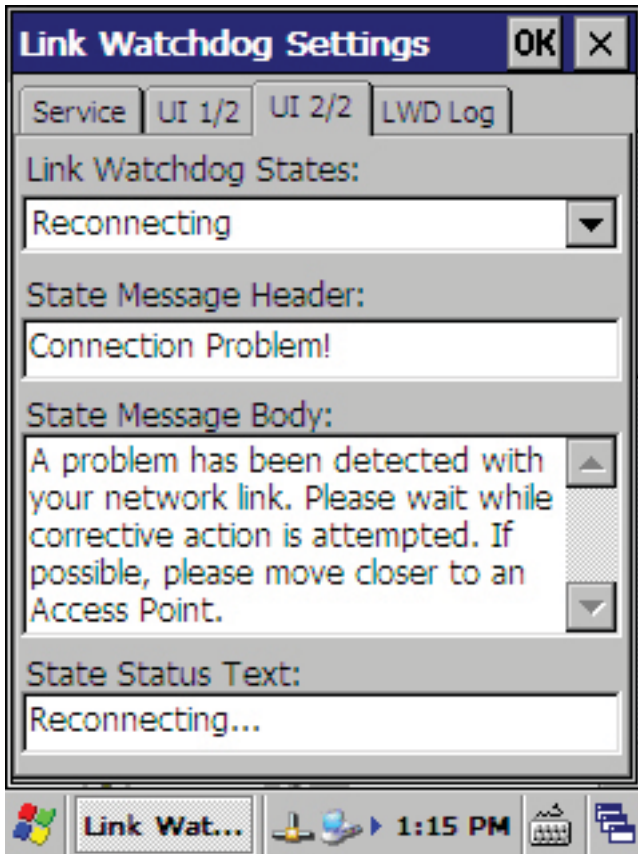
The UI application displays the current network link state, there are three possible states. The UI application always starts out in the "Reconnecting" state. It remains in this state until either the network link is re-established or the LWD service reconnect attempt is timed out. If the link is re-established the UI application displays the "Connected" state message. If the timeout occurs, the "Connection Lost" state message is displayed. Please note that even in the connection lost state, the LWD service is constantly monitoring the link state. Should the link state change to up, the state message in the UI application will automatically change to the "Connected" state. Each state has three text fields you may configure to say whatever you wish in any supported language. They should be set so that they promptly and without confusion inform the user about what is happening. The "State Message Header" is a one line header in big bold font at the top of the UI application window. The "State Message Body" is a multiline text field that you may use to convey a short message to the user describing the current state. The "State Status Text" field is a bold text line intended to inform the user about what the LWD service is currently doing.

Page 4 : LWD Service Log

Link Watchdog Settings OK ✕

Service | UI 1/2 | UI 2/2 | LWD Log

```
13:15:56.0844: LinkWatchDog Servi
13:15:56.0850: LWD_Init(0)
13:15:56.0853: ParseTargets: Atten
13:15:56.0861: ParseTargets: Targe
13:15:56.0870: WatchDogThread()
13:15:56.0877: WatchDogPMThread
13:15:56.0881: StartWatchDogThre
13:15:56.0887: LWD_Init(0), done
13:15:56.0895: WatchDogThread()
13:16:03.0439: IOControl: Got IOCT
```

Refresh log display | Save log

Link Wat... ▸ 1:15 PM

A service is an application that does not have a user interface and typically performs background tasks. The LinkWatchdog solution contains the LWD service that performs the link monitoring behind the scenes. To verify that the LWD service is working and in case it is not, the reason for the failure, the LWD service maintains an internal event log. This log can be read and stored to disk using page 4 in the LinkWatchdog Control Panel applet. Should you run into problems you are unable to resolve with LinkWatchdog, always include the service log text file in your mail to Customer Support. This will significantly improve our ability to assist you.

LinkWatchdog Programmers Reference

The LinkWatchdog settings are stored under the following registry key:
HKEY_LOCAL_MACHINE\SOFTWARE\Apps\LinkWatchdog

To have the LWD service start your user interface application instead of the LinkWD_UI.exe program, create the following value under this key:

"UIExec"="Your application path and executable"

You can communicate with the LWD service using standard Widows CE I/O calls. Open the connection to the service with a CreateFile call such as this:

```
HANDLE lwd = INVALID_HANDLE_VALUE;
lwd = CreateFile(L"LWD0:",GENERIC_READ,0,NULL,OPEN_EXISTING,0,NULL);

if (lwd != INVALID_HANDLE_VALUE)
{
     //Service was running, you're good to go
}
```

You can then query the current link state like this:

```
DWORD newstate = 0;
DWORD written = 0;
#define IOCTL_LINKWD_GETSTATE \
CTL_CODE(FILE_DEVICE_SERVICE, 3001, METHOD_BUFFERED, FILE_ANY_ACCESS)

if (lwd != INVALID_HANDLE_VALUE)
{
  DeviceIoControl(lwd, IOCTL_LINKWD_GETSTATE, NULL, 0, &newstate, sizeof
(DWORD), &written, NULL);
}
```

The valid values of newstate after this are defined as:

```
  enum LWD_STATES
    {
        LWD_STATE_RECO = 0xBEEF0001,
        LWD_STATE_LOST = 0xBEEF0002,
        LWD_STATE_CONN = 0xBEEF0003,
    };
```

To force the LWD service to shut down and restart the network link, you may use this call:

```
DWORD written = 0;

if (lwd != INVALID_HANDLE_VALUE)
{
  DeviceIoControl( lwd, IOCTL_LINKWD_RETRY, NULL, 0, NULL, 0, &written,
NULL);
}
```

Finally, when you are done, remember to use CloseHandle to avoid handle leaks.

6.5.34 Simple Network Time Protocol (SNTP) Service

Introduction

Many software applications require that the handheld device clock is set correctly. For instance Wireless LAN network credential certificates have a specific validity timeframe, which means at least the current year and month needs to be correct. Applications requiring greater precision are numerous; most inventory applications record some form of timestamp information that is later used to determine the most recent data. The SNTP protocol is as its name says, an easy way to acquire the correct time from a remote server over the network. The SNTP protocol does not attempt to correct for the data transmission lag time over the network. This means that the time data, when arriving and being applied in the handheld terminal is already some milliseconds too old. How much depends on the network transmission delays involved. In almost all cases, the time value acquired using STNP can be assumed to be correct to the second, but perhaps not to the tenth of a second and certainly not into the millisecond range. SNTP lag can roughly be estimated by pinging the NTP server and dividing the result by two, since ping usually reports round trip time and the time lag is only introduced by the return transmission in SNTP.

The SNTP implementation in the PL3000 consists of three applications. There is the SNTP service which, when enabled, is running in the background and periodically updates the time. There is an application called AskTime which can be configured to query the user for the correct time in case the SNTP request does not succeed. There is the SNTP Control Panel applet which is used to configure both the SNTP service and the AskTime application.

Set Correct Time

Please enter the correct date and time:

| 05 | 10 | 2006 |
| Day | Month | Year |

| 23 | 41 | 36 |
| Hour | Minute | Second |

Use TAB or Arrow Keys to move the cursor.

OK

Page 1 : Service Configuration

The first page contains all SNTP service configuration settings. The default NTP Server Address is "europe. pool.ntp.org" which is a collection of NTP servers that anyone may access. The standard NTP port is 123, change this value only if you are sure your NTP server uses a different port. Also verify that this port is not blocked by any firewalls along the route. The Update Interval value specifies how often the SNTP service should ask for the correct time. In most applications it is pointless to have this value set to less than a few hours, it only generates unnecessary traffic. Every time any one of the PL3000's network links change state, an address change notification message is sent to all services in the unit. This message causes the SNTP service to ask for the correct time. This means every time the device is rebooted, wakes up from sleep or associates with a WLAN AP the correct time is automatically fetched. Thus there is no reason to set the update interval to anything less than one hour, three or six hours should be sufficient for most applications. The Timeout value tells the SNTP service how long it should wait for the NTP server to reply to the request before giving up. The Retries value sets how many additional attempts at contacting the NTP server will be made if the first one fails.

Page 2 : Service Log

SNTP Configuration OK ×

Settings | Service | AskTime 1 | AskTime 2

Service Status: Active

Stop Service | Save Log to File

08:08:10.0349: SNTP_UT_StartThre
08:08:10.0354: SNP_Init(0) done
08:08:10.0368: IOCTL_SERVICE_ST
08:08:10.0405: IOCTL_SERVICE_ST
08:08:10.0409: SNTP_UT_StartThre
08:08:10.0416: IOCTL_SERVICE_ST
08:08:11.0928: SNTP Request succe
23:05:15.0944: New Time is: 23:05:
23:05:15.0949: SNTP_Update_Thre

SNTP C... 11:05 PM

The Start / Stop Service button causes the SNTP service to load and start or stop and unload. Remember to perform a registry backup after starting the service, so that it remains active even after a cold boot. If you are having problems with the service and you wish to contact our Customer Services department it will significantly improve our ability to assist you if you include the SNTP service log. To store the log to a text file, click the Save Log to File button. You can then copy this file to a PC over ActiveSync and read it using Notepad, WordPad or Microsoft Word.

Page 3 : AskTime Configuration 1/2
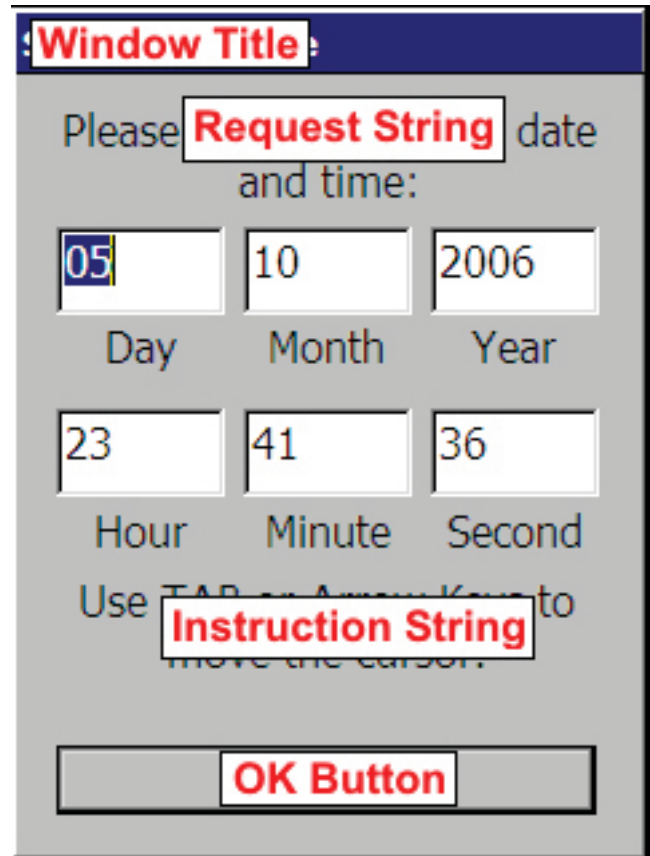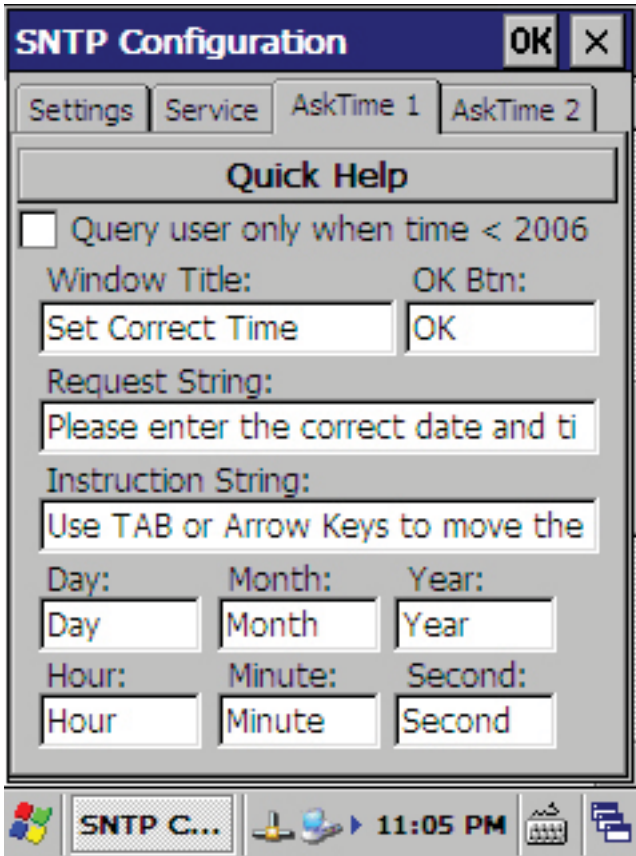
The AskTime application is a standalone application called AskTime.exe. It is used by the SNTP service if so configured on page 1. The Quick Help button contains a brief description of how the application works. When the PL3000 starts up after a cold boot, its date will be set to 1.1.2005. For this reason we may assume that if the date is set to some value prior to 1.1.2006 the correct date and time is not currently known. If the date and time is past this date, either the SNTP request has previously gone trough or the user has already configured the correct time once. By checking the "Query user only when time < 2006" you configure AskTime to ask the user to enter the correct time only when completely necessary. AskTime will in any case not allow the user to enter a date prior to 1.1.2006.

Page 4 : AskTime Configuration 2/2

| SNTP Configuration | OK | × |

Settings | Service | AskTime 1 | AskTime 2

Invalid Day:
Invalid Day!

Invalid Month:
Invalid Month!

Invalid Year:
Invalid Year!

Invalid Hour:
Invalid Hour!

Invalid Minute:
Invalid Minutes!

Invalid Second:
Invalid Seconds!

SNTP C... ▶ 11:05 PM
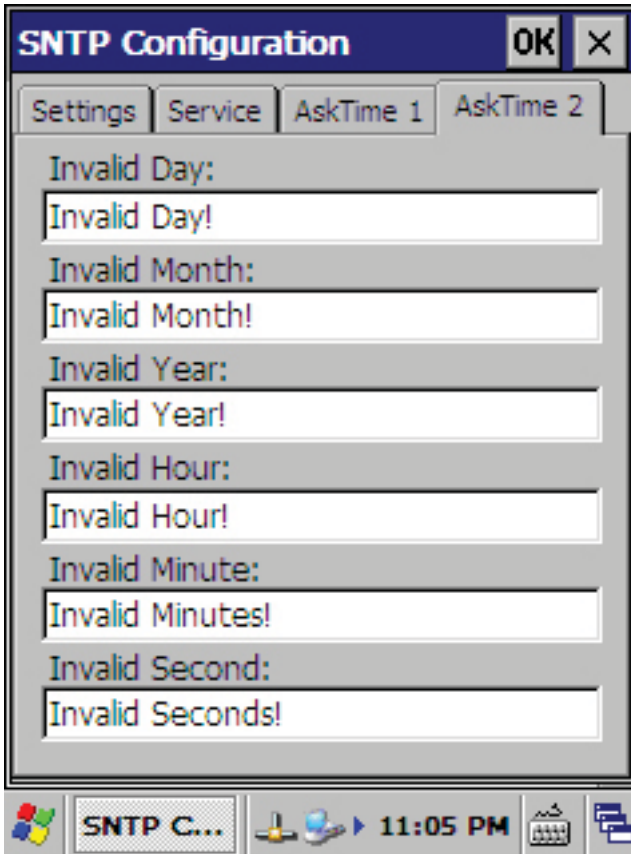
The second page of the AskTime configuration pages contains the error strings that are displayed to the user if an invalid time value is entered. For instance, if an hour value of 26 is entered the Invalid Hour string is displayed in a MessageBox and the invalid value is highlighted. As with the user interface strings on the first AskTime configuration page, you may freely change these strings to say what you wish is your local language.

7 Safety warnings

7.1 User safety

The Nordic ID PL3000 is an electronic device and depending on the actual configuration may include one or more radio transmitters.

When using the PL3000 the user should ensure the integrity of the casing, any cables and accessories of the device. The PL3000 should not be used in moist conditions where risks of electric shocks exist.

Electronic components within the device may contain hazardous chemicals that may have an adverse effect on the environment and human health.

The user should avoid extreme bending and reaching the arm and the wrist when using the PL3000.

Radio transmitters may cause interference.

7.2 Regulatory and safety agency approvals

The following table contains information about the different regulatory and safety agency approvals required of handheld terminal devices.

Specification/Standard	Subject
EN 301489-1:2002 EN 301489-3:2002 CISPR 22: 1997 ANSI C63.4: 3000 FCC 47 CFR PART 15, SUBPART B, CLASS B:2002 EMC 89/336/EEC IEC/EN 60950-1:2001 EN 60825-1/A2: 2001	Led/laser sighting device

Table 2 Regulatory & Safety Agency Approvals

7.2.1   Medical equipment compatibility

Medical devices, such as pacemakers, hearing aids, etc. are usually manufactured according to the IEC 601-1-2 standard, which requires that devices must operate properly in an EM (Electromagnetic) field which has strength of 3V/m over a frequency band from 26 to 1000 MHz.

Persons using pacemakers should be aware of the possible risk of interference from any electronic device if positioned too close to the pacemaker.

When using WLAN, Bluetooth, GPRS, GSM or other features, which emit radio frequency signal, please verify that the model in question fulfils the required standards.

7.2.2   Wireless networks and microwave equipment

When equipped with a WLAN (Wireless Local Area Network) adapter or Bluetooth, users should be aware that Bluetooth and most Wireless LAN networks operate at the frequency of 2.4 GHz. Many microwave products, e.g. microwave ovens, operate at the same frequency. Therefore, in environments containing such products, performance degradation may be noticed. In most cases all effected equipment will continue to operate normally, excluding data transfer speed, which may be slower than normal due to the increased need for error correction.

7.2.3   LED safety

Some configurations of Nordic ID PL3000 include an LED-sighting device in the imager. This sighting device is Class 1 LED Product Certified to IEC 60825-1 Ed.1.2 2001. Class 1 LED products are safe under reasonably foreseeable conditions of operation, including the use of optical instruments for intra-beam viewing.

7.2.4   Laser safety

Some Configurations of Nordic ID PL3000 include a laser-sighting device located in the imager. The sighting device is Class 2 Laser Product Certified to IEC 60825-1 Ed. 1.2 2001, which may cause eye injury if the beam is directed straight or via a reflecting surface to the eye. The laser beam should never be pointed at the eye of a person or an animal. Mirror or reflecting surfaces may cause the beam to deflect in harmful ways. Never look directly into the laser module when the beam is active.

	ENGLISH LASER LIGHT DO NOT STARE INTO BEAM CLASS 2 LASER DEUTSCH LASERSTRAHLEN NICHT DIRECT IN DEN LASERSTRAHL SCHAUEN LASERPRODUKT DER KLASSE 2	FRANCAIS LUMIERE LASER NE PAS REGARDER LE RAYON FIXEMENT PRODUIT LASER DE CLASSE 2 ITALIANO LUCE LASER NON FISSARE IL RAGGIO PRODOTTO
ESPAÑOL LUZ LASER NO MIRE FIJAMENTE EL HAZ PRODUCTO LASER DE LA CLASE 2	PORTUGUÊS LUZ DE LASER NÃO FIXAR O RAIO LUMINOSO PRODUTO LASER DA CLASSE 2	SUOMI VAARA LASERSÄTEILYÄ ÄLÄ TUIJOTA SÄTEESEEN LUOKKA 2 LASER
SVENSKA VARNING LASERSTÅLNING STIRRA EJ IN I STRÅLEN KLASS 2 LASER	DANSK LASERLYF SE IKKE IND I STRÅLEN KLASSE 2 LASER	NORSK LASERLYS IKKE STIRRINN I LYSSTRÅLEN LASER, KLASSE 2
NEDERLANDS LASERLICHT NIET IN STRAAL STAREN KLASSE-2 LASER		

Table 3 Laser warnings

7.3   Batteries

The PL3000 contains a removable Lithium-Ion battery pack. Please follow the instructions below when handling the battery pack:

• Use only original battery packs available from Nordic ID or from authorised dealers.
• Replace a defective battery pack immediately to prevent possible damage to the unit.
• Never short-circuit the battery pack terminals or throw the battery pack into a fire as this may cause an explosion.
• Excessive discharge may cause permanent degradation of the battery's performance. Battery charging should be done immediately after the unit indicates a low battery status.

The battery pack does not require any special maintenance.

NOTICE: Use only rechargeable battery type: Varta, Model 2sLIC18650-22C.

CAUTION: RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.

7.4   Charging and electrical safety

Before using the PL3000 charger check that all the cords and connections, covers of charger and PL3000 are undamaged. Any damages may risk the safe use of the device.

NOTICE: Use only applicable power supply with Desk Top Charger: Nordic Power AB, Model SA30-24U. Use only applicable power supply with Multi Desk Top Charger: FSP Group Inc., Model FSP120-ACC with MDTC.

8   Warranty

Please read these warranty and safety related warnings carefully before taking the product into use:

Warranty will be void, if the product is used in any way which is in contradiction with the instructions given in this User Manual, or if the housing of the PL3000 has been opened or tampered.

The devices mentioned in this manual are to be used only according to the instructions described in this manual. Faultless and safe operation of the devices can be guaranteed only if the transport, storage, operation and handling of the devices are followed. This also applies to the maintenance of the products.
The PL3000 contains no user serviceable parts inside the actual case apart from the battery pack and SD/ MMC card located inside the battery compartment.

The PL3000 has not been designed, intended or inspected to be used in any life support related device or system related function or as a part of any other critical system and are granted no functional warranty if they are used in any such applications.

8.1   Warranty coverage

The manufacturer grants to the PL3000 a warranty of one year, however, no longer than two years from the date of manufacturing to the system integrator or local Nordic ID dealer. The manufacturer warrants that the PL3000 is free from defects in materials and workmanship under normal use during the warranty period. The system integrator or local Nordic ID dealer must supply proof of sale for the unit in question.

Only Nordic ID has the qualified service maintenance facilities and know-how for the servicing of the PL3000.

NOTE: Service attempts by unauthorised personnel will void warranty.

8.2   Returning the unit for service (RMA)

The PL3000 shall be returned to the manufacturer for repair in case of the system integrator or the local Nordic ID dealer cannot help with the problem. Each party will bear the cost of freight of the PL3000 to be repaired to the intended destination.

8.3   Technical support

The supplier of the PL3000 or your local Nordic ID dealer primarily provides all other non-service related technical support. Nordic ID as a hardware manufacturer provides the hardware repair related technical support.

Please use the e-mail address support@nordicid.com or other contact information for requesting direct hardware support from Nordic ID.

8.4   Type label

The label is located inside the PL3000 battery compartment. Information printed on label as text is:

*   Nordic ID (company logo)
*   PL3000
*   CO:EC (country of origin)
*   Hand terminal configuration code
*   Hand terminal Item code
*   Hand terminal serial number

Information printed on the label as a single Datamatrix barcode in format: PL3000; ht_config_code; ht_Item_code; ht_serial_number

*   PL3000
*   Hand terminal configuration code
*   Hand terminal Item code
*   Hand terminal serial number

8.5   Recycling

When removing the device from use in EU area, the device must be returned to local Nordic ID office or to the Nordic ID service centre. Please see www.nordicid.com or your supplier to find nearest Nordic ID office or Service centre. Returning the device to Nordic ID enables reuse of the materials in the device. If the device is left to nature hazardous substances in the equipment may have effects on environment and human health.

Wasted Nordic ID PL3000 handheld computers and accessories should be collected separately.

Appendix A -Technical specifications

Technical specifications depend on the configuration of the individual device. You may not have all the features in the table installed into your device.

Processor	200 MHz ARM processor
Operating platform	Windows CE
Memory	64 / 128 MB SDRAM 32 MB FLASH
Battery	2200 mAh @ 7,2V (4-28 hours continuous use)
Display	3,5" ¼ VGA colour transflective TFT display, touch screen
Keyboard	29 keys Backlight with brightness control Individually quided backlight
Imager	Supports common 1D and 2D codes, LED-sighter or Laser-sighter, Short and normal range optics, 1D, 2D and photo decoders
Casing	IP 54 Drop tested from 1.5 meters onto concrete floor Turquoise and grey
Dimensions	L: 230 mm H: 45 mm W: 90 mm
Weight	450g with batteries, without pistol grip and extra antenna
Operation temperature	-10 C to +50 C
Storage temperature	-20 C to +60C
WLAN	802.11b/g
Bluetooth	Class 1
GPRS	Class 10 multislot
Card slot	SD/MMC card slot
Headset jack	2.5 mm connector
Other I/O	Loudspeaker Vibrating alarm Wakeup motion sensor
Charger	Desktop, wall mounted and vehicle charger USB 2.0 full speed client
Charging time	5 hours from 0 to 100% charged 2½ hours from 0 to 90% charged
Pistol grip	User mountable accessory Barcode reading trigger Extra battery optional

Appendix B - Code reading distances and requirements

This appendix explains some basics of reading distances and the specification for some of the supported codes.

Glossary of terms:

Mil:
One thousand of an inch, ~0,0254mm

X dimension:
Also known as "code size" or "symbol density" of a bar code. In a bar code symbol, data is conveyed by the patterns and relative widths of the bars and spaces. The x dimension describes the minimum element width in mils of the narrowest element (bar or space) in the bar code.

For 2D matrix symbologies, X dimension refers to the nominal dimension of the smallest data cell.
The X dimension density of the barcode largely decides how many characters can be encoded in one inch.

The resolution of an imager is also measured by the x dimension density that the imager can recognize.

The decode zone:
The decode zone is a function of various symbol characteristics including density, print contrast, wide-to-narrow ratio and edge acuity.

Depth of Field (DoF):
The Depth of Field is the area between the maximum and minimum readable length of a scan engine and a bar code.

Field of View (FoV):
The Field of View is the maximum readable size of an ID symbology at the given range
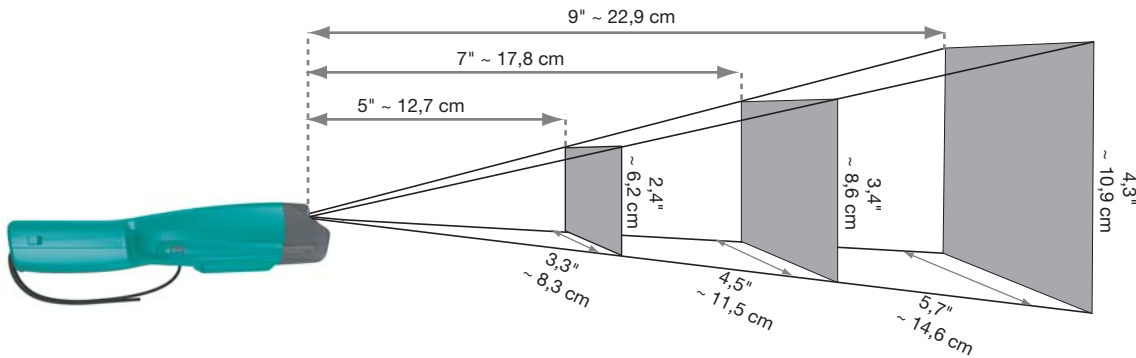
Figure: The PL3000 Field of View in given ranges

ID Symbology:

A symbology (or code) is a protocol for arranging the bars and spaces or blacks and whites that make up a particular kind of ID symbology. Often 1D symbologies are referred as bar codes. There is no one standard bar code; instead, it's estimated that there are currently over 400 barcode symbologies that serve different uses, industries, or geographic needs.

Symbologies can be designed to encode numbers, letters, special character control characters, or a combination of any of the three. There are generally two kinds of barcode symbologies; discrete and continuous. A discrete symbology is one where every character in the bar code can be interpreted individually without referencing the rest of the bar code. A continuous symbology is one where individual characters in the bar code cannot be interpreted individually. Most barcode readers have a feature called "auto-discrimination", which allows them to be configured to automatically recognize and read different barcode symbologies, much the same way a human reader can interpret and read different font types.

However the 1D (one-dimensional) barcodes can encode only very limited number of symbols, a 2D code is actually a portable data file that travels with the product it is affixed to, and provides large amounts of machine-readable information. In this way all 2D symbologies are fundamentally different from the traditional 1D bar codes.

2D symbologies can encode any data such as ASCII, alphanumeric, or binary data. They also utilize sophisticated error/erasure correction algorithms to compensate for lost or missing data, extraneous marks, or label damage. Currently there are approximately two dozen 2D symbologies in the market place. They can be divided into two main categories: Stacked Linear Codes and Matrix Codes.

Print quality

One of the key element in successful decoding is the print quality. The better the print quality, the easier the identification. When printing ID symbologies, there may appear small defects on the print. These defects are usually printer related so, that different types of printers create different kinds of defects. The printing method should be chosen so that the edges of the symbols should be well defined. Their edges should not be rough or fuzzy, so that the bars and spaces have the proper widths intended for the bar code symbology used.

Also the printer resolution has to be considered when printing the codes. The printer must be able to print the narrowest element, the x dimension, of the code. See table for printer resolution versus to the x dimension.

Resolution (dpi)	Dot size (mil)	Narrowest printable element sizes
200	5	10; 15; 20; 25; 30...
300	3,3	6.6; 10; 13.3; 16.6; 20...
400	2,5	5; 7.5; 10; 12,5; 15...
600	1,6	5; 6.6; 8.3; 10; 11,6...
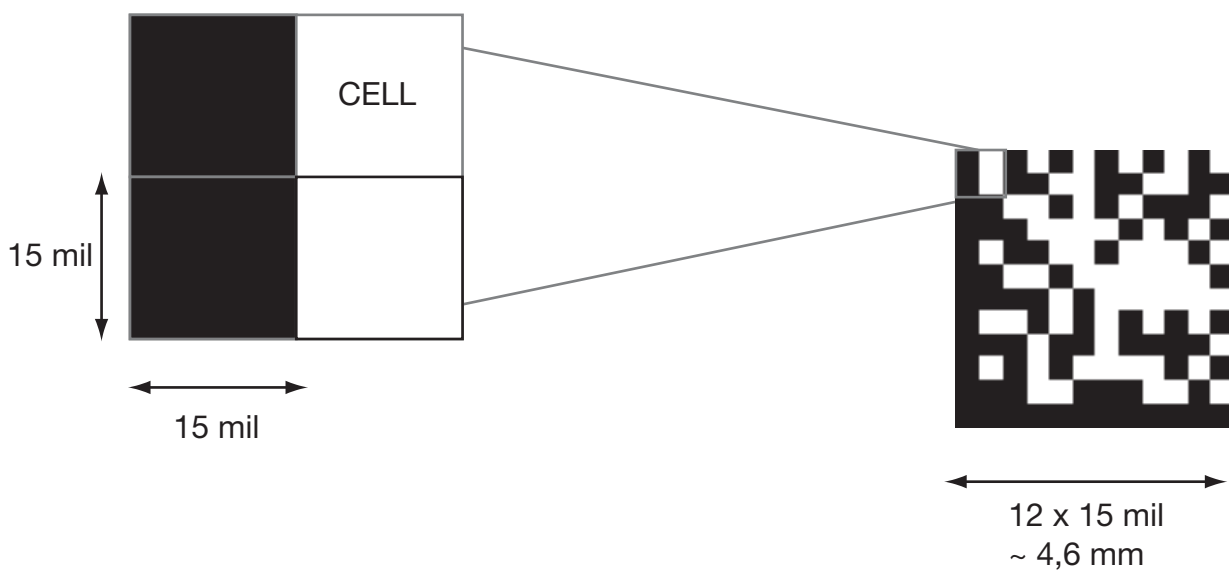
Figure: DataMatrix (15 mil) ID symbology cell and code size (not in actual size)

Table: Printer resolution effect on the narrowest element size(s)
Key to successful decoding

In PL3000 the imager does the ID symbology recognition and decoding. The reason why it is called an imager is because it is actually a camera that captures the still images and interprets them (when scanning is activated by pressing the scan-key). If the imager can recognize and decode the ID symbology it stops the scanning and returns the value to the active program.

The successful decoding of the ID symbology requires that all the following conditions have met.

1.   The ID symbology (barcode or 2D code) is printed with good quality.

2.   ID symbology is supported by the imager

3.   ID symbology is in Depth of Field (see table) and the size of the ID symbology doesn't exceed the Width of View.

4.   Lightning and contrast conditions are in met.

The imager performs best in the presence of at least 535 lux, (50 fc) of ambient light. Codes printed on glossy or laminated paper are best read at angles greater than 5° in relation to the scanner. This prevents the bright illumination reflections from being returned to the scanner.

Depth of Field for Standard Density (SD) optics for some barcode types:

Code	Near (inch)	Near (cm)	Far (inch)	Far (cm)
Maxicode (35-mil)	2.0	5.1	13.0	33.0
Datamatrix 15-mil (ECC200)	3.7	9.4	6.5	16.5
PDF417,ECL4 10-mil	3.1	7.9	9.0	22.7
PDF 417,ECL4 8-mil	3.3	8.4	8.0	20.3
PDF 417,ECL4 6.6-mil	4.5	11.4	6.25	15.9
Code 39 15-mil	2.1	5.3	12.8	32.5
Code 39 10-mil	3.2	8.1	9.2	23.4
Code 39 8-mil	3.5	8.9	7.6	19.3
UPC 13-mil, 100%	2.5	6.4	12.5	31.8
Postnet	4.0	10.2	5.9	15.0
12-point OCRA	2.5	6.4	11.8	30.0
12-point OCRB	2.5	6.4	11.0	27.9
Code 39 13-mil 90%	2.25	5.7	11.5	29.2
Code 39 20-mil 90%	3.25	8.3	14.25	36.2
Code 39 40-mil 90%	3.5	8.9	21.5	54.6
PDF 417 ECL3 15-mil 90%	3.5	8.9	11.25	28.6
QR 15-mil 90%	4.0	10.2	6.5	16.5

High Density (HD) optics for some barcode types:

Code	Near (inch)	Near (cm)	Far (inch)	Far (cm)
Datamatrix 9-mil	2.8	7.1	3.8	9.7
Datamatrix 10-mil	2.5	6.4	4.1	10.4
Maxicode (35-mil)	2.0	5.1	7.9	20.1
Datamatrix 15-mil (ECC200)	2.3	5.8	6.0	15.2
PDF417,ECL4 10-mil	1.9	4.8	5.8	14.7
PDF 417,ECL4 15-mil	2.2	5.8	7.2	18.3
PDF 417,ECL4 6.6-mil	2.1	5.3	5.0	12.7
Code 39 15-mil	1.6	4.1	6.9	17.5
Code 39 6-mil	2.2	5.6	4.7	11.9
Code 39 4-mil	2.6	6.6	3.6	9.1
Code 39 13-mil	2.2	5.6	6.5	16.5
Code 39 5-mil	2.4	6.1	4.3	10.2
QR 10-mil	2.4	6.1	3.5	8.9
QR 12-mil	2.0	5.1	4.2	10.7

Appendix C – Keyboard key mappings

Key	Numeric			Function			Alphabetic		
	Normal	Shift+	Alt+	Normal	Shift+	Alt+	Normal	Shift+	Alt+
F	Read code	Read code	Read code	Read code	Read code	Read code	Read code	Read code	Read code
ok	Enter	Enter	Enter	Enter	Enter	Enter	Enter	Enter	Enter
del	Delete	Delete	Delete	Delete	Delete	Delete	Delete	Delete	Delete
▲	Up	Up		Up	Select up		Up	Up	
◄	Left	Select left		Left	Select left		Left	Select left	
►	Right	Select right		Right	Select right		Right	Select right	
▼	Down	Down		Down	Select down		Down	Down	
tab	Tab	Tab	Open Task	Tab	Tab	Open Task	Tab	Tab	Open Task
esc	Escape	Escape	Escape	Escape	Escape	Escape	Escape	Escape	Escape
O									
□		Open/ Close Input panel	Open/ Close Input panel					Open/ Close Input panel	Open/ Close Input panel
123									
F									
abc									
1	1	1		F1	F1		..;`1	..;`1	
2	2	2		F2	F2		abc2	ABC@	
3	3	3		F3	F3		def3	DEF3	
4	4	4		F4	F4		ghi4	GHI$	
5	5	5		F5	F5		jkl5	JKL%	
6	6	6		F6	F6		mno6	MNO^	
7	7	7		F7	F7		pqrs7	PQRS&	
8	8	8		F8	F8		tuv8	TUV*	
9	9	9		F9 slides	F9 slides		wxyz9	WXYZ(	
.	.	.		F10 .	F10 .		.	>	
0	0	0		F11	F11		Space. 0	Space.)	
-	-	-		F12 -	F12 -		-	_	
↑	Shift	N/A	Shift	Shift	N/A	Shift	Shift	N/A	Shift
alt	Alt-Menu	Alt-Menu	N/A	Alt-Menu	Alt-Menu	N/A	Alt-Menu	Alt-Menu	N/A
ф	On/Off	On/Off	On/Off	On/Off	On/Off	On/Off	On/Off	On/Off	On/Off

Appendix D Activesync

The Windows CE .NET 4.2 operating system is delivered with a software for transferring files, programs and data between a Windows PC and a PL3000 unit. This program is called ActiveSync and is made by Microsoft. Installing the PC version of this software onto your desktop, your computer will enable you to synchronise the contents of your PL3000 with your Windows PC using a USB port connection or Bluetooth.

Installing ActiveSync

Microsoft ActiveSync version 3.7 and all later versions will work with the PL3000. If you have ActiveSync already installed, please make sure that the version number is 3.7 or later. To acquire the latest version, please visit Microsoft's search page and search for ActiveSync:

http://www.microsoft.com/downloads/search.asp

Select your operating system and ActiveSync from the menus shown on the pages and you will be presented with the latest ActiveSync version for download.

Setting up the connection

After you have installed ActiveSync you are ready to set up the connection. There are currently two ways to establish an ActiveSync connection between the handheld unit and the PC. Of these the USB cable is the fastest and most convenient once set up correctly, but it requires installing a driver.

ActiveSync over USB

The USB is the fastest and most flexible way to communicate with a PC. It is also the only method, which requires a driver to be installed on your PC in order for the connection to work properly. Windows XP, 2000, 98 and ME all support making a USB connection. You will need to have one of these operating systems installed on your desktop PC in order to use the USB connection and naturally your PC has to be equipped with a USB port. Make sure that the power to your PL3000 is switched on and that it is in the Desktop Charger. Attach the USB cable to the USB connector on the back of the Desktop Charger and then connect the other end to the USB port on your PC. At this point the operating system should prompt you to define or supply the software driver for the device it has detected. The driver is available from the Nordic ID web site.

After the driver is installed the connection should be established automatically. This can be verified by observing the round grey icon in the ActiveSync main window. If the grey icon begins to spin and changes from grey to green, the connection is being established. If not, you need to configure ActiveSync to use the USB port by selecting "Connection Settings" from the ActiveSync file menu and by checking the "Allow USB connection with this desktop computer" check box. Apply the changes by selecting OK. After this the window is closed. When the connection is established the icon will stop spinning and remain green. You have now successfully set up your USB ActiveSync connection.

File transfers & Synchronisation

When the ActiveSync connection is established ActiveSync will ask you on your PC if you wish to set up a new partnership. If you answer "No", you will still be able to transfer files to and from the PL3000, and you can also install programs. Answering, "Yes" will enable you to keep data automatically synchronised between your PC and PL3000.

Creating an ActiveSync connection to a PC

Through ActiveSync file folders of the PL3000 can be accessed from a PC.

Install ActiveSync onto your PC.

Save the PL3000_usbsync, wceusbh security log and wceusbh system files to your hard drive.

After connecting the PL3000 charger with USB cable to the PC, place the PL3000 into the charger. Switching on the PL3000, your PC should automatically start the hardware installation wizard. In the wizard select the folder where PL3000_usbsync is installed and install the drivers.

If your PC does not automatically recognise the PL3000, install the driver by starting the hardware installation from the control panel.

Appendix E Creating Cisco WLAN connection

Start the Aironet Client Utility (ACU) from the Cisco folder.

Create a profile and edit the settings according to your network.

To ensure that there is sufficient signal in the WLAN network you should use the site survey tool of the ACU.

After creating the profile and settings, connect to the network using the Wireless Login Module under Start-up menu within programs within Cisco.

Exemplary Ad-Hoc network installation

Add a network by using the Aironet Client Utility.

Write the SSID code of the network you have selected.

Choose the Infrastructure Mode value: No

Confirm the setting by clicking OK

Select active profile: AdHoc and confirm the setting by clicking OK

After setting set fixed IP addresses to the PL3000 and the PC an Adhoc network is created.

Specify an IP Adress for the PL3000.

The IP Address, Subnet mask, Default Gateway Primary DNS and Secondary DNS addresses must be same as for the PC.

Appendix F Creating Option GPRS connection

When the GPRS card is installed the device recognises the card when the PL3000 is turned on. The text "Pin Driver, registering to network" appears on the display" to take the GPRS card into use.

From the Startup menu select network and dial up connections. Choose the GPRS, connection, select the modem and choose Globetrotter and click "OK"

Set the API to Internet from the "API" software in the control panel.

When starting the browser or otherwise establishing the connection, a dial-up window appears in the display. If needed the password and username are supplied by the network operator.

Depending on the actual SIM card and network provider you may need to manually change the settings. For the correct settings consult your network provider. If the automatic IP settings are not supported you may need to set the DNS server IP address manually. Settings/network and dial up connections, GPRS connections, properties, TCP/IP settings/name servers primary and secondary DNS. Click "OK" to save the settings

Appendix G Application development

Microsoft Windows CE.NET 4.2

Windows CE .NET 4.2 is a robust operating system for the professional PDT and embedded device market. The Operating System is highly configurable and customisable and includes a great deal of the features found in desktop Windows computers today. Windows CE .NET 4.2 and Windows Mobile 2003 are running the same version of the kernel, but as with previous versions, they are not completely compatible. The PL3000 contains aygshell.dll which allows Windows Mobile applications to run on the CE .NET 4.2 platform, but compatibility must be tested on a case by case basis.

Program compatibility

When looking for existing programs that will run on your PL3000, there are three things to consider. First; the target Operating System must be Windows CE .NET or one of its predecessors. If you use a program compiled for a predecessor, such as H-PC 3000, you will probably also need the dynamic link libraries it is dependent on. The one typically required is MFCCE300.DLL or MFCCE211.DLL. The PL3000 has the file MFCCE420.DLL preinstalled which is the correct one for Windows CE .NET 4.2.

The second thing you need to take into account is the processor architecture. The brand name or manufacturer of the processor is not important. Only programs compiled with the ARM V4i compiler will work on the PL3000. The last thing to remember is the display orientation and size. Almost all programs and drivers that work for the PL3000 have dialogues made for a portrait quarter VGA screen. If the display shape or size does not fit the PL3000 and a change cannot be made, use any available scroll bars and the display rotating software.

SDK & Application types

The Software Development Kit (SDK) for the PL3000 is available from the Nordic ID partner support website. To register and receive a login and password please see the support section in Nordic ID web site www.nordicid.com or contact Nordic ID directly. The SDK is necessary for all solutions where a custom application will be programmed for and installed on the PL3000. For solutions using technologies such as terminal emulation or Internet Explorer you will not require the SDK. These types of applications require no development on the PL3000 unit as the application is built on the server. For terminal emulation Nordic ID can recommend third party terminal emulation software which has been tested with the PL3000. To develop software that will run on the PL3000, you will require:

Embedded Visual C++ application development

• ActiveSync 3.5 or later installed on your host PC.
• eMbedded Visual C++ 4.0
• The PL3000 Windows CE 4.2 SDK

• To control the device hardware you will need to use the MHL interface. The partner support section on the Nordic ID website has details about MHL available.
• Additionally the general Windows CE .NET 4.2 SDK is good to have installed.

All of these tools are free and available from the Nordic ID SDK site, except the eMbedded Visual C++ 4.0 application. It is available free of charge from Microsoft.

.NET Compact 1.1 framework application development

• ActiveSync 3.7 or later installed on your host PC.
• Microsoft Visual Studio .NET 2003 with the Compact Framework package installed
• The PL3000 Windows CE 4.2 SDK installed.
• To control the PL3000 hardware you will need the MHL .NET wrapper class. This is available from Nordic ID on request.

.NET Compact 2.0 framework application development

• ActiveSync 3.7 or later installed on your host PC.
• Microsoft Visual Studio .NET 2005
• The PL3000 Windows CE 4.2 SDK installed.
• To control the PL3000 hardware you will need the MHL .NET wrapper class. This is available from Nordic ID on request.

HTML + J Script / VBScript Application development

As this type of solution uses the Internet Explorer 6.0 application on the PL3000, no third party development tools are explicitly required. PL3000 specific hardware features are only available by calling a COM component trough a client side script in your solution. This COM component is actually the same MHL component used in all the languages above, but exposed trough a COM component wrapper. The MHL SDK documentation is available from the Nordic ID partner support webpage. You do not need to download and install the SDK for this type of solution.

Appendix H Configuring the Linksys WCF54G –card

This appendix describes the configuration of the wireless network with Linksys WCF54G –network adapter.

Glossary of term

WEP   The first security standard used in wireless networks to encrypt the wireless network traffic.

WPA   Wi-Fi Protected Access. An improved security standard for wireless networks that provides stronger data protection and network access control. It provides stronger data protection by using encryption, access controls and user authentication (not included in WEP). WPA utilizes 128-bit encryption keys and dynamic session keys to ensure the wireless network's privacy and security.

PSK   A mechanism in Wi-Fi Protected Access (WPA) that allows the use of manually entered keys or passwords to initiate WPA security. The PSK is entered on the access point or wireless gateway and each device that is on the Wi-Fi network. The password also initiates the encryption process which, in WPA is Temporal Key Integrity Protocol (TKIP).

EAP   Extensible Authentication Protocol. A protocol that provides an authentication Framework for both wireless and wired Ethernet enterprise networks.

Required information from the network administrator:

-       Network SSID (name)
-       Type of network (AdHock or Network)
-       Encryption used
-       Authentication method used
-       Network key (PSK)

Connecting to the wireless network

Before configuring the wireless network settings define the IP-addresses and Name servers from the "Settings – Network and Dial-up connections" –menu. The Linksys -card should automatically create the default IP-setting file named "WLAG46F1". By default the IP-addresses and nameservers are configured to be obtained by DHCP. Modify the setting by tapping that file and typing the IP-addresses and Name servers if needed.

By default the program always pops up when new network(s) is detected, this can be disabled by unchecking the "Notify when new networks available" checkbox. If not, open the application by double tapping the Network connections –tray icon (see picture) and select the Wireless Information –tab.
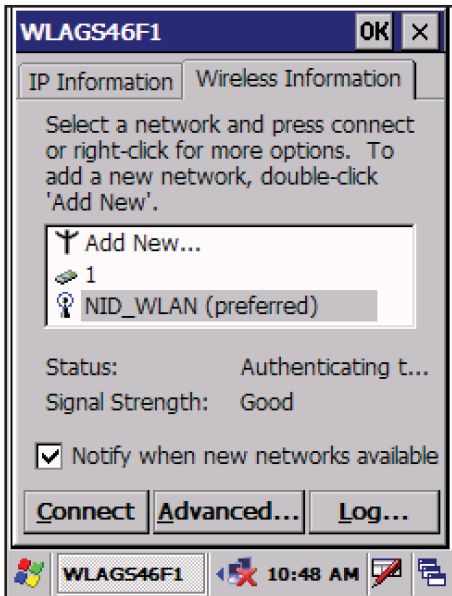
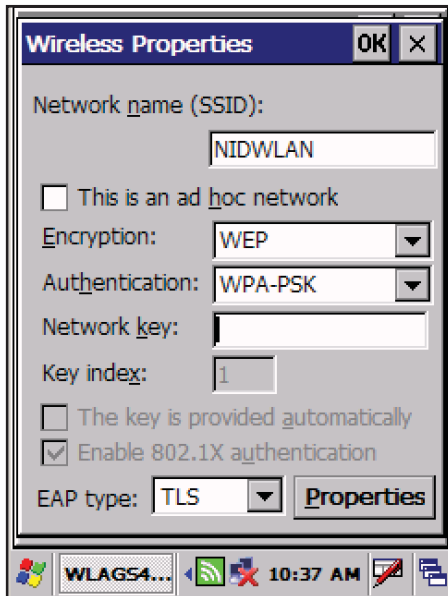Fig: Detected networks in range. NID_ WLAN is being connected. Authorisation process in progress.

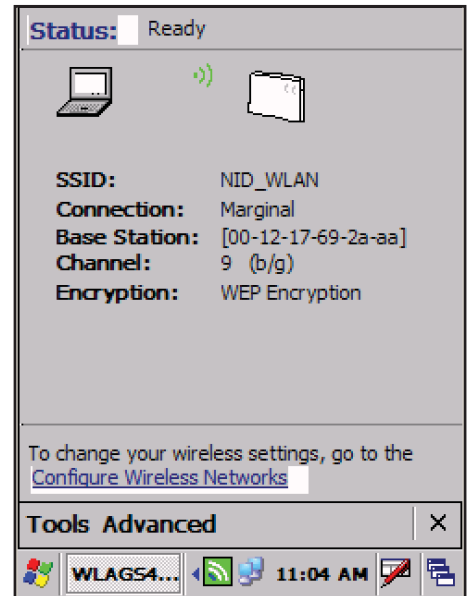Fig: Wireless properties -window. Enter the network settings here.

Fig: Network monitor -window.

Networks within reach are listed below Add New… -selection.

Note: If the network is configured as not visible, it cannot be seen in this window. Open the network configuration window by tapping the desired network or Add New…-selection in the listbox . Fill the wireless properties with the information provided by your network administrator. Save the settings and close the window by tapping the OK-box at the top of the window.

After configuring the wireless properties, choose the network to be connected from the listbox and tap the connect -button. The PL3000 tries to connect the selected network and indicates the connection status at the window below the Available networks –listbox. Also the signal strength of the selected network is shown.

Network Monitor window

The Network monitor application can be opened from Programs – WCF54G Wireless Network Monitor. This application shows the status of the current network connection, tools for network management and troubleshooting and controls for wlan radio power.

Appendix I PL3000 configurations

PL3000 handheld computer can include one or more of the following functionalities as described in the table below. Configuration is defined in the Item code on the type label.

Barcode reader: one of the following readers may be included in the PL3000:

- Imager/ Linear Imager / Laser scanner

RFID reader/writer: One of the following RFID reader/writers may be included in the PL3000:

- HF RFID

Radio: one of the following radios may be included in the PL3000:

- WLAN / 3G

Bluetooth radio

- Bluetooth radio may be included in the PL3000:

Finger print reader

-Finger print reader may be included in the PL3000. Finger print reader cannot be in the PL3000 with Linear imager or Laser scanner

Memory options: One of following memory options may be included in the PL3000:

- 64MB RAM / 128 MB RAM

Appendix J Creating Summit WLAN connection

The Summit Client Utility (SCU) is an application designed for end users and administrators of mobile devices that use a Summit radio module.

- From the Start menu, select Programs
- Select the directory called Summit
- Inside the Summit directory are two items: a directory for the storage of security certificates and the SCU. To run SCU, click the SCU icon.

The SCU has five windows: Main, Config, Global Settings, Status, and Diags (or Troubleshooting).
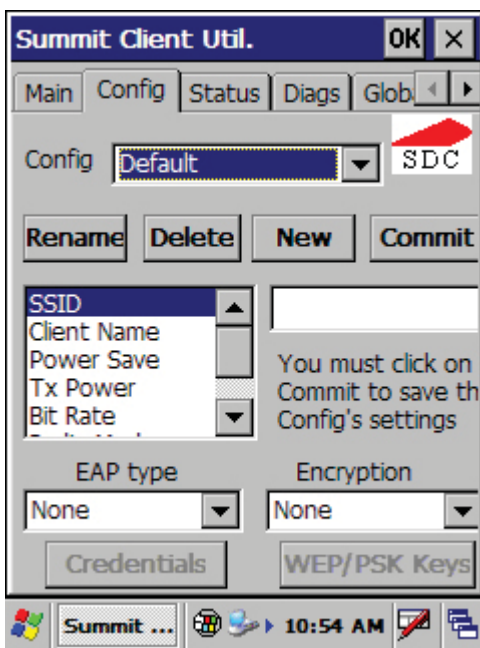
Figure 1 below is an example of a Main window:

Figure1: Main window

Here are the highlights:

1. Enable/disable radio: When the radio is enabled, selecting this button disables it; when the radio is disabled, selecting this button enables it.

2. Active config: A user can view the name of the active configuration profile, or config. An administrator can use the selection list to select a different config. If "ThirdPartyConfig" is selected then, after the device goes through a power cycle, WZC (Windows Zero Config) is used for configuration of the radio.

3.   Association status: Indicates if the radio is associated to an access point and, if not, what the radio's status is.

4.   Regulatory domain: Indicates the regulatory domain or domains for which the radio is configured. "Worldwide" means that the radio can be used in any domain. The domain cannot be configured by an administrator or user.

5.   Software versions: Indicates the version of the device driver and the version of SCU that are running on the device.

6.   About box: Supplies information on SCU that on a Windows application normally would appear under Help | About.

Config Window

Config settings are radio and security settings that are stored in the registry as part of a configuration profile, or config. When a config is selected as the active config on the Main window, the settings for that config become active. An administrator can define, change, and delete a config on the Config window in SCU. Config changes made on the window are saved to the config only when the Commit button is pressed. SCU supports a maximum of 20 configs.

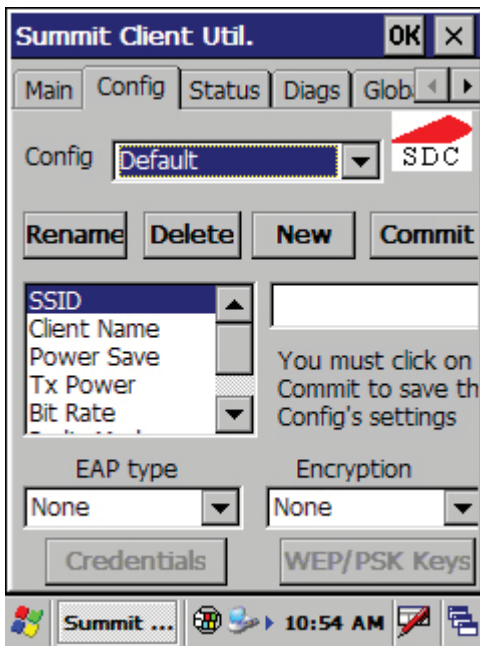Figure 2 below is an example of a Config window:

Figure 2: Config window

Here are the highlights:

- Config: This is used to select the config to be viewed or, if you are an administrator, edited. If "ThirdPartyConfig" is selected then, after the device goes through a power cycle, WZC is used for configuration of the radio.
- Actions: Four actions are available to an administrator:
    1. Rename: Give the config a new name, one that is not assigned to another config
    2. Delete: Delete the config, provided that it is not the active config
    3. New: Create a new config with default settings and give it a name (and then change settings using other selections on the window)
    4. Commit: Ensure that changes to config settings made on the window are saved in the config
- Radio attribute and setting: Attributes in the list box can be selected individually. When an attribute is selected, the current setting or an appropriate selection box with the current setting highlighted appears on the right. For example, selecting SSID causes an edit box to appear; selecting transmit power causes SCU to display a drop-down list box with available settings.
- Security settings: The items at the bottom of the window enable the administrator to configure the settings for authentication and encryption.

EAP Credentials

Here are some important notes on entering credentials for EAP authentication:
- If the credentials specified in the config are incorrect then, when that config is used, the authentication will fail without an error message, and the user will not be prompted to enter correct credentials
- If the credentials are not specified in the config then, when the radio tries to associate using that config, the user will be prompted to enter the credentials
- When prompted, the user can enter valid credentials, enter invalid credentials, or cancel the operation
- If the user enters valid credentials and taps the OK button, the radio will associate and authenticate
- If the user enters invalid credentials and taps the OK button, the radio will associate but not authenticate, and the user will be re-prompted to enter credentials
- If the user taps the Cancel button or the user clears the credentials fields and taps the OK button, then the radio will not attempt to associate with that config until the user performs one of the following actions (while the config is the active config):

    - Causes the device to go through a power cycle or suspend/resume
    - Disables and enables the radio or taps the Reconnect button on the Diags windows
    - Modifies the config and taps the Commit button

Alternatively, the user can select another config as the active config and then switch back to the config for which EAP authentication was canceled.

ThirdPartyConfig

If the config named "ThirdPartyConfig" is selected as the active config, then SCU works in tandem with WZC for configuration of all radio and security settings for the radio module. WZC must be used to define the following radio and security settings: SSID, Auth Type, EAP Type, and Encryption. The following SCU config settings can be defined for the ThirdPartyConfig config: Client Name, Power Save, Tx Power, Bit Rate, and Radio Mode. Those SCU config settings, all SCU global settings, and the WZC settings are applied to the radio when ThirdPartyConfig is selected as the active config and a power cycle is performed.

Status Window

The Status window provides status information on the radio. Status items include IP address and MAC address for the client radio, IP address and MAC address for the AP, signal strength, channel, transmit power, and data rate. A sample Status window is shown in Figure 4 below:
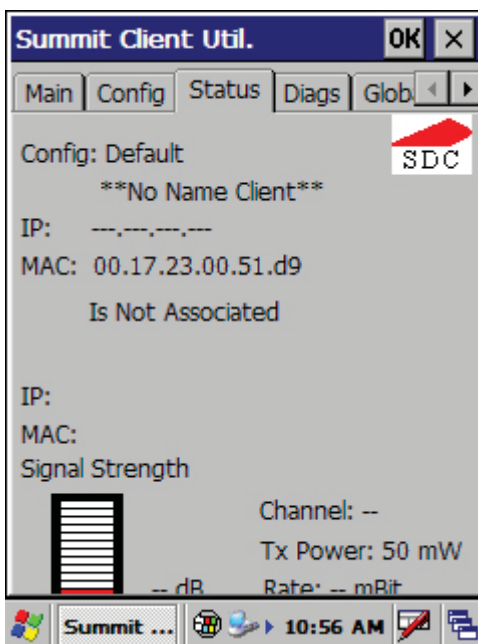

Figure 4: Status window

Here are the highlights:

- Client info: Name of active config, client name, client IP address, and client MAC address
- AP info: AP name, AP IP address, and AP MAC address
- Signal strength, shown both graphically and numerically
- Other connection info: Channel, transmit power[4], and bit rate

One status item, the radio association state, is shown on both the Status window and the Main window.

Potential values are: Down (not recognized), Not Associated, Associated, or [EAP type] Authenticated.

 Diags Window

A sample Diags, or troubleshooting, window is shown in Figure 5 below:
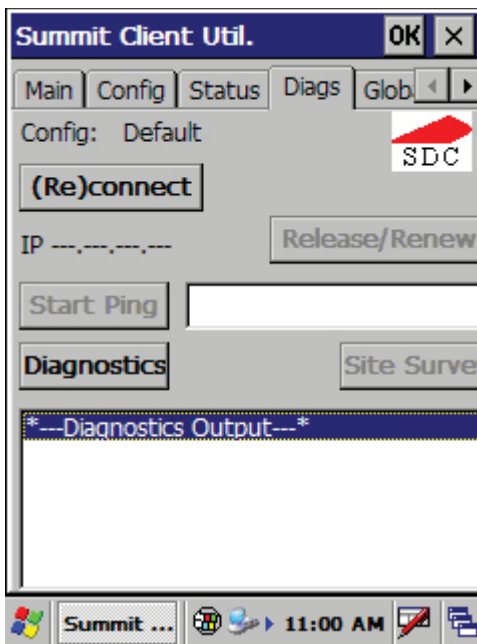

Figure 5: Diags window

 Here are the functions available on the Diags window:

- (Re)connect: Disable and enable the radio, apply or reapply the current config, and attempt to associate and authenticate to the wireless LAN, logging all activity in the output area at the bottom.

- Release/Renew: Obtain a new IP address through DHCP release/renew, and log all activity in the output area at the bottom.

- Start Ping: Start a continuous ping to the address in the edit box next to it. Once the button is clicked, its name and function will change to Stop Ping. Leaving the Diags window also will stop the ping, as will pressing any other button on the screen.

- Diagnostics: Attempt to (re)connect to an AP, and provide a more thorough dump of data than is obtained with (Re)connect. The dump will include radio state, config settings, global settings, and a BSSID list of APs in the area. In addition to displaying the diagnostic information on the Diags window, SCU will save the information to the file "_sdc_diag.txt" in the Windows directory.

- Site Survey: Launch a separate site survey utility (not yet available).

Global Settings Window

Global settings include:
- Radio and security settings that apply to all configs
- Settings that apply to SCU itself

An administrator can define and change most global settings on the Global Settings window in SCU. A sample Global Settings window is shown in Figure 3 below:
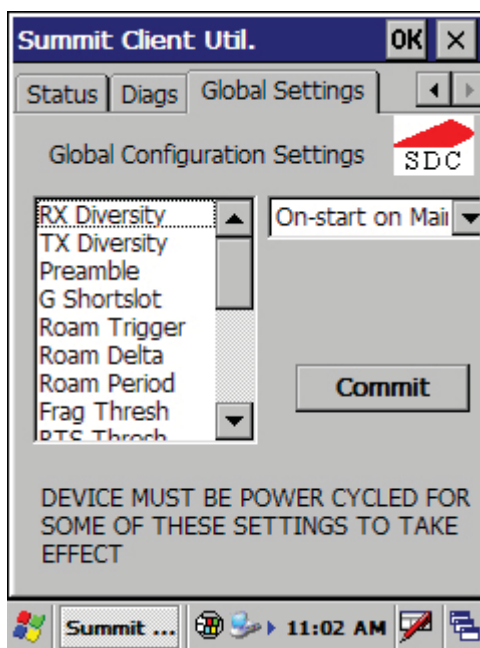
Figure 3: Global Settings window

When a global setting is changed on the window and the Commit button is tapped, the change may not take effect until the device is power cycled.

A few global settings can be defined or set only through a separate utility such as the Summit Manufacturing Utility, which is made available only to device manufacturers and not to their customers.