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Elf™ - User's Manual

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REFERENCES

CONVENTIONS

This manual uses the following conventions:

"User" refers to anyone using an Elf™ PDA.

"PDA" and "Elf™" refer to Elf™ PDA.

"You" refers to the System Administrator or Technical Support person using this manual to install, configure, operate, maintain or troubleshoot an Elf™ mobile computer.

"Single Dock" refers to the Elf™ Single Slot Dock.

REFERENCE DOCUMENTATION

For further information regarding Elf™ refer to the SDK Help on-Line.

SERVICES AND SUPPORT

Datalogic provides several services as well as technical support through its website.

Log on to www.mobile.datalogic.com and click on the [links](#) indicated for further information including:

- **PRODUCTS**

Search through the links to arrive at your product page where you can download specific **Manuals** and **Software & Utilities**

- **SERVICES & SUPPORT**

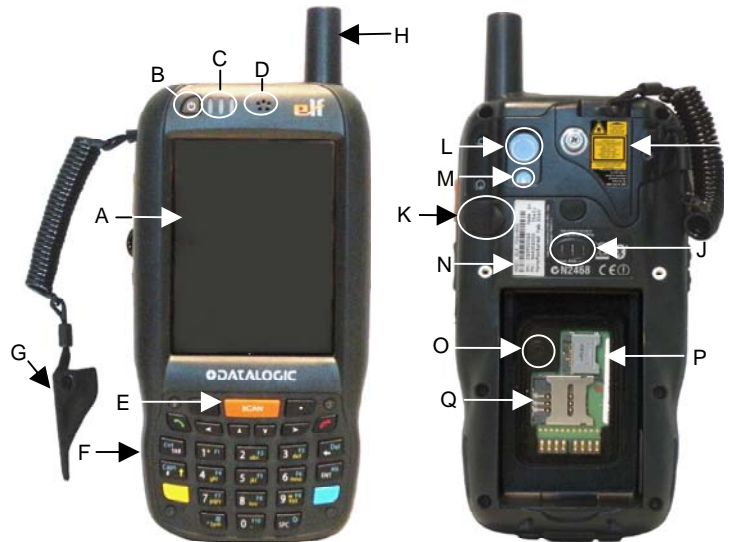
- **Datalogic Services** Warranty Extensions and Maintenance Agreements

- **Authorised Repair Centres**

- **CONTACT US**

E-mail form and listing of Datalogic Subsidiaries

GENERAL VIEW



- | | |
|---|---------------------------------------|
| A) Color Display* | I) Laser Safety Label |
| B) ON/OFF Power Key | J) Loudspeaker |
| C) LEDs | K) Headset Connector |
| D) Receiver | L) Color Camera |
| E) Front Scan Key | M) Flash |
| F) Keyboard | N) Product Label |
| G) Guitar Pick Stylus | O) Reset Key (under battery) |
| H) HSDPA antenna, present in HSDPA model only | P) Micro-SD Card Slot (under battery) |
| | Q) SIM Card Slot (under battery) |
- * Remove protective film cover before use



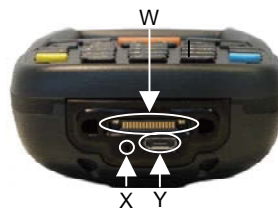
- R) Side Scan Key (right)
- S) Push-to-talk Key



- T) Side Scan Key (left)
- U) Up/down Volume Keys



- V) Data Capture/Laser Output Window *



- W) Handylink Connector (host/slave)
- X) Microphone
- Y) Micro USB Communication Connector (host/slave) for supplying power and data transfer

1 INTRODUCTION

1.1 ELF™ DESCRIPTION

Datalogic Mobile's new PDA, Elf™ is designed with the technology and ruggedness needed in Field Service, Field Sales, Delivery, Retail and Logistics applications. Capitalizing on Datalogic Mobile's legendary ergonomics, the new PDA packs unprecedented features into a compact form factor built for single handed operation.

Elf's Power³ construction starts with a parallel microprocessor architecture using a PXA310 and ARM-7 processors combined with 256 MB RAM & Flash and Windows Mobile 6.5.

Elf 1D laser scanner and 2D imager both come equipped with Datalogic's patented Green Spot good read feedback. An HF RFID interrogator provides a third data capture option. Every Elf is also outfitted with an autofocus 3MPixel camera with flash.

A complete set of radios keeps the users connected through out the day: HSDPA UMTS for voice and data, Summit's latest Wi-Fi 802.11a/b/g wireless radio with CCX v4 certification. Elf's GPS receiver helps with route planning and proof of delivery.

The Micro USB port facilitates charging with a phone industry standard power supply or On-the-Go (OTG) communications.

Datalogic's software tools and strategic software alliances fit Elf to the business practice. Datalogic Desktop and Configuration utilities offer full control over the on device experience. Wavelink Avalanche enables rapid deployment and central management of Elf installation. Finally Datalogic's comprehensive service programs protect the Elf investment.

1.2 MODELS DESCRIPTION

The brand new Elf™ is available in different models depending on the options it is equipped with. All options are listed below:

- communication options: 802.11 a/b/g radio, Bluetooth®, GSM
- capture options: laser, 2D imager
- compute options: Windows Mobile 6.5.

For further details about the Elf™ models refer to the web site: <http://www.mobile.datalogic.com>.

For further information regarding Windows Mobile refer to the website: <http://www.microsoft.com/windowsmobile>.

The currently available models are:

- 944301000 Elf 00A0LS-1N1-MEN0
Elf with Bluetooth v2.0, 802.11 a/b/g CCX V4, Std Laser w/ Green Spot,
Camera 3MPixel, Windows Mobile 6.5, 256MB RAM/256MB Flash, 27-Key
Numeric
- 944301001 Elf 00A0WI-1N1-MEN0
Elf with Bluetooth v2.0, 802.11 a/b/g CCX V4, Std 2D Imager w/ Green
Spot, Camera 3MPixel, Windows Mobile 6.5, 256MB RAM/256MB Flash,
27-Key Numeric
- 944301002 Elf U2A0LS-1Q1-MEN0
Elf with Bluetooth v2.0, 802.11 a/b/g CCX V4, 3.5G UMTS HSDPA, GPS,
Std Laser w/ Green Spot, Camera 3MPixel, Windows Mobile 6.5, 256MB
RAM/256MB Flash, 46-Key QWERTY
- 944301003 Elf U2A0LS-1N1-MEN0
Elf with Bluetooth v2.0, 802.11 a/b/g CCX V4, 3.5G UMTS HSDPA, GPS,
Std Laser w/ Green Spot, Camera 3MPixel, Windows Mobile 6.5, 256MB
RAM/256MB Flash, 27-Key Numeric
- 944301004 Elf U2A0WI-1N1-MEN0
Elf with Bluetooth v2.0, 802.11 a/b/g CCX V4, 3.5G UMTS HSDPA, GPS,
Std 2D Imager w/ Green Spot, Camera 3MPixel, Windows Mobile 6.5,
256MB RAM/256MB Flash, 27-Key Numeric
- 944301005 Elf U2A0WI-1Q1-MEN0
Elf with Bluetooth v2.0, 802.11 a/b/g CCX V4, 3.5G UMTS HSDPA, GPS,
Std 2D Imager w/ Green Spot, Camera 3MPixel, Windows Mobile 6.5,
256MB RAM/256MB Flash, 46-Key QWERTY
- 944301008 Elf 00A0LS-1Q1-MEN0
Elf with Bluetooth v2.0, 802.11 a/b/g CCX V4, Std Laser w/ Green Spot,
Camera 3MPixel, Windows Mobile 6.5, 256MB RAM/256MB Flash, 46-Key
QWERTY
- 944301009 Elf 00A0WI-1Q1-MEN0
Elf with Bluetooth v2.0, 802.11 a/b/g CCX V4, Std 2D Imager w/ Green
Spot, Camera 3MPixel, Windows Mobile 6.5, 256MB RAM/256MB Flash,
46-Key QWERTY

1.3 PACKAGE CONTENTS

The Elf™ package contains:

- 1 Elf™ mobile computer
- 1 Elf™ Quick Start Guide
- 1 AC/DC power supply
- 1 EU plug adapter
- 1 AUS. Plug Adapter
- 1 UK Plug Adapter
- 1 US Plug Adapter
- 1 std-A to micro-B USB 2.0 cable*
- 1 CD-ROM Getting Started Disk
- 1 guitar pick stylus
- 1 rechargeable standard battery pack
- 1 hand-strap with stylus holder
- 1 Windows Mobile End User License Agreement (depending on models)
- 1 belt clip
- elastic strap for stylus

Any other packages will contain the accessories necessary for the Elf™ connection to the host computer and to the network: the cradle, one or more connection cables.

Remove all the components from their packaging; check their integrity and congruity with the packing documents.

**CAUTION**

Keep the original packaging for use when sending products to the technical assistance center. Damage caused by improper packaging is not covered under the warranty.

**NOTE**

Rechargeable battery packs are not initially charged. Therefore the initial operation to perform is to charge them. See paragraph 2.1.

* to connect the Elf™ to a host (PC) in USB slave mode

1.4 INSERTING A MICRO SD CARD

Elf™ provides the possibility to add a Micro SD memory storage card. To access the Micro SD card slot and insert the card, proceed as follows:

1. Turn off the Elf™.
2. Pull the battery latch down and remove the battery pack:



3. Shift the cardholder to the left and then pull it up:



4. Insert the Micro SD card with the written part upward



5. Lock the card into place by pushing the cardholder down and then shifting it to the right:



6. First insert the bottom and then the upper (contacts) side of the battery pack into the slot and press it back until the battery latch is automatically closed.



To remove the Micro SD card, follow the steps above to access the SD area, and remove it from its slot.

**CAUTION**

Follow proper ESD precautions to avoid damaging the SD. Proper ESD precautions include, but are not limited to, working on an ESD mat and ensuring that the operator is properly grounded.

Do not force the card. If you feel resistance, remove the card, check the orientation, and reinsert it.

Do not use the Micro SD card slot for any other accessories.

1.5 INSTALLING THE SIM CARD

To correctly insert the SIM Card, proceed as follows:

2. Turn off the ELF™.
3. Pull the battery latch down and remove the battery pack.



3. Shift the cardholder to the left and then pull it up:



4. Insert the SIM card with the contacts downward:



5. Lock the card into place by pushing the cardholder down and then shifting it to the right:



6. First insert the bottom and then the upper (contacts) side of the battery pack into the slot and press it back until the battery latch is automatically closed.

**CAUTION**

Follow proper ESD precautions to avoid damaging the SIM card. Proper ESD precautions include, but are not limited to, working on an ESD mat and ensuring that the operator is properly grounded. Do not force the card. If you feel resistance, remove the card, check the orientation, and reinsert it. Do not use the SIM card slot for any other accessories.

**NOTE**

The SIM Card option is not available in 802.11b/g radio and batch models.

1.5.1 Removing the SIM Card

To remove the SIM card, follow the steps above to access the SIM area, and remove it from its slot.

**NOTE**

All the basic functionalities normally associated to the SIM card are managed by the terminal (GPRS connectivity, phone calls, SMS handling).

It is possible that not all the services connected to the SIM card can be used or can be managed by the terminal.

1.6 ACCESSORIES

❑ Cradles

- 94A151124 Dock, Single Slot, Elf
- 94A151130 Dock, Powered Mobile, Elf
- 94A151132 Dock, Ethernet 4 Slot, Elf
- 94A151134 Charger, 4 Slot Dock, Elf
- 94A151136 Charger, 4 Slot Battery, Elf

❑ Batteries

- 94ACC1376 Battery, High Capacity, Elf
- 94ACC1377 Battery, Standard Capacity, Elf

❑ Power Supply

- 94A051975 Power Adapter, 12 to 24v Pwr Plug 2.1mm
- 94A051976 Adapter, Pwr Jack 2.1mm To Handylink
- 94ACC1380 Power Supply, Micro USB
- 94ACC1381 Power Supply, Dock, PWR Plug 2.1mm

❑ Cables

- 94A051020 Cable for dock-PC (RS232) communication
- 94A051968 Cable, Micro USB, Client
- 94A051969 Cable, Micro USB, Host
- 94A051970 Cable, USB Handylink, Client
- 94A051971 Cable, USB Handylink, Host
- 94A051972 Cable, RS232 Handylink, Client
- 94A051973 Cable, RS232 Handylink, Host
- 94A051974 Cable, Dex Handylink

❑ Various

- 95ACC1033 Screen Protector Kit, 5 Pack
- 94ACC1230 Swivel for Functional Case (10pcs)
- 94ACC1345 Stylus Pen (10 pcs.)
- 94ACC1371 Module, Ethernet, Single Slot Dock
- 94ACC1372 Module, Modem, Single Slot Dock
- 94ACC1378 Handle, Elf
- 94ACC1379 Belt Holster, Elf
- 94ACC1382 Stylus, Guitar Pick W/ Cord (5pcs)

**NOTE**

Use only a Datalogic Mobile-approved power supply and cables. Use of an alternative power supply will invalidate any approval given to this device and may be dangerous.

2 BATTERIES AND MAINTENANCE



NOTE

Rechargeable backup batteries and battery packs are not initially charged. Therefore the initial operation to perform is to charge them. See below.



CAUTION

By default, the battery pack is disconnected at the factory to avoid damage due to excessive draining. Annual replacement of rechargeable battery pack avoids possible risks or abnormalities and ensures maximum performance.

2.1 CHARGING THE BATTERY PACK



NOTE

The battery pack autonomy varies according to many factors, such as the frequency of barcode scanning, RF usage, battery life, storage, environmental conditions, etc.

The battery icon on the Taskbar indicates when the battery pack is low.

It is possible to recharge the battery pack by connecting the power supply directly to the ELF™.

Alternatively, it is also possible to recharge the battery pack by using the single slot dock, the powered mobile dock, the Ethernet four slot dock or the four slot battery charger.

Moreover recharging is possible by USB Direct connection with the host computer, but with longer charging times and only if the mobile computer is off.

During the charging process the LED positioned at the left side of the display is red constant. Once the charging process has been completed this LED is green constant (see par. 4.5).

If the battery pack is removed from the mobile computer, it can be recharged by inserting it into the rear slot of the single slot dock, the powered mobile dock, the Ethernet four slot dock or the four slot battery charger.



CAUTION

Do not use the ELF™ until batteries are charged for minimum 4 hours.

**CAUTION**

Risk of explosion if battery is replaced by an incorrect type.

Dispose of used batteries according to the instructions.

**ATTENTION**

Il y a risque d'explosion si la batterie est remplacée par une batterie de type incorrect.

Mettre au rebut les batteries usagées conformément aux instructions.

**NOTE**

Even if the storage temperature range is wider, In order to achieve the longest battery life, store the terminal and the spare batteries between 20 to 30 °C (68 to 86 °F).

Large batteries must be charged at a temperature ranging from 0° to +40 °C (+32° to +104 °F).

Small batteries must be charged at a temperature ranging from 0° to +45 °C (+32° to +113 °F).

**NOTE**

The battery level may not be displayed correctly for some minutes after the disconnection if the Elf™ is disconnected from power supply before the charging cycle is completed.

**NOTE**

The Elf™ could get warm during charging, this is normal and does not mean a malfunction.

**NOTE**

Use only a USB-IF compliant USB port as a charging source.

2.2 REPLACING THE BATTERY PACK

To correctly replace the battery pack, proceed as follows.

1. Turn off the ELF™.
2. Pull the battery latch down as indicated in the figure below:



3. Remove the battery pack.



4. Install the new battery pack, first insert the bottom side, then the upper (contacts) side of the battery pack into the slot and press it back until the battery latch is automatically closed:



**WARNING**

Installing, charging and/or any other action should be done by authorized personnel and following this manual.

The battery pack may get hot, explode, ignite, and/or cause serious injury if exposed to abusive conditions.

If the battery pack is replaced with an improper type, there is risk of explosion.

Do not place the battery pack in or near a fire or heat; do not place the battery pack in direct sunlight, or use or store the battery pack inside unventilated areas in hot weather; do not place the battery pack in microwave ovens, dryer, high pressure containers, on induction cookware or similar device. Doing so may cause the battery pack to generate heat, explode or ignite. Using the battery pack in this manner may also result in a loss of performance and a shortened life expectancy.

Use only a Datalogic Mobile approved power supply. The use of an alternative power supply will void the product warranty, may cause product damage and may cause heat, explode or ignite.

The area in which the units are charged should be clear of debris and combustible materials or chemicals.

Do not use the battery pack of this terminal for power devices different from this mobile computer.

Immediately discontinue use of the battery pack if, while using, charging or storing the battery pack, the battery pack emits an unusual smell, feels hot, changes colour or shape, or appears abnormal in any other way.

Do not short-circuit the battery pack contacts connecting the positive terminal and negative terminal. This might happen, for example, when you carry a spare battery pack in your pocket or purse; accidental short-circuiting can occur when a metallic object such as a coin, clip, or pen causes direct connection of the contacts of the battery pack (these look like metal strips on the battery pack). Short-circuiting the terminals may damage the battery pack or the connecting object

**WARNING**

Do not apply voltages to the battery pack contacts.

Do not pierce the battery pack with nails, strike it with a hammer, step on it or otherwise subject it to strong impacts or shocks.

Do not disassemble or modify (i.e. bend, crush or deform) the battery pack. The battery pack contains safety and protection devices, which, if damaged, may cause the battery pack to generate heat, explode or ignite.

In case of leakage of liquid from the battery, avoid contact with liquid the skin or eyes. If the contact occurs, immediately wash the affected area with water and consult a doctor.

Do not solder directly onto the battery pack.

Do not expose the battery pack to liquids.

Avoid any knocks or excessive vibrations. If the device or the battery is dropped, especially on a hard surface, you should take it to the nearest Authorised Repair Centre for inspection before continuing to use it.

Do not replace the battery pack when the device is turned on.

Do not remove or damage the battery pack's label.

Do not use the battery pack if it is damaged in any part.

Battery pack usage by children should be supervised.

Collect and recycle waste batteries separately from the device in comply with European Directive 2006/66/EC, 2002/95/EC, 2002/96/EC and subsequent modifications, US and China regulatory and others laws and regulations about environment.

**NOTE**

In order to guarantee an adequate operating autonomy, when replacing the battery pack the mobile computer checks the battery energy level. If the battery is not sufficiently charged, Elf™ does not turn on (when pressing the ON/OFF key).

In this case, either substitute the battery pack with a charged one (sufficiently charged) or insert Elf™ into a powered cradle or plug it into the direct power supply.

**NOTE**

To achieve the best battery life, turn off the radios not in use.

2.3 CLEANING THE MOBILE COMPUTER

Periodically clean the Elf™ with a slightly dampened cloth.

Do not use alcohol, corrosive products or solvents.

3 CONNECTIONS

3.1 USB CONNECTION

You can use any standard mini USB cable to directly connect the Elf™ to a host computer to transfer data through the USB interface.



Key:

- | | |
|----------------------------|---------|
| A) Host Computer | C) Elf™ |
| B) Standard Mini USB cable | |

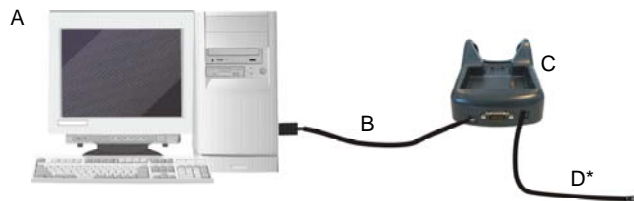


NOTE

Connection through the cable is compliant to 2.0 USB standard.

The Single Dock can be connected to the Host by means of a Micro-B USB cord, such as Datalogic 94A051968 cable.

Once the host has been turned on, insert the Elf mobile computer into the cradle.



Key:

- | | |
|---|-----------------------------|
| A) Host Computer | C) Elf Single Slot Dock |
| B) 94A051968 Micro-B to Std-A
USB straight cable | D) * 94ACC1381 Power Supply |

In this case the power supply is only necessary for battery charging. Insert the power supply plug into the power jack on the base of the cradle and attach the power supply to a power outlet.



NOTE

Connection through the cradle is compliant to 2.0 USB standard.



NOTE

The actual data transfer speed can be appreciably lower than the maximum theoretical speed.

3.2 CONNECTION TO USB PERIPHERALS

You can use a standard A (4 pin female) to mini A (5 pin male) USB cable to connect the Elf™ to a keyboard or a memory. For all these devices maximum current withdrawal must be below 100mA.



Key:

A Keyboard with USB interface C 94A051024 (Standard A to Mini A USB cable)

B Elf™

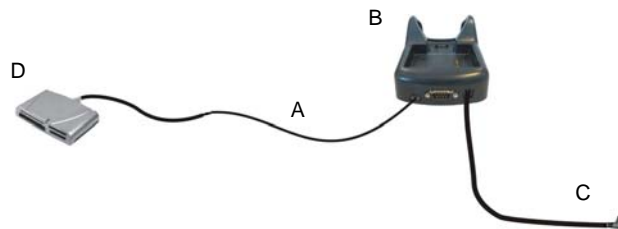


Key:

A USB hard drive/ external memory source C 94A051024 (Standard A to Mini A USB cable)

B Elf™

Connect the Single Slot Dock to the peripheral by means of a Micro-A USB cord, or use a Micro-A to Std-A receptacle USB adapter such as Datalogic 94A051969 (together with a standard USB cable if needed).



A) 94A051969 Micro-A to Std-A receptacle USB adapter C) 94ACC1381 Power Adapter

B) Elf Single Slot Dock D) USB Peripheral (memory)



NOTE

Connect first the USB peripheral to the cable, and then the cable to the Elf™.



NOTE

Elf™ works with most of mentioned USB peripherals. In any case, we can't guarantee good operations with all devices available on market place.



NOTE

Connection is compliant to 1.1 USB standard.

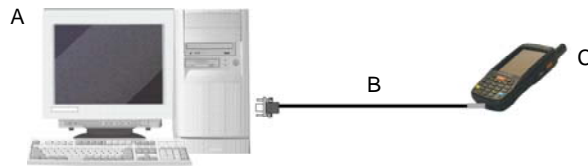


NOTE

The actual data transfer speed can be appreciably lower than the maximum theoretical speed.

3.3 RS232 CONNECTION

You can use a cable to directly connect the Elf™ to a host computer to transfer data through the RS232 interface.

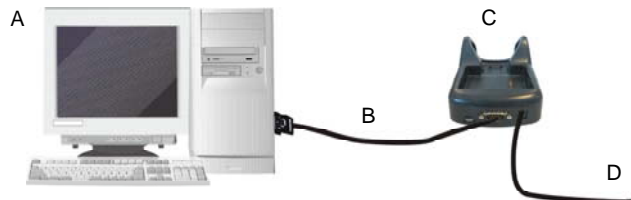


Key:

- | | |
|--|---------|
| A) Host Computer | C) Elf™ |
| B) 94A051022 WIN-NET
(HRS ST40X-18S-CV) | |

The Single Slot Dock can be connected to the Host by means of a standard null modem cable such as Datalogic 94A051020 CAB-427 for 9-pin connections.


Once the Host has been turned on, insert the Elf™ mobile computer into the cradle.



Key:

- | | |
|---------------------------------|---------------------------|
| A) Host Computer | C) Elf Single Slot Dock |
| B) 94A054000 9-pin serial cable | D) 94ACC1381 Power Supply |

In this case the power supply is only necessary for battery charging. Insert the power supply plug into the power jack on the base of the cradle and attach the power supply to a power outlet.

 CAUTION	<p><i>If the mobile computer supports Windows Mobile, before plugging the RS232 cable you have to check the 'COM1 Enable' option on the 'System, Configuration' window. (Start -> Programs -> System Configuration).</i></p>
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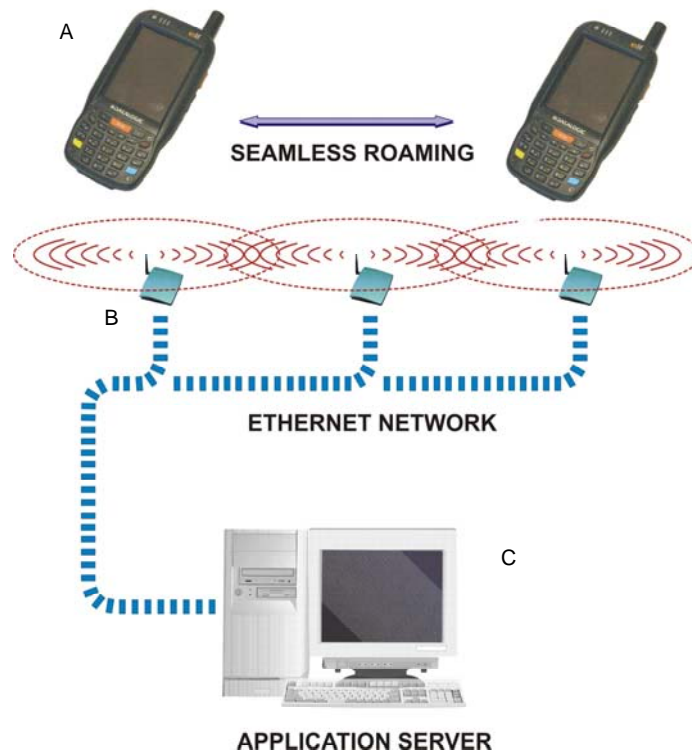
3.4 WLAN CONNECTION

Elf™ 802.11b/g radio models can communicate with the host using the on-board radio frequency component and an Access Point connected to the host computer.

For models using the 802.11g radio, you can find information about the applet for radio configuration: <http://www.summitdatacom.com/SCU.htm>.

To launch this utility you can tap the specific icon if it's visible on the taskbar or:

1. On Windows CE devices, you can open Connections folder or Control Panel from desktop and select the 'Summit Client Utility' icon.
2. On Windows Mobile devices, you can select the menu item: Start->Programs->Summit and tap the 'Summit Client Utility' icon.



Key:

- A) Elf™
- B) Access Point
- C) Host – Application Server

**NOTE**

802.11g radio module is on by default, in order to avoid wasting energy, you can switch it off using the Wireless Communications applet.

**NOTE**

Suspending the terminal powers off the 802.11b/g radio and drops the radio connection. When the terminal resumes, depending on the radio power mode and security protocol selected, it may take up to 30 seconds for the 802.11b/g radio driver to re-associate the radio to the network.

**NOTE**

Area coverage and radio performance may vary, due to environmental conditions, access points types or interference caused by other devices (microwave ovens, radio transmitters, etc.)

**NOTE**

In case of heavy usage the Elf™ could get warm, this is normal and does not mean a malfunction.

3.5 WPAN CONNECTION

Elf™ mobile computer models with Bluetooth® can communicate with other Bluetooth® enabled devices, such as a printer, within a range of 10 m, using the onboard Bluetooth® module.



Key:

- A) Elf™
- B) Bluetooth® printer



NOTE

In order to avoid wasting energy, the Bluetooth® module is off by default. If you need to have Bluetooth® working, the module must be powered on using the Wireless Communications applet (see par. 4.7.2), and perform the Discovery procedure (see par. 4.8.2).



NOTE

Suspending the terminal powers off the Bluetooth® radio and drops the piconet (Bluetooth® connection). When the terminal resumes, it takes approximately 10 seconds for the Bluetooth® radio driver to re-initialize the radio.



NOTE

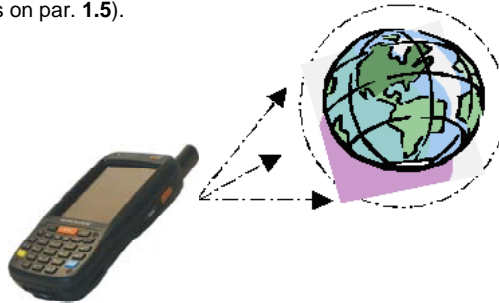
Area coverage and Bluetooth® radio performance may vary, due to environmental conditions or interference caused by other devices (microwave ovens, radio transmitters, etc.), etc.

3.6 WWAN CONNECTION

Elf™ GSM models enhance your connectivity solutions giving you an opening to an international wireless infrastructure that is the global standard.

GSM (Global System for Mobile communications) is a digital mobile phone system based on TDMA; it utilizes the 850, 900, 1800 and 1900 MHz bands.

In order to use a WWAN Connection you have to install a SIM Card* (see instructions on par. 1.5).



NOTE

In order to avoid wasting energy, the GSM module is off by default. If you need to have GSM working, the module must be powered on using the Wireless Communications applet (see par. 4.7.2).



NOTE

Suspending the terminal powers off the GSM radio and drops the connection. When the terminal resumes, if the connection was managed by Microsoft Internet Explorer, it is automatically restored, otherwise, the radio connection must be manually re-initialized.



NOTE

The GSM voice capability of this mobile computer has to be addressed to occasional use, in well covered areas. If the coverage is poor, the voice quality can be highly affected.



NOTE

Calls can be made or received using the Elf™ as a phone handset, by the Elf™ headset or by a Bluetooth® headset.

* the SIM Card option is not available in 802.11g radio and batch models



During a call, you can set the speaker volume by pressing the arrow navigation keys.

NOTE



In case of heavy usage the Elf™ could get warm, this is normal and does not mean a malfunction.

NOTE

3.8 WIRELESS AND RADIO FREQUENCIES WARNINGS

**WARNING**

Use only the supplied or an approved replacement antenna. Unauthorized antennas, modifications or attachments could damage the product and may violate laws and regulations.

**WARNING**

Most modern electronic equipment is shielded from RF signals. However, certain electronic equipment may not be shielded against the RF signals generated by Elf™.

**WARNING**

Datalogic recommends persons with pacemakers or other medical devices to follow the same recommendations provided by Health Industry Manufacturers Associations for mobile phones.

Persons with pacemakers:

- *Should ALWAYS keep this device more than twenty five (25) cm from their pacemaker and/or any other medical device;*
- *Should not carry this device in a breast pocket;*
- *Should keep the device at the opposite side of the pacemaker and/or any other medical device;*
- *Should turn this device OFF or move it immediately AWAY if there is any reason to suspect that interference is taking place.*
- *Should ALWAYS read pacemaker or any other medical device guides or should consult the manufacturer of the medical device to determine if it is adequately shielded from external RF energy.*

In case of doubt concerning the use of wireless devices with an implanted medical device, contact your doctor.

**WARNING**

Turn this device OFF in health care facilities when any regulations posted in these areas instruct you to do so. Hospitals or health care facilities may use equipment that could be sensitive to external RF energy.

**WARNING**

RF signals may affect improperly installed or inadequately shielded electronic systems in motor vehicles. Check with the manufacturer or its representative regarding your vehicle. You should also consult the manufacturer of any equipment that has been added to your vehicle.

**WARNING**

An air bag inflates with great force. DO NOT place objects, including either installed or portable wireless equipment, in the area over the air bag or in the air bag deployment area. If vehicle's wireless equipment is improperly installed and the air bag inflates, serious injury could result.

**WARNING**

Turn off the device when in any area with a potentially explosive atmosphere. Observe restrictions and follow closely any laws, regulations, warnings and best practices on the use of radio equipment near fuel storage areas or distribution fuel areas, chemical plants or where some operation involves use of explosive materials.

Do not store or carry flammable liquids, explosive gases or materials with the device or its parts or accessories.

Areas with a potentially explosive atmosphere are often, but not always, clearly marked or showed.

Sparks in such areas could cause an explosion or fire, resulting in injury or even death.

4 USE AND FUNCTIONING

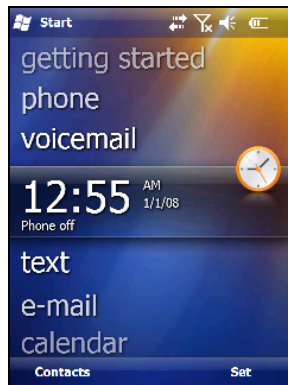
The use of the Elf™ depends on the application software loaded. However there are several parameters that can be set and utilities that can be used to perform some basic functions such as data capture, communications, file management, etc.

4.1 STARTUP

The Elf™ turns on when the battery pack or the external supply is inserted.

After the battery pack is installed, use the [ON/OFF] key to turn the mobile computer on and off.

As soon as the mobile computer is on, the Windows Mobile 6.5 desktop configuration will appear on the screen. Wait a few seconds before starting any activity so that the mobile computer completes its startup procedure.



Today Screen



Start Menu

Use the stylus (par. 4.1.1) as suggested to select icons and options.

The mobile computer goes into power-off (low power with display and keyboard backlight off), when it is no longer used for more than a programmable timeout, which is defined in the POWER applet of the Control Panel. In this mode it can be awakened (resuming operation) by the [ON/OFF] key.



NOTE


The mobile computer can also be awakened or turned off by the application program.

4.1.1 Using the Stylus

The stylus selects items and enters information. The stylus functions like a mouse.

Tap:	Touch the screen once with the stylus to open items and select options
Drag:	Hold the stylus on the screen and drag across the screen to select text and images. Drag in a list to select multiple items.
Tap-and-hold:	Tap and hold the stylus on an item to see a list of actions available for that item. On the pop-up menu that appears, tap the action you want to perform.

To recalibrate the touch screen use the Stylus Applet (see par. 4.7.3)



CAUTION *Use only original Datalogic styluses supplied with the product itself.*

In harsh applications, use of screen protectors should be taken into consideration, in order to extend the touch screen operating life.

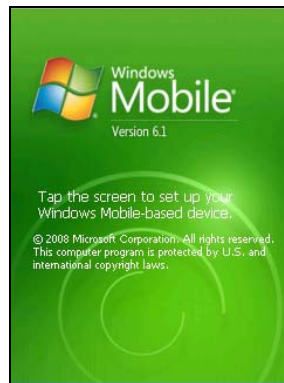
To prevent damage to the screen, do not use sharp devices or any device other than the Datalogic Mobile-provided stylus.

Do not apply not necessary high pressures on the screen.

For applications where an intensive use of the touch screen is foreseen, please consider that touch screen components are subject to progressive wear.

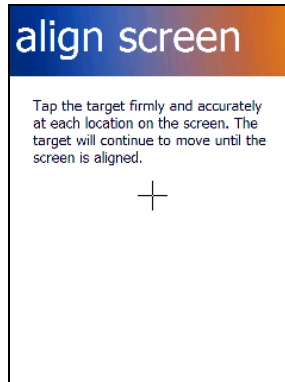
4.2 WINDOWS MOBILE WELCOME WIZARD

In Windows Mobile, at the very first Elf™ startup, following a clean boot or following a registry restore to default values, the mobile computer startup (see par. 4.1) is preceded by the Welcome Wizard.



Welcome Wizard Screen

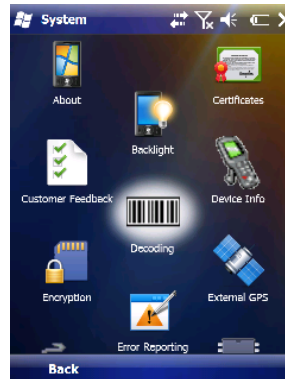
The Welcome Wizard allows the user to calibrate the touch screen (see par. 4.7.3) and to configure an email account and a password to protect the terminal.



Touch Screen Calibration Screen

4.3 DATA CAPTURE

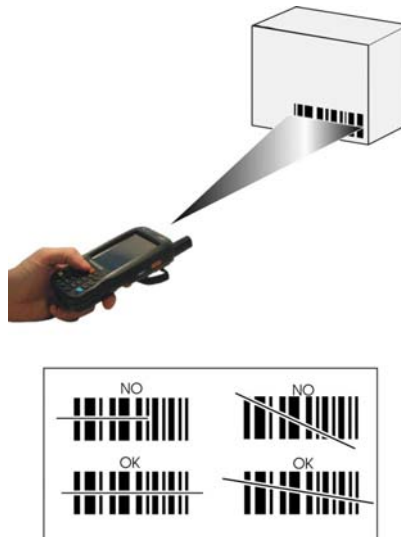
To capture data first of all tap Start > Settings > System > Decoding:



To configure and enable data capture parameters refer to par. 4.6.

4.3.1 Laser Data Capture

To scan barcodes, point the Elf™ laser model onto the code from a distance within the reading range while pressing the SCAN key. The lighted band emitted by the laser must completely intercept the barcode as shown in the figure below.



If the scan has taken place correctly:

- the Good Read LED gets constant Green for a configurable time;
- if enabled, the GoodReadSound emits an acoustic signal;
- if enabled, the GreenSpot projects a green spot onto the bar code image.



NOTE

Remove the protective film cover over the Laser Output Window before use.

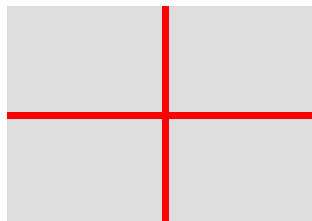
4.3.2 Imager Data Capture

The Elf™ Imager captures a picture of the entire bar code. The omni-directional scanning does not require that the operator orient the bar code to align with the scan pattern.

To read a 1D or 2D code, simply point the Elf™ Imager model onto the code and press the SCAN Key.



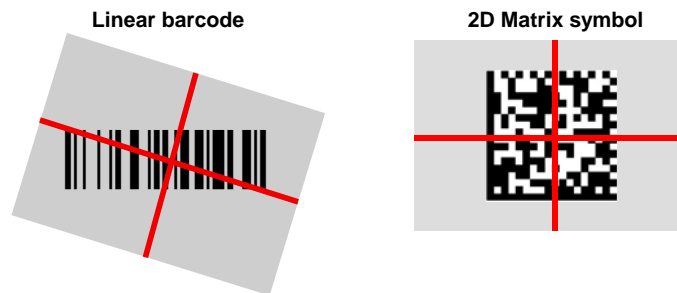
The Elf™ Imager uses an intelligent aiming system pattern, similar to those on cameras, indicating the field of view, which should be positioned over the code:



Aiming System

If the aiming system pattern is centered over the entire symbology as shown in the following figure, either wait for the timeout or release the Scan key to capture the image.

A red beam illuminates the code, which is captured and decoded. You will get a good read.



Relative Size and Location of Aiming System Pattern

The field of view changes its size as you move the reader closer or farther away from the code. The field of view indicated by the aiming system pattern will be smaller when the Elf™ Imager is closer to the code and larger when it is farther from the code.

Symbologies with smaller bars or elements (mil size) should be read closer to the unit. Symbologies with larger bars or elements (mil size) should be read farther from the unit. (See par. 5.1 for further details).

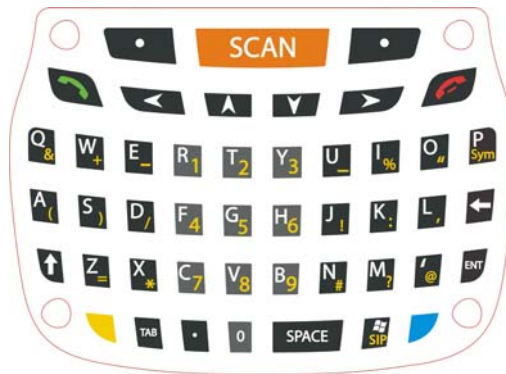
If the scan has taken place correctly:

- the Good Read LED gets constant Green for a configurable time;
- if enabled, the GoodReadSound emits an acoustic signal.







4.4 DESCRIPTION OF THE KEYS

The Elf™ provides two different keyboards, an alphanumeric keyboard and a numeric keyboard, having a total of respectively 46 and 27 keys.

4.4.1 Alphanumeric Keyboard



Main Keys Function







KEY	FUNCTION
	It starts barcode data capture.
	They let you move forwards, backwards, upwards or downwards within text fields, scroll through a Menu list or browse among folder files.
	Yellow modifier (toggle key): when pressed before a standard key, it enables the character or function printed in yellow above the key.
	Blue modifier (one shot key): when pressed before a standard key, it enables the character or function printed in blue above the key.
	It powers the Elf™ ON or OFF. It is placed on the upper left side of the terminal.
	The hang up key normally generates the VK_TEND virtual key code, used to hang-up phone calls and to exit applications. In blue mode, the hang up key generates a VK_ESCAPE virtual key code for applications that uses this specific virtual key code to exit (e.g. touch

screen calibration application).

4.4.2 Numeric Keyboard



Main Keys Function

KEY	FUNCTION
	It starts barcode data capture.
	They let you move forwards, backwards, upwards or downwards within text fields, scroll through a Menu list or browse among folder files.
	Yellow modifier (toggle key): when pressed before a standard key, it enables the character or function printed in yellow above the key.
	Blue modifier (one shot key): when pressed before a standard key, it enables the character or function printed in blue above the key.
	It powers the ELF™ ON or OFF. It is placed on the upper left side of the terminal.
	The hang up key normally generates the VK_TEND virtual key code, used to hang-up phone calls and to exit applications. In blue mode, the hang up key generates a VK_ESCAPE virtual key code for applications that uses this specific virtual key code to exit (e.g. touch screen calibration application).

4.4.3 Resetting the Elf™

There are several reset methods for the Elf.

A warm boot terminates an unresponsive application and clears the working RAM, but preserves the file system. Registry is restored from persistent memory if available or returned to factory default.

A cold boot forces all applications to close reinitializing completely the system. It clears the working RAM, but the file system is preserved. Registry is restored from persistent memory.

A clean boot restores the Elf to a clean configuration: both the registry and the file system returns to a clean status that conforms to factory default.

Warm Boot

To perform a warm boot, press and hold the following keys simultaneously:



Cold Boot

To perform a cold boot, do the following steps:

1. Turn off the Elf by pressing the on-off key.
2. Pull the battery latch down and remove the battery pack.
3. Press the reset button.
4. Insert the battery pack.
5. Turn on the Elf by pressing the on-off key.

Clean Boot

To perform a clean boot, do the following steps:

1. Perform a Cold Boot (see Cold Boot).
2. Press and hold down the 0 and hang up keys simultaneously and then press the on-off key:



A dialog box will appear asking for confirmation. Select 'OK'.

	Warm Boot	Cold Boot	Clean Boot
REGISTRY	Restored from flash	Preserved	Clean configuration (no user config)
File System	Restored from flash	Preserved	Clean Installation (no user files)

4.5 STATUS INDICATORS



4.5.1 LED Status

The Elf™ provides three different LEDs signaling the mobile computer status.

LED	STATUS	
Good Read (right side)	Red	Scanning LED is ON from the time the user hits the scan button (Trigger) until the bar code is decoded (laser models) Time-out (imager models)
	Green	Scanning LED is ON, showing a good decode.
Charging Status (left side)	Green	It is constant once the charging process has been completed (full charge).
	Red	It is constant while charging.
	Red blinking	charge fault
Keyboard Status (center)	Off	Keyboard in primary
	Yellow solid	Yellow alternate key mode
	Blue solid	Blue alternate key mode
	Pink	CapsLock available for use by the application, cause and duration

4.5.2 Taskbar

The Taskbar provides information about the time, the battery level, the keyboard function, and the decoding status.

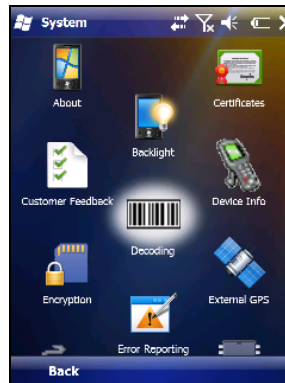
ICONS	DESCRIPTION
Time and Battery Icons	
	It displays the system battery status.
	It indicates that the battery is charging



Windows Mobile Taskbar

4.6 DATA CAPTURE CONFIGURATION

You can configure the Elf's decoding options by tapping Start -> Settings -> System -> Decoding.



There are two sections in the Decoding control panel, each containing additional pages. There are six General Configuration pages and multiple Barcode symbology pages.

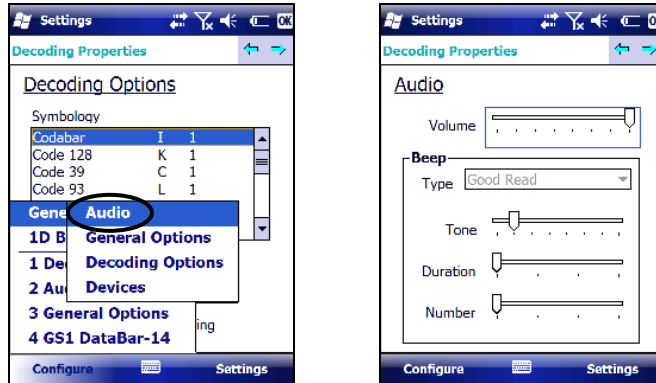
4.6.1 Configuration Control Panels

Select the desired configuration from the options shown in the figure below, and the other Decoding Properties figures on the following pages.

Select General or 1D Bar Code, then use the menu or tap the left and right arrow keys to navigate the different pages of the Decoding utility. The menu options will change to reflect the items most recently selected.

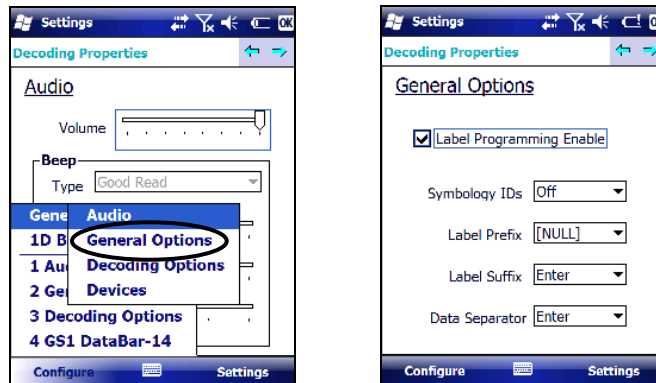
Audio

From the Decoding menu, tap Configure > General > Audio. Use to set volume, tone, duration, and number of various types of beeps.



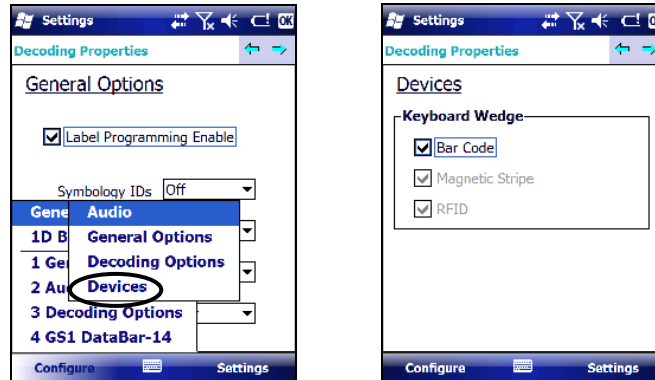
General Options

From the Decoding menu, tap Configure > General > General Options. Select from Label Programming Enable, Symbology IDs, Label Prefix, Label Suffix, and Data Separator.



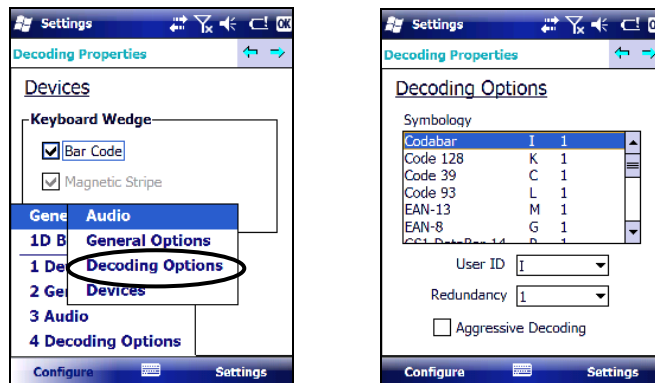
Devices

From the Decoding menu, tap Configure > General > Devices. Use to enable or disable the keyboard wedge for Barcode scanner.



Decoding Options

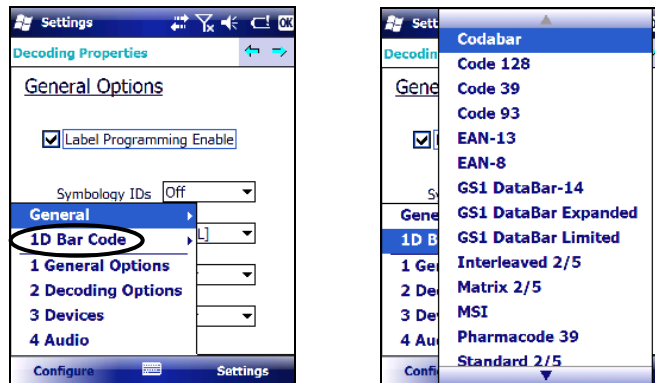
From the Decoding menu, tap Configure > General > Decoding Options. Select a symbology to view or change the available properties settings.



Select Configure > General from the menu to view other configuration options.

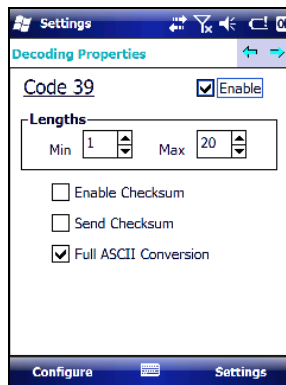
1D Barcode Symbology Pages

Use the drop-down menus from Configure > 1D Barcode, or tap the left and right arrow keys to navigate the different pages of the barcode symbology pages.



Select Configure > General from the menu to view other configuration options.

Each barcode symbology opens to its own page, as shown in the figure below. Refer to the sample symbology control panels for examples of the types of fields and options you can modify.



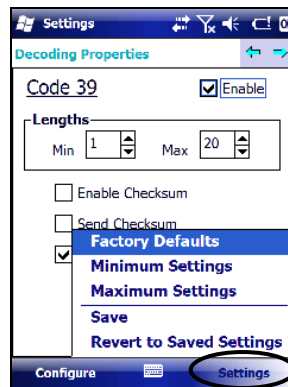
- Code 39: Select Enable, Min/Max Lengths, Enable Checksum, Send Checksum, Full ASCII Conversion, and Concatenate.

Decoding Settings

Select from the Decoding Properties Settings menu to restore previous configurations and/or other available default settings. Choose from:

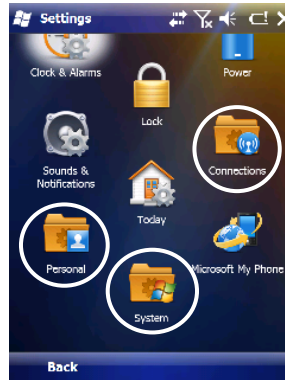
- Factory Defaults
- Minimum Settings
- Maximum Settings
- Save (New Settings)
- Revert to Saved Settings

The settings are saved when you tap OK.

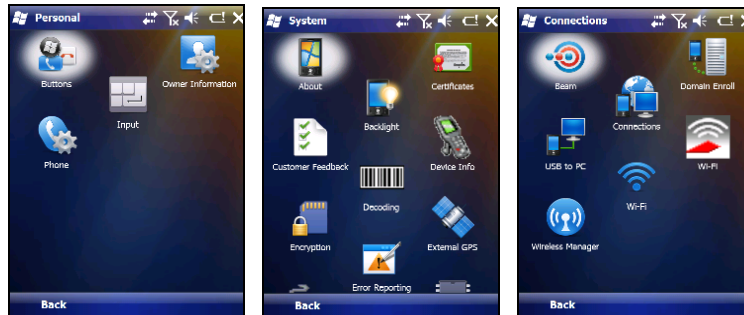


4.7 CONTROL PANEL

From the Start menu, tap Settings. The Control Panel is split into three sections: Personal, System, Connections.



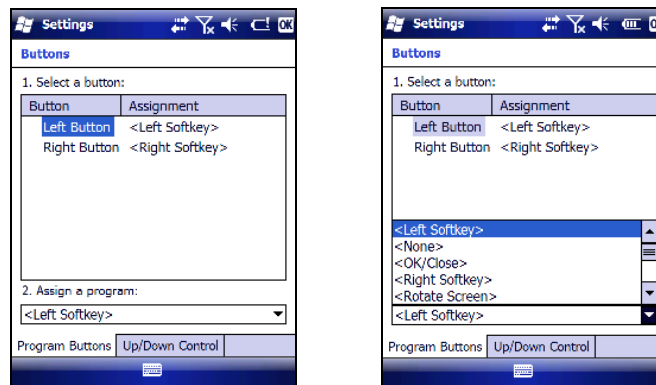
APPLET programs are displayed as icons; one icon corresponds to each APPLETT:



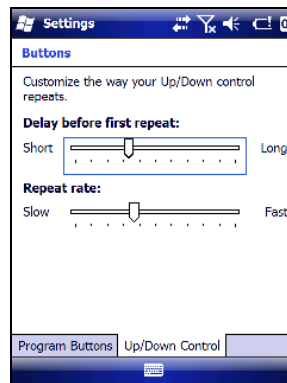
Windows Mobile Control Panel

4.7.1 Buttons

From the Start menu, tap Settings > Personal > Buttons > Program Buttons. On the Program Buttons tab, customize the program hardware buttons to launch your most used applications. Under Select a button, tap the button you want to assign a program to, and then select a program from Assign a program.



To configure the way up/down and the rest of keys control repeats, use the Up/Down Control applet (Start > Settings > Personal > Buttons > Up/Down Control).



You can also select to wake up the terminal by the SCAN key.

4.7.2 Wireless Communications

The WIRELESS COMMUNICATIONS applet provides management of the 802.11b/g radio, the Bluetooth® and GSM modules.



Connectivity Icon

The Wireless Manager application manages access to wireless connections. The 'Wireless Manager' is a sort of 'Control Panel' for bluetooth and phone modules. From here it's possible to turn on or off bluetooth and phone radio stacks.

Open the Wireless Manager by tapping Start -> Settings -> Connections -> Wireless Manager, or by tapping the Connectivity icon located at the top of the screen. The following window will appear:



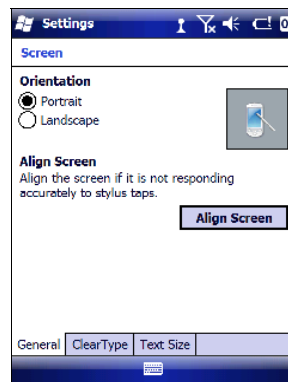
Wireless Communications Window

4.7.3 Stylus Calibration

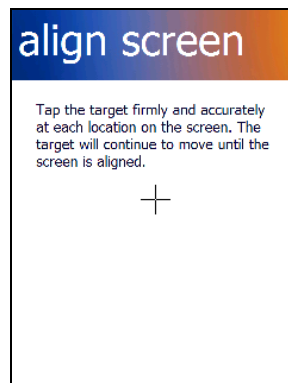
You might need to recalibrate the touch screen (i.e. when you attempt to select one item with the stylus, another item is erroneously selected).

To recalibrate the touch screen, complete the following steps:

1. Select **Start > Settings > System > Screen** to open the **Screen Settings** dialog as shown in the figure below:



2. Tap **Align Screen** to open the **Calibration** screen shown in the figure below.
3. Carefully press and briefly hold stylus on the center of the target. Repeat as the target moves around the screen.
4. By completing the calibration procedure you implicitly accept the new calibration settings.
5. New calibration settings are persistently saved in registry.



Startup stylus calibration

When starting the terminal, a Welcome Wizard (with Stylus Calibration) comes up if valid calibration settings are not available. This happens in the following circumstances:

1. At the first startup of the terminal.
2. After restoring registry default settings using the applet **Registry Admin** and performing a boot.
3. After a **Clean Boot**.

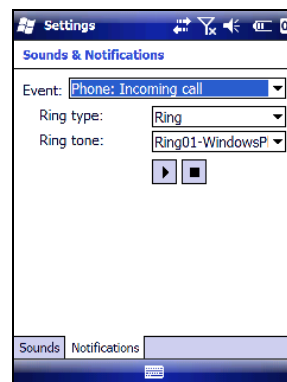
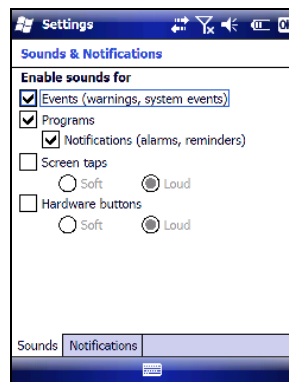
4.7.4 Volume Settings


From the Start Menu, select Settings > Sounds and Notifications:

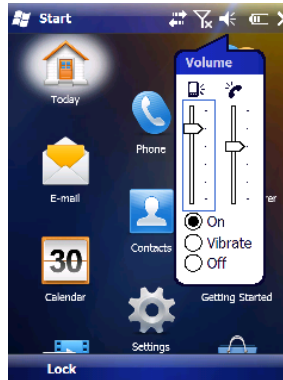


Sounds and Notifications Window

The Audio applet allows to set the recording volumes of the main microphone and of the headset microphone. Also, it allows to set the headset volume when the user is listening to an audio file.

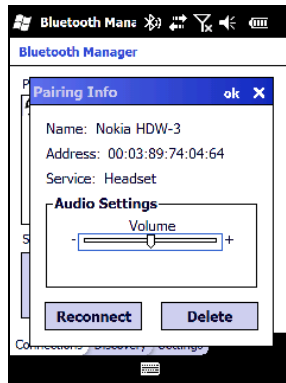


To set the speaker volume during a call, click the  icon on the right top of the Windows Mobile Start Menu. To set the front speaker or the headset speaker volume, use the right bar or move the joystick up and down. To set the rear speaker volume, use the left bar.



To set the Bluetooth® headset volume, tap

Start > Settings > System > Bluetooth Manager > Connections and select the headset. The following window will appear:



4.8 WINDOWS CONNECTIONS

To connect the Elf™ to another device (i.e. Host PC) from Windows, several programs are available. These programs require specific electrical connections in order to function properly.

4.8.1 Windows Mobile® Device Center

Windows Mobile® Device Center gives you the possibility to connect your desktop computer to your Elf™ and synchronize the information on them. Synchronization compares the data on the Elf™ with that on the desktop computer and updates both computers with the most recent information.

With Windows Mobile® Device Center" it is possible to:

- Back up and restore Elf™ data.
- Copy files between Elf™ and desktop computer.
- Synchronize files by selecting a synchronization mode.

You can establish a connection to your Elf™ through the following electrical interfaces:

- **USB** either directly or through the Single Dock
- **Bluetooth®** (see par. 4.8.2)

Synchronizing lets you transfer e-mail, contacts, appointments, tasks, Web favorites, and media files from your computer to your device or from your device to your computer. You must accept an update to Windows Mobile Device Center (WMDC) on your computer before you can use WMDC to synchronize the Elf™ with a host PC or with a Microsoft Exchange Server.

To establish a connection between the Elf™ and a host PC, start Windows Mobile® Device Center, which is pre-installed on the PDA, and follow the steps below:

1. Connect the Elf™ to the host PC. Windows Mobile® Device Center configures itself and then opens.
2. On the licence agreement screen, click Accept.
3. On the Windows Mobile Device Center's Home screen, click Set up your device.
4. Select the information types that you want to synchronise, then click Next.
5. Enter a device name and click Set Up.

When you finish the setup wizard, Windows Mobile Device Center synchronises the PDA automatically. Microsoft® Office Outlook® emails and other information will appear on your device after synchronisation.

**NOTE**

Windows Mobile Device Center works with all versions of Windows 7. However you need to install WMDC and the 64 bit driver update since you are running the 64 bit version. In order to install WMDC and the drivers you must be logged in as a local administrator.

**NOTE**

In Windows Mobile before using WMDC follow the directions described in par. 3.3

**NOTE**

*Visit the following Microsoft Web site for the latest in updates and technical information:
<http://www.microsoft.com/windowsmobile/en-us/help/synchronize/device-synch.mspx>*

4.8.2 Bluetooth® Manager Device Setup

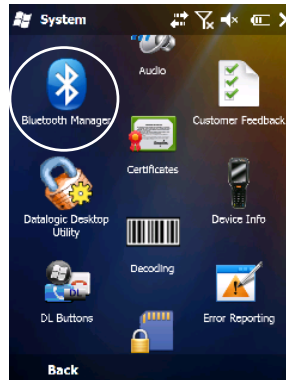


The Bluetooth Device Properties icon will only be visible if Bluetooth hardware has been installed on the unit.

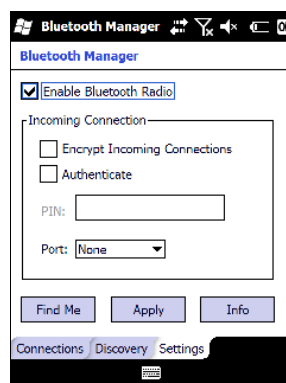
NOTE

Before turning on Bluetooth®, ensure that the two devices are within close range and that both Bluetooth-enabled devices are discoverable.

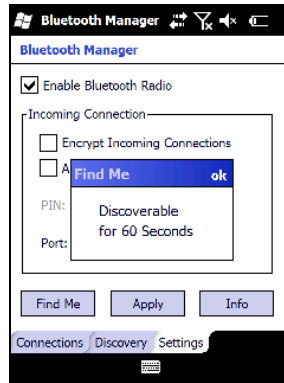
1. Tap Start > Settings > System > Bluetooth Manager to open the Bluetooth® control panel.



2. Tap Settings. The Settings tab allows you to enable or disable the Bluetooth radio and specify settings for Incoming Connections.
3. Select or clear the “Enable Bluetooth Radio” check box:



4. Tap Find Me if you want to make the Elf™ visible to other Bluetooth devices for 60 seconds, allowing them to set up a connection.

**NOTE**

By default, Bluetooth® is turned off. If you turn it on, and then turn off your device, Bluetooth® also turns off. When you turn on your device again, Bluetooth® turns on automatically.

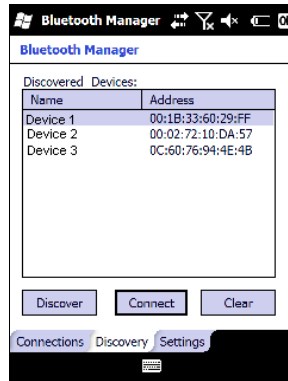
To create a Bluetooth® partnership between your device and another device that has Bluetooth® capabilities, ensure that the two devices are turned on, discoverable, and within close range.

1. Open the Bluetooth® control panel by tapping Start > Settings > System > Bluetooth Manager. > Connections
2. Search for available Bluetooth® Devices by tapping the button for the type of device you want (Printer, Serial or All) or tap Discovery > Discover to skip this step. The Elf™ will search for Bluetooth® Devices within range.

**NOTE**

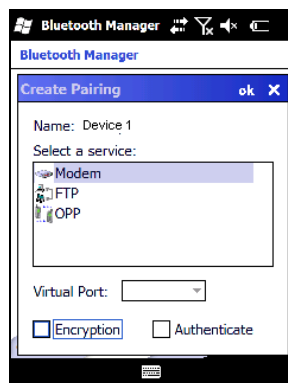
If you attempt to set up a connection when the Bluetooth® Radio is disabled, you will receive a message reminding you that the radio is turned off, and asking you if you want to turn it on. Tap Yes if you need to enable the Bluetooth® Radio.

3. Once searching is complete, Bluetooth® Device Profiles will be displayed in the Discovery tab. You can set up a connection to a device on the list, or clear it from the list by tapping the Clear button:










To set up a connection:

1. Double tap the device you want to activate, or select and then tap Connect. The resulting dialog will display services that are available on the device:



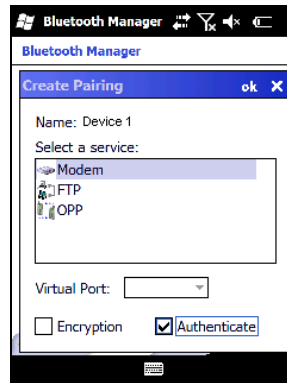
2. Select the service you want to connect to. The following table shows the icons that display for different types of service.

Icon	Service
	Dialup Networking
	Printer
	File Transfer Protocol (FTP) Object Exchange (OBEX)
	Object Push (OPP) Object Exchange (OBEX)
	ActiveSync
	Human Interface Device (HID) - Keyboard
	Serial

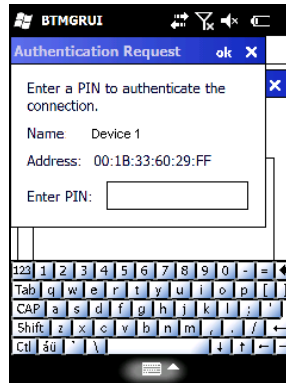
Virtual Port allows you to specify the incoming port, which is used to communicate serially with an incoming device just as if it were a physical COM port. This option is available only if you have selected a Printer or Serial service.

You can also select Encrypt or Authenticate from the Bluetooth® control panel to apply or modify those settings.

1. To require Authentication, tap the checkbox, then tap OK.



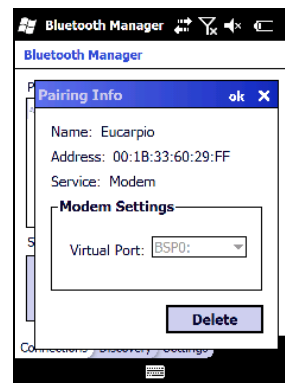
2. The Authentication Request dialog will then open, requesting that you enter a PIN. Use the Input Panel to type in the PIN.



3. Tap OK to complete.

The dialog will also appear when an Authentication request is received from another device.

Once you have set up a Pairing, you can view the settings by double-tapping its name from the Connections tab. Tap the arrow to change the Virtual Port, or Delete to remove the device pairing. Tap Sync to initiate a Sync (available only if the service is an ActiveSync connection).



4.8.3 Windows Mobile Phone

For information on Windows Mobile Phone use and functioning, refer to the Windows Mobile web site: <http://www.microsoft.com/windowsmobile>.

4.9 FIRMWARE UPDATE

The Elf™ is equipped with a tool that implements a firmware update service.

For further information, refer to DFU Reference Guide.

5 TECHNICAL FEATURES

5.1 TECHNICAL DATA

Elf™ Common Features

PHYSICAL CHARACTERISTICS	
DIMENSIONS (LXWXH)	157 x 81x 42 mm (6.18 x 3.18 x 1.65 in)
WEIGHT (DEPENDING ON MODEL)	415 to 440 g (14.6 to 15.5 oz) depending on model (incl. battery)
AUDIO	Loudspeaker Headset
LEDS	Six LEDs Decoding Status/ Keyboard Status/ Charging Status
DISPLAY	Reflective TFT daylight readable color display, allowing both resolution 320 x 240 pixels and 640 x 480, 89 mm (3.5 in) diagonal, 65K color, backlight, touch screen
KEYBOARD	27-key Numeric or 46-key QWERTY backlit keyboard standard. Side scan keys, push to talk and volume setting
OPERATING TEMPERATURE*	-10° +50°C (14° to 122°F)
STORAGE TEMPERATURE	-20° +70°C (-4° to 158°F)
HUMIDITY**	10 to 80% non condensing for temperatures < 40 °C
DROP RESISTANCE***	Withstands 18 drops from 1.5 m (5 ft) onto concrete
ENVIROMENTAL SEALING	IP64 standard for water and dust resistance
ESD PROTECTION	4 KV contact discharge, 8 KV air discharge

* Battery must be charged at a temperature ranging from 0° to +40 °C. For the GSM models the maximum recommended temperature is +35°C. At higher values the charging may slow down.
Close to the limits of the working temperature, some display and/or battery performance degradation may occur.
When the battery is exhausted, the GSM turns off and it is not working until the battery is charged or changed.

** Multiple rapid humidity and/or temperature variations may cause condensing.

*** Multiple drops can permanently damage the device.

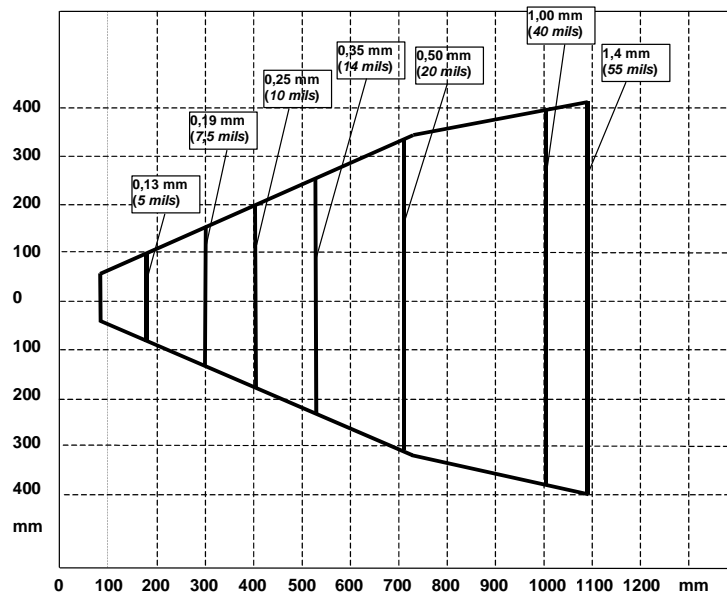
SYSTEM	
OPERATING SYSTEM	Microsoft Windows Mobile 6.5 with Office Mobile 2010: Outlook, Word Mobile, Excel Mobile, PowerPoint Mobile, One Note Mobile and Internet Explorer Mobile 6.0
MICROPROCESSOR	XScale™ PXA310 @ 624 MHz
SYSTEM RAM MEMORY	256 MB
SYSTEM FLASH MEMORY	256 MB (including backup directory for user data & program permanent storage)
POWER SUPPLY	Removable battery pack with rechargeable Li-ion batteries; 3.7 V 3000/5000 mAh (11.10/18.50 Watt hours)
COMMUNICATIONS	
INTERFACES	Micro USB connector: USB 2.0 Client, USB 1.1 Host and Client OTG, also for supplying power; Integrated RS232 up to 115.2 Kbps, USB 2.0 Client, USB 1.1 Host
WIDE AREA NETWORK (WAN)	UMTS HSDPA 850 1900 2100 - GSM/GPRS/EDGE 850 900 1800 1900 MHz for voice and data communication SIM socket under the battery
LOCAL AREA NETWORK (LAN)	Summit IEEE 802.11a/b/g Frequency range: Country dependent, typically 2.4 and 5.2 GHz CCX v4 Security
PERSONAL AREA NETWORK (PAN)	Bluetooth® Wireless Technology IEEE 802.15 Class 2 with EDR
GLOBAL POSITIONING SYSTEM (GPS)	Integrated GPS

READING OPTIONS	
LASER CHARACTERISTICS	
SCANNING RATE	104 ± 12 scan/sec
MINIMUM RESOLUTION	0.10 mm / 4 mils
DEPTH OF FIELD	5 to 64 cm (2 to 25 in), depending on bar code density
SKEW ANGLE	± 50°
PITCH ANGLE	± 65°
AIMING LASER	VLD, wavelength 630–680 nm
BAR CODES	GS1 Databar, EAN/UPC, Code 39, 2/5 Codes, Plessey, Codabar, Code 128, EAN128, MSI, Code 93, Code 11
LASER CLASSIFICATION	VLD - Class 2/II EN 60825-1/CDHR
LED CLASSIFICATION	IEC Class 1M
IMAGER CHARACTERISTICS	
SCANNING RATE	60 frames/sec maximum
MINIMUM RESOLUTION	Linear codes at 3 mils; 2D codes at 5 mils
AIMING LASER	VLD, wavelength 645–665 nm
BAR CODES	UPC A, UPC E, EAN 8, EAN 13, Interleaved 2 of 5, Code 39, Code 39 Full ASCII, Codabar, Code 128, EAN 128, Code 93, MSI, PDF417, Micro PDF, DataMatrix, QR, GS1 Databar, Aztec, Maxicode, POSTNET, PLANET, Japan Post, Australia Post, KIX Code, Royal Mail RM4SCC, USPS 4CB, UPU FICS
LASER CLASSIFICATION	CDRH/IEC Class II
LED CLASSIFICATION	IEC Class 1M
ILLUMINATION SYSTEM	LEDs 620–630 nm

5.2 READING DIAGRAM

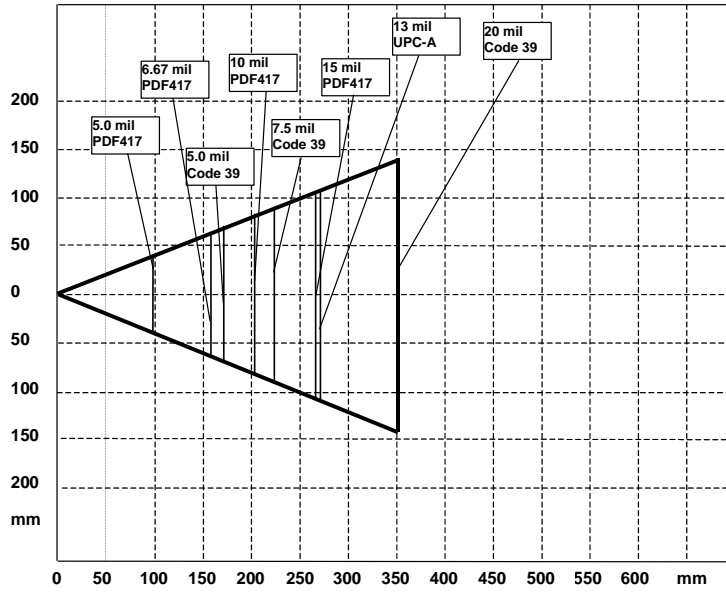
Elf™ 1D

Typical Reading Diagram - Reading Zones (10° skew angle)



Elf™ SE4500-DL

Typical Reading Diagram - Reading Zones (10° skew angle)



6 TEST CODES

High Density Codes

0.25 mm (10 mils)

Code 39



17162

2/5 Interleaved



0123456784

Code 128



test

EAN 13



8 012345 000012

EAN 8



6450 9723

Medium Density Codes

0.38 mm (15 mils)

Code 39



17162

Interleaved 2/5



0123456784

Code 128



test

EAN 13



8 012345 000012

EAN 8



6450 9723

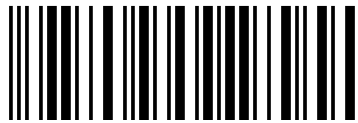
Low Density Codes0.50 mm (20 mils)

Code 39



17162

Interleaved 2/5



0123456784

Code 128



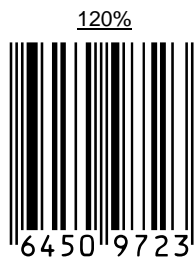
test

EAN 13



8 012345 000012

EAN 8



6450 9723

2D Codes

Datamatrix ECC200



Example

Inverse
Datamatrix ECC200



Example

SAFETY REGULATIONS



NOTE

*Read this manual carefully before performing any type of connection to the Elf™ mobile computer.
The user is responsible for any damages caused by incorrect use of the equipment or by inobservance of the indication supplied in this manual.*

GENERAL SAFETY RULES

- Use only the components supplied by the manufacturer for the specific Elf™ being used.
- Do not attempt to disassemble the Elf™ mobile computer, as it does not contain parts that can be repaired by the user. Any tampering will invalidate the warranty.
- When replacing the battery pack or at the end of the operative life of the Elf™ mobile computer, disposal must be performed in compliance with the laws in force.
- Before using the devices and the battery packs, read par. 2.2.
- Do not submerge the Elf™ in liquid products.
- For further information, refer to this manual and to the Datalogic Mobile web site: www.mobile.datalogic.com.

POWER SUPPLY

This device is intended to be connected to a UL Listed/CSA Certified computer which supplies power directly to the Elf™ or else be supplied by a UL Listed/CSA Certified Power Unit marked "Class 2" or LPS power source rated 5 V, 3.0 A, which supplies power directly to the Elf™ via the power connector of the cable.

The package includes three international plug adapters. The adapters must be plugged in the power supply before the power supply itself is plugged on the wall outlet.

LASER SAFETY

The laser light is visible to the human eye and is emitted from the window indicated in the figure.

This information applies to both laser models and the Elf™ Imager Aiming System.



I	D	F	E
La luce laser è visibile all'occhio umano e viene emessa dalla finestra indicata nella figura.	Die Laserstrahlung ist für das menschliche Auge sichtbar und wird am Strahlaustrittsfenster ausgesendet (siehe Bild).	Le rayon laser est visible à l'oeil nu et il est émis par la fenêtre désignée sur l'illustration dans la figure.	La luz láser es visible al ojo humano y es emitida por la ventana indicada en la figura.
LUCE LASER NON FISSARE IL FASCIO APPARECCHIO LASER DI CLASSE 2 MASSIMA POTENZA DI USCITA: 1 mW LUNGHEZZA D'ONDA EMESSA: 630-680 nm CONFORME A EN 60825-1 (2001)	LASERSTRAHLUNG NICHT IN DER STRAHL BLINKEN PRODUKT DER LASERKLASSE 2 MAXIMALE AUSGANGLEISTUNG: 1 mW WELLENLÄNGE: 630-680 nm ENTSPR. EN 60825-1 (2001)	RAYON LASER EVITER DE REGARDER LE RAYON APPAREIL LASER DE CLASSE 2 MAXIMUM PUISSANCE DE SORTIE: 1 mW LONGUER D'ONDE EMISE: 630-680 nm CONFORME A EN 60825-1 (2001)	RAYO LÁSER NO MIRAR FIJO EL RAYO APARATO LÁSER DE CLASE 2 MÁXIMA POTENCIA DE SALIDA: 1 mW LONGITUD DE ONDA EMITIDA: 630-680 nm CONFORME A EN 60825-1 (2001)

ENGLISH

The following information is provided to comply with the rules imposed by international authorities and refers to the correct use of your mobile computer.

STANDARD LASER SAFETY REGULATIONS

This product conforms to the applicable requirements of both CDRH 21 CFR 1040 Subchapter J and EN 60825-1:2001 at the date of manufacture.

For installation, use and maintenance, it is not necessary to open the device.



CAUTION

Do not attempt to open or otherwise service any components in the optics cavity. Opening or servicing any part of the optics cavity by unauthorized personnel may violate laser safety regulations. The optics system is a factory only repair item.



CAUTION

Use of controls or adjustments or performance of procedures other than those specified herein may result in exposure to hazardous visible laser light.

The product utilizes a low-power laser diode. Although staring directly at the laser beam momentarily causes no known biological damage, avoid staring at the beam as one would with any very strong light source, such as the sun. Avoid that the laser beam hits the eye of an observer, even through reflective surfaces such as mirrors, etc.



CAUTION

Use of optical systems with the scanner will increase eye hazard. Optical instruments include binoculars, microscopes, eye glasses and magnifying glasses.

ITALIANO

Le seguenti informazioni vengono fornite dietro direttive delle autorità internazionali e si riferiscono all'uso corretto del terminale.

NORMATIVE STANDARD PER LA SICUREZZA LASER

Questo prodotto risulta conforme alle normative vigenti sulla sicurezza laser alla data di produzione: CDRH 21 CFR 1040 sezione J e EN 60825-1:2001.

Non si rende mai necessario aprire l'apparecchio per motivi di installazione, utilizzo o manutenzione.



ATTENZIONE

Non tentare di accedere allo scomparto contenente i componenti ottici o di farne la manutenzione.

L'apertura dello scomparto, o la manutenzione di qualsiasi parte ottica da parte di personale non autorizzato, potrebbe violare le norme della sicurezza. Il sistema ottico può essere riparato solamente alla fabbrica.



ATTENZIONE

L'utilizzo di procedure o regolazioni differenti da quelle descritte nella documentazione può provocare un'esposizione pericolosa a luce laser visibile.

Il prodotto utilizza un diodo laser a bassa potenza. Sebbene non siano noti danni riportati dall'occhio umano in seguito ad una esposizione di breve durata, evitare di fissare il raggio laser così come si eviterebbe qualsiasi altra sorgente di luminosità intensa, ad esempio il sole. Evitare inoltre di dirigere il raggio laser negli occhi di un osservatore, anche attraverso superfici riflettenti come gli specchi.



ATTENZIONE

L'uso di strumenti ottici assieme allo scanner può aumentare il pericolo di danno agli occhi. Tali strumenti ottici includono cannocchiali, microscopi, occhiali e lenti di ingrandimento.

DEUTSCH

Die folgenden Informationen stimmen mit den Sicherheitshinweisen überein, die von internationalen Behörden auferlegt wurden, und sie beziehen sich auf den korrekten Gebrauch vom Terminal.

NORM FÜR DIE LASERSICHERHEIT

Dies Produkt entspricht am Tag der Herstellung den gültigen EN 60825-1:2001 und CDRH 21 CFR 1040 Subchapter J Normen für die Lasersicherheit.

Es ist nicht notwendig, das Gerät wegen Betrieb oder Installations-, und Wartungs-Arbeiten zu öffnen.



ACHTUNG

Unter keinen Umständen darf versucht werden, die Komponenten im Optikhohlraum zu öffnen oder auf irgendwelche andere Weise zu warten. Das Öffnen bzw. Warten der Komponenten im Optikhohlraum durch unbefugtes Personal verstößt gegen die Laser-Sicherheitsbestimmungen. Das Optiksistem darf nur werkseitig repariert werden.



ACHTUNG

Jegliche Änderungen am Gerät sowie Vorgehensweisen, die nicht in dieser Betriebsanleitung beschrieben werden, können ein gefährliches Laserlicht verursachen.

Der Produkt benutzt eine Laserdiode. Obwohl zur Zeit keine Augenschäden von kurzen Einstrahlungen bekannt sind, sollten Sie es vermeiden für längere Zeit in den Laserstrahl zu schauen, genauso wenig wie in starke Lichtquellen (z.B. die Sonne). Vermeiden Sie es, den Laserstrahl weder gegen die Augen eines Beobachters, noch gegen reflektierende Oberflächen zu richten.



ACHTUNG

Die Verwendung von Optiksystemen mit diesem Scanner erhöht die Gefahr einer Augenbeschädigung. Zu optischen Instrumenten gehören unter anderem Ferngläser, Mikroskope, Brillen und Vergrößerungsgläser.

FRANÇAIS

Les informations suivantes sont fournies selon les règles fixées par les autorités internationales et se réfèrent à une correcte utilisation du terminal.

NORMES DE SECURITE LASER

Ce produit est conforme aux normes de sécurité laser en vigueur à sa date de fabrication: CDRH 21 CFR 1040 sous-chapitre J et EN 60825-1:2001.

Il n'est pas nécessaire d'ouvrir l'appareil pour l'installation, l'utilisation ou l'entretien.



ATTENTION

Ne pas essayer d'ouvrir ou de réparer les composants de la cavité optique. L'ouverture de la cavité optique ou la réparation de ses composants par une personne non qualifiée peut entraîner le nonrespect des règles de sécurité relatives au laser. Le système optique ne peut être réparé qu'en usine.



ATTENTION

L'utilisation de procédures ou réglages différents de ceux donnés ici peut entraîner une dangereuse exposition à lumière laser visible.

Le produit utilise une diode laser. Aucun dommage aux yeux humains n'a été constaté à la suite d'une exposition au rayon laser. Eviter de regarder fixement le rayon, comme toute autre source lumineuse intense telle que le soleil. Eviter aussi de diriger le rayon vers les yeux d'un observateur, même à travers des surfaces réfléchissantes (miroirs, par exemple).



ATTENTION

L'utilisation d'instruments optiques avec le scanneur augmente le danger pour les yeux. Les instruments optiques comprennent les jumelles, les microscopes, les lunettes et les verres grossissants.

ESPAÑOL

Las informaciones siguientes son presentadas en conformidad con las disposiciones de las autoridades internacionales y se refieren al uso correcto del terminal.

NORMATIVAS ESTÁNDAR PARA LA SEGURIDAD LÁSER

Este aparato resulta conforme a las normativas vigentes de seguridad láser a la fecha de producción: CDRH 21 CFR 1040 Sección J y EN 60825-1:2001.

No es necesario abrir el aparato para la instalación, la utilización o la manutención.



ATENCIÓN

No intente abrir o de ninguna manera dar servicio a ninguno de los componentes del receptáculo óptico. Abrir o dar servicio a las piezas del receptáculo óptico por parte del personal no autorizado podría ser una violación a los reglamentos de seguridad. El sistema óptico se puede reparar en la fábrica solamente.



ATENCIÓN

La utilización de procedimientos o regulaciones diferentes de aquellas descritas en la documentación puede causar una exposición peligrosa a la luz láser visible.

El aparato utiliza un diodo láser a baja potencia. No son notorios daños a los ojos humanos a consecuencia de una exposición de corta duración. Eviten de mirar fijo el rayo láser así como evitarían cualquiera otra fuente de luminosidad intensa, por ejemplo el sol. Además, eviten de dirigir el rayo láser hacia los ojos de un observador, también a través de superficies reflectantes como los espejos.



ATENCIÓN

El uso de sistemas ópticos con el escáner aumentará el riesgo de daños oculares. Los instrumentos ópticos incluyen binoculares, microscopios, lentes y lupas.

LED CLASS

According to EN60825-1:2001, the Elf™ 1D models which use the green spot LED are also CLASS 1 LED PRODUCTS.

APPARECCHIO LED CLASSE 1 IEC	PRODUIT LED DE CLASSE 1 IEC
PRODUKT LED KLASSE 1 IEC	PRODUCTO LED DE CLASE 1 IEC

According to EN60825-1:2001, the Elf™ 2D models which use the illuminator LED are also CLASS 1M LED PRODUCTS.

LED LIGHT	LUCE LED
DO NOT VIEW DIRECTLY	NON OSSERVARE DIRETTAMENTE
WITH OPTICAL INSTRUMENTS	CON STRUMENTI OTTICI
CLASS 1M LED PRODUCT	APPARECCHIO LED DI CLASSE 1M

LAMPE LED	LUZ LED
NE PAS OBSERVER DIRECTEMENT	NO OBSERVAR DIRECTAMENTE
AVEC INSTRUMENTS OPTIQUES	CON INSTRUMENTOS ÓPTICOS.
APPAREIL LED DE CLASSE 1M	PRODUCTO LED DE CLASE 1M

LED-LICHT
NICHT DIREKT MIT OPTISCHEN
INSTRUMENTEN BETRACHTEN.
GERÄTEKLASSE 1M.

RADIO COMPLIANCE

In radio systems configured with mobile computers and access points, the frequencies to be used must be allowed by the spectrum authorities of the specific country in which the installation takes place. Be absolutely sure that the system frequencies are correctly set to be compliant with the spectrum requirements of the country.

The Radio modules used in this product automatically adapt to the frequencies set by the system and do not require any parameter settings.

Information for the User

ENGLISH

Contact the competent authority responsible for the management of radio frequency devices of your country to verify any possible restrictions or licenses required.

Refer to the web site <http://europa.eu.int/comm/enterprise/rte/spectr.htm> for further information.

ITALIANO

Prendi contatto con l'autorità competente per la gestione degli apparati a radio frequenza del tuo paese, per verificare eventuali restrizioni o licenze. Ulteriori informazioni sono disponibili sul sito:

<http://europa.eu.int/comm/enterprise/rte/spectr.htm>.

FRANÇAIS

Contactez l'autorité compétente en la gestion des appareils à radio fréquence de votre pays pour vérifier d'éventuelles restrictions ou licences. Pour tout renseignement vous pouvez vous adresser au site web:

<http://europa.eu.int/comm/enterprise/rte/spectr.htm>.

DEUTSCH

Wenden Sie sich an die für Radiofrequenzgeräte zuständige Behörde Ihres Landes, um zu prüfen ob es Einschränkungen gibt, oder eine Lizenz erforderlich ist. Weitere Informationen finden Sie auf der Web Seite:

<http://europa.eu.int/comm/enterprise/rte/spectr.htm>.

ESPAÑOL

Contacta la autoridad competente para la gestión de los dispositivos de radio frecuencia de tu país, para verificar cualesquiera restricciones o licencias posibles requerida. Además se puede encontrar mas información en el sitio Web:<http://europa.eu.int/comm/enterprise/rte/spectr.htm>.

FCC COMPLIANCE

FCC Regulations:

- This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

- This device 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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

- The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

RF EXPOSURE INFORMATION (SAR)

This model device meets the government's requirements for exposure to radio waves. This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government.

The exposure standard for wireless devices employs a unit of measurement known as the Specific Absorption Rate, or SAR. The SAR limit set by the FCC is 1.6W/kg. Tests for SAR are conducted using standard operating positions accepted by the FCC with the device transmitting at its highest certified power level in all tested frequency bands. Although the SAR is determined at the highest certified power level, the actual SAR level of the device while operating can be well below the maximum value. This is because the device is designed to operate at multiple power levels so as to use only the power required to reach the network. In general, the closer you are to a wireless base station antenna, the lower the power output.

While there may be differences between the SAR levels of various devices and at various positions, they all meet the government requirement.

The FCC has granted an Equipment Authorization for this model device with all reported SAR levels evaluated as in compliance with the FCC RF exposure guidelines. SAR information on this model device is on file with the FCC and can be found under the Display Grant section of <http://www.fcc.gov/oet/fccid> after searching on the below FCC IDs:
FCC ID: U4G-0040.

This device is compliant with SAR for general population /uncontrolled exposure limits in ANSI/IEEE C95.1-1999 and had been tested in accordance with the measurement methods and procedures specified in OET Bulletin 65 Supplement C.

INDUSTRY CANADA COMPLIANCE

Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

This device and its antenna(s) must not be co-located or operating in conjunction with any other antenna or transmitter.

The County Code Selection feature is disabled for products marketed in the US/Canada.

This EUT is compliant with SAR for general population/uncontrolled exposure limits in IC RSS-102 and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528. This equipment should be installed and operated with minimum distance 1,5cm between the radiator & your body.

SAR COMPLIANCE

This product has been tested and found to comply with the following standards:

- OET BULLETIN 65 SUPPLEMENT C: evaluating compliance with FCC guidelines for human exposure to radio frequency electromagnetic fields.
- EN 50360:2001: product standard to demonstrate the compliance of mobile phones with the basic restrictions related to human exposure to electromagnetic fields (300 MHz – 3 GHz).
- EN 62311:2008: assessment of electronic and electrical equipment related to human exposure restrictions for electromagnetic fields (0 Hz – 300 GHz).

PATENTS

This product is covered by one or more of the following patents.

Design Pat.: EP 1,180,681.

US Pat.: 5,198,649; 5,311,000; 5,440,110; 5,481,098; 5,493,108; 5,686,716; 5,992,740; 6,412,698; 6,415,978; 6,454,168; 6,478,224; 6,513,714; 6,561,427; 6,585,157; 6,808,114 B1; 6,997,385 B2; 7,108,170; 7,387,246 B2.

European Pat.: 681,257 B1; 789,315 B1; 1,128,315 B1; 1,396,811 B1; 1,413,971 B1.

Additional patents pending.

CTIA COMPLIANCE

- Do not disassemble or open crush, bend or deform, puncture or shred
- Do not modify or remanufacture, attempt to insert foreign objects into the battery, immerse or expose to water or other liquids, expose to fire, explosion or other hazard.
- Only use the battery for the system for which it is specified
- Only use the battery with a charging system that has been qualified with the system per this standard. Use of an unqualified battery or charger may present a risk of fire, explosion, leakage, or other hazard.
- Do not short circuit a battery or allow metallic conductive objects to contact battery terminals.
- Replace the battery only with another battery that has been qualified with the system per this standard, IEEE-Std-1725-2006. Use of an unqualified battery may present a risk of fire, explosion, leakage or other hazard.
- Promptly dispose of used batteries in accordance with local regulations
- Battery usage by children should be supervised.
- Avoid dropping the phone or battery. If the phone or battery is dropped, especially on a hard surface, and the user suspects damage, take it to a service center for inspection.
- Improper battery use may result in a fire, explosion or other hazard.
- The device shall only be connected to products that bear the USB-IF logo or have completed the USB-IF compliance program.

WEEE COMPLIANCE



Informazione degli utenti ai sensi della Direttiva Europea 2002/96/EC

L'apparecchiatura che riporta il simbolo del bidone barrato deve essere smaltita, alla fine della sua vita utile, separatamente dai rifiuti urbani.

Smaltire l'apparecchiatura in conformità alla presente Direttiva consente di:

- evitare possibili conseguenze negative per l'ambiente e per la salute umana che potrebbero invece essere causati dall'errato smaltimento dello stesso;
- recuperare materiali di cui è composto al fine di ottenere un importante risparmio di energia e di risorse.

Per maggiori dettagli sulle modalità di smaltimento, contattare il Fornitore dal quale è stata acquistata l'apparecchiatura o consultare la sezione dedicata sul sito www.mobile.datalogic.com.

Information for the user in accordance with the European Commission Directive 2002/96/EC

At the end of its useful life, the product marked with the crossed out wheeled wastebin must be disposed of separately from urban waste.

Disposing of the product according to this Directive:

- avoids potentially negative consequences to the environment and human health which otherwise could be caused by incorrect disposal
- enables the recovery of materials to obtain a significant savings of energy and resources.

For more detailed information about disposal, contact the supplier that provided you with the product in question or consult the dedicated section at the website www.mobile.datalogic.com.

Information aux utilisateurs concernant la Directive Européenne 2002/96/EC

Au terme de sa vie utile, le produit qui porte le symbole d'un caisson à ordures barré ne doit pas être éliminé avec les déchets urbains.

Éliminer ce produit selon cette Directive permet de:

- éviter les retombées négatives pour l'environnement et la santé dérivant d'une élimination incorrecte
- récupérer les matériaux dans le but d'une économie importante en termes d'énergie et de ressources

Pour obtenir des informations complémentaires concernant l'élimination, veuillez contacter le fournisseur auprès duquel vous avez acheté le produit ou consulter la section consacrée au site Web www.mobile.datalogic.com.

Información para el usuario de acuerdo con la Directiva Europea 2002/96/CE

Al final de su vida útil, el producto marcado con un símbolo de contenedor de basura móvil tachado no debe eliminarse junto a los desechos urbanos.

Eliminar este producto de acuerdo con la Directiva permite de:

- evitar posibles consecuencias negativas para el medio ambiente y la salud derivadas de una eliminación inadecuada
- recuperar los materiales obteniendo así un ahorro importante de energía y recursos

Para obtener una información más detallada sobre la eliminación, por favor, póngase en contacto con el proveedor donde lo compró o consultar la sección dedicada en el Web site www.mobile.datalogic.com.

Benutzerinformation bezüglich Richtlinie 2002/96/EC der europäischen Kommission

Am Ende des Gerätelebenszyklus darf das Produkt nicht über den städtischen Hausmüll entsorgt werden. Eine entsprechende Mülltrennung ist erforderlich.

Beseitigung des Produkts entsprechend der Richtlinie:

- verhindert negative Auswirkungen für die Umwelt und die Gesundheit der Menschen
- ermöglicht die Wiederverwendung der Materialien und spart somit Energie und Ressourcen

Weitere Informationen zu dieser Richtlinie erhalten sie von ihrem Lieferanten über den sie das Produkt erworben haben, oder besuchen sie unsere Homepage unter www.mobile.datalogic.com.

GLOSSARY

Access Point

A device that provides transparent access between Ethernet wired networks and IEEE 802.11 interoperable radio-equipped mobile units. Hand-held mobile computers, PDAs or other devices equipped with radio cards, communicate with wired networks using Access Points (AP). The mobile unit (mobile computer) may roam among the APs in the same subnet while maintaining a continuous, seamless connection to the wired network.

Applet

Diminutive form of app (application), it refers to simple, single-function programs that often ship with a larger product. Programs such as Windows' Calculator, File Manager, and Notepad are examples of applets.

Barcode

A pattern of variable-width bars and spaces which represents numeric or alphanumeric data in binary form. The general format of a barcode symbol consists of a leading margin, start character, data or message character, check character (if any), stop character, and trailing margin. Within this framework, each recognizable symbology uses its own unique format.

Baud Rate

A measure for data transmission speed.

Bit

Binary digit. One bit is the basic unit of binary information. Generally, eight consecutive bits compose one byte of data. The pattern of 0 and 1 values within the byte determines its meaning.

Bluetooth®

A standard radio technology using a proprietary protocol. The onboard Bluetooth® module in the mobile computer is compatible with the 1.1 protocol.

Byte

On an addressable boundary, eight adjacent binary digits (0 and 1) combined in a pattern to represent a specific character or numeric value. Bits are numbered from the right, 0 through 7, with bit 0 the low-order bit. One byte in memory can be used to store one ASCII character.

Decode

To recognize a bar code symbology (e.g., Codabar, Code 128, Code 3 of 9, UPC/EAN, etc.) and analyze the content of the bar code scanned.

Depth of Field (DOF)

The portion of a scene that appears acceptably sharp in the image. Although a lens can precisely focus at only one distance, the decrease in sharpness is

gradual on each side of the focused distance, so that within the DOF, the unsharpness is imperceptible under normal viewing conditions.

EDGE

Enhanced Data rates for GSM Evolution (EDGE) is a backward-compatible digital mobile phone technology that allows improved data transmission rates, as an extension on top of standard GSM. EDGE is considered a 3G radio technology and is part of ITU's 3G definition.

EEPROM

Electrically Erasable Programmable Read-Only memory. An on-board non-volatile memory chip.

Ethernet

The standard local area network (LAN) access method. A reference to "LAN," "LAN connection" or "network card" automatically implies Ethernet. Defined by the IEEE as the 802.3 standard, Ethernet is used to connect computers in a company or home network as well as to connect a single computer to a cable modem or DSL modem for Internet access.

Firmware

Firmware is a software program or set of instructions programmed on a hardware device. It provides the necessary instructions for how the device communicates with the other computer hardware. Firmware is typically stored in the flash ROM of a hardware device. While ROM is "read-only memory," flash ROM can be erased and rewritten because it is actually a type of flash memory.

Flash Disk

Non-volatile memory for storing application and configuration files.

GSM

Global System for Mobile communication. It is a standard for digital cellular communications, currently used in the 900 MHz and 1800 MHz bands.

Host

A computer that serves other mobile computers in a network, providing services such as network control, database access, special programs, supervisory programs, or programming languages.

WLAN

A Wireless Local Area Network links devices via a wireless distribution method (typically spread-spectrum or OFDM radio), and usually provides a connection through an access point to the wider internet. This gives users the mobility to move around within a local coverage area and still be connected to the network.

IEEE 802.11

A set of standards carrying out wireless local area network (WLAN) computer communication in the 2.4, 3.6 and 5 GHz frequency bands. They are created and maintained by the IEEE LAN/MAN Standards Committee.

Liquid Crystal Display (LCD)

A display that uses liquid crystal sealed between two glass plates. The crystals are excited by precise electrical charges, causing them to reflect light outside according to their bias. They use little electricity and react relatively quickly. They require external light to reflect their information to the user.

Light Emitting Diode (LED)

A low power electronic light source commonly used as an indicator light. It uses less power than an incandescent light bulb but more than a Liquid Crystal Display (LCD).

Null modem cable

RS-232 serial cable where the transmit and receive lines are crosslinked. In some cables there are also handshake lines crosslinked. In many situations a straight through serial cable is used, together with a null modem adapter. The adapter contains the necessary crosslinks between the signals.

Pairing

A Bluetooth pairing occurs when two Bluetooth devices agree to communicate with each other and establish a connection.

Piconet

A piconet is a Bluetooth PAN that links up to eight devices. Each piconet is controlled by one master device, and up to seven slave devices at any one time. Any device may be a member of more than one piconet, changing its membership as a user moves from one area to another.

RAM

Random Access memory. Data in RAM can be accessed in random order, and quickly written and read.

RF

Radio Frequency.

RTC

Real Time Clock.

TDMA

Time division multiple access (TDMA) is digital transmission technology that allows a number of users to access a single radio-frequency (RF) channel without interference by allocating unique time slots to each user within each channel. The TDMA digital transmission scheme multiplexes three signals over a single channel. The current TDMA standard for cellular divides a single

channel into six time slots, with each signal using two slots, providing a 3 to 1 gain in capacity over advanced mobile-phone service (AMPS). Each caller is assigned a specific time slot for transmission.

USB

Universal Serial Bus. Type of serial bus that allows peripheral devices (disks, modems, printers, digitizers, data gloves, etc.) to be easily connected to a computer. A "plug-and-play" interface, it allows a device to be added without an adapter card and without rebooting the computer (the latter is known as hot-plugging). The USB standard, developed by several major computer and telecommunications companies, supports data-transfer speeds up to 12 megabits per second, multiple data streams, and up to 127 peripherals.

WWAN

Stands for "Wide Area Network." It is similar to a Local Area Network (LAN), but it is not limited to a single location and it uses Mobile telecommunication cellular network technologies such as UMTS, GPRS, CDMA2000, GSM, CDPD, Mobitex, HSDPA or 3G to transfer data. WWAN connectivity allows a user with a laptop and a WWAN card to surf the web, check email, or connect to a Virtual Private Network (VPN) from anywhere within the regional boundaries of cellular service.

WPAN

A Wireless Personal Area Network is a personal area network - a network for interconnecting devices centered around an individual person's workspace - in which the connections are wireless. Typically, a wireless personal area network uses some technology that permits communication within about 10 meters - in other words, a very short range.

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