Dolphin™ Handheld Computer and HomeBase™ User's Guide

Rev. 1.1

HAND HELD®
PRODUCTS

Copyright

Trademarks

Contacting Hand Held Products

North America, Asia and Pacific Rim:
7510 East Independence Boulevard, Suite 100
Charlotte, North Carolina 28227-9411
USA
(TEL) +1-(704)-537-1444
(FAX) +1-(704)-532-4191

Latin America:
Avenida 6 de Agosto
Edif. Hilda, Piso 2, Of. 202-B
La Paz
Bolivia
(TEL) (591-2) 43-1056
(FAX) (591-2) 43-4150

Europe, Middle East and Africa:
P.O. Box 280225602 JA Eindhoven
The Netherlands
(TEL)+31-40 24 24 486
(FAX)+31-40 24 25 672

The United Kingdom:
Wessex House
Oxford Road
Newbury Berkshire, RG14 1PA
United Kingdom
(TEL)+44 (0) 7000 426343
(FAX)+44 (0) 7074 426343

Suisse:
GOMARO s.a.
La Rosaire 5
CH 1123 Aclens
(TEL) +41 (0) 21 869 97 70
(FAX) +41 (0) 21 869 96 02

Australia:
45 A Avalon Parade
P.O. Box 256
Avalon, NSW 2107
Australia
(TEL)+61-2-9918-3203
(FAX)+61-2-9918-3201

Table of Contents

Before You Begin

Welcome

C ongratulations on the purchase of your new Dolphin handheld computer/bar code scanner. You have made a wise choice in selecting the Dolphin, a device known world-wide for its ergonomic shape, light weight and single-handed data collection features.

The patented shape allows true, one-handed operation and fits either hand comfortably. Built to last, the Dolphin's ruggedly built case houses a 386 microprocessor and DOS operating system that is easily programmable with standard programming tools like Microsoft Visual C/C++, Borland C++, or Hand Held's family of Simplicity Software.

Dolphin is one of the most durable devices available, and is designed to withstand repeated five-foot drops onto a concrete floor. It also resists extreme temperatures, humidity levels and dust conditions.

The Dolphin's collection of features also includes long-lasting Nickel Metal Hydride (NiMH) batteries, a large, easy-to-read 8 line x 20 character backlit display that can display text or graphics, a natural scan and viewing angle, a scan engine capable of reading all standard bar code symbologies and two keypad options.

Load up the Dolphin with your custom software application and the ultimate data collection solution for your business fits in the palm of your hand.

The Dolphin Handheld Computer/HomeBase™ User Guide is designed to provide you with the information you need to make the most of your new Dolphin. Sections on the basics, safety, battery use, accessories, and service make this guide a complete source of information.

Safety

The Dolphin handheld computer/bar code scanner meets or exceeds the requirements of all applicable standards organizations for safe operation. However, as with any electrical equipment, the best way to ensure safe operation is to know the possible risks.
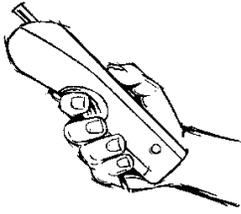
The following safety guidelines are designed to protect both you and others around you. Please read them carefully before using your Dolphin.

Required Safety Labels

The Dolphin uses a low power Visible Laser to scan bar codes. Short-term exposure to CDRH Class II laser light is not known to be harmful. As with any bright light source, such as the sun, you should avoid direct eye exposure. The following are required safety labels, as they should appear on the back panel of the Dolphin:

CAUTION
LASER LIGHT - DO NOT STARE INTO BEAM
CLASS II LASER PRODUCT
670nm Laser - 1.0mW Max. Output

AVOID EXPOSURE - Laser light is emitted from this aperture.

HAND HELD PRODUCTS®
DOLPHIN ™ LASER SCANNER
Q.A. BY:
VERSION:
SERIAL NUMBER: 1234567
MANUFACTURING MONTH: WEEK: YEAR:
U.S. and foreign patents pending. CAUTION - Laser light when open. DO NOT STARE INTO BEAM. No user serviceable parts. Opening voids warranty. Product conforms to U.S.A. DHHS 21 CFR subchapter J. Made in U.S.A. of U.S. and imported parts.
Call from U.S.A. & Internat.: + 1-704-537-1444
Call from EUR., Afr, M-East.: + 31-40-242-4486
Visit our web site at http://www.handheld.com
HAND HELD PRODUCTS, INC.
CHARLOTTE, N.C., 28227-9411, U.S.A.

RF Energy
The Dolphin RF™ terminal is designed to comply with the most current applicable standards on safe levels of RF energy developed by the Institute of Electrical and Electronics Engineers (IEEE) and the American National Standards Institute (ANSI) and has been recommended for adoption by the Federal Communications Commission (FCC). In addition, the Dolphin RF complies with the specifications for an intenti*Figure 1 Required Safety Labels for Dolphin*   he FCC's code of federal regulations. The Dolphin RF also complies with the European specifications ETS

300328 (Type Test of Radio LAN to European standards) and ETS 300826 (EMC Testing of radio equipment).

FCC Statement

The Dolphin Batch and Dolphin RF terminals both comply with part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. Devices may not cause harmful interference.

2. Devices must accept any interference received, including interference that may cause undesired operation.

Canadian Equipment Identification Statement

This Class A digital apparatus meets all the requirements of the Canadian Interference-Causing Equipment Regulations.

Interference

Pacemakers, Hearing Aids and Other Electrically Powered Devices

Most manufacturers of medical devices adhere to the IEC 601-1-2 standard. This standard requires devices to operate properly in an EM Field with a strength of 3V/m over a frequency range of 26 to 1000MHz.

The maximum allowable field strength emitted by the Dolphin is 0.3V/m according to Subpart B of Part 1 of the FCC rules. Therefore, the Dolphin RF will have no effect on medical devices that meet the IEC specification.

Microwaves

The radio in the Dolphin RF terminal operates on the same frequency band as a microwave oven. Therefore, if you use a microwave within range of the Dolphin RF terminal you may notice performance degradation in your wireless network. However, both your microwave and your wireless network will continue to function.

The Dolphin Batch terminal does not contain a radio, and therefore, is not affected by microwave ovens.

Batteries

- Use only the battery supplied with your Dolphin or a replacement battery supplied, recommended, or approved by Hand Held Products, Inc.

- Replace a defective battery immediately as it could damage the Dolphin terminal.

- Never throw a used battery in the trash. It contains heavy metals and should be recycled according to local guidelines.

- Don't short-circuit a battery or throw it into a fire. It can explode and cause severe personal injury.

- Excessive discharge damages a battery. Recharge the battery when your Dolphin indicates low battery power.
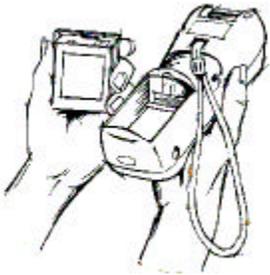
- Although your battery can be recharged many times, it will eventually be depleted. Replace it after the recommended usage period (about 500 charge cycles for the 1200 mAh NiMH battery) or if the battery does not hold a charge.

- If you are not sure the battery or charger is working properly, please send it to Hand Hand Products or an authorized Hand Held Products service center, for inspection.

The Dolphin handheld computer/bar code scanner meets or exceeds all applicable standards and has been manufactured to the highest level of quality.

Care and Cleaning of the Dolphin
When needed, clean the laser engine window and the LCD display with a clean non-abrasive, lint-free cloth.

Chapter 1 Getting Started

Summarizes the Dolphin's features, functions and accessories and getting it started for the first time.
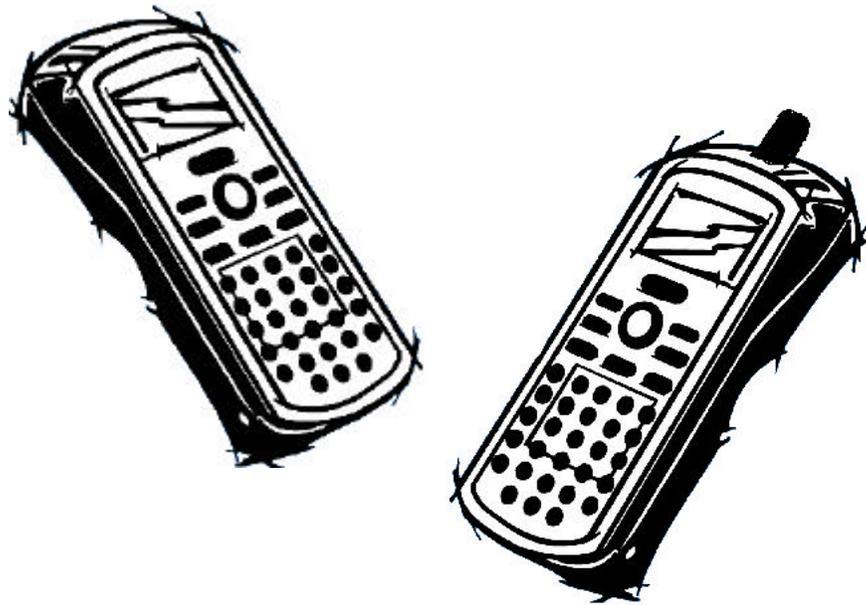
About the Dolphin

The Dolphin is a handheld computer and bar code scanner designed for easy, single-handed data collection. It has a 386 33 MHz microprocessor that runs with GS-DOS and is PC-compatible.

Accessories for the Dolphin

The Dolphin is part of a data collection system that includes accessories specifically designed for vehicle, desktop and hub operations. Accessories available include serial and networkable communications/charging cradles, desktop "gang chargers" and vehicle mounted charging/communication cradles.

You can use these accessories with the Dolphin:
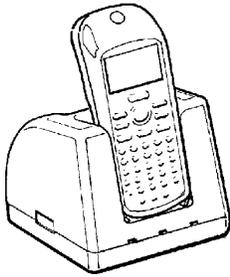
Dolphin HomeBase   Dolphin terminal charging, one-slot auxiliary battery charging and communication station, includes power adapter.

Dolphin HomeBase power adapter   Replacement power adapter for Dolphin HomeBase. Note: Use only power adapters approved for use by Hand Held Products. Failure to do so may result in improper operation or damage to the unit.
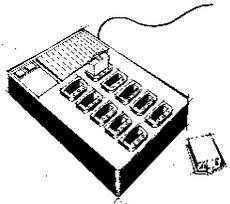
10 Slot Battery Charger for Dolphin   Charges and reconditions 10 batteries in under four hours. Supports 90-264V.

VehicleBase Vehicle Kit for Dolphin   Battery charging and communications cradle providing connectivity to any serial device including printers, radio modems, GPS, on-board computers and vehicle monitoring systems.

Wrist Strap for Dolphin   A convenient way to carry the Dolphin. *(Note: Lanyard ring for attaching strap not available with Dolphin RF.)*

Holster   Another convenient way to carry the Dolphin. Available in leather or cordura, a rugged synthetic fabric.

NiMH Battery Pack   Nickel Metal Hydride (NiMH) 3.6V rechargeable battery for the Dolphin.

6' RS-232 Serial Cable   Connects HomeBase to your desktop PC.

Contact your Value-Added Reseller for more information. For details about how to install or use any of these accessories, refer to the documentation provided with the product.

Dolphin Models and Options

Hand Held Product's family of Dolphin handheld portable data collection terminals includes these models:

The Dolphin™ Batch terminal is a DOS programmable handheld computer/bar code scanner with a unique, ergonomic shape designed for single-handed use. The basic terminal has 2MB RAM and 2MB FLASH EEPROM memory. It also features an IrDA infrared transceiver for data communications.

The Dolphin™ with iButton Reader handheld computer integrates the basic functionality of the Dolphin Batch terminal with iButton™ technology that allows the terminal to read and write data from and to iButtons. The iButton reader is a function and feature extension of the Batch terminal.

The Dolphin RF™ terminal integrates the basic functionality of the Batch terminal with a 2.4GHz RF interface that allows the terminal to communicate with a host computer via a wireless local area network (WLAN).

These following options are available for the Dolphin terminal:

.

Dolphin Batch	Dolphin RF
36-key alphanumeric keypad **or** 20-key numeric keypad with shifted alpha characters	36-key alphanumeric keypad **or** 20-key numeric keypad with shifted alpha characters
Standard, High-Visibility, Long-Range or High Density scan engines	Standard, High-Visibility, Long-Range or High Density scan engines
2 MB RAM with 2 MB non-volatile FLASH memory (expandable to 4, 6, or 10 MB)	2 MB RAM with 2 MB non-volatile FLASH memory **or** 2 MB RAM with 8 MB non-volatile FLASH memory
No scan engine (manual entry only)	No scan engine (manual entry only)
iButton reader	Terminal emulation software and keypad overlays for IBM 3270, IBM 5250 and DEC VT220 emulation.

Bar Code Symbologies Supported

Symbologies supported by the Dolphin terminal are:

Code 3 of 9 (Code 39), Interleaved 2 of 5 (I 2 of 5), EAN, Codabar, Code 11, Code 128, Plessey MSI, Code 93 and Universal Product Code (UPC)

Using Dolphin for the First Time

This section will show you how to:

1. Be sure that you've received all items included with your Dolphin order

2. Charge the battery

3. Turn the Dolphin on and off

4. Set the date and time

1 Checking Your Package

Inspect the package to see that the following standard items and accessories (if ordered) are included:

• Dolphin handheld computer/bar code scanner

• Battery (1200 mAh, Nickel Metal Hydride [NiMH])

• Dolphin Handheld Computer/HomeBase User's Guide

• Dolphin HomeBase

• AC-DC Power Adapter for Dolphin HomeBase

• Dolphin Operating System and Development System Software

2 Charging the Battery

CAUTION: Use only 3.6V battery packs provided by Hand Held Products. The use of any other battery pack in the Dolphin terminal will void your warranty and may result in damage to the Dolphin terminal or battery.

The terminal's NiMH battery is shipped discharged of all power so you must charge it before using for the first time. There are three ways to charge the battery:

• Place the battery in the auxiliary battery well on the Dolphin HomeBase™. Time to Charge: 3 hours

- Place the battery in the 10-slot Dolphin multiple battery charger. Time to Charge: 3 hours

- Install the battery in the Dolphin, place the Dolphin in the HomeBase and connect the HomeBase to an external power source. Time to Charge: 5 ½ hours

For help, see the chapter on the Dolphin. To learn more about managing the terminal's battery power, see *"Maintaining the Dolphin's Batteries"* in   Chapter 2.

Inserting the Battery Pack
1. Hold the Dolphin with the front panel (keypad) facing down.

2. Insert the end without the locking tab into the bottom of the battery opening and snap the battery into place with a hinging motion. The battery case serves as the back cover of the Dolphin.

Removing the Battery Pack
1. Hold the Dolphin with the front panel (keypad) facing down.

2. Push the locking tab on the battery pack down and pull the battery out from the Dolphin terminal with a hinging motion.
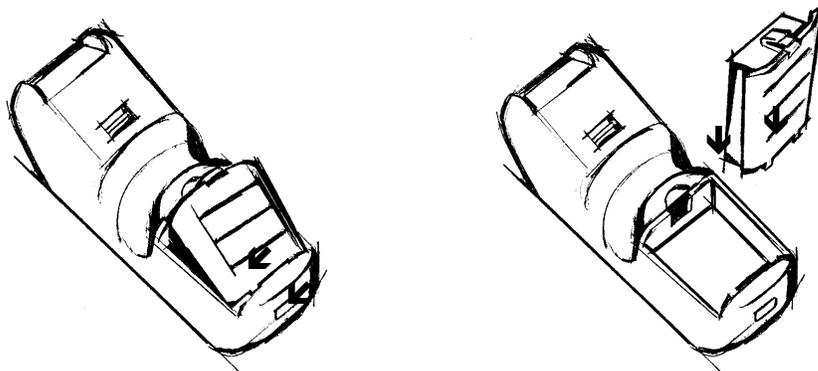
Figure 2 Inserting and Removing the Battery

3 Turning the Dolphin On And Off

Turning On the Dolphin

1. Install the charged battery pack in the Dolphin.

2. Hold the Dolphin in the palm of your hand so that you can press the ON/SCAN key easily with your thumb.

3. Press the ON/SCAN key to turn the Dolphin on. Your Dolphin will boot up just like a desktop PC and the title screen for the HHP Demo Application will appear on the display.

   If the title screen does not appear on the display of your Dolphin, the HHP Demo Application has been removed from your terminal. Therefore, you will see a DOS prompt on the screen. Example: C:\   or   A:\ .

Note: If using the Dolphin for first time or if the terminal has been without a battery pack for more than 30 minutes and you are now inserting a battery, you may receive a CMOS error when the terminal boots up. Don't worry, the terminal is OK. This simply means that the internal back-up battery needs to be recharged and the date and time need to be reset. To recharge the internal backup battery and reset the date and time, insert a fully charged battery in the Dolphin and then use the DOS date and time function to set the correct date and time. The internal back-up battery requires a minimum of 5 hours of charging time in order to perform and maintain the system as described on page 28.

Turning the Dolphin Off

The Dolphin is never actually turned off. To conserve power, the Dolphin goes into "sleep mode" when it is inactive for a programmed period of time as defined by your application. The screen is blank when the Dolphin is in "sleep mode."

4 Setting the Date and Time

Use the DOS date and time function to set the correct date and time for your Dolphin terminal.

To set the date on an alphanumeric Dolphin:

1. Enter <DATE> at the Dolphin's DOS prompt.

2. Press NUM LOCK to put the Dolphin in numeric mode.

3. Enter the new date <mm-dd-yy>.

4. Press <ENTER>.

To set the date on a numeric Dolphin:

1. Press <SHIFT> to put the Dolphin in alpha mode.

2. Enter <DATE> at the Dolphin's DOS prompt. See the section called *Using the Numeric Keypad* in Chapter 2 for more information.

3. Press <SHIFT> to put the Dolphin back in numeric mode.

4. Enter the new date <mm-dd-yy>.

5. Press <ENTER>.

To enter the new time, enter <TIME> at the Dolphin's DOS prompt instead of <DATE> and follow the directions for the Dolphin model you are using.

Chapter 2 Dolphin Basics

Describes system features and explains how to use the Dolphin's keypad, display, batteries, drives and scanner.

System Features

CPU
The Dolphin's computing power is provided by a highly integrated AMD ELAN SC310 386SX 33 MHz microprocessor.

Disk Drives
The Dolphin contains two disk drives that provide storage for system files, applications, and data. A third drive is also present if you purchase the FLASH expansion option.

Drive A
Drive A contains 256K executable FLASH EEPROM to store system utilities and to initialize the boot process. This drive is read-only and is not usable by the developer/end-user.

Drive C
Drive C is a 2MB or 8MB FLASH virtual hard drive used for program and data storage.

Drive D
If you add the expanded memory module to your Dolphin Batch terminal, it will appear as Drive D. Up to 8MB of additional FLASH memory can be added via the FLASH expansion module. *Note: This option is not available for the Dolphin RF.*

Front Panel Physical Features

This section describes features on the Dolphin's front panel. The alphanumeric and numeric Dolphins have identical back panels.
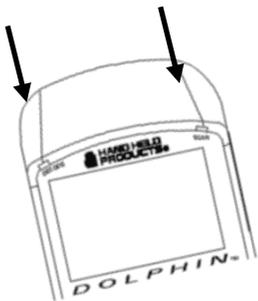
Light Emitting Diodes (LED)
The red LED located at the upper right corner of the LCD display is labeled 'SCAN'. This LED illuminates when the user presses the ON/KEY key and activates the scan engine.

The green LED located at the upper left corner of the LCD display is labeled 'DECODE.' This LED illuminates when the bar code software successfully decodes a bar code. Both LEDs are software programmable.

Liquid Crystal Display (LCD)

The alphanumeric, scrollable LCD consists of nine rows with 20 character positions per row and 119 x 73 graphics pixels, which are software addressable. The electroluminescent backlight allows you to view the display in low light conditions. To conserve power, the backlight is automatically turned off after 30 seconds. The on/off function and contrast is software programmable.

Note: The ninth row is used for system icons and application-defined icons.

Speaker

The Dolphin Batch terminal's internal speaker emits a sound level of 80dB at 10 cm. The sound level for the Dolphin RF terminal's external speaker is 90dB at 10 cm.

RF Antenna

The Dolphin RF terminal's 1.36 inch (34.5 mm) antenna is a unity gain, helically-loaded, monopole antenna.

Using the Alphanumeric Keypad

The Dolphin's alphanumeric, splash-resistant keypad has 36 epoxy coated keys. The keyboard's yellow background enhances the readability of the numeric and special character keys.

The Dolphin's ON/SCAN key "wakes" the terminal from sleep mode. Its position also allows convenient one-handed bar code scanning.

The SHIFT key toggles the Dolphin from alpha to numeric mode and back and, in combination with other keys, allows you to enter special characters.

The F1, F2, F3 and F4 keys are user-definable function keys and may be programmed for a variety of functions.

The ENTER key confirms data

The BKSP key moves you to move the cursor back one space each time the key is pressed.

The LIGHT key toggles the LCD backlight on and off.

The NUM LOCK key toggles between the alphabetic and numeric modes.

Figure 3 Dolphin Alphanumeric Keypad

Key Combinations For Keypad Functions and Special Characters

Use the key combinations listed below to access certain keypad functions or to use special characters that are not defined on the Dolphin keypad.

Key Combination	Function/Special Character
ESC (SHIFT + BKSP**)**	The ESC function performs a cancel action.
SPC (SHIFT + U)	The SPC function moves the cursor forward one space at a time.
CLR (SHIFT + A)	The CLR function erases the line of data just entered, if the ENTER key has not yet been pressed.
SHIFT + F	#
SHIFT + K	@
SHIFT + P	&
SHIFT + V	$
SHIFT + W	%
SHIFT + X	!
SHIFT + Y	\
SHIFT + Z	:
SHIFT + E	*
SHIFT + J	/
SHIFT + LIGHT	Changes Contrast

Figure 4 Key Combinations for Alphanumeric Keypad

Using the Numeric Keypad

The Dolphin's numeric, splash-resistant keypad has 20 epoxy coated keys. The large, amber-color keys are large, easy-to-read, and comfortably spaced to help prevent errors in data entry. Digits can be entered without using the shift key.

Though designed primarily for numeric data entry, you can use the SHIFT key to switch between numeric and alpha modes or to use special characters.

The Dolphin's ON/SCAN key "wakes" the terminal from sleep mode. Its position also allows convenient one-handed bar code scanning.

The F1, F2, F3 and F4 keys are user-definable function keys. These keys may be programmed for a variety of functions.

The SHIFT key toggles the Dolphin from numeric to alpha mode and back. You can also enter special characters.

The ENTER key confirms data entry.

The BKSP key moves the cursor back one space each time the key is pressed.

The SP key moves the cursor forward one space at a time.

Figure 5 Dolphin Numeric Keypad

Key Combinations For Keypad Functions and Special Characters

Key Combination	Function
ESC (SHIFT + BKSP)	The ESC function performs a cancel action.
LIGHT (SHIFT + SP)	This action toggles the LCD backlight on and off. Press the SHIFT key to put the Dolphin in alpha mode and press the SP key once.
CONTR (SHIFT + SP+SP)	The CONTR function adjusts the LCD contrast. Press the SHIFT key to put the Dolphin in alpha mode and press the SP key twice. Use the **F1** and **F2** keys to adjust the contrast up or down. When finished, press the BKSP key.
CALC	This function is undefined. However, it can be programmed by a custom application to load a calculator utility.

Figure 6 Key Combinations and What They Do
Numeric Keypad

Entering Alpha and Special Characters

1. Press the **SHIFT** key to switch the numeric keypad to alpha mode. This is indicated by the **<ABC>** symbol indicated on the LCD. Each numeric key, as well as the "." key has three letters or symbols listed beside it.

2. To display the first letter or symbol next to a key, press the numeric key once.

3. To display the second letter/symbol, press the key next to the desired letter/symbol **twice** within one second.

4. To display the third letter/symbol, press the key next to the desired letter/symbol **three** times within one second.

For example, to enter a letter "G" into the Dolphin terminal, press the **SHIFT** key to put the Dolphin in alpha mode. Press the "9" key **once** and the letter "G" will be entered.

To enter a "T" into the Dolphin terminal, press the **SHIFT** key to put the Dolphin in alpha mode. Press the "1" key **twice** and the letter "T" will be entered.

Display Symbols

Here is a list of the symbols that can appear on the LCD display of your Dolphin and their meanings.

Battery Charge

Battery charging symbol blinks while main battery in the Dolphin terminal is charging in the Dolphin HomeBase. Located in lower left-hand corner of the LCD.

Indicates charge level of the Dolphin terminal's main battery when the terminal is in use. The charge symbol decreases in size as the charge level drops. Located in lower left-hand corner of the LCD.

When this symbol is blinking, the battery's charge is critically low and you should recharge it as soon as possible.

For information on battery capacity and charging, see the section on Maintaining the Dolphin's Batteries later in this chapter.

NOTE

The battery charging symbol is only an estimate of the remaining battery life.

Keyboard Mode

These symbols indicate which mode is operational on the keyboard and are located next to the battery charge indicator. Use the SHIFT key to toggle between numeric to alpha mode on Dolphin.

ABC   Alpha mode -- alphabetic characters are active

123   Numeric mode -- numeric characters are active

Keypad Overlays for Terminal Emulation

Optional terminal emulation keypad overlays are available for the alphanumeric Dolphin. These overlays are similar to alphanumeric keypad, but contain additional keys available on an IBM 3270, 5250 or VT220 keyboard.

Back Panel Features

This section describes features on the Dolphin's back panel. The alphanumeric and numeric Dolphins have identical back panels.

Laser Engine

Lanyard Eyelet
(*not available on Dolphin RF*)

Battery Well

Reset Switch

Battery Charging Contacts

Infrared Communications Port
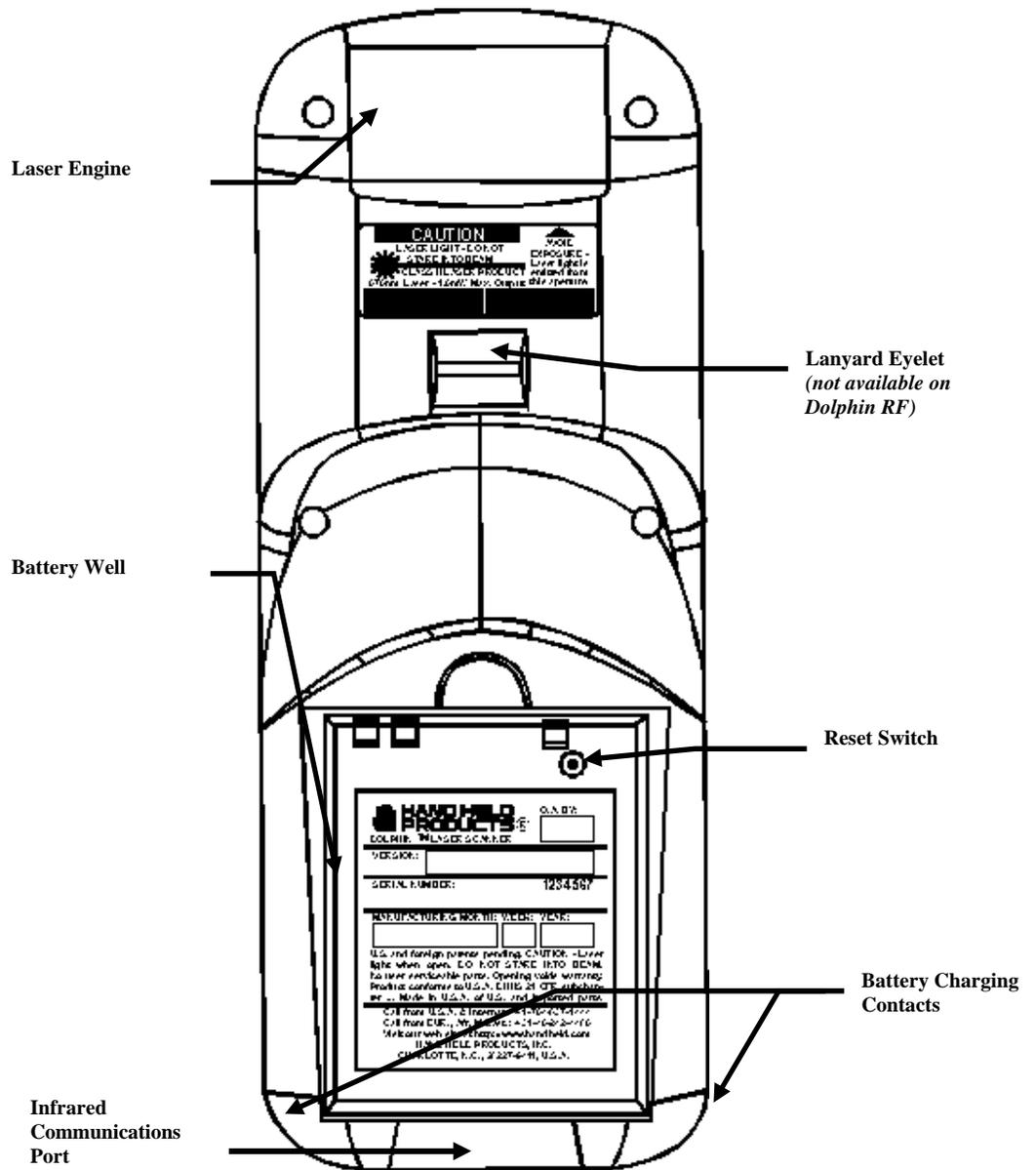
Figure 7 Dolphin Back Panel

Laser Engine

The Dolphin is currently available with five scanning options:

- Standard range
- Long range
- High density scanning
- High visibility scanning
- No scan engine

The laser engine converts reflected light into a digital pattern that represents the bar code data. A clear window covers the laser engine to protect it from dust and dirt.

Lanyard Eyelet for Optional Wrist Strap

This feature allows a strap to be attached to the Dolphin terminal so that it can be conveniently secured around the wrist or hooked on to a belt. Not available on the Dolphin RF.

Battery Well

The Battery Well is a recessed area on the back of the Dolphin which holds the 3.6V battery pack.

Reset Switch

The Reset Switch is located inside the Dolphin terminal and is accessible through a small opening within the battery well. To reset the Dolphin, remove the label covering the opening and press the reset switch with a small blunt object such as a paper clip.

Infrared Communications Port

The Infrared Communications Port allows the Dolphin to communicate through the Dolphin HomeBase to a host serial device.

Battery Charging Contacts

When the Dolphin is placed in the main well of the Dolphin HomeBase, the Dolphin's battery pack is charged through these contacts.

Maintaining the Dolphin's Batteries

CAUTION: Use only the 3.6V battery packs provided by Hand Held Products. The use of any other battery pack in the Dolphin Terminal will void your warranty and may result in damage to the Dolphin Terminal or battery.

There are two batteries in the Dolphin:

NOTE

Never insert the Dolphin into the HomeBase without the NiMH main battery pack inserted.

Internal NiMH Backup Battery
Located inside the Dolphin, this battery backs up the RAM and clock when the NiMH main battery is discharged or removed from the terminal.

NiMH Battery Pack
The battery pack is the primary power source for operating the Dolphin.

Internal NiHM Backup Battery

The Dolphin's internal backup battery prevents the terminal from being reset if you need to remove and replace the main battery pack. The battery retains RAM data and allows the real-time clock to remain operational for up to 30 minutes when the battery pack is removed. If the internal back-up battery becomes discharged of power, it requires a minimum of 5 hours of charging time in order to perform and maintain the system as described above.

The internal backup battery is charged by the Dolphin's main battery pack. If the terminal is left without the main battery pack for more than 30 minutes, the internal backup battery needs to be recharged.

Note: Data and programs on Drives C and D remain safe even if the internal backup battery fails. However, you must reset the real-time clock using the DOS Time and Date function.

NOTE

Return the Dolphin to an authorized service center when the internal battery needs to be replaced.

Follow these guidelines to maximize the life of the Dolphin's backup battery:

- Keep a charged NiMH battery pack in the Dolphin. The internal battery will prematurely discharge if there is not at least a partially charged battery in the terminal.

- Put the Dolphin in the HomeBase when the terminal is not in use.

NiMH Battery Pack

The 3.6V, 1200 mAh Nickel-Metal-Hydride (NiMH) battery pack is the primary power source for the Dolphin. Other Nickel-Metal-Hydride batteries may be approved by Hand Held Products, Inc. to work with your Dolphin. Contact Hand Held for more information.

The 1200 mAh NiMH battery is designed to operate in temperature range of -10 to 50 °C (14 to 122° F). For maximum performance, charge the batteries between 10 and 35 °C (50 and 95° F).

Performance specifications for a fully charged 1200 mAh NiMH battery for the Dolphin provides approximately:

20 hours of usage in a Dolphin Batch terminal with a full battery charge

10 hours of usage in a Dolphin RF terminal with a full battery charge

Keep a charged battery pack in the Dolphin at all times to conserve the internal back-up battery. When you remove a battery pack, insert another battery pack in the Dolphin. The internal battery will prematurely discharge if there is not at least a partially charged battery in the terminal.

Servicing the Battery Pack
For optimum battery performance, it is recommended that you service, or calibrate the battery once per month. For more information, see the section on the *Service Aux Batt* feature of the HomeBase in Chapter 4.

Charging the Battery Pack
You can recharge an individual battery pack using the auxiliary battery well of the Dolphin HomeBase or the Dolphin 10-Slot Multiple Battery Charger. Both accessories use a charging method that senses when the battery pack is fully charged and then drops to a trickle charge to keep the battery pack at full capacity.
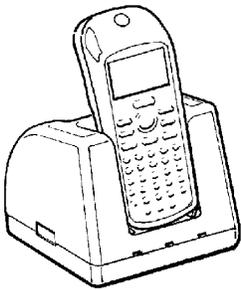
For more details, see the section on *Charging Batteries in the HomeBase* in Chapter 4.
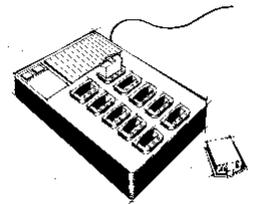
Chapter 3   Dolphin™ with iButton Reader Handheld Computer

Describes the iButton reader and how to use it.

About Dolphin with iButton Reader Handheld Computer

The Dolphin with iButton Reader handheld computer integrates the basic functionality of the Dolphin Batch terminal with iButton™ technology that allows the terminal to read and write data from and to iButtons.

The iButton reader is a function and feature extension of the Batch terminal. Like the batch version, Dolphin iB can be equipped with up to 10 Mb of flash memory and will support all scan engine versions available for the Dolphin platform. Refer to Chapters 1 and 2 in this manual for more on basic operation of the Dolphin terminal and accessories available.

What is an iButton?

iButton technology was developed by Dallas Semiconductor. The iButton is a 16mm computer chip housed in a stainless steel can. The iButton can be worn by a person or attached to an object for up-to-date information at the point of use.

There are a variety of buttons with different features. Each starts with a guaranteed-unique registration number engraved in the silicon. Some buttons add computer memory to store typed text; information can be updated as often as needed with a simple, momentary contact.

Working with iButtons

In order to communicate with an iButton, the Dolphin iButton reader must make proper contact with the iButton during the time frame of the communication session. Intermittent contact can result in slow data communication or need for re-attempts.

iButton Reader

To transfer data between iButtons and Dolphin iButton reader:

Make sure that both the iButton and the iButton reader are clean and dry.

Touch the iButton reader against the iButton you want to communicate with. The reader and the iButton must have full surface-to-surface contact for data transfer to be completed.

Keep the iButton reader touched against the iButton until the application generates a beep or displays a message on the Dolphin's screen indicating the data transfer is completed.

iButtons supported by Dolphin with iButton Reader

The types of iButtons that Dolphin iButton reader may read and write data to depends on the software development tools used.

Read/write iButton types that Dolphin iButton reader can read/write to include:

- DS 197X range   EEPROM Devices

- DS 199X range   NVRAM devices (with the exception of
                          DS1990A, which is read only)

- DS 1954   Crypto iButton

- DS 1963   Monetary iButton

Compatible read-only iButton types that Dolphin iButton reader can read include:

- DS 1990A   Serial number iButton

- DS 1920   Temperature iButton

Compatible read/write iButtons that the Dolphin iButton reader can read include:

- DS 198X   EPROM devices

Developing Applications with Dolphin with iButton Reader

Hand Held Products has a Software Developer's Kit (SDK) that includes the following:

1. API for iButton functions that support the most commonly used iButton types and concern file handling and data manipulation of iButton specific features. May be used in conjunction with Dolphin Development System.

2. Demo software and source code examples

Note: In addition, developers need the MicroSoft C/C^{++} or Borland C/C^{++} compiler.

Chapter 4 Using the Dolphin HomeBase

Summarizes the features of the Dolphin HomeBase and explains how to use it.

Hub of the System

As the hub of your Dolphin system, the Dolphin HomeBase performs three important functions – battery management, communications and storage.

Intelligent Battery Charging

The HomeBase uses a charging method that senses when the battery pack is fully charged and then drops to a trickle charge to keep the battery pack at full capacity. If calibrated once per month, the battery pack does not need to be discharged before recharging because this method protects the battery from damage caused by overcharging.

IrDA Optical Communications

The IR communications port on the HomeBase connects with the IrDA port on the Dolphin. Reliable data communications at speeds of up to 115 baud can be transmitted by the HomeBase. With no pins or contacts to break, IrDA will work reliably for years.

HomeBases can be networked together for mass programming and charging. Units are individually addressable, allowing each HomeBase to be automatically loaded with the right information and files for its user.

Convenient Storage

The Dolphin HomeBase is a safe and convenient storage receptacle for the Dolphin terminal and a spare charged battery pack.

HomeBase Parts and Functions

Serial Port

Dolphin Terminal
Well

Charging Main
Batt LED

COMM LED

Charging Aux
Batt LED
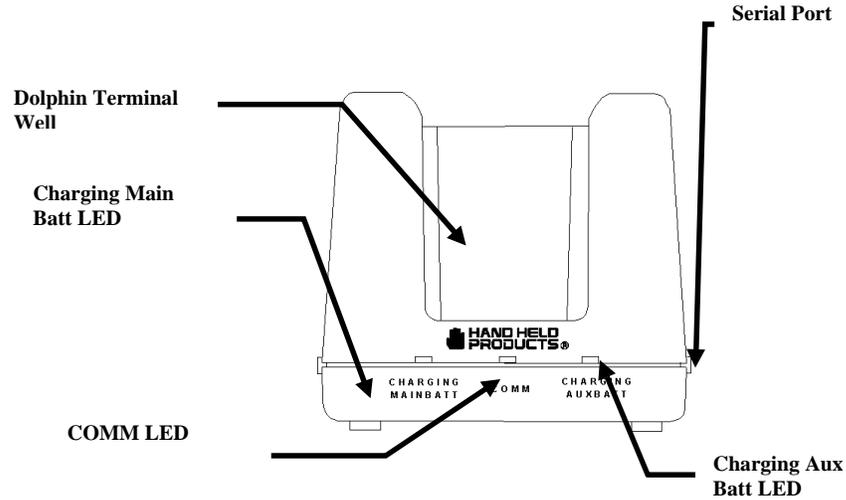
Figure 8 HomeBase Front Panel

Front Panel
The Dolphin's front panel has one slot:

Dolphin Terminal Well You put the Dolphin this well to communicate with a host
device and to charge the Dolphin's batteries.

LEDs There are three LEDs that you can use to monitor the status of battery charging
communications:

1. Charging Main Batt LED   Turns solid green when the Dolphin Terminal is
   properly seated into the Dolphin HomeBase.

2. COMM LED   Indicates the status of data transfer between the Host Device and the
   Dolphin Terminal as described below:

Comm LED	Description
Red LED	Data is being sent from the Host Device to the Dolphin HomeBase.
Green LED	Data is being sent from the Dolphin HomeBase to the Host Device.
Orange LED	Data is being sent at high data rates.

Figure 9 Data Transfer States

3. Charging Aux Batt LED   Indicates the status of the auxiliary battery pack in the
    Dolphin HomeBase as described in the table below:

Charging Aux Batt LED	Description
OFF	Battery pack not properly inserted into the auxiliary battery well, or the HomeBase has no power
Red	Battery discharging
Blinking red LED	Charge cycle initializing
Blinking orange LED	Battery charging at the maximum rate
Solid green LED	Trickle charging; battery pack is ready for use

Figure 10 Battery Charging States

Back Panel
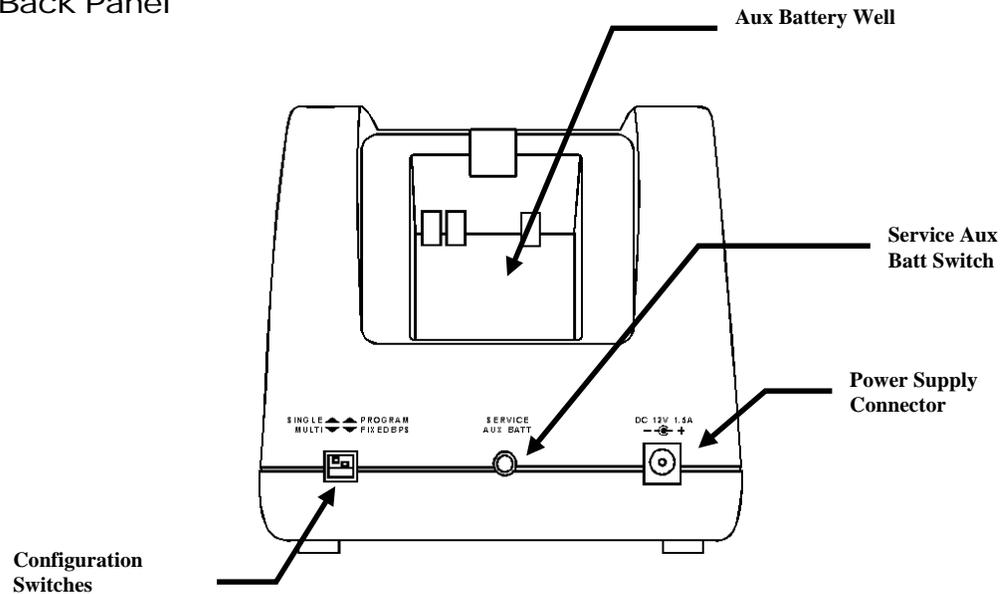
Figure 11 Back Panel of HomeBase

There is an auxiliary battery well, two configuration switches, a discharge button, and a
power supply connector:

Auxiliary battery well Insert a battery into the well to charge a second battery and you will always have a spare. The auxiliary battery well can also service your battery pack.

Configuration switches Use these switches to select the network and communications modes for your Dolphin.

Service Aux Batt switch Press and hold this button for four seconds to service the battery in the auxiliary battery well. For maximum battery life, the battery should be serviced, or calibrated once a month. The Charging AUX BATT LED is red while the battery is discharging and changes to blinking red when the charging cycle begins. The battery is ready to use when the light turns green.

Power supply connector Use this connector to attach a power supply to the HomeBase. The power supply provides 12V DC input for communications and battery charging.

Side Panels

There is a main communications port on one side and a multi-HomeBase-port on the other side:

Main Communications Port Use a standard serial cable to connect this port to a host RS-232 device if the Dolphin HomeBase is the first unit of HomeBase network. Otherwise, the main communications port connects to another Dolphin HomeBase Multi-HomeBase Port to form a daisy-chained network. See pinout definitions in the section on *Setting Up the Dolphin HomeBase* in Chapter 5.

Figure 12 HomeBase Side Panel Main Communications Port

Multi-HomeBase Port Use this port to form a Dolphin HomeBase Network. This port mates with the next HomeBase's main communications port to form an addressable network. *Note: The Multi-HomeBase Port can not be used for communications to standard serial devices.*
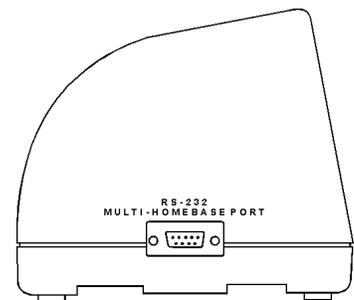
Figure 13 HomeBase Side Panel Multi-HomeBase Port

Getting Started

Setting Up The Dolphin HomeBase

Set the Dolphin HomeBase on any dry, stable surface such as a desktop. Before mounting the Dolphin HomeBase, check to ensure that all AC wall transformers have a nearby electrical outlet. Be sure to provide enough work space with good lighting for the user to view and operate the Dolphin Terminal while it is in the Dolphin HomeBase.

Connect the Dolphin HomeBase to the host computer or other device by plugging an RS-232 serial cable into the Main Comm Port on the side of the HomeBase. Since the location for RS-232 ports varies on different devices, check with your host system operator, or the host computer/peripheral setup manual, to tell you the location of the RS-232 port on the host device.

CAUTION

Using a non-HHP wall transformer will void your warranty and can result in serious damage to the Dolphin HomeBase circuitry.

Connect the power supply to the Dolphin HomeBase. Plug the AC transformer into the Dolphin HomeBase 12 Volt DC power supply connector. The AC wall transformer provided can power only one Dolphin HomeBase. If you are using the Dolphin HomeBase to form a network, each HomeBase must have its own individual wall transformer.

Hand Held Products recommends that you leave the Dolphin HomeBase connected to its power source at all times, so that it is always ready to use.

Charging Batteries In The HomeBase

CAUTION: Use only the 3.6V battery packs provided by Hand Held Products. The use of any other battery pack in the Dolphin Terminal will void your warranty and may result in damage to the Dolphin Terminal or battery.

With the Dolphin HomeBase, you can charge a Dolphin terminal and a spare NiMH battery pack simultaneously. The HomeBase charges the terminal and the spare battery pack independently.

When you insert a battery into the Dolphin HomeBase, it charges the battery at the highest rate possible. The HomeBase uses a charging method that senses when the battery pack is fully charged and then drops to a trickle charge to keep the battery pack at full capacity. You do not need to discharge the battery pack before recharging because this method protects the battery from damage caused by overcharging. A dead battery will charge to full capacity in approximately three hours.

The Dolphin Terminal can be stored indefinitely in the HomeBase without damage to the terminal, battery packs, or the HomeBase. Keep the HomeBase plugged in so that the Dolphin Terminal's battery pack stays fully charged.

Charging A Dolphin Terminal

1. Insert a battery pack into the Dolphin Terminal.

2. Place the terminal, laser engine window up and the LCD visible, in the Dolphin Terminal Well of the Dolphin HomeBase.

3. Let it glide down into the well until it stops.

4. Once the Dolphin Terminal is properly seated, the Charging Main Batt LED on the HomeBase will be solid GREEN.
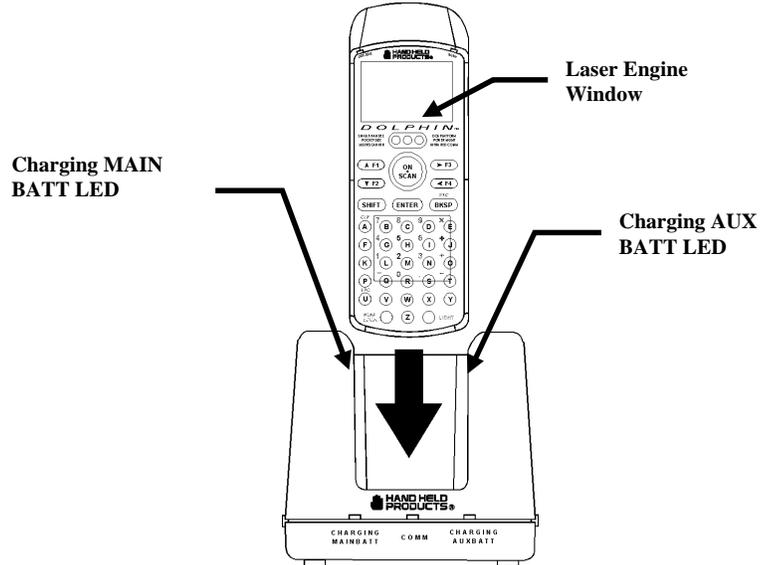
Figure 14 Inserting the Dolphin terminal into the HomeBase

Charging an Additional NiMH Battery Pack

1. Insert an NiMH battery pack with the battery contacts pointing upward into the Dolphin HomeBase auxiliary battery well.
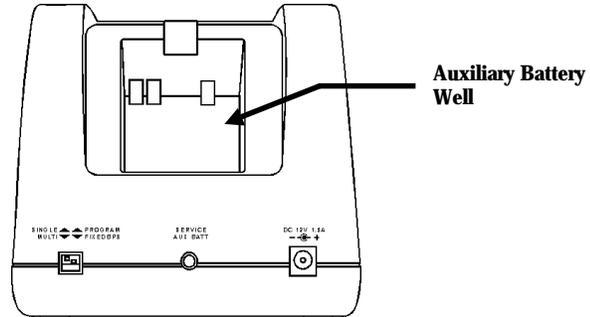
Figure 15 Rear View Dolphin HomeBase

Once the battery is inserted into the Dolphin HomeBase you can use the CHARGING AUXBATT LED to monitor the charging progress. See Figure 10 for a summary of each charging state.

Servicing the Battery

For maximum battery life, the battery should be serviced, or re-calibrated, once a month. Place the battery in the HomeBase's auxiliary battery well. Press and hold the SERVICE AUX BATT button for four seconds to begin the re-calibration process. The CHARGING AUXBATT LED is red while the battery is discharging and changes to blinking red when the charging cycle begins and orange when charging at the maximum rate. The battery is ready to use when the light turns green. See Figure 11 for more on the LED status.

Chapter 5 Setting Up Dolphin for Communications

Explains how to set up and configure the Dolphin Terminal Dolphin HomeBase to communicate with other devices and how to create a Dolphin HomeBase network.

43

Setting Up For Communications

The Dolphin Terminal and Dolphin HomeBase support RS-232 communications through the Main Communications Port DB9 connector on the side of the HomeBase. The HomeBase translates the RS-232 signals from the host computer into infrared signals to communicate with the Dolphin Terminal.

The HomeBase RS-232 interface allows the Dolphin Terminal to communicate to a personal computer, modem, or any standard RS-232 device using a standard serial cable and communications software.

Follow these steps to set up the Dolphin HomeBase and Dolphin Terminal for communications:

1. Set up the Dolphin HomeBase.

2. Set-up the Dolphin Terminal.

3. Follow the data transfer sequence as described by your application.

Setting up the Dolphin HomeBase

Connecting the Cables

You connect the Dolphin HomeBase to a host computer, printer or any other standard RS-232 device with an RS-232 cable. The wiring of your cable depends on whether the other device is set up as a DCE (Data Communications Equipment) or DTE (Data Terminal Equipment) device.

The Dolphin HomeBase Main Communication Port is configured as a DCE device. To communicate with a DTE device such as a computer, use a standard (or straight-through) RS-232 cable. To communicate with a DCE device, use either a null modem adapter in line with a standard RS-232 cable, or a null-modem serial cable.

You can make your own cables by following the pin configuration in the chart below. To do so, you must determine if your host RS-232 device is 9-pin or 25-pin, and whether it is configured as a DCE or DTE device.

HomeBase /Host Port (DCE)	IBM AT DB9 (DTE)	IBM XT DB25 (DTE)	Modem DB25 (DCE)
2 (RD)	2	3	2
3 (TD)	3	2	3
5 (SG)	5	7	7
4 (DTR)	4	20	6
6 (DSR)	6	6	20
7 (RTS)	7	4	5
8 (CTS)	8	5	4

Figure 16 Pin Configuration

Use the appropriate cable to connect each device to the Main Comm Port for a single Dolphin HomeBase or to the Multi-HomeBase Port if you are creating a Dolphin HomeBase network.

Setting the Configuration Switches

Use these switches to select the network and communications modes for your Dolphin HomeBase. If you are configuring the HomeBase for a single Dolphin Terminal, the switch must be in the 'Single' position for proper basic operation. The switch must be set to 'Multi' for proper network operation if you are creating a HomeBase network.

Modes of Operation

Through the Command Mode, the host application software provides command instructions for configuring a single Dolphin HomeBase or a network of HomeBases for communications. Once configured, the HomeBase(s) is in Transparent Mode and ready for communications.

Command Mode

You can configure a single Dolphin HomeBase or a whole network and select units for communications via the host application by entering the Command Mode. Data transmission is not possible while the Dolphin HomeBase network is in this mode.

Go into Command Mode by entering an escape sequence that informs the HomeBase network that it will be receiving commands from the host device or application. The escape string is:

<ESC>HHP

where **<ESC>** is an ASCII 27 character. The escape string should be surrounded by a 100 millisecond period of line silence. When sending commands, the escape string must precede the command string. The HomeBase automatically exits Command Mode after receiving each command.

Programming commands used for configuring single Dolphin HomeBases include Version Number and Baud Rate Selection. You configure HomeBase networks using the Baud Rate Selection, Address Assignment and Device Selection programming commands. See the sections on *Configuring A Single Dolphin HomeBase* and *Creating a HomeBase Network* for details.

Transparent Mode
When the Dolphin HomeBase is selected by the host application and ready for communications, it is in Transparent Mode. In this mode, the HomeBase facilitates point-to-point communication between the host device and the Dolphin Terminal. Data sent through the RS-232 link is passed directly to and from the Dolphin Terminal via the Infrared Link between the terminal and the HomeBase.

Configuring a Single Dolphin HomeBase

To prepare a single Dolphin HomeBase for communications, you must enter the Command Mode to configure the version number and select the baud rate.

Version Number
To configure the version number for the Dolphin HomeBase:

1. Enter or send the escape and command strings:

    <ESC>HHPV*n*

    where ***n*** is the version number of the Dolphin HomeBase.

This command will return the version number but is not needed for communications.

Baud Rate Selection
The Dolphin HomeBase baud rate is set to 9600 at the factory. Use the configuration switches on the HomeBase's back panel to select the network and communications modes for your Dolphin. The following table outlines the configuration switch settings:

NOTE

The configuration switches are checked at power up. Changes in the switch settings will not be recognized until power is turned off and then back on.

Switch	Setting	Function
1	SINGLE (UP)	Single HomeBase only
2	FIXED BPS (DOWN)	Baud rate fixed at 9600
2	PROGRAM (UP)	Baud rate can be programmed

Figure 17 Configuration Switch Settings on HomeBase for Single HomeBase

To ensure reliable communications, leave Switch 2 in the 'FIXED BPS' position and configure your communications software for 9600 baud. When Switch 2 is in the 'PROGRAM' position, the baud rate can be changed using the following procedure:

1. Enter or send the escape and command strings:

    <ESC>HHPB*n*

    where *n* is the ASCII number corresponding to the baud rate shown in the table below. For example, the string <ESC>HHPB6 (which consists of the escape string and the command B6) would set the baud rate for the network to 19200. No response will be transmitted back to the host after executing this function.

ASCII Value of "n"	Selected Baud Rate	ASCII Value of "n"	Selected Baud Rate
0	38400	6	19200
1	38400	7	38400
2	1200	8	57600
3	2400	9	115200
5	9600		

Figure 18 Baud Rate per Value of n

Creating a HomeBase Network

As many as 255 Dolphin HomeBases can be connected and networked to a single serial port on a host computer. Each HomeBase must have its own AC power adapter connected to a standard AC electrical socket. The group can be placed on a table or desk, or rail-mounted using the mounting holes on the two outside Dolphin HomeBase units.

How to Daisy Chain the Dolphin HomeBases
To form a HomeBase network, daisy chain the HomeBases together using one of the following methods:

- Align adjacent units so that the MULTI-HOMEBASE PORT of one unit will mate with the MAIN COMM PORT of the next unit until all HomeBases in the network are connected.

OR
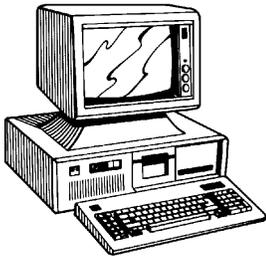
- Use a RS-232 cable to connect the Multi-HomeBase Port on one terminal to the MAIN COMM PORT on the next terminal. Repeat this step to include each additional terminal in the chain. Connect the last terminal to the host computer and leave the last MULTI-HOMEBASE PORT open if it is not needed.

Programming Commands
To configure a Dolphin HomeBase network, these attributes must be programmed: Address Assignment, Baud Rate Selection and Device Selection.

Address Assignment
Use the Address Assignment command to establish unit IDs for each Dolphin HomeBase in your network. This must be done before a unit can be selected for communications. To establish an Address Assignment:

1. Type or send the escape and command strings to set-up the configuration mode and establish the beginning unit ID number:

   <ESC>HHPCI*n*

   n is the number representing the first unit in the network

   For example, the string <ESC>HHPCI0 would instruct the network to set up ID numbers for all the units in the network beginning at zero (0).

2. The first Dolphin HomeBase in the network receiving the command responds to the host with:

    <SYN>

    <SYN> indicates that the command was accepted

3. In sequence, each Dolphin HomeBase will determine its own ID number by adding one to the previous ID number.

4. When ID numbers are established for all HomeBases, the last HomeBase will return this response to the host:

    <ACK>*n*

    <ACK> indicates completion of ID configuration; *n* represents the ID number for the last unit in the network.

Programmer's Note: When sending ID numbers to the Dolphin HomeBase, remember that numbers typed on the keyboard are ASCII numbers which will be converted to Hex when sent to the Dolphin HomeBase. For example, typing the command from the keyboard:

<ESC>HHPCI1

would instruct the network to set up ID numbers for each Dolphin HomeBase starting with the ASCII number 1. The first unit in the network would actually receive the number 31 Hex (since ASCII 1 is equal to 31 Hex) as the starting ID number. Each unit in the network would sequentially add one to this starting ID number to establish its own ID. So, for a network of 15 units, the final ID number would be set up as 3F Hex. When the final unit sends back an <ACK>3F, the host computer (which converts Hex data back to ASCII) will then display the ID number as "?" instead of 15 as you might expect.

Baud Rate Selection

The Dolphin HomeBase baud rate is preset to 9600 at the factory. Use the configuration switches on the back panel of the HomeBase to select the network and communications modes for your Dolphin. The following table outlines the configuration switch settings:

Switch	Setting	Function
2	FIXED BPS (DOWN)	Baud rate fixed at 9600
2	PROGRAM (UP)	Baud rate can be programmed

Figure 19 Configuration Switch Settings for a HomeBase Network

When Switch 2 is in the 'PROGRAM' position, the baud rate can be changed using the following procedure:

Enter or send the escape and command strings:

<ESC>HHPB*n*

n is the ASCII number corresponding to the baud rate shown in the table below. For example, the string <ESC>HHPB6 (which consists of the escape string and the command B6) would set the baud rate for the network to 19200. No response will be transmitted back to the host after executing this function.

ASCII Value of "n"	Selected Baud Rate	ASCII Value of "n"	Selected Baud Rate
0	38400	6	19200
1	38400	7	38400
2	1200	8	57600
3	2400	9	115200
5	9600		

Figure 20 Baud Rate per Value of n

Device Selection

Use this command to enable the host device to select a specific Dolphin HomeBase in the network for communication.

1. Enter or send the escape and command strings:

    \<ESC\>HHPS*n*

    where ***n*** is the unit ID of the Dolphin HomeBase being selected

2. The Dolphin HomeBase with the unit ID corresponding to the ID number in the Device Selection command string will respond with:

    \<ACK\>*n*

    to indicate to the host that it is present. ***n*** is the unit ID.

When data transfer begins, the COMM LED on the Dolphin HomeBase will blink red and green. A unit remains selected until another unit in the network is selected. For example, the string <ESC>HHPS3 would select the unit with ID number 3 for communications. That unit would then send back an <ACK>3.

A selected unit in the Dolphin HomeBase network will assert the DSR signal of the HomeBase when a Dolphin terminal is present. The DSR signal can be used by the host application to determine if a Dolphin terminal is present and selected.

Communicating with the Dolphin Terminal

To communicate with the Dolphin and any other devices connected to the HomeBase:

1. Insert the Dolphin into the terminal well of the HomeBase. If the Dolphin is in sleep mode, it will awaken into active state.

2. The CHARGING MAINBATT LED on the HomeBase will turn on. If the Dolphin does not turn on , or the LED does not light up, make sure that it is properly seated in the terminal well and that the power supply is properly connected to the HomeBase and plugged into a functioning AC outlet.

3. Start your application on the Dolphin terminal or the host computer. Data can then begin transmitting between the terminal and the devices connected to the Dolphin HomeBase.

4. When data transfer begins, the COMM LED on the Dolphin HomeBase will blink red and green. If the HomeBase will not communicate with the Dolphin, check the port connections to ensure that the HomeBase is correctly configured. See *Chapter 8, Troubleshooting* for more information.

Chapter 6 Learning About the Software

Explains how to use and manage the software accompanying the Dolphin.
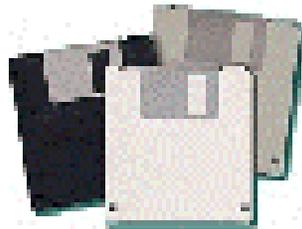
53

Dolphin OS and Development System

Important Notice: Before installing the Dolphin OS and Development System it is important that you remove all previous installations. To remove the previous installations, delete the c:\dolphin directory and all files contained within. You should also delete the Dolphin Group or Folder. Only install the most recent release of the Dolphin ROM IMAGE and Boot Loader, loading an old version of the ROM IMAGE or Boot loader can result in Dolphin becoming unstable or inoperable, and requiring the unit to be returned to HHP for repair.

Your Dolphin terminal comes with a set of diskettes containing the Dolphin OS and Development System. The Dolphin OS and Development System includes the following:

- Dolphin Development Tools and Libraries (API)

- Sample Programs with source code

- Dolphin Utilities including Communication and Upgrade Wizard

- Electronic Help

- Boot Loader & ROM Image

Installation

The Dolphin OS and Development System installs easily using a standard Windows installation utility. To install:

1. Start Microsoft Windows and Close/Exit any active Windows Applications.

2. Insert the Dolphin OS and Development System diskette #1 into drive A: or drive B:.

3. In Windows 3.1, select File|Run from Program Manager, or, from Windows 95, select Start|Run.

4. Type **a:\setup** (or **b:\setup**) and press <ENTER>**.**

5. Follow the instructions on the screen to complete the installation and setup procedure. The setup program will create the following directories on your system:

Directory	Contents
c:\dolphin	Default installation directory, containing HHP Help and Read Me First Files.
c:\dolphin\bootldr	Backup of Dolphin Boot Loader (BURN.EXE and BOOTLDR.BIN)
c:\dolphin\devtools	Dolphin Development Libraries, Samples and API Help file.
c:\dolphin\wizard	Dolphin Upgrade Wizard
c:\dolphin\hhpdemo	HHP Dolphin Batch Demo Program
c:\dolphin\romimage	Backup of Dolphin ROM Image
c:\dolphin\utils	Dolphin Utilities (YX.EXE, DCOMM.EXE, BMP2LCD.EXE)
c:\dolphin\devtools\samples\rfdemo\server	Host/Server application
c:\dolphin\devtools\samples\rfdemo\client	Client application for Dolphin RF

*Note: All future references to directories assume that the user has accepted the installation default directory. The default installation directory is "*c:\dolphin*".*

Figure 21 Directories Created by Dolphin OS & Development System Set-up Program

Help File, Document and Utility Icons

The Dolphin OS and Development System set up program will set up a Dolphin group or folder and install the following Help, Document and Utility icons.

The Read Me First Icon provides important information not available at the time the manual was printed.

The Contacting HHP Icon provides information on contacting HHP by Phone, Fax, Email, WWW and BBS.

The OS and Development System Icon provides additional information on the Dolphin OS and Development System.

The Development Library Help file provides information on the Dolphin API and Sample applications.

Electronic Users Guide for the Dolphin terminal.

A Windows drag-and-drop communication utility, supporting Xmodem and Ymodem file transfer protocols

A Windows utility that steps you through the process of upgrading Dolphin's Boot Loader, ROM image and Demo application.

A Windows utility for configuring the HomeBase baud rate.

Dolphin HHP Demo Program

A simple demonstration program is included with the Dolphin OS and Development System that shows how the Dolphin terminal works. The Dolphin OS and Development system setup program installs the demonstration programs in the **c:\dolphin\hhpdemo** directory on your PC.

The HHP demo has also been pre-installed on your Dolphin terminal. If you need to re-install the HHP demo, copy all the files located in the **c:\dolphin\hhpdemo** directory to your Dolphin terminal's C: drive or run the Dolphin Upgrade Wizard.

Main Menu

The HHP Demo Program is loaded automatically when the Dolphin terminal is turned on. To turn the Dolphin terminal on, press the ON/SCAN key. When you first turn the Dolphin terminal on, an HHP logo and a dolphin graphic are displayed. Press any key and the following prompt should appear on the display:

HHP Demo Main Menu

Note: If the screen illustrated above does not appear on your Dolphin terminal, the HHP Demo Application has been removed from your terminal.

F1 - SCAN DEMO

Press F1 to load the Scan program. Documented source code for the Scan demo program is included on the Dolphin OS and Development System disk.

HHP Scan Demo Screen

F2 - HELP MENU

Press F2 to access the Help Menu. The Help Menu contains information about the Dolphin terminal, Specifications and contacting Hand Held Products.
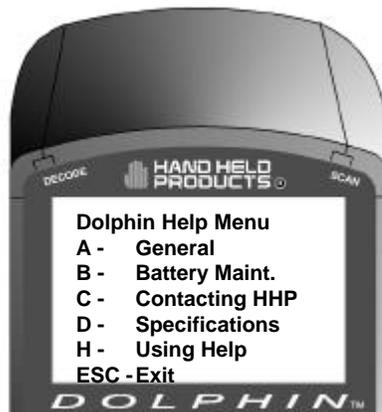
HHP Help Menu

F3 - **HHP DEMO**

Press F3 to load the HHP Inventory Control sample program. This application uses a lookup table to validate item numbers and display part descriptions. The data entered is written to a file, and can be transferred via Xmodem to a computer.

HHP Demo Main Screen

F1 – Enter Data

Press F1 to display enter or scan data. If the item number is found, the item description is displayed. If the item number is not found, the program will ask the user if the item should be added. The date is automatically entered.

F1 Enter Data Screen

F2– Transfer Data

Press F2 to transfer the collected data to a desktop computer. The data is transferred using standard Xmodem protocol.

F3– Receive Lookup

Press F3 to initiate Xmodem receive. A new Lookup table can be transferred to the terminal.

F4- Scan Set-up

F4 - UTILITY MENU

Press F4 to load the Utility Menu. The Utilities Menu has four options as described below:

HHP Utility Menu

F1 -COM Menu

Press **F1** to Send File from the Dolphin terminal to a host system (PC) via the Ymodem protocol at 38400 baud rate. Press **F2** to Receive File sent from a host system via the Ymodem protocol at 38400 baud rate.

F2 - System Menu

Gives version of operating system, serial number of your Dolphin and access to miscellaneous utilities

F3 - DOS Prompt

Press F3 to exit the HHP demo and return to the DOS prompt.

F4 RF Menu (For Dolphin RF only)

Press F4 to access the RF menu. Press F1 for RF Setup and F2 for Ping.

Scanning A Barcode

The Dolphin Terminal comes with demonstration software that allows you to scan barcodes immediately. A sample barcode is illustrated below for you to use for practice.

Hold the Dolphin terminal approximately 2 inches away from the sample barcode. Press the ON/SCAN key to begin scanning. Move the Dolphin terminal back and forward until the unit gets a good read. The Dolphin terminal will "beep," and the laser will turn off when a good read is obtained. The decode LED will turn green

The Dolphin terminal will show a translation of the sample barcode on the LCD window, which should appear similar to the following illustration.

Dolphin Utilities

A number of utilities are provided with your Dolphin terminal. The Utility programs are installed in the **c:\dolphin\utils** directory on your computer.

BMP2LCD.EXE

BMP2LCD.EXE is a Windows tool that allows developers to create a bitmap data structure from a standard Windows™ bitmap. The bitmap can then be displayed using a Dolphin Developers API function such as evDrawUserBitMap().
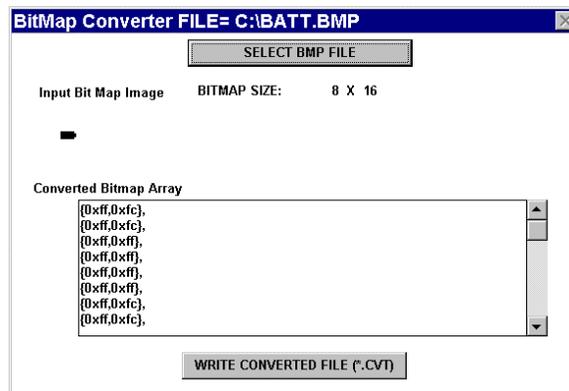
BURN.EXE

BURN.EXE is a Dolphin utility, which will load or reload the Dolphin's Boot Loader. The Boot Loader is an Xmodem communications utility used by the Dolphin OS to load or update the BIOS and Operating System (ROM image). To load or reload the Dolphin's Boot Loader:

1. Transfer BURN.EXE and BOOTLDR.BIN to the Dolphin's FLASH Drive C:.
2. Execute BURN.EXE. The OS Boot Loader is updated and the files BURN.EXE and BOOTLDR.BIN are deleted.

DCOMM.EXE

DCOMM.EXE is a Windows communication utility.   It supports drag-and-drop file transfer using both Ymodem and Xmodem.

Usage:

   dcomm [/c#] [/b#] [/y] [/x] [filename1…n]

Where:

/c#	*Specifies COM port, where #=1-4*
/b#	*Specifies Baud Rate, where #=9600, 19200, 38400 or 57600*
/x	*Specifies Xmodem protocol*
/y	*Specifies Ymodem protocol*
/a	*Automatic mode, waits and receives all files that are sent*
filename	*Filename to transfer, supports multiple file names and wildcards (*.dat).*

Example:

   dcomm /c1 /b38400 /y filename.dat

If you do not specify command line arguments, DCOMM.EXE will open a dialog that allows you to receive files or configure the default serial communications port, baud rate, communications protocol and download path.
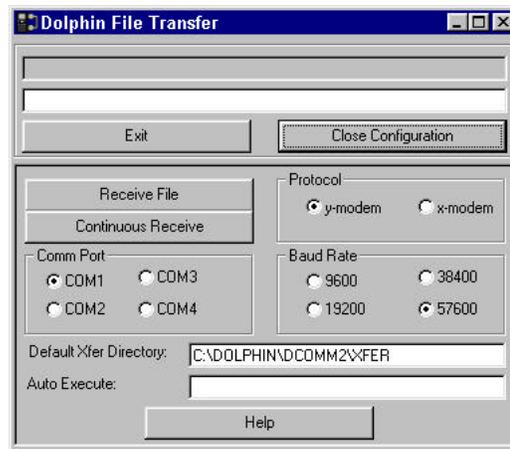
An 'Auto Execute' command line can also be specified in the configuration screen. The specified command line will be executed when a file is received.

DWIZARD.EXE

DWIZARD.EXE is a Windows utility that steps you through the process of upgrading Dolphin's Boot Loader, ROM image and Demo application. Simply run DWIZARD and follow the instructions provided to:

- Upgrade the terminal Boot Loader

- Upgrade the terminal ROM Image (BIOS, A Drive Image)

- Reinstall/Upgrade the HHP Demo
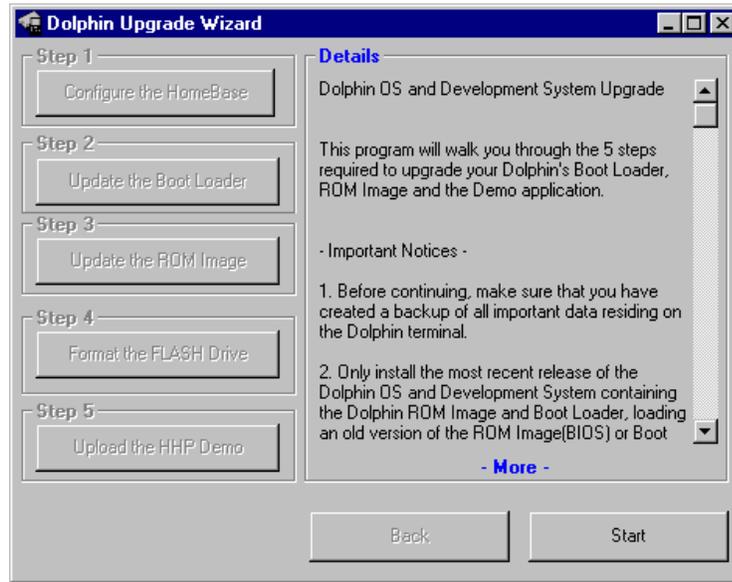
HBCFG.EXE

HBCFG.EXE is a Windows utility that allows the user to change the baud rate setting for the Dolphin HomeBase. HBCFG.EXE supports the following command line arguments:

Usage:
> *hbcfg [/c#] [/I] [/b#]*

Where:
> | /c#: | Specifies COM port, where #=1-4 |
> | /b#: | Specifies Baud Rate, where #=9600, 19200, 38400 or 57600 |
> | /I: | Forces HBCFG.EXE to display 'Please wait Dialog' |

Example:
> *hbcfg /c1 /b38400 /I*

If no command line arguments are specified or an error is detected, HBCFG.EXE will open a dialog that allows the user to select the serial communications port, baud rate, or run a diagnostic.
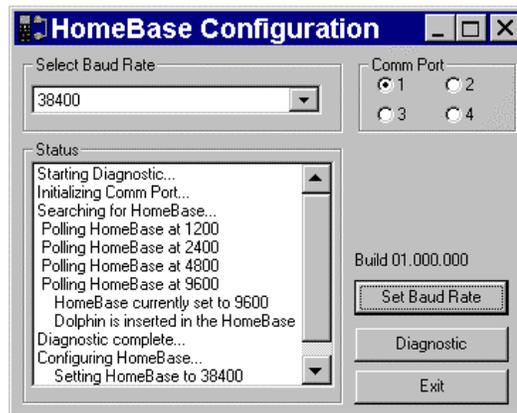
Note: *Dip Switch 2 located on the back of the HomeBase must be set in the Up (PROGRAM) position for the baud rate to be programmed. The HomeBase power must be cycled (turned off and on) for the new dip switch settings to be recognized.*

LOADER.EXE

LOADER.EXE is a DOS Xmodem utility used to load or reload the Dolphin terminal's ROM Image. LOADER.EXE supports the following command line arguments:

Usage*:*
    loader filename [-p# -b#]

Where:

filename:	*refers to file name to load*
-p#:	*Specifies new COM port, 1-2*
-b#:	*Specifies new BAUD rate, 300-38400*

Example:
    LOADER C:\DOLPHIN\BIOS\ROM262.BIN -p1 -b9600

STL.EXE

STL.EXE is a DOS command line utility for Dolphin that turns the 9th line status indicators on or off.

Usage*:*
    STL *[1] [0]*

Where:

1:	*Turns the status line on*
0:	*turns the status line off*

Example:
    STL *1*

If no command line is specified, STL.EXE will toggle the status line off, if it was on, and on if it was off.

YX.EXE

YX.EXE is a DOS command line Ymodem communication tool for the Dolphin terminal or a PC.   YX.EXE is limited to COM 1 when running on a PC. YX.EXE supports the following options:

Usage:

yx {/c#] [/b#] [/m] [filename]

Where:

filename:	*refers to file name to send, if not specified YX will receive a file*
/c#:	*Specifies COM ports 1-4*
/b#:	*Specifies new BAUD rate, 300-57600*
/m:	*Run YX in menu driven mode*

Examples:

yx /b38400 autoexec.bat
yx
yx /m
yx /c2

The default baud rate for the YX.EXE utility is 9600. For your convenience, batch files are included on the Dolphin terminal to make sending data at a higher baud rate easier.

To send at 38400, enter <YF> instead of YX.

To send at 57600, enter <YFF> instead of YX.

ZZZ.EXE

ZZZ.EXE is a DOS command line utility for Dolphin that places the terminal into sleep mode.

Note - The terminal can not be placed in sleep mode while it is in the HomeBase. While in a HomeBase, the terminal must be on so it can monitor the battery status.

The following Utilities are included in the Dolphin ROM image and are automatically loaded when the terminal boots. They are NOT included on the Dolphin OS and Development System Disk.

Utility	Description
EVS.EXE	Enhanced Video System (EVS) is a TSR that traps standard video BIOS (INT 10H) calls, and overlays hardware-specific support for the Dolphin's LCD. In addition, EVS provides application and system level Status line support.
POWERMON.EXE	POWERMON.EXE is a TSR that monitors battery status and power usage. POWERMON.EXE is automatically loaded when the terminal boots.

Dolphin Application Development

Compiling Applications for the Dolphin

Dolphin application development is straightforward. Since Dolphin is DOS-compatible, most of the application can be tested on a desktop computer.

Although Dolphin is DOS-compatible, it provides many unique features that are not built into most PCs. For example, it has an integrated bar code scanner. The Dolphin libraries provide an API that allows an application to use these features. There are four libraries provided for linking into applications:

- **dolphins.lib** for small memory models

- **dolphinm.lib** for medium memory models

- **dolphinc.lib** for compact memory models

- **dolphinl.lib** for large memory models

The header file, **dolphin.h**, in the **c:\dolphin\devtools** directory contains useful declarations for using these libraries.

Sample Applications

A number of sample programs with source code have been provided with your Dolphin terminal. The sample programs are installed in the **c:\dolphin\devtools\samples** directory on your desktop computer.

Application	Description
GRAPH	Draws various patterns on the Dolphin's LCD display.
KBSTATUS	Displays keystrokes. If the keystroke is non-printable, the hex value of the keystroke is displayed.
LED	Allows the red and green LEDs to be toggled
ONBHIT	Displays status of the ON key.
SCAN	Allows bar code scanning.
SIO	Performs serial I/O. Displays characters received and sends key strokes.
SOUND	Runs through the frequency range of the Dolphin's speaker.
NI	Sample programs for the Numeric Dolphin. This sample is located in the C:\DOLPHIN\DEVTOOLS\NUMERIC\BORLAND or C:\DOLPHIN\DEVTOOLS\NUMERIC\MSVC.
EVSDEMO	Demonstrates graphics, changing fonts, turning the status line on and off, adding new icons to the status line, and changing the system cursor.
INV5	Sample inventory application with source code.

Building the Samples

There is one Microsoft Visual C\C++ version 1.52 project file, **.mak**, for each sample application. There is also a Borland C++ version 5.0 project file, **samples.ide**. This project file will rebuild all sample applications. Consult the documentation for your compiler for information on the use of project files.

Compiling the Sample Programs

Note: *See the Development API Help file (DAPI.HLP) for complete information regarding the Dolphin Development Libraries, Samples and Compiling instructions.*

Microsoft

In order for an application to use Dolphin's unique features, you must add a Dolphin library to the *application's* project. There are four libraries located in **c:\dolphin\lib\msvc** named **dolphinx.lib** where **x** is **s**, **m**, **c**, or **l**, corresponding to the memory model.

To add **dolphinx.lib** to an application's project:

- Select the menus Project|Edit.

- Change List Files of Type: to Library (*.lib). Browse into **c:\dolphin\devtools\lib\msvc**. Select **dolphinx.lib** corresponding to the memory model. Click the Add button.

- The Include Files Path must be modified, so the compiler will search for include files in **c:\dolphin\devtools\include.**

Borland

For an application to use Dolphin's unique features, you must add a Dolphin library must be added to the application's project. There are five libraries are located in **c:\dolphin\devtools\lib\borland** directory. They are named **dolphinx.lib** where **x** is **t**, **s**, **m**, **c**, or **l**, corresponding to the memory model.

To add **dolphinx.lib** to an application's project:

- Right click on the .exe file in the Project Window.

- Select Add node from the pop-up menu.

- When the Add to Project List dialog box is displayed, change Files to Type: to Libraries (*.lib).

- Browse to **c:\dolphin\devtools\lib\borland**.

- Select the **dolphinx.lib** library corresponding to the memory model. Click the Open button.

- The Include Files Path must be modified, so the compiler will search for include files in **c:\dolphin\devtools\include**.

Transferring Files to or from Dolphin

Transferring files between your Dolphin terminal and a desktop PC is easy with the YX.EXE utility or the Dolphin File Transfer program.

Using the YX.EXE Utility

The YX.EXE utility, installed in the directory **c:\dolphin\utils**, performs   RS-232 file transfers using Ymodem batch protocol. In addition, YX.EXE is preloaded on the Dolphin's A drive. This program can be run by entering commands at the DOS prompt or by accessing a menu.

YX.EXE is limited to COM 1 when running on a PC. YX.EXE supports the following options:

Usage:
>*yx [/b#] [/m] [filename]*

Where:

filename:	*refers to file name to send, if not specified YX will receive a file*
/b#:	*Specifies new BAUD rate, 300-57600*
/m:	*Run YX in menu driven mode*

Examples:
>*yx /b38400 autoexec.bat*
>*yx*
>*yx /m*

The default baud rate for the YX.EXE utility is 9600. For your convenience, batch files are included on the Dolphin terminal to make sending data at a higher baud rate easier.

To send at 38400, enter <YF> instead of YX.

To send at 57600, enter <YFF> instead of YX.

Using the Dolphin File Transfer Program

Dolphin File Transfer

Open the Dolphin program group in Windows Explorer and copy the Dolphin File Transfer shortcut to your PC's desktop. Putting the shortcut on your desktop will simplify the file transfer process.

Sending a File to the Dolphin

1. Open the Dolphin File Transfer Program Configuration dialog box. Check to make sure the baud rate is set at 9600. This is the default for YX.EXE. Close the Configuration dialog box and exit the Dolphin File Transfer program. To change the baud rate, see the section on *"Sending Files at a Higher Rate"* on the next page.

2. Open Windows Explorer. Resize and move the window so that you can see both Explorer and the Dolphin File Transfer shortcut on your desktop.

3. In Windows Explorer, select the file to be transferred and, while holding down the left mouse button, drag and drop the file on the Dolphin File Transfer shortcut on the desktop. This opens the Dolphin File Transfer program.

4. At the Dolphin's C: prompt, enter <YX>.

5. Press <ENTER> on the Dolphin terminal to begin the file transfer. The COMM LED on the Dolphin HomeBase will blink red and green during the transfer. You can also view the progress of the file transfer on the Dolphin screen and Dolphin File Transfer program window.

Sending a File From Dolphin to Your PC

1. Double-click on the Dolphin File Transfer shortcut to open the program.

2. Open the Configuration dialog box. Check to make ensure the baud rate is set at 9600.

3. At the Dolphin's C: prompt, enter <YX> [Filename].

4. Click on the Receive File button.

5. Press <ENTER> on the Dolphin terminal to begin the file transfer. The COMM LED on the Dolphin HomeBase will blink red and green during the transfer. You can also view the progress of the file transfer on the Dolphin screen and in the Dolphin File Transfer program window.

Sending Files At A Higher Rate

A batch file containing command lines for sending and receiving files at higher baud rates is also loaded on the Dolphin terminal. To send at a higher rate, the Dolphin HomeBase must be programmed at the higher baud rate. Configuration Switch 2 should be in the down position. Refer to the section on *Baud Rate Selection* in *Configuring a Single Dolphin HomeBase* or *Creating a HomeBase Network* later in this chapter.

•   To send at 38400 baud rate, enter <YF> at the DOS prompt instead of <YX>.

•   To send at 57600 baud rate, enter <YFF> at the DOS prompt.

Using the Dolphin File Transfer Program and YX in Menu Mode

You can also use YX in menu mode to send and receive files from the Dolphin to your PC and vice versa with the Dolphin File Transfer program and YX.EXE on the PC.

Sending Files to the Dolphin

To use a menu for sending files to the Dolphin, follow these steps:

1. Open the Configuration dialog box. Check to make sure the baud rate is set at 9600. This is the default for YX.EXE.

2. Enter <YX /M> at the Dolphin terminal's DOS prompt.

3. Press <ENTER> and the menu below will appear on your Dolphin terminal's screen:

4. In Windows Explorer, select the file to be transferred and, while holding down the left mouse button, drag and drop the file on the Dolphin File Transfer shortcut on the desktop. This opens the Dolphin File Transfer program.

5. Press <F2> to begin the file transfer. The COMM LED on the Dolphin HomeBase will blink red and green during the transfer. You can also view the progress of the file transfer on the Dolphin screen and status bar in the Dolphin File Transfer program window.

NOTE

When using the menu, press <F3> to change to a higher baud rate Be sure to set Configuration Switch 2 in the up position.

Sending Files From the Dolphin To Your PC

1. Double-click on the Dolphin File Transfer shortcut to open the program.

2. Open the Configuration dialog box. Check to make sure the baud rate is set at 9600.

3. Enter <YX /M> at the Dolphin terminal's DOS prompt.

4. Press <ENTER> and the menu below will appear on your Dolphin terminal's screen:

5. Click on the Receive File button.

6. Press <F1> on your Dolphin terminal and then enter the name of the file. Press <ENTER>. The COMM LED on the Dolphin HomeBase will blink red and green during the transfer. You can also view the progress of the file transfer on the Dolphin screen and status bar in the Dolphin File Transfer program window.

Dolphin EVS Engine

The EVS engine provides bit-mapped graphics support for the Dolphin LCD. EVS is the primary interface between an application and BIOS graphics functions. The EVS engine consists of three basic parts:

1. A TSR (EVS.EXE) that traps standard video BIOS (INT 10H) calls, and overlays hardware specific support for the Dolphin LCD.

2. A set of API routines that allow easy access to the EVS specific routines. These functions have been merged into the standard Dolphin Development API and are documented in the Dolphin API Help file (DAPI.HLP).

3. Application and system level Status line support.

The EVS engine eliminates the need for an application to directly access the hardware layer. The EVS engine maintains an image of the display in memory (118 pixels wide by 73 pixels tall). All application screen access (read/write) is filtered so as to write to the display image rather to the hardware. The EVS engine then updates the hardware (e.g. writes to the display) as necessary. This process allows for support of a single display plane that combines graphics and text.

For more on the Dolphin EVS Engine, see the Dolphin OS and Development System electronic help file.

Dolphin ROM Image and Boot Loader

Upgrading the Dolphin ROM Image

Important Notice: Before installing the Dolphin OS and Development System, you must remove all previous installations. To do this, delete the C:\DOLPHIN directory and all files contained within as well as the Dolphin Group or Folder. Only install the most recent release of the Dolphin ROM IMAGE and Boot Loader. Loading an old version of the ROM IMAGE or Boot Loader can make the Dolphin unstable or inoperable, and requiring you to return the unit to HHP for repair.

The Dolphin terminal has a Boot Loader incorporated that allows the developer to upgrade or reload the ROM IMAGE.

Follow these steps to manually reload the ROM IMAGE and Operating System from DOS:

1. Verify that Configuration Switch 2 on the back of the Dolphin HomeBase is set to "Fixed BPS" and Switch 1 is set to "Single". Power must be turned off and then on to accept the new dip switch settings.

2. Make sure the serial cable is properly installed and power is properly connected to the HomeBase. Make sure no other communications programs are running on the PC.

3. Start the Dolphin Boot Loader. Hold down the "7" and "9" keys with one hand. With your other hand, press and release the "ON/SCAN", "SHIFT" and "BKSP" keys. Release the "7" and "9" keys. You should see the screen below. If not, repeat step three.

4. Press "3" to select Baud rate. Press "1" to set baud rate to 9600.

SYS Utilities X.XX

1) **9600**
2) **19200**
3) **38400**
4) **57600**
Baud: 9600

D O L P H I N ™

5. Press 1 to download.

Upgrading the Dolphin Boot Loader

Note: *We recommend that you use the Dolphin Upgrade WIZARD to update the Dolphin Boot Loader, ROM image and Demo application. Simply run DWIZARD and follow the instructions provided.*

While it is unlikely that you will ever need to reload the Dolphin Boot Loader, an image of the Dolphin Boot Loader is included with the Dolphin OS and Development System just in case. The Boot Loader image is installed in the **c:\dolphin\BooTLDR** directory on your PC.

To load or reload Dolphin's Boot Loader:

1. Transfer BURN.EXE and BOOTLDR.BIN to Dolphin's FLASH Drive C:.

2. Execute BURN.EXE. The OS Boot Loader is updated and the files BURN.EXE and BOOTLDR.BIN are deleted.

Chapter 7 Troubleshooting and Warranty Information

Describes troubleshooting tips, solutions for problems you may encounter with the Dolphin terminal or HomeBase and warranty information.

Just In Case

The Dolphin terminal and Dolphin HomeBase are both designed to provide years of trouble-free use. Both products are covered by a one-year limited warranty. This chapter includes troubleshooting tips, warranty information, describes how to obtain technical support.

Before Calling For Technical Support

If you have problems with either the Dolphin terminal or HomeBase, review the list of symptoms and solutions included in this chapter. If the problem isn't listed in this chapter, contact your Reseller or Hand Held Products' Technical Support Department for assistance.

Troubleshooting the Dolphin Terminal and HomeBase

This table describes some of the common problems/symptoms and solutions that you could encounter while using your Dolphin terminal or Dolphin HomeBase. If you need further assistance with troubleshooting your terminal, contact your HHP Authorized Reseller.

If You Have This Problem/Symptom	Try This:
The display is blank, the Dolphin terminal will not turn on.	Is the battery is low? Recharge or replace it with a known good battery. Reset the Dolphin terminal. See page 79.
When booting up the Dolphin, I see the message 'CMOS MEM size wrong' for a second or two and the unit continues to boot. Is there something wrong with my unit?	When the Dolphin's internal NiMH battery is not charged or run down, this message will display and the terminal's settings are reset to their default values. This includes the date and time which is reset to January 1, 1980 and 12:00 AM. The terminal is fine. You simply need to recharge the internal battery and reset the Dolphin's date and time. To do this, insert a fully charged battery in the Dolphin and then use the DOS Date and Time function to set the correct date and time. The internal back-up battery requires a minimum of 5 hours of charging time in order to perform and maintain the system as described in Chapter 2 of this manual.

If You Have This Problem/Symptom	Try This:
The Dolphin terminal will not scan a bar code.	The bar code may be out of spec. Try reading some of the bar code examples in Appendix C, or locate a bar code sample that you know can be read by another Dolphin terminal. Is the exit window dirty? Clean it with a soft dry cloth. If the exit window is badly scratched, the Dolphin terminal should be returned to HHP for repair. Consult your software developer to ensure the correct bar code symbology is being used.
The battery in the Dolphin terminal keeps failing.	If the battery has been stored for a long period of time, it may take three charge/discharge cycles before the battery reaches its full storage capacity. The capacity of NiMH batteries decreases as the number of charge/discharge cycles increases. So, if you are experiencing low run times, a new battery may be required. To increase the run time of the Dolphin terminal, try to limit the use of the speaker, scan engine and backlight.
The Dolphin terminal is not communicating with the host computer.	Make sure the HomeBase is connected to a power source. Make sure the Dolphin terminal is inserted properly into the HomeBase. The CHARGING MAINBATT LED should be solid green. If not, remove the Dolphin terminal and reinsert it into the HomeBase. Ensure the communications baud rate is set correctly. Set communications for 9600, N, 8, 1. Make sure that Configuration Switch 2 on the back of the HomeBase is set to "Fixed BPS". Make sure the RS-232 cable is properly attached to the HomeBase and host computer. Also, check to ensure that the cable is configured properly.
I can not enter a ":" to change to Drive B: at the DOS prompt.	The ":" is a special character that can be entered by typing "SHIFT" "Z". See reference to special characters in "Using the Alphanumeric Keypad" or "Using the Numeric Keypad" section for additional information.
The 'CHARGING AUXBATT' LED does not come on when I insert an auxiliary battery pack into the Dolphin HomeBase.	Check the power connections on the Dolphin HomeBase. Also check to ensure the auxiliary battery pack is properly seated.

If You Have This Problem/Symptom	Try This:
The 'CHARGING AUXBATT' LED constantly changes from RED to ORANGE to GREEN.	The NiMH battery pack may need to be replaced. Insert a new battery pack into the Dolphin HomeBase's auxiliary battery well.
The 'CHARGING MAIN BATT' LED is on, but the Dolphin terminal will not communicate.	Check the cable connections to other devices. If you are connecting to another DCE device, be sure you're using a null modem cable. Try a previously tested cable if you suspect a bad cable.

Check your communications program in both the Dolphin terminal and the RS-232 device with which you are communicating. Verify that the baud rates are set properly. |

Resetting The Dolphin Terminal
Under normal circumstances, you should not need to reset the Dolphin terminal. However, if required, you can reset the terminal with one of the following methods:

1. Perform the "Three Key Reset."

The Dolphin terminal can be reset by pressing and releasing the "SHIFT", "ON/SCAN" and "BKSP" keys. All three keys must be held down and released at the same time.

2. Press the Reset Switch.

The reset switch is located in the battery compartment of the Dolphin terminal.
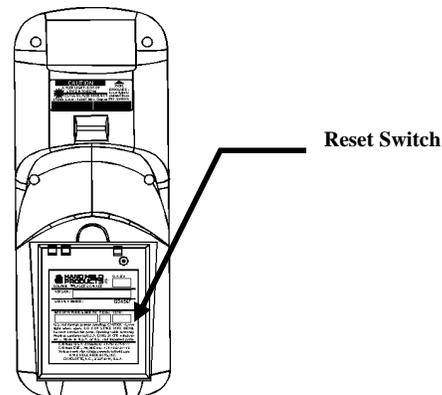
Reset Switch

Use the tip of an unfolded paper clip (or other similar blunt object) to gently press the reset switch.

Note: The recess hole for the reset switch may be covered with a small plastic cover.
This cover must be removed and placed back in position after accessing the reset
switch.

3. Remove the Main Battery.

If the methods described above are not successful, the Dolphin terminal may be reset
by removing the main battery for an extended period of time. The terminal will reset
when the Dolphin's internal backup battery is completely drained of power. This
process may take up to 5 hours.

Warranty Information

Who Is Covered By The Warranty

The Dolphin terminal and HomeBase offered by Hand Held Products, Inc. (HHP) are both covered with a one-year limited warranty. Hand Held Products, Inc. extends this warranty only to the first end-user of the product. This warranty is non-transferable.

What's Covered By The Warranty

This warranty covers the Dolphin terminal and HomeBase and warrants them to be free from defects in materials and workmanship, under normal use and service, for a period of one year from date of purchase by the first end-user.

THIS LIMITED WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE AND FREEDOM FROM INFRINGEMENT. Neither HHP nor its marketing agents shall be liable for any direct, indirect, consequential, or incidental damages resulting from the use, results of use, or inability to use this product.

No one is authorized to change, add to, or otherwise alter this Warranty without the express written permission of an officer of HHP.

What's Not Covered By The Warranty

This Warranty does not cover software, or damage to the product caused by modification, alteration, misapplication, misuse of, or physical abuse to the product; or damage due to repair or service to the product by anyone other than an Authorized HHP Service Center. This Warranty also excludes any damage to the product caused by circumstances outside of HHP's control, such as, but not limited to, lightning or fluctuation in electrical power.

How Problems Should Be Handled

Should the Dolphin terminal or HomeBase prove to be defective within one year of date of purchase, return the product, as described in the RMA procedures below, and we will, at our option, repair or replace the product, to whatever extent HHP deems necessary to restore the product to proper operating condition, without any charge to you.

Return Information

If you purchased the product from an Authorized Hand Held Products Reseller, contact the Reseller with the unit's serial number. Your Reseller will contact Hand Held, on your behalf, to arrange for the unit to be serviced.

If you purchased the product directly from Hand Held, or have been instructed by your Reseller to contact Hand Held directly, call the Customer Services Department in your area to request a Repair Maintenance Authorization (RMA) number. *Note: An RMA number is not needed for service at the Europe, the Middle East, Africa or United Kingdom repair facilities.*

North and South America, Asia, Pacific Rim
(TEL)+1-(704)-537-1444
(FAX)+1-(704)-566-9904

Europe, Middle East and Africa :
(TEL)+31-40 24 24 486
(FAX)+31-40 24 25 672

The United Kingdom :
(TEL)+44 (0) 7000 426343
(FAX)+44 (0) 7074 426343

You must have an RMA number to receive service from the repair facility for North and South America, Asia and the Pacific Rim. Failure to obtain an RMA number before shipping your product to this repair facility can delay the processing of your repair request.

When calling for service at any of our repair facilities, please be prepared to give the following information:

- Product's type and serial number

- Brief description of problem

- Dated Proof-of-Purchase

Place the product in its original packaging with a copy of your original invoice and ship the product prepaid to the appropriate address on the next page:

North and South America, Asia, Pacific Rim

Hand Held Products
Customer Services Department
7510 East Independence Blvd., #100
Charlotte, NC 28227-9411
RMA Number:_____

Europe, Middle East and Africa :

Hondsruglaan 87D
5602 JA Eindhoven
The Netherlands

The United Kingdom :

Wessex House
Oxford Road
Newbury Berkshire, RG14 1PA
United Kingdom

If your equipment is still covered under the initial end-user's product warranty, please notify the Customer Services Representative when you call. Please include a copy of the original invoice in the package to avoid possible service delays. For your protection, we recommend you insure any equipment being sent to HHP.

After repair or replacement of the equipment, Hand Held Products will ship the product, at our cost, to your location. Non-warranty repairs will be returned, at the customer's expense, unless otherwise requested. Units currently under a service agreement will be shipped per the service agreement.

Please make note of the RMA number (if required) before shipping and the product's serial number for future reference.

How To Extend Your Warranty

Hand Held Products offers a variety of extended service plans on our hardware products. These agreements offer continued coverage for your equipment after the initial warranty expires. For more information, contact Hand Held or your Authorized Reseller.

Technical Support

If you have a question or problem with your Dolphin terminal or Dolphin HomeBase, you can get technical assistance from Hand Held's Technical Support department.

Technical Support -- North and South America, Asia and Pacific Rim:

(TEL) +1-(704) 537-1444
(FAX) +1-(704) 532-4191
8:30 a.m. and 5:30 p.m., Eastern Time, Monday through Friday

Technical Support -- Europe, Middle East and Africa :

(TEL)+31-40 24 24 486
(FAX)+31-40 24 25 672
9 a.m. - 5 p.m., Central European Time, Monday through Friday

Technical Support -- The United Kingdom :

(TEL)+44 (0) 7000 426343
(FAX)+44 (0) 7074 426343
9 a.m. - 5 p.m., UK Time, Monday through Friday

Appendix A   Dolphin Batch and Dolphin RF Terminal Specifications

Terminal Specifications

Item	Dolphin Batch	Dolphin RF
Case Material	Polycarbonate ABS Blend, Splash-resistant, one-piece module	Same as Dolphin Batch
Dimensions	6.85 x 2.63 x 1.87 in (170 x 70 x 50 mm) Dolphin with iButton Reader: 7.05 x 2.63 x 1.87 in (179 x 70 x 50 mm)	Same as Dolphin Batch
Ergonomics	Patented shape allows true, one-handed operation and fits either hand comfortably	Same as Dolphin Batch
Weight	12 oz (352 gm) Batch Model Dolphin with iButton Reader: 13.7 oz (389 gm)	14.5 oz (411 gm)
Display	8 lines of 20 characters per line, 119 x 73 graphics pixels, Alpha-Numeric, scrollable, Application software controllable pixel graphics, 6 x 8 pixel matrix, Electroluminescent Backlight	Same as Dolphin Batch
Keypad	Alphanumeric keypad--36 keys Numeric keyboard-20 keys with shifted alpha keys	Alphanumeric keypad--36 keys Numeric keyboard-20 keys with shifted alpha keys Terminal emulation keypad overlays for IBM 3270, IBM 5250 & DEC VT220

Item	Dolphin Batch	Dolphin RF
Connectors	Contact RS-232 port and charging	Same as Dolphin Batch
Visual Indicators	Red light is on during "Laser Scanning," Green light blinks when "Successful bar code decode"	Same as Dolphin Batch
Audio Indicators	Internal application software controllable speaker, emits sound level of 80 dB at 10 cm.	External application software controllable speaker, emits sound level of 90 dB at 10 cm.

Power Specifications

Item	Dolphin Batch	Dolphin RF
Primary	Rechargeable 3.6V 3 cell battery pack @ 1,200 mAh 2.2 x 1.8 x 0.8" (5.6 x 4.6x 2cm)	Same as Dolphin Batch
Backup	Internal NiMH Back-up battery retains memory & clock for < 30 minutes	Same as Dolphin Batch
Battery Capacity	20 hours with a full battery charge	10 hours with a full battery charge
Recharging Time	3 hours in Dolphin HomeBase auxillary battery well 3 hours in 10-slot multi-battery charger 5 ½hours when battery installed in Dolphin and Dolphin charging in the HomeBase main battery well.	Same as Dolphin Batch
Power Management	Low-battery detection & automatic shut-off with battery voltage levels.	Same as Dolphin Batch

Processing Specifications
Communication Speed

Item	Dolphin Batch	Dolphin RF
CPU	AMD ELAN SC310 386SX microprocessor using CMOS technology	Same as Dolphin Batch
Memory	2 MB RAM with 2 MB non-volatile FLASH memory expandable to 4, 6, or 10 MB	2 MB RAM with 2 MB non-volatile FLASH memory or 2 MB RAM with 8 MB non-volatile FLASH memory No expansion FLASH with radio.
Real Time Clock	Accurate, crystal-controlled real time clock/calendar Application software controllable time/date stamping	Same as Dolphin Batch
Operating System	GS-DOS architecture programmable with standard x86 development tools;, Borland C++ and Microsoft C/C++ libraries provided for non-PC standard functions (scan engine support, communication & power management)	Same as Dolphin Batch

Environmental Specifications

Item	Dolphin Batch	Dolphin RF
Operating Temperature	-10 to 50°C (14 to 122°F); Operates at -20° for a short time with little loss of LCD quality	Same as Dolphin Batch
Storage Temperature	-20 to 70°C (-4 to 158°F)	Same as Dolphin Batch

Item	Dolphin Batch	Dolphin RF
Humidity	Operates in up to 95% non-condensing humidity	Same as Dolphin Batch
Drop/Shock	Survives multiple 5 ft (1.5 m) drops to concrete	Same as Dolphin Batch
Electrical Static Discharge	15KV	Same as Dolphin Batch
Fire Retardant Rating	UL 94-VO	Same as Dolphin Batch

2.4 GHz Specifications

Item	Dolphin Batch	Dolphin RF
Radio	---------	Integrated WLIF
Frequency	---------	2.4 to 2.4835 GHz
Output Power	---------	100mW
Data Rate	---------	1.6 Mbps per channel in high-speed mode; 800 Kbps in back-off mode
Modulation	---------	4FSK (BFSK in back off mode)
Typical Range	---------	<500 ft (150 m) in offices, <1000 ft (300 m) in open spaces
Temperature Range	---------	-10 to 50°C (14 to 122°F)
Technology	---------	Frequency Hopping Spread-Spectrum
Channels	---------	15 independent

IButton Reader

Item	Dolphin Batch	Dolphin RF
Communication Speed	Batch -- NA Dolphin iButton Reader -- 115.2kbps	NA

Network Information

Item	Dolphin Batch	Dolphin RF
Drivers	-----------	ODI supports major network operating systems
Media Access Protocol	-----------	Optimized CSMA/CA
Software	-----------	Standard TCP/IP Stack

Bar Code Specifications

Item	Dolphin Batch	Dolphin RF
Standard scan engine	Symbol SE 1200-I000A, scans 2 - 36" (5 - 91cm)	Same as Dolphin Batch
Optional scan engines	Symbol SE1200LR, scans <15 ft (4.6 m) with reflective labels Symbol SE 1200VHD, scans bar codes <2 mil Symbol SE 1200HV, scans in high ambient light No Scan Engine (available with no scan engine)	Same as Dolphin Batch
Bar code symbol types	Code 3 of 9, Interleaved 2 of 5, EAN, Codabar, Code 128, Plessey MSI, Code 11, Code 93, UPC	Same as Dolphin Batch

Appendix B   Bar Code Symbologies

In this section, we will briefly describe and discuss bar code symbologies. We also list and discuss the symbologies that the Dolphin terminal supports.

Bar coding is rapidly replacing other methods of data entry, partly due to its accuracy rate (only 1 error in every 3-5 million scans 1:3-5M, vs. an OCR rate of 1:250 to 1:10,000). Scanning bar code is also faster and easier than typing entries on a computer keyboard, cash register, or other recording devices. Present day uses for bar code include package tracking, inventory control, VCR programming, self-checkout at grocery stores, security systems, and games and toys,

There are two types of bar codes: binary and modular. Binary codes have only two sizes of bars and spaces; modular codes have varied bar and space sizes.

Bar code symbologies are also designed to be either discrete or continuous. Discrete codes are those whose individual characters can stand alone. In other words, the space between each character (the intercharacter gap) is not part of the code itself (e.g. Code 39). Continuous codes specify that the intercharacter gap be a part of the code itself (e.g. Interleaved 2 of 5).

There are many excellent reference books available on bar coding. Among them are:

Reading Between the Lines - An Introduction to Bar Code Technology, by Craig K. Harmon and Russ Adams (Helmers Publishing, Inc., Peterborough, NH 03458. 1984).

Getting Started With Bar Codes: A Systematic Guide. by Richard Bushnell, Jr., Cutter Information Corp., Arlington, MA 021734. The Black & White Solution, by Russ Adams and Joyce Lane (Heimers Publishing, Inc., Peterborough, NH 03458. 1987).

Another excellent reference, from which we quote here, is A Guide to Bar Coding, published by Bar Code Systems, Inc. (7000 Central Parkway, Suite 1210, Atlanta, GA 30328, 404/399-5921 or 800/343-0343).

Chapter Two of BAR CODE TYPES: THEIR STRUCTURE AND USES, pp. 5-6, Bar Code Systems states:

The basic principle of any symbology (the interpretation and structural characteristics of bar codes) is to represent a character with a pattern of black and white, wide and

narrow lines. The black lines are generally called bars, while the white lines are called spaces. Although the lines have been referred to as black, and the spaces as white, you are not limited to strictly black against white. The key is having the correct amount of print contrast between the bars (which must appear dark or have the properties that absorb light from the bar code reading device) and spaces (which must be light or disperse the light from the reading device).

The common characteristics that bar codes have are as follows:

QUIETZONE

All symbols must have a clear space, containing no marks or conflicting artwork, preceding the beginning of the code and following the end of the code.

START AND STOP PATTERNS

Each symbol has distinct characters used at the beginning and end of the code which provide reading instructions, as well as scanning direction. The start character is normally at the left-hand end of a horizontally-oriented symbol, while the stop character would normally be at the right-hand end of the same symbol.

BARS AND SPACES

Each symbol has a defined pattern of bars and spaces that is machine readable by a bar code reader. It is the relative width of the bars and spaces that contains information; the height of the bars has no such interpretive information. Published specifications for each bar code outline the exact bar and space dimensions, along with allowable plus and minus tolerances from these dimensions that are allowed. Character sets vary depending on the code type. Some codes are only numeric while some offer Alphanumeric and special characters.

CHECK CHARACTERS

Check characters are mandatory with some code types, and optional with others. When used, this character allows a mathematical check to be performed which ensures the accuracy of the encoded information.

PRINT CONTRAST

The print contrast is a measurement of the reflectivness between the bars and spaces. Specifications state that a bar code symbol must meet a standard formula used to determine the contrast between a symbol's background and bars.

DENSITY

Bar code symbols can be printed in a variety of sizes. The basic element of the code is the width of the narrow element, which is called the ,XI dimension. The width of the wider elements in the code are typically measured in multiples of 'X'. Bar code symbologies can achieve different densities (number of characters per inch). The density of a bar code is determined by the minimum 'X' dimension, the wide-to-narrow element ratio (if applicable), and the number of elements required to represent a character of information. Considerations when choosing the code density are the size of the area on which a code must fit, specifications of the bar code reader, and the limitations of the bar code printer.[1]

Bar Code Symbologies Supported By Dolphin

This section describes each of the bar code symbologies supported by the Dolphin terminal. See Appendix C to view examples of some of the bar codes. You can use these samples to test your Dolphin terminal if you are using an application that reads one of the symbologies.

CODE 39 (also called CODE 3 of 9)

The name CODE 39 describes the makeup of the code. It consists of nine elements - five bars and four spaces. Three of the elements are wide; the remaining six are narrow. It is a discrete, binary, self-checking symbology.

Features of CODE 39 include the ability to:

- Scan in either direction making it bi-directional

- Provide a high level of data security

- Encode the digits 0-9, the twenty six letters of the Alphabet, a space, and six special characters (asterisk (*), diagonal (/), plus sign (+), percent sign (%), period (.), and dash (-). The asterisk is most often used as the start and stop character.

It is the most widely used symbology in industrial environments as it can be printed by a variety of equipment.

INTERLEAVED 2 OF 5 (I 2 OF 5)

Interleaved 2 of 5 is a continuous, binary symbology. It consists only of numeric characters. It received its name from the structure of the code - each character contains five elements (two wide, three narrow). The symbology usually requires an

even number of characters, because it works by pairing characters (but can include leading zeros). In I 2 of 5, the start character always consists of this sequence: narrow bar, narrow space, narrow bar, narrow space. The stop character is always: wide bar, narrow space, narrow bar.

Advantages of I 2 of 5 include:

- Compact structure due to the interleaving of characters. Maximum character density is 17.8 characters/inch at 2.25:1 ratio.

- Provides higher level of data security when using a bearer bar (a stripe above and below the code).

However, I 2 of 5 does not prevent short reads and therefore needs a check digit to ensure a proper read.

UPC (Universal Product Code)

Possibly the most popular bar code symbology is UPC, the code seen most often at grocery stores.

UPC is a modular code. The longer bars at the front, back, and middle of the bar code are called "guard bars". The guard bar in the center divides the code into a right and left half. This allows the code to be read from either direction. Tags, or code labels, are usually printed beneath the code.

The number to the left of the code is called the Number Systems Character, and denotes the type of item (e.g. 0=regular retail items, 2=variable-weight items, 3=health-related items, 4=in-store item marking, 5=coupons, 6 & 7=industrial, distributor products, 1 & 8=reserved for future use, 9=version D of UPC).

The first five digits of the bar code represent the UPC Manufacturer's ID number; the remainder of the digits can represent the product number.

EAN (European Article Number)

A variation of UPC, EAN was designed for use in Europe. The symbology has eight and 13 digit versions that are based on UPC. EAN also includes a symbol that represents the country of origin.

CODABAR

Libraries, package-delivery services, blood banks, air-freight and photo-developing companies are the primary industries that use CODABAR. It is a discrete, 16-character, numeric code. Each character is represented by four bars and three included spaces. There are four different start and stop characters, each having one wide bar and two wide spaces. It does not include check digits.

CODE 11

CODE 11 is a very dense, discrete, numeric code. It is primarily used in the telecommunications industry. The digits 0 - 9 and the dash can be represented with CODE 11. Each character is represented by three bar's and two included spaces. CODE 11 is not self-checking, but can include one or two check-digits.

CODE 128

With CODE 128, 128 different characters can be encoded. It is an extremely dense code and is similar in structure to the UPC symbology. CODE 128 is modular, and requires three bars and three spaces to represent each character. There are three different start characters and one stop character. CODE 128 is continuous and self-checking.

CODE 93

This code is also very dense, and was designed to be similar to CODE 39. It codes alpha and numeric characters. Each character is represented by three bars and three spaces. The termination bar after the stop character closes off the final space.

CODE 93 is continuous and not self-checking. It uses two check-digits, and has the highest density of any of the alphanumeric bar codes.

PLESSEY MSI

Plessey was designed in England, and is widely used in libraries. It is limited to a character set of ten digits and six additional characters. Each character is represented by four bars and the adjacent four spaces. It is a low-density code, continuous, and is not self-checking.

Appendix C   Bar Code Samples

In this section, you will find samples of bar code symbologies described in Appendix B. With the HHP Demo program, the Dolphin terminal is programmed to read these codes. Practice scanning each of the bar codes, and notice the LCD window after you scan each code.

Code 39 (Code 3 of 9)

* D O L P H I N *

EAN (UPC variation)

0123 4565

UPC

0 12345 67890 5

Interleave 2 of 5 (I2of5)

1 1 1 1 2 2 2 2 3 3 3 3 4 4 4 4 5 5 5 5

Appendix D   GS-DOS Commands

The Dolphin terminal ships with General Software DOS (GS-DOS). GS-DOS is compatible with Microsoft DOS (MS-DOS) and is optimized to run in a very small amount of memory.

The following is a list of internal commands supported by GS-DOS:

HELP	BREAK	CALL
CD (CHDIR)	CLS	COPY
CTTY	DATE	DEL (ERASE)
DELAY	DIR	ECHO
EXIT	FOR	GOTO
IFMD (MKDIR)	PATH	PAUSE
PROMPT	RD (RMDIR)	REM
REBOOT	REN	SHIFT
SET	SWITCH	SYNC
TIME	TRUENAME	TYPE
VER	VERIFY	VOL

The following section describe the internal GS DOS commands in detail.

Warning: The command line functions are intended for developers only. Some commands may produce undesirable results or may not function at all. In addition, the LCD may not display the command results properly.

HELP

The **HELP** command displays a list of the commands that are supported by the command interpreter.

Syntax: **HELP**

BREAK

The **BREAK** command changes or displays how GS DOS handles break-ins by the user with ^C and CTL-BRK key sequences. If BREAK is ON, then GS DOS will break out of a running program or batch file when the ^C or CTL-BRK keys are pressed. If BREAK is OFF, then GS DOS will not break out, but will instead pass the keys pressed to the program.

Syntax: **BREAK [ONlOFF]**

CALL

The **CALL** command executes a pre-recorded list of commands as a subroutine.

Syntax: **Call [d:] [pathname] [parameter1] [parameter2] […]**

CD (CHDIR)

The **CD** command displays the current directory of the specified drive, or can change the current directory of the specified drive. If no drive is specified, then the default drive is used.

Syntax: **CD [drive:][pathname]**

CLS

The **CLS** command clears the terminal's screen and resets the cursor position to the upper-left hand corner of the screen. The next prompt is issued on the top line of the screen.

Syntax: **CLS**

COPY

The **COPY** command copies one or more files to a new destination. If the destination path names a file, then all of the source files are written to the target file, concatenated together.

Syntax: **COPY [drive:]pathname [drive:]pathname**

CTTY

The **CTTY** command changes the default console device

Syntax: ***CTTY device***

> *Note: This command is not supported the Dolphin Terminal.*

DATE

The **DATE** command displays the current date (month, day, date, and year) on the screen. If a user specifies a new date on the command line, then DATE will change the date to the one specified. This command updates the battery-maintained clock so that the new date will be remembered across power-downs.

Syntax: ***DATE [mon-dd-yy]***

DEL (ERASE or ERA)

The **DEL** command deletes one or more files from a file system on a specific drive. If the specified path is a directory, all files in that directory will be deleted. If the path contains wildcards, then all files that match the wildcard specification will be deleted.

Syntax: ***DEL [drive:]pathname***

DELAY

 The **DELAY** command delays a batch file for a specified amount of time.

Syntax: ***DELAY seconds***

DIR

The **DIR** command displays the files and sub-directories in a directory on the specified drive. If the drive is not specified, then the default drive is assumed. DIR uses the path operand to determine which files to list. If the path is not specified, then the current directory is assumed. If the specified path is a directory name, then all files in that directory are listed. If the specified path is a wildcarded filename, then all files matching the path specification are listed.

Syntax: ***DIR [drive:][path] [wildcard-filename]***

ECHO

The **ECHO** command has two functions; namely, control of the ECHO flag, and displaying messages in batch files. ECHO mode controls the command processor's echoing of commands in batch files. If ECHO mode is on, then commands read from batch files are automatically echoed to the screen before they are executed. If ECHO mode is off, then commands are not echoed as they are executed. To display the current ECHO flag status, use the ECHO command without any parameters. To display a message from a batch file, use the ECHO command with a non-empty string to be displayed. The special form of the ECHO command with a period (".") immediately following the word ECHO (no intervening space) causes a blank line to be echoed.

Syntax: **ECHO [ON|OFF|string]**

EXIT

The **EXIT** command terminates the current command shell and reverts control to the previous shell, provided that the current command shell is not the first one loaded in the system. The very first shell cannot be terminated with EXIT. If executed from a batch file, EXIT will terminate the batch file in a controlled manner causing control to be transferred to the keyboard user.

Syntax: **EXIT**

GOTO

The **GOTO** command causes the command processor to start executing commands that follow the specified label, in the current batch file. Labels can be inserted anywhere in batch files, and take the following form: ": label".

Syntax: **GOTO label**

IF

The **IF** command causes a command to be executed if (or if NOT) a condition is TRUE.

Syntax: **IF [NOT] ERRORLEVEL n statement**

       IF [NOT] EXIST filename statement

MD (MKDIR)

The **MD** command creates a subdirectory in the root directory or a subdirectory. By using the MKDIR command, a tree-structured file systems can be created. If a drive is specified, then the directory is created on the specified drive. Otherwise, it is created on the default drive.

Syntax: **MD [drive:]path**

PATH

The **PATH** command displays or changes the current search path that is used by the command processor, COMMAND.COM, to locate user programs and batch files. If no pathlist parameter is specified, then the current path is displayed. If a pathlist parameter is specified, then the path will be changed to the one specified.

Syntax: **PATH [pathl[;path2][;path3][;...]**

PAUSE

The **PAUSE** command is typically used in batch files to suspend execution of the batch file, print a message on the screen, and wait for the user to press a key after some action has been performed. PAUSE displays the following message on the screen before accepting a keypress from the user, "Strike any key when ready".

Syntax: **PAUSE**

PROMPT

The **PROMPT** command maintains the PROMPT environment variable that is used by COMMAND.COM to display something before the user is asked to type-in a command.

The default PROMPT variable is ng. This has the effect of showing the current drive letter followed by a "greater-than" sign:

Syntax: **PROMPT string**

RD (RMDIR)

The **RD** command removes a subdirectory from a root directory or of a subdirectory. This command can only be used to delete directories, and cannot be used to delete files, even if they are inside the directory to be removed.   Conversely, the DEL command cannot delete directories; only the files they contain. If a drive is specified, then the directory on the specified drive is removed. Otherwise, the default drive is assumed.

Syntax: **RD [drive:]path**

REM

The **REM** command provides a simple way of entering a free-form comment in a batch file. The line starting with REM has no effect on the execution of the batch file.

Syntax: **REM any comment**

REBOOT

The **REBOOT** command will reset the terminal.

Syntax: **REBOOT**

REN

The **REN** command renames a file or group of files. Files cannot be moved in the directory structure with this command; instead, only their filenames are altered within the directory in which they reside. Wildcards may be used in the second pathname to indicate that the characters in that component of the first filename are to be kept as-is.

Syntax: **REN [drive:][path]filespec filespec**

SHIFT

The **SHIFT** command allows access to multiple batch file arguments. The command shifts the contents of the 9 batch file arguments so that %2 is copies into %1, %3 is copies into %2 and so on.

Syntax: **SHIFT**

SET

The **SET** command displays the entire environment space (one variable per line), or changes the assignment of one variable in the environment space. If no operands are specified, then the SET command simply displays all of the environment variables in the environment space. If a variable name and an equal sign is given, but no string is specified, then the variable name is removed from the environment space. If the string is specified, then the previous definition of the variable is deleted, and the new one is installed in the environment.

Syntax: **SET [keyword=[string]]**

SHIFT

Displays or changes the optional switch character.

Syntax: **SWITCH [character]**

SYNC

The **SYNC** command provides a synchronization checkpoint feature that enables a batch file to flush the file system's buffers to disk before doing something that might otherwise cause a disorderly shutdown

Syntax: **SYNC**

TIME

The **TIME** command displays or changes the system time. If no parameter is specified, then the current system time is displayed, and the user is queried for the new system time. If the user just presses the ENTER key, the system time is not changed. If the user enters a new time, then the system's real-time-clock is updated.

Syntax: **TIME [hh:mm:ss[.hh]]**

TRUENAME

The **TRUENAME** command displays the true name and path of a file.

Syntax: **TRUENAME file**

TYPE

The **TYPE** command copies the contents of the specified file to standard output (usually, the screen). If the drive letter is not specified, then the default drive is assumed.

Syntax: **TYPE [drive:][path]filespec**

VER

The **VER** command displays the MS-DOS emulation version number, as well as the version of the Embedded DOS-ROM operating system that is running.

Syntax: **VER**

VERIFY

The **VERIFY** command changes or displays how GS DOS handles I/O to disk files and directory structures. If VERIFY is ON, then Embedded DOS-ROM verifies immediately that disk I/O is completed successfully before telling the user that it was. This is accomplished by writing data directly to disk, without temporarily storing it in a file system or disk driver cache. If VERIFY is OFF, then GS DOS caches writes to files and defers the actual writing to disk, enabling multiple writes to the same sectors to be served much faster. The cache is automatically written to disk in the background during "dead time", when the disk is not busy. This is accomplished with the multitasking threads and semaphores that the GS DOS kernel supports.

Syntax: **VERIFY [ONIOFF]**

VOL

The **VOL** command displays the volume label of a diskette or a hard disk. VOL does not allow the user to change the volume label. If the drive letter is not specified, then the default drive is assumed.

Syntax: **VOL [drive:]**

Appendix E Declarations of Conformity

DECLARATION OF CONFORMITY
EC declaration of conformity for: 89/336/EEC   EMC Directive

1. Product Identification

Product name	: Dolphin 1 Terminal and Homebase
Line of business	: Auto ID
Model/type	: N/A
Version	: N/A
Additional information	: This Product was tested with the following:
	Dolphin 1 Terminal Bar Code Scanner
	Dolphin 1 Homebase

2. Manufacturer

Name	: Hand Held Products, Inc.	
Address	: 7510 E. Independence Blvd. #100	
	Charlotte, North Carolina 28227-9411	
Country	: United States Of America	
Authorized by manufacturer	: Corporate Body:	Trading as:
	Fleuri Kets V B.V.	Hand Held Products Europe
	Kaatsheuvel	Hondsruglaan 87d
	The Netherlands	5628 DB Eindhoven
		The Netherlands

3. Test lab

Name	: Instrument Specialties
Address	: Delaware Water Gap, Pennsylvania 18327-0136
Country	: United States of America

4. Applied standards

Name/numbers		
	:ITE Emissions	EN 55022
	:Generic Immunity for Res./Comm./Lt. Industrial	EN 50082-1
	:Electrostatic Discharge Immunity	IEC 1000-4-2
	:Radiated EMI Field Immunity (IEC 801-3)	IEC 1000-4-3
	:Fast Transient / Burst Immunity	IEC 1000-4-4

5. Test report

Name/number		
	:ITE Emissions	45889
	:Generic Immunity for Res./Comm./Lt. Industrial	45889
	:Electrostatic Discharge Immunity	45889
	:Radiated EMI Field Immunity (IEC 801-3)	45889
	:Fast Transient / Burst Immunity	45889

6. Declaration

We, mentioned at point 2, declare on our own full responsibility that the product mentioned at point 1 complies with the directive 89/336/EEC. This is based upon testing of a sample of the product mentioned at point 1, performed by the test lab mentioned at point 3, according to the harmonized standards corresponding to article 10 (1) of the directive 89/336/EEC. These standards are mentioned at point 4. The results of the tests are given in the report mentioned at point 5.

7. Authentication

Signature in behalf of authorized
company mentioned at point 2 :

J.H. Cottrell Jr., Managing Director, Hand Held Products Europe
Date : _____   Place : _____

DECLARATION OF CONFORMITY
EC declaration of conformity for the following:
89/336/EEC EMC Directive
73/23/EEC Low Voltage Directive as amended by 93/68/EEC

1. Product Identification

Product name	: Dolphin RF 2.4 GHz Portable Data Collection Terminal
Line of business	: Auto ID
Model/type	: N/A
Version	: N/A
Additional information	: This Product was tested with the following:
	Dolphin I Homebase

2. Manufacturer

Name	: Hand Held Products, Inc.
Address	: 7510 E. Independence Blvd. #100
	Charlotte, North Carolina 28227-9411
Country	: United States of America
Authorized by manufacturer	: Corporate Body:

: Corporate Body:	Trading as:
Fleuri Kets V B.V.	Hand Held Products Europe
Kaatsheuvel	Hondsruglaan 87d
The Netherlands	5628 DB Eindhoven
	The Netherlands

3. Test labs

Name	: Telefication BV
Address	: Utrechtseweg 310
Country	: The Netherlands
Name	: SGS US Testing Company Inc.
Address	: 291 Fairfield Avenue
Country	: Fairfield NJ 07004 USA

4. Applied standards

Name/numbers		
	: ITE Emissions	EN 55022:1995
	: Electromagnetic Immunity for	
	Res./Comm./Lt. Industrial	ETS 300 826:1997
	Including:	
	: Electrostatic Discharge Immunity	EN 61000-4-2:1995
	: Radiated EMI Field Immunity (IEC 801-3)	EN 61000-4-3:1996
	: Fast Transient / Burst Immunity	EN 61000-4-4:1995
	: Conducted RF Immunity	EN 61000-4-6:1996
	: Safety of Information Technology Equipment, Including	
	Electrical Business Equipment (LVD)	EN 60950:1992

DECLARATION OF CONFORMITY
EC declaration of conformity for the following:
89/336/EEC EMC Directive
73/23/EEC Low Voltage Directive as amended by 93/68/EEC

5. Test report

Name/number

Telefication
: ITE Emissions   98302120
: Electromagnetic Immunity for Res./Comm./Lt. Industrial 98302120
 (all inclusive as listed above)

SGS
: LVD Compliance   U0212

6. Declaration

We, mentioned at point 2, declare on our own full responsibility that the product mentioned at point 1 complies with the directive 89/336/EEC and 73/23/EEC as amended by 93/68/EEC. This is based upon testing of a sample of the product mentioned at point 1, performed by the test labs mentioned at point 3, according to the harmonized standards corresponding to article 10 (1) of the directive 89/336/EEC and to 73/23/EEC as amended by 93/68/EEC. These standards are mentioned at point 4. The results of the tests are given in the reports mentioned at point 5.

7. Authentication

Signature in behalf of authorized
Company mentioned at point 2:

J.H. Cottrell Jr., Managing Director, Hand Held Products Europe

Date : 27 OCT 98   Place : NorthCarolina, USA