Hand Held

PRODUCTS

Dolphin® 7200
Mobile Computer

User's Guide

Trademarks

Microsoft, Windows 3.11, Windows 95, Windows 2000, and Windows NT and Excel are trademarks or registered trademarks of Microsoft Corporation. Dolphin and HomeBase are trademarks or registered trademarks of Hand Held Products. Other product names mentioned in this document may be trademarks or registered trademarks of their respective companies and are hereby acknowledged.

Table of Contents

Chapter 4 - Dolphin 7200 RS-232

Chapter 5 - Dolphin 7200 2D Mobile Computer

Chapter 6 - Dolphin OS and System Development Software

Chapter 7 - Troubleshooting

Chapter 8 - Dolphin HomeBase

Chapter 9 - Compact HomeBase

Chapter 10 - Dolphin Vehicle Base

Chapter 11 - Dolphin MultiCharger

Chapter 12 - Customer Support

Appendix A - Technical Specifications

Appendix B - Bar Code Samples

Appendix C - Decoding Demo Menu Layout

Appendix D - IQ Imaging Test Target

Appendix E - GS-DOS Commands

1

Introduction

Congratulations on the purchase of your new Dolphin 7200 mobile computer!

You have made a wise choice in selecting the Dolphin 7200, a device known worldwide for its ergonomic shape, light weight, versatility and single-handed data collection features.

Ergonomics

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/C++, or Visual Basic.

Durability

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.

Features

The Dolphin's basic features include 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, and two keypad options.

Multiple Configurations

The multiple configurations available for the Dolphin 7200 make it one of the most versatile terminals in the automatic data collection industry. The terminal may be equipped with a scan engine capable of reading all standard bar code symbologies.

The **Dolphin 7200 RS-232** terminal features a micro-DB9 RS-232 for serial data input/output and charging in addition to the infrared port.

The **Dolphin 7200-2D** terminal comes available with the IMAGETEAM™ 4250 Image Engine, a low power, high-resolution digital image engine for omni-directional and auto-discrimination reading and decoding of linear barcodes, stacked linear (PDF417) and 2D matrix codes. The image engine functions like a digital camera and also provides Optical Character Recognition (OCR) functionality.

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.

Safety

The Dolphin 7200 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

Dolphin 7200 terminals use 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.

Locations

The following are required safety labels, as they should appear on the back panel of the Dolphin 7200:

Label for Laser Batch Terminals

Label for Dolphin 7200-2D Terminals

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.

FCC Tested to Comply
With FCC Standards

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

Product ID Label

Version   XXXXXXXX

Serial Number: PRE XXXXX

MONTH, DAY, YEAR

IF REQUIRED - REF BOM

HAND HELD PRODUCTS, INC.

SEE PATENT STATEMENT

NO USER SERVICEABLE PARTS.
OPENING VOIDS WARRANTY MADE
IN USA OF US AND IMPORTED PARTS

Statement of Agency Compliance

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

FCC Class A Compliance Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Caution: Any changes or modifications made to this device that are not expressly approved by Hand Held Products may void the user's authority to operate the equipment.

Note: To maintain compliance with FCC Rules and Regulations, cables connected to this device must be shielded cables, in which the cable shield wire(s) have been grounded (tied) to the connector shell.

Canadian Notice

This equipment does not exceed the Class A limits for radio noise emissions as described in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la classe A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

CDRH Laser Safety Statement: 7200 Batch

This product complies with US DHHS 21 CFR J Part 1040.10. This product is a CLASS II LASER PRODUCT with a maximum output of 1.0 mW at 670 nanometers and continuous wave.

EN 60825-1 Laser Safety Statement

This product is classified as a CLASS 2 LASER PRODUCT with a maximum output of 1.0 mW at 670 nanometers per EN 60825-1:1994, Issue 2, June 1997.

Regulatory and Safety Agency Approvals

Parameter	Specification
U.S.A.	FCC Part 15, Class A
Canada	IEC 0003
Europe	EN 55022 (CISPR22) Class A EN 55024

CE The CE mark on the product indicates that the system has been tested to and conforms with the provisions noted within the 89/336/EEC Electromagnetic Compatibility Directive and the 73/23/EEC Low Voltage Directive.

For further information please contact:

Hand Held Products, Inc.
5627 BT Eindhoven
The Netherlands

Hand Held Products shall not be liable for use of our product with equipment (i.e., power supplies, personal computers, etc.) that is not CE marked and does not comply with the Low Voltage Directive.

Batteries

- Use only the battery supplied with your Dolphin or a replacement battery supplied, recommended, or approved by Hand Held Products.
- 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 1500 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 Held 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.

2

Getting Started

About the Dolphin 7200

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

Accessories for the Dolphin

The Dolphin 7200 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, serial communications/ charging cables, desktop "gang chargers" and vehicle mounted charging/communication cradles.

You can use these accessories with the Dolphin:

Dolphin HomeBase™

Dolphin Compact HomeBase™
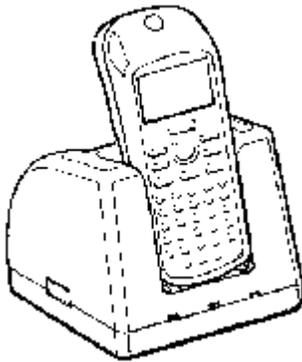
Charges one Dolphin terminal and one extra battery pack in its auxiliary batter well; includes power adapter for proper current.

For more information, see Dolphin HomeBase on page 8-1.
For more information, see Compact HomeBase on page 9-1.

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.

Dolphin MultiCharger™

10-slot battery charger designed specifically for Dolphin NiMH battery packs that charges and reconditions 10 batteries in under four hours. Supports 90-264V.

For more information, see Dolphin MultiCharger on page 11-1.

Dolphin VehicleBase™

Battery charging and/or communications cradle designed for in-transit applications. Mounted inside a vehicle, this cradle provides connectivity to any RS-232 serial device including printers, radio modems, GPS, on-board computers and vehicle monitoring systems.

For more information, see Dolphin Vehicle Base on page 10-1.

Wrist Strap for Dolphin

A convenient way to carry the Dolphin.
Note: Lanyard ring for attaching strap not available with the Dolphin 7200 RS-232.

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.
For more information, see Dolphin MultiCharger on page 11-1.

Communication/Charging Cable for Dolphin 7200 RS-232

Connects the Dolphin 7200 RS-232 terminal directly to host computer using micro-DB9 to DB9 serial cable, and recharges the battery using the Universal Power Adapter PS9U-11.

6' RS-232 Serial Cable

Connects the Dolphin HomeBase to your desktop PC.

Note: Use your Dolphin only with accessories supplied, recommended or approved by Hand Held Products, Inc. Use of non-approved accessories can be dangerous and will invalidate any warranty or liability claims.

Dolphin 7200 Models

Hand Held Product's family of Dolphin 7200 handheld portable data collection terminals includes these models:

Dolphin 7200 Batch Terminal

The Dolphin 7200 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 8MB FLASH EEPROM memory. It also features an IrDA infrared transceiver for data communications.

Options

- 36-key alphanumeric keypad or 20-key numeric keypad with shifted alpha characters
- Standard High Performance, Long-Range or High Density scan engines
- 2 MB RAM with 8 MB non-volatile FLASH memory (expandable to 16 MB on Dolphin 7200 Batch only)
- No scan engine (manual entry only)
- Integrated image engine
- Micro-DB9 RS-232 serial port

Dolphin 7200 RS-232 Terminal

The Dolphin 7200 RS-232 terminal is identical to the Dolphin 7200 Batch terminal except that it features a micro-DB9 RS-232 port on the back panel for serial data input/output and charging.

Dolphin 7200 2D Terminal

The Dolphin 7200 2D terminal is identical to the Dolphin 7200 Batch terminal with IQ Imaging™. IQ Imaging offers a suite of features to increase productivity when reading all major linear, stacked linear (PDF417), and matrix bar code symbologies, OCR fonts, and performing image capture. IQ Imaging features the IMAGETEAM™ 4250 Image Engine, a low power, high-resolution digital image engine for omni-directional and auto-discrimination reading and decoding.

Bar Code Symbologies Supported

1D Linear Codes:	Code 3 of 9, Interleaved 2 of 5, Code 11, MSI, UPC A, UPC EO, UPC EI, EAN/EAN13, Codabar, Code 128, Code 93, UPC
2D Codes:	PDF417, microPDF, Maxicode, Datamatrix, Aztec, QR Code, Code 49
Composite Codes:	RSS-14, CODABLOCK, AZTEC MESA
OCR Codes:	OCR A and OCR B
Postal Codes:	Postnet and most international 4 state codes, PLANET CODE, BPO 4 STATE, CANADIAN 4 STATE, DUTCH POSTAL, AUSTRALIAN 4 STATE, JAPANESE POSTAL

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

Note: Be sure to keep the original carton and packaging in the event that the Dolphin terminal or Dolphin HomeBase should need to be returned for service.

Step 1. Checking Your Package

If you ordered a Dolphin 7200 Batch or 2D terminal, inspect the package to see that the following standard items and accessories (if ordered) are included:

- Dolphin 7200 terminal
- Battery (1500 mAh, Nickel Metal Hydride (NiMH)
- Dolphin 7200 HomeBase
- AC-DC Power Adapter for Dolphin HomeBase

If you ordered a Dolphin 7200 RS-232 terminal, inspect the package to see that the following standard items and accessories (if ordered) are included:

- Dolphin 7200 RS-232 terminal
- Battery - 1500 mAh, Nickel Metal Hydride (NiMH)
- Dolphin 7200 RS-232 Communication/Charging Cable
- AC-DC Universal Power Adapter

Step 2. Charging the Battery

⚠️ *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.*

⚠️ *Although the Dolphin 7200 terminal is received with the battery inserted, it is NOT ready for charging and/or deep-cycling. Remove the plastic insulator located between the terminal and battery connectors. Failure to remove the insulator may result in damages to the terminal.*

The terminal's NiMH battery is not conditioned at the factory and is shipped discharged of all power and inserted in the Dolphin terminal. For maximum battery life, Hand Held Products recommends that you deep-cycle the battery twice before initial use.

To deep-cycle, insert the battery into the HomeBase auxiliary battery well. Then, push and hold the Service Aux Batt button for at least four seconds. For more information, see Deep-Cycling the Battery on page 8-6. You may also use the CycleBat software utility to deep-cycle the battery. This utility is available for download from the Partners Area of www.handheld.com.

Note: For maximum battery life, Hand Held Products recommends that you deep-cycle (service) the battery twice before initial use and then, once a month thereafter.

If you have a Dolphin 7200 RS-232 terminal and are using the communication/charging cable instead of a HomeBase to charge the battery, charge the terminal for 24 hours before initial use.

After deep cycling the battery, you may charge the battery using one of these methods:

• 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 MultiCharger. 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
• Plug the micro-DB9 end of the communication/charging cable into Dolphin 7200 RS-232 terminal's RS-232 port and connect to an external power source. Time to Charge: 5 ½ hours

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.
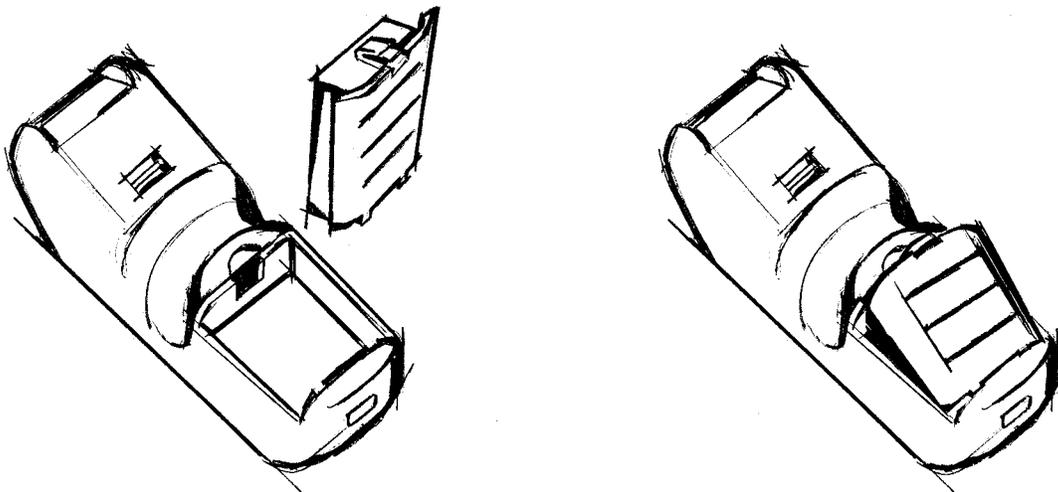
Step 3. Turning the Dolphin On And Off

Turning the Dolphin On

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 Demo Application will appear on the display.

4. If the title screen does not appear on the display of your Dolphin, the Demo Application has been removed from your terminal. Therefore, you will see a DOS prompt on the screen; for 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 30.

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."

Step 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 Terminal:

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-yyyy.

4. Press ENTER.

To Set the Date on a Numeric Terminal:

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

2. Enter DATE at the Dolphin's DOS prompt; see Using the Numeric Keypad on page 3-4.

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

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

5. Press ENTER.

To Set the Time

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.

3

Dolphin 7200 Basics

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 a 120K 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 an 8MB FLASH virtual hard drive used for program and data storage. Drive C is an image of the Drive A and not a physical drive.

Drive D If you add the expanded memory module to your Dolphin Batch terminal, it will appear as Drive D. Eight MB of additional FLASH memory can be added via the FLASH expansion module. This option is available in the Dolphin Batch terminal only.

Front Panel Features

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

Light Emitting Diodes (LEDs)
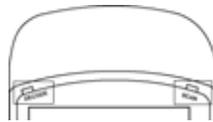
The red LED located at the upper right corner of the LCD display is labeled SCAN. This LED illuminates when the user presses the ON/KEY key and activates the scan engine.

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.

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 ENTER key confirms data entry.

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

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

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.

Alphanumeric Key Combinations for 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 Combinations	Functions or 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

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 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 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 ENTER key confirms data entry.

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

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

The SP (space) key moves the cursor forward one key at a

Key Combinations for 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.

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 Charging Symbol

Located in lower left-hand corner of the LCD, this symbol indicates the battery charge. When this symbol is blinking, the battery's charge is critically low and you should recharge it as soon as possible.

Note: The battery charge level symbol is only an estimate of the remaining battery life.

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

Icon	Indicates
	Blinks while main battery in the Dolphin terminal is charging in the Dolphin 7200 HomeBase. Located in lower left-hand corner of the LCD.
	Blinks while the main battery in the Dolphin terminal is discharging when using the battery deep-cycling utility program.
	Switches from a blinking arrow to this blinking check when the unit has completed charging in the HomeBase.
	Shows the 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.

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.

Icon	Indicates	Which means that …
ABC	Alpha mode	Alphabetic characters are active
123	Numeric mode	Numeric characters are active

Back Panel Features

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

Laser/Image Engine Window

Micro-DB9 RS-232 (Dolphin 7200 RS-232) or Lanyard Eyelet (not available on Dolphin 2D)

Reset Switch

Battery Well

Battery Charging Contacts

Infrared Communications Port
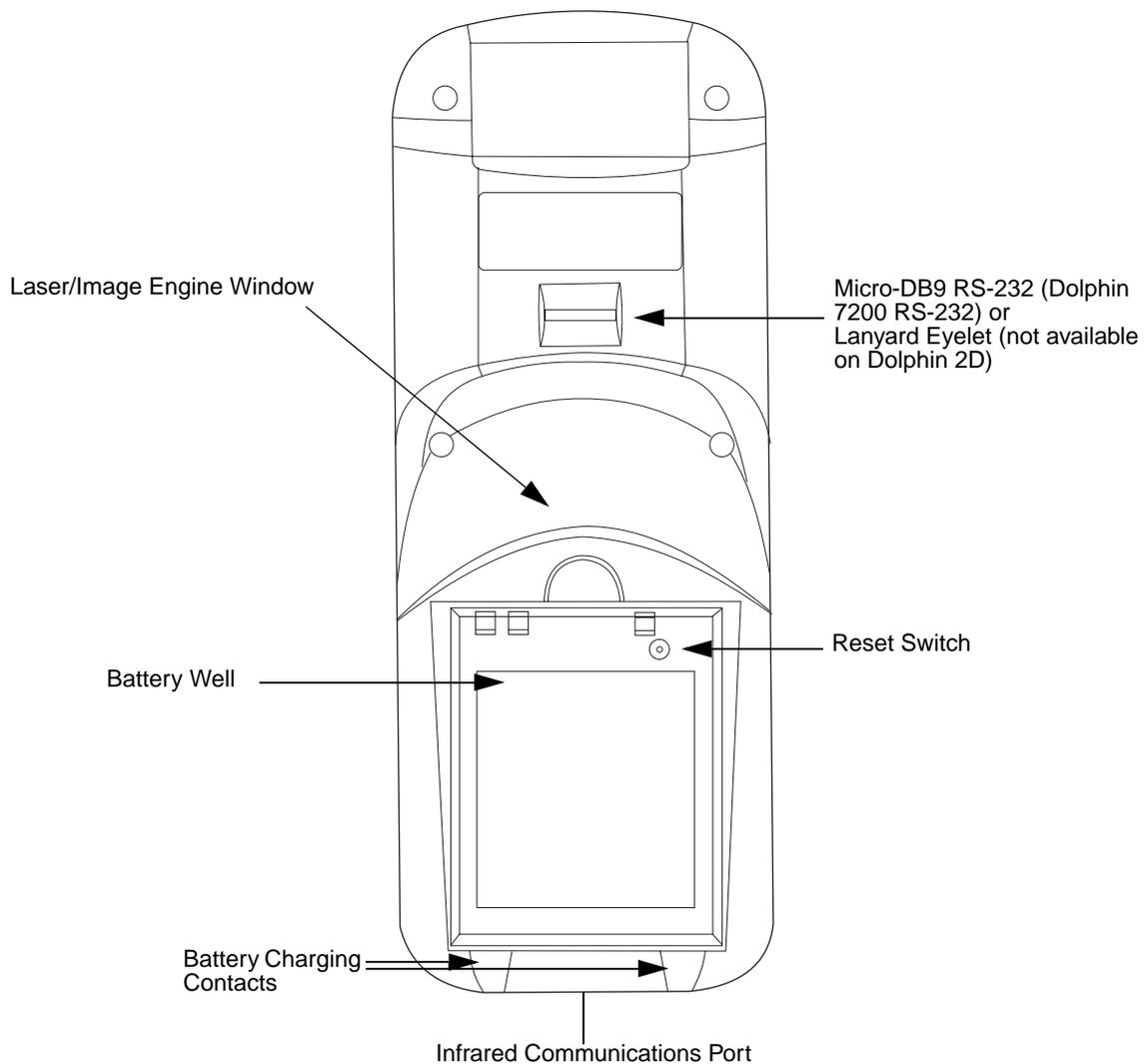
Laser Engine

The Dolphin 7200 is currently available with four scanning options:

• Standard range
• Long range
• High density 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.

Image Engine

The Dolphin 7200 2D terminal is available with the following imaging options:

• Standard image engine: scans 2 to 9 in. (5 to 23 cm)
• High-Density: scans 2 to 4 in. (5 to 12 cm)
• LX image engine: scans 2 to 15 in. (5 to 38 cm) on low density bar codes

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 7200 2D or the Dolphin 7200 RS-232 terminals.

Battery Well

The battery well is a recessed area on the back of the Dolphin that 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.

Note: Under normal circumstances, you should never need to reset your Dolphin terminal.

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

⚠ *Although the Dolphin 7200 terminal is received with the battery inserted, it is NOT ready for charging and/or deep-cycling. Remove the plastic insulator located between the terminal and battery connectors. Failure to remove the insulator may result in damages to the terminal.Use only the 3.6V battery packs provided by Hand Held Products. The use of any other battery pack in the Dolphin 7200 terminal will void your warranty and may result in damage to the Dolphin terminal or battery.*

There are two batteries in the Dolphin:

1. 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.

2. NiMH Battery Pack - Inserted into the back panel, the battery pack is the primary power source for operating the Dolphin.

Internal NiMH 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.

Guidelines

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.

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

NiMH Battery Pack

The 3.6V, 1500 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 1500 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).

⚠ *Although the Dolphin 7200 terminal is received with the battery inserted, it is NOT ready for charging and/or deep-cycling. Remove the plastic insulator located between the terminal and battery connectors. Failure to remove the insulator may result in damages to the terminal.*

Performance specifications for a fully charged 1500 mAh NiMH battery (using power management function calls within application):

*   Up to 20 hours of usage in a Dolphin Batch terminal with a full battery charge
*   Up to 20 hours of usage in a Dolphin 2D 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 maximum battery life, Hand Held Products recommends that you deep-cycle the battery twice before initial use. To deep cycle, insert the battery into the HomeBase auxiliary battery well. Then, push and hold the Service Aux Batt button for at least 4 seconds. For more information, see Charging an Additional NiMH Battery Pack on page 8-6.

You may also deep cycle the battery using the CycleBat battery utility conditioning software which is available from the Partners area of the Hand Held Products web site www.handheld.com. More information on this utility is available from the help file that comes with the software.

Note: For maximum battery life, Hand Held Products recommends that you deep-cycle (service) the battery twice before initial use and then, once a month thereafter.

Hand Held Products also recommends that you service, or calibrate the battery once per month. For details, see Servicing the Battery Pack on page 11-3.

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 MultiCharger.

Note: Keep a charged battery pack in the Dolphin at all times to conserve the internal back-up battery.

For details about the Dolphin HomeBase, see Charging Batteries in the Dolphin 7200 HomeBase on page 8-5.

For details about the Dolphin MultiCharger, see Charging Batteries in the Dolphin MultiCharger on page 11-3.

Storing Battery Packs

To maintain top performance from batteries, follow the guidelines below when storing them:

• Avoid storing batteries outside of the specified range of -4 to 104° F (-20 to 40°C) or in extremely high humidity.
• For prolonged storage, do not keep batteries stored in the terminal.
• During long-term storage, battery deactivation may tend to occur which may cause charging to stop early during recharging after storage. Charging and discharging the battery several times can handle this issue. Also, the first charging after prolonged storage may yield a lower than normal capacity. While this will vary depending on the storage conditions, charging and discharging the battery several times will almost completely restore capacity.

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.

   OR

2. Press the Reset Switch.
   The reset switch is located in the battery compartment of the Dolphin terminal.
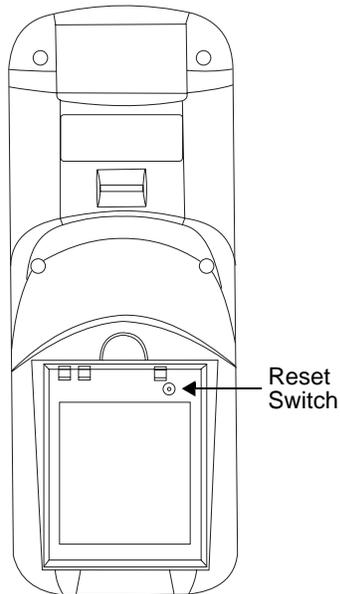
Use the tip of an unfolded paper clip (or other similar blunt object) to gently press the reset switch.
The recess hole for the reset switch may be covered with a small plastic cover. This cover must be removed and placed back in position after accessing the reset switch.

   OR

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.

4

Dolphin 7200 RS-232

About Dolphin 7200 RS-232

The Dolphin 7200 handheld computer with micro-DB9 RS-232 port is a compact, high performance data collection terminal with standard connectivity at a low cost. Through the terminal's micro-DB9 RS-232 port, the Dolphin 7200 can be connected to a host computer to send and receive data.

The terminal's battery can be recharged through the RS-232 port using the Dolphin 7200 communication/charging cable and a power adapter or the Dolphin HomeBase charging/communications cradle.

The Dolphin 7200 RS-232 can also connect to self-powered, RS-232-compliant peripherals, such as external modems and printers, GPS receivers, electronic scales, and various input devices via the micro-DB9 RS-232 port. Wireless IrDA connectivity remains available, allowing users to connect with IrDA-compliant printers through the IR port.

Cables

The following table shows pinout for the Dolphin 7200 terminal's micro-DB9 RS-232 port.

Note: The " RF_card" function call will turn off the 5V supplied on pin 9 of the 7200 RS-232 non-scan units. This already exists in OS4.1 API.

The pin-out configuration is as follows:

Pin #	Signal	Description	Direction
1	VCHG	9V Charging Voltage	Input
2	TXD	Transmit Data	Output
3	RXD	Receive Data	Input
4	DSR	Data Set Ready	Input; looped to Pin 6
5	GND	Ground	
6	DTR	Data Terminal Ready	Output; looped to Pin 4
7	CTS	Clear To Send	Input
8	RTS	Request To Send	Output
9	/	No Connectadd +5VDC	Non scanning (blind) models only

Charging the Battery Through the RS-232 Port

Before initial use, the Dolphin 7200 RS-232 terminal should be charged for 24 hours.

1. Plug the adapter into electrical outlet.

2. Insert a battery pack into the battery well of the terminal.

3. Insert the micro-DB-9 RS-232 connector on the communication/charging cable into the micro-DB-9 port on the back of the Dolphin 7200 RS-232 terminal.

4. Connect the Universal Power Charging Adapter (Part #PS9U-11) into the adapter end of the communication/charging cable.

Note: The charging adapter is a regulated 9V power supply and, due to the different connector, cannot be used with the HomeBase.

For more on maintaining the batteries, see the section on Maintaining Batteries in Chapter 2.

Sending and Receiving Data

The Dolphin 7200 RS-232 terminal can be connected to a host computer to send and receive data via the micro-DB9 RS-232 port using the YX.EXE Utility or the Dolphin File Transfer Program.

1. Insert a battery pack into the battery well of the terminal.

2. Insert the micro-DB-9 RS-232 connector to the Dolphin communication (only) cable into the micro-DB-9 port on the back of the Dolphin 7200 RS-232 terminal.

3. Connect the DB-9 connector to your PC's serial port.

4. Run the YX.EXE utility or the Dolphin File Transfer Program.

For more on sending and receiving data using YX.EXE and the Dolphin File Transfer Program, see the section on Transferring Files to or From Dolphin in Chapter 9.

5

Dolphin 7200 2D Mobile Computer

About the Dolphin 7200 2D Mobile Computer

The Dolphin 7200 2D mobile computer features the IMAGETEAM 4250 Image Engine, a low power, high-resolution digital image engine for omni-directional and auto-discrimination reading and decoding of linear barcodes, stacked linear (PDF417) and 2D matrix codes. The image engine functions like a digital camera and also provides OCR functionality.

The terminal is available in several configurations with alphanumeric and numeric keyboard options. These configurations include the standard range (LR), long range (LX), and high-density (HD) engines with 2MB RAM and 8MB non-volatile FLASH memory.

The 2D terminal has image lift capabilities for signature capture and proof of delivery applications. Images taken with the unit can be compressed and stored using industry-standard data compression technologies. The device provides the flexibility to store either images that contain grayscale information or black and white only information. Images can be downloaded via HomeBase or VehicleBase communication cradles and then transmitted via one of many wired or wireless options.

The terminal is also able to decode barcode symbologies and capture images in dim lighting conditions or complete darkness.

Supported Symbologies

1D Linear Codes:	Code 3 of 9, Interleaved 2 of 5, TLC Code 39, Code 11, MSI, UPC A, UPC EO, UPC EI, EAN/EAN13, Codabar, Code 128, Code 93, UPC
2D Codes:	PDF417, microPDF, Maxicode, Datamatrix, Aztec, QR Code, Code 49
Composite Codes:	RSS-14, CODABLOCK, AZTEC MESA
OCR Codes:	OCR A and OCR B
Postal Codes:	Postnet and most international 4 state codes, PLANET CODE, BPO 4 STATE, CANADIAN 4 STATE, DUTCH POSTAL, AUSTRALIAN 4 STATE, JAPANESE POSTAL

For other supported symbologies, please see the IMAGETEAM 4250 User's Guide.

Reading Barcodes

The omni-directional scanning capabilities of the Dolphin 7200 2D terminal greatly simplify operation and training and increase productivity.

1. Press the ON/SCAN button to project the scanner's bright red aiming beam

2. Center the aiming beam over the barcode.

3. The red SCAN LED illuminates when the user presses the ON/KEY key and the green DECODE LED illuminates when a bar code is successfully decoded. **The aiming beam can be positioned in any direction for a good read.**

Linear bar code   **2D Matrix symbol**

The aiming beam is smaller when the terminal is held closer to the code and larger when it is farther from the code. Symbologies with smaller bars or elements (mil size) should be read closer to the unit. Symbologies with larger bars or elements (mil size) should be read farther from the unit.

Capturing Images

The image-capture process is a split-second operation for experienced users. By following the basic guidelines, new users can easily develop their own technique and, with practice, quickly learn to adapt it to different circumstances.

The basic steps for acquiring images using the Dolphin 7200 2D terminal are:

1. To aim, hold the Dolphin terminal horizontally at a 45° angle approximately 2 to 9 inches (5 to 20 cm) away from the target. You may have to adjust the angle at which you hold the Dolphin if there is glare on the screen.

2. Press the ON/SCAN button to take an image. Use the live video image on the terminal screen as a guide for positioning and aiming the terminal at the target. You may find it helpful to start by moving the terminal further away and then in closer to the target. The active screen image will have a slightly degraded appearance compared to the captured image. This is normal.

3. Release the ON/SCAN button to capture the image when the desired image is displayed on the terminal screen. Hold the Dolphin terminal as still as possible when capturing the image.

Image Quality and File Size

The image quality and related file size is determined by the data compression method used by your software application. For highest quality, take grayscale images. When saved, the image will be saved in JPEG file format. The size of the file depends on the information content of the image and will be approximately 4-8 K.

Lighting Conditions

The Dolphin 7200 2D terminal is designed to read bar codes and take images in dim light conditions. It is suggested that you turn on the unit's electroluminescent display backlight when taking images in extreme low light conditions to help with aiming.

Dolphin 7200 2D Demo Software

The Dolphin 7200 2D terminal demonstration software allows you to show terminal's ability to do omni-directional decoding, image capture and I.Q. Imaging.

The Image Capture demo requires that you have a PC available with a program such as the Dolphin File Transfer utility that is capable of receiving files via Ymodem protocol, and a Dolphin home base connected to that PC.

For more information on using the Dolphin File Transfer Utility, see Transferring Files to or from the Dolphin Terminal on page 6-9.

Re-Installing the Dolphin 7200 Demo Applications

The Dolphin 7200 2D terminal is shipped loaded with the demonstration software. If the demo software has been removed from your terminal, follow these steps to re-install it:

1. Download the demonstration installation programs from the Partners area of the web site: www.handheld.com. The program is called DEMOS.EXE and is a self-extracting zip file that installs the Demo applications and also offers to replace the Dolphin terminal's AUTOEXEC.BAT file.

2. Use the Dolphin File Transfer utility to load DEMOS.EXE onto the Dolphin unit.

3. Run DEMOS.EXE.

4. Start the demo program by typing **DEMOSTART** at the C:> prompt and then pressing ENTER.
   If you chose to let DEMOS.EXE overwrite the AUTOEXEC.BAT, perform a three-key reset (pressing and releasing the SHIFT, ON/SCAN and BKSP keys at the same time.) and the program will start.

Dolphin Demo Main Screen

When you start the program, this menu screen will be the first one you see. This screen allows you to access the demonstration programs listed or exit to DOS. All the Demo programs will return to this menu screen when exited.

```
F1-Decoding Demo    ||||

F2-Imaging Demo

F3-I.Q. Demo      Bill

F4-Exit to DOS    C:\>_
```
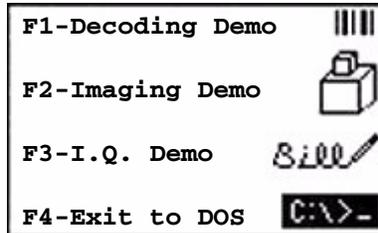
If there is no keyboard activity over a short period of time, press any key to go to the Dolphin Demo Main Screen.

F1 - Decoding Demo

Press F1 and the Scan a Target screen shown below will display:

```
        Scan a Target



                    F3-Setup
                    H-Help
```
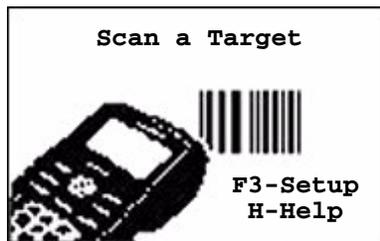
For optimal scanning performance for your application, the 2D imager has three scanning modes: standard omni, reduced omni and Advanced Linear Decoding (ALD).

To scan a bar code:

1. Press and hold the ON/SCAN button.

2. You will see the scanner alternate between a thin green aiming line, and a general red flash. The flash is when the imager is actually taking an image and attempting to decode any barcodes in the image.

3. After the Dolphin successfully decodes a barcode, the Decoded Message screen shown below will display.

```
            UPC
C7771104501


      {I xnɪʒɪlɪ II}
```
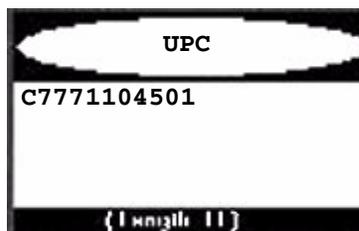
The top of the screen tells the name of the symbology decoded, the bottom of the screen tells the length of the data decoded, and the middle section shows the message. If the message is long, you can scroll up and down using the F1 & F2 keys to read the data. To scan again, just press the ON/SCAN button again.

3. To exit demo, press F4 and you will return to the Dolphin Demo Screen.

F2 - Imaging Demo

Press F2 and the screen shown below will display:

```
Press ON/SCAN to
capture an image

                    F3-Setup
                     H-Help
```
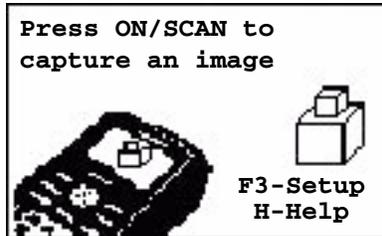
To setup the imager, press F3.

To Take an Image:

1. Press and hold the ON/SCAN button. Release the ON/SCAN button to capture the image when the desired image is displayed on the terminal screen. When you release the ON/SCAN button, the terminal will save the image taken. You will hear a confirming set of beeps and the screen shown below will display.

```
Set Dcomm to
receive a file

Place in Base

Press ENTER
```
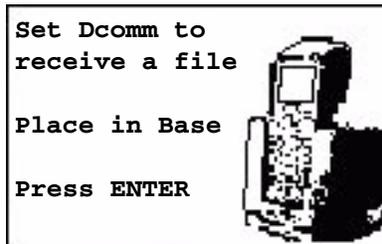
2. Place the unit in the Home Base, start the Dolphin File Transfer utility on your PC and set it to receive a file.

3. Press ENTER on the Dolphin terminal to transfer the image to your PC. Go to the directory to the file was transferred and you should see a file titled Gray.jpg.

4. Double click on the file to launch the viewer to see the image. Browsers like Internet Explorer are good tools for looking at jpg images. (Note: If you changed any file format settings in the setup window for the program, the name of the file will be different).

5. You can skip sending the file by pressing enter, then pressing esc when the Dolphin attempts to transmit the file. F4 on the "Press ON/SCAN" screen will allow you to exit the application.

F3 - I.Q. Imaging Demo

Press F3 and the Scan the Test Target screen shown below will display:

```
Scan the Test Target
```

For this demo, you must use the test target shown below. See Appendix E for a copy of the test target to make copies for multiple uses in the future.

To use the demo:

1. Enter a signature in the box below.

2. Press and hold the ON/SCAN button and aim at the barcode. When the engine successfully decodes, you will hear a short beep. The image engine will then take an image of the signature. When the signature is captured, the terminal will beep and the screen shown below will appear on the screen.


```
Tracking Number:

 231498324
Address:

Hand Held Products
7520 E. Independence Blvd.
Charlotte, NC 28227
```

3. The data shown is information contained in the barcode. Press the ENTER key and the signature captured screen will be displayed as shown below:


```
Captured Image:
```

4. Press ENTER to return to the Scan the Test Target screen. Press F4 to exit the demo and return to the demo main menu.

6

Dolphin OS and System Development Software

Important Notice: *Only install the most recent release of the Dolphin ROM IMAGE and Bootloader, loading an old version of the ROM IMAGE or Bootloader can result in Dolphin becoming unstable or inoperable, and requiring the unit to be returned to Hand Held Products for repair.*

The Dolphin OS and Development System is available from the Partners Area of the web site at www.handheld.com. The self-extracting file contains:

•   Dolphin Development Tools and Libraries (API)
•   Sample Programs with source code
•   Dolphin Utilities including Communication and Upgrade Wizard
•   Electronic Help
•   Bootloader & ROM Image

Installation

Once the file is downloaded on your PC, double click the Dolphin OS and Development System icon and follow the instructions on the screen to complete the installation and set-up procedure.

Default Installation Directories

There are two install packages - one for the Dolphin 7200 2D and one for the Dolphin 7200 Batch and Laser configurations. Each configuration has its own default directory:

`c:\Dolph34\` is the default directory for the **Dolphin 7200 2D**.

`c:\Dolph43\` is the default directory for the **Dolphin 7200 Batch and Laser**.

In the table below, this will be represented by `c:\dolphXX\`

Directory	Contents
`c:\dolphXX\`	Default installation directory, containing the Help and Read Me First Files.
`c:\dolphXX\bootldr`	Backup of Dolphin Bootloader (BURN.EXE and BOOTLDR.BIN)
`c:\dolphXX\devtools`	Dolphin Development Libraries, Samples and API Help file.
`c:\dolphXX\wizard`	Dolphin Upgrade Wizard
`c:\dolphXX\demo`	Dolphin Batch Demo Program
`c:\dolphXX\romimage`	Backup of Dolphin ROM Image
`c:\dolphXX\utils`	Dolphin Utilities (YX.EXE, DCOMM2.EXE, BMP2LCD.EXE)
`c:\dolphXX\devtools\samples\`	Sample applications

Note: All future references to directories assume that the user has accepted the installation default directory.

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.

Icon	Tapping this icon, …
Read Me First	Provides important information not available at the time the manual was printed.
Contacting	Provides information on contacting Hand Held Products by Phone, Fax, Email, WWW and BBS.
Development Libary Help	Provides additional information on the Dolphin OS and Development System.
Dolphin API	Provides information on the Dolphin API and Sample applications.
Dolphin Help	Provides an Electronic User's Guide for the Dolphin terminal.
Dolphin File Transfer	A Windows drag-and-drop communication utility, supporting Xmodem and Ymodem file transfer protocols
Dolphin Upgrade Wizard	A Windows utility that steps you through the process of upgrading Dolphin's Bootloader, ROM image and Demo application.
HomeBase Configuration	A Windows utility for configuring the HomeBase baud rate.

Dolphin Utilities

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

Note: See the Development API electronic Help file (dolphapi.hlp) for additional information regarding the Dolphin Development Libraries, samples and compiling instructions.

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().
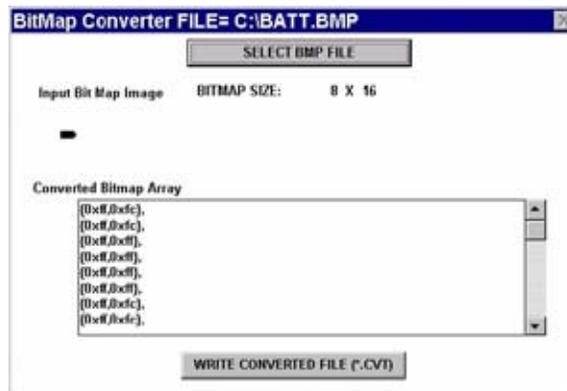
BURN.EXE

BURN.EXE is a Dolphin utility that will load or reload the Dolphin's Bootloader. The Bootloader is an Xmodem communications utility used by the Dolphin OS to load or update the BIOS and Operating System (ROM image).

> *Install only the most recent release of the Dolphin Boot Loader, loading an old version of the Boot loader can result in Dolphin becoming inoperable, and requiring the unit to be returned to Hand Held Products for repair.*

To Load or Reload the Dolphin's Bootloader:

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

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

DCOMM2.EXE - Dolphin File Transfer Utility

DCOMM2.EXE is a Windows communication utility that supports drag-and-drop file transfer using both Ymodem and Xmodem.

Usage: dcomm2 [/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: Dcomm2 /c1 /b57600 /y filename.dat

If you do not specify command line arguments, DCOMM2.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 (Dolphin Upgrade Wizard)

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

- Upgrade the terminal Bootloader
- Upgrade the terminal ROM Image (BIOS, A Drive Image)
- Reinstall/Upgrade the Demo Program
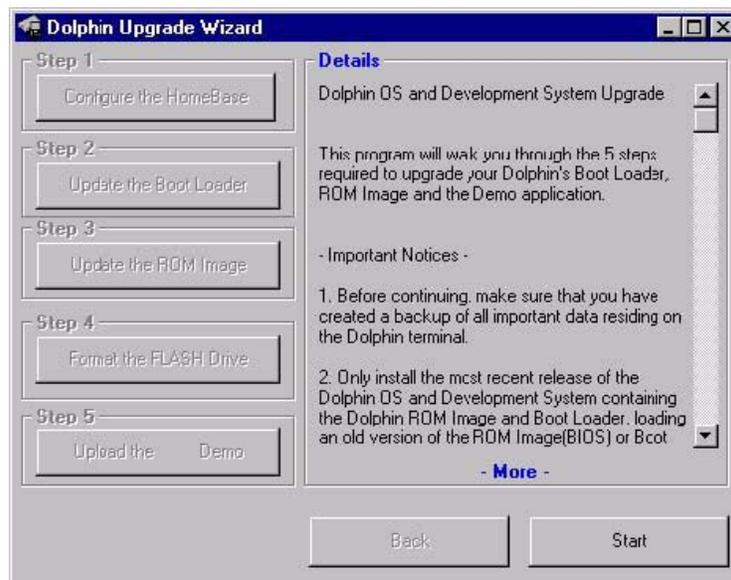
HBCFG.EXE - HomeBase Configuration Utility

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#] [/l] [/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 /b57600 /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.
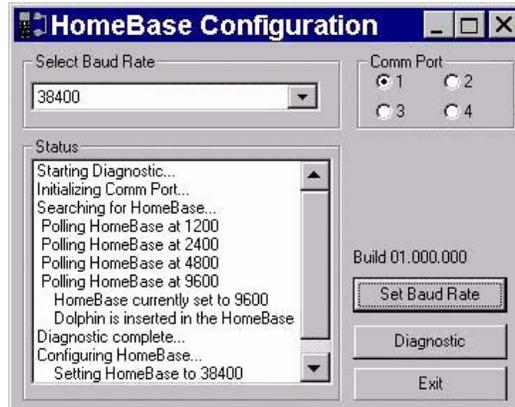
Note: Dip Switch 2 located on the back of the HomeBase must be set in the Up (PROGRAM) position for the baud rate to be programmed. The HomeBase power must be cycled (turned off and on) for the new dip switch settings to be recognized.

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 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 (1=Ir Port, 2=Micro DB-9)
/b#:	Specifies new BAUD rate, 300-57600
/m:	Run YX in menu driven mode

Examples: yx /b57600 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.

Note: When using YX on the Dolphin 7200 terminal, only COM1 is available.

To send at 38400, enter **YF** instead of **YX/b38400**.
To send at 57600, enter **YFF** instead of **YX/b57600**.

For more information, see

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.

ROM Image

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 and is loaded when the terminal boots.

Dolphin Application Development

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

Compiling Applications for the Dolphin

Although the operating system on the Dolphin 7200 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:\dolphXX\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:\dolphXX\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:\dolphXX\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:

1. Select the menus Project > Edit.

2. Change List Files of Type: to Library (*.lib). Browse into **c:\dolphXX\devtools\lib\msvc**. Select dolphinx.lib corresponding to the memory model.

3. Click the *Add* button.

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

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

2. Select Add node from the pop-up menu.

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

4. Browse to **c:\dolphXX\devtools\lib\borland**.

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

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

Transferring Files to or from the Dolphin Terminal

Transferring files between your Dolphin terminal and a desktop PC is easy with the YX.EXE utility (see YX.EXE on page 6-5) or the Dolphin File Transfer program (see DCOMM2.EXE - Dolphin File Transfer Utility on page 6-3).

Using the YX.EXE Utility

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

Note: When using YX on the Dolphin 7200 terminal, only COM1 is available.

For a sample, see YX.EXE on page 6-5.

Using the Dolphin File Transfer Program

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 simplifies 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 57600. 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 Sending Files at a Higher Rate on page 6-9.

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.

6. 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 57600.

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.

6. 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.

- 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.

Note: When using the menu, press F3 to change to a higher baud rate. If you are using a HomeBase to transfer files, be sure to set Configuration Switch 2 on the HomeBase in the up position.

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.

2. Check to make sure the baud rate is set at 57600. This is the default for YX.EXE.

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:

```
Port=1
Baud Rate=9600
F1=Send File
F2=Receive File
F3=Set Baud Rate
F4=Choose Port
Q=Quit
```

5. 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.

6. Press F2 to begin the file transfer.
   If you are using a HomeBase to transfer files, the COMM LED 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.

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 57600.

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.

7. If you are using a HomeBase to transfer files, 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 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.

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.

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

Dolphin ROM Image and Bootloader

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 Bootloader. Loading an old version of the ROM IMAGE or Bootloader can make the Dolphin unstable or inoperable, and requiring you to return the unit to Hand Held Products for repair.*

Upgrading the Dolphin ROM Image

The Dolphin terminal has a Bootloader 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 Bootloader. 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 3.

```
   SYS Utilities X.XX


1 Download
2 Launch Bios
3 Set Baud Rate


Baud: 57600
```

4. Press 3 to select Baud rate. Press 1 to set baud rate to 57600.

```
     SYS Utilities X.XX

1 9600
2 19200
3 38400
4 57600


Baud: 9600
```

5. Press 1 to download.

Upgrading the Dolphin Bootloader

⚠ *Install only the most recent release of the Dolphin ROM IMAGE and Boot Loader. DO NOT load an old version of the ROM IMAGE or Bootloader. The Dolphin may become unstable or inoperable requiring you to return the unit to* Hand Held Products *for repair.*

Hand Held Products recommends that you use the Dolphin Upgrade WIZARD to update the Dolphin Boot Loader, ROM image and Demo Programs. 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:\dolphXX\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.

7

Troubleshooting

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 Hand Held Products Authorized Reseller.

Troubleshooting the Dolphin Terminal and HomeBase

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.
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. For more information about battery maintenance, Maintaining the Dolphin's Batteries (page 3-8).
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 Hand Held Products 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 57600, 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.

Troubleshooting the Dolphin Terminal and HomeBase

If You Have This Problem/Symptom	Try This:
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 (page 3-2) or Using the Numeric Keypad (page 3-4).
The CHARGING AUXBATT LED does not come on when I insert a battery pack into the Dolphin HomeBase.	Check the power connections on the Dolphin HomeBase. Also check to ensure the battery pack is properly seated.
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.

Troubleshooting with Dolphin 7200-2D

Image is not readable …	Try This:
Because it is too dark	Move to an area with more light to take image.
Because it is distorted	Hold Dolphin with Image-Capture terminal at 90 degree angle.
Because it is cut off	You are holding terminal too close to subject. Hold the terminal at a 90 degree angle and move it further away from the subject.
Because of a dirty lens	Wipe lens with clean, lint free cloth.
Because it is too small.	You are holding the terminal too far away from the subject. Hold the terminal at a 90 degree angle and move it closer to the subject.
Due to reflection	Adjust the angle at which you are holding the Dolphin terminal to avoid a reflection.

8

Dolphin HomeBase

Hub of the System

As the hub of your Dolphin system, the Dolphin 7200 HomeBase performs three important functions - battery management, communications and storage.

Battery Management

The Dolphin 7200 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. 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 115K baud can be transmitted by the HomeBase. With no pins or contacts to break, IrDA will work reliably for years.

The Dolphin 7200 HomeBase 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 7200 HomeBase is a safe and convenient storage receptacle for the Dolphin terminal. The HomeBase also holds a spare charged battery pack.

Dolphin 7200 HomeBase Parts and Functions

Front Panel

Dolphin Terminal Well

Multi-Serial Port

CHARGING
MAINBATT

COMM

CHARGING
AUXBATT

Main Serial Port

Charging Main
Battery LED

COMM
LED

Charging Aux
Battery LED
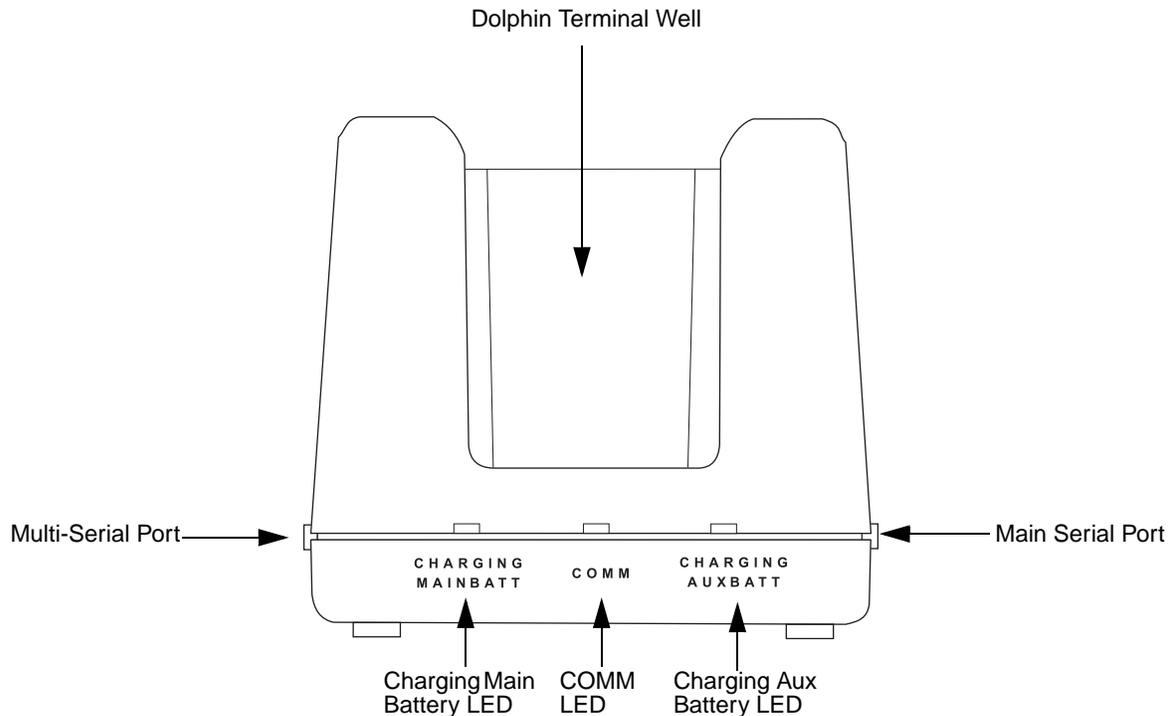
Dolphin Terminal Well	You put the Dolphin in this well to communicate with a host device and to charge the Dolphin's batteries.
LEDs	There are three LEDs that you can use to monitor the status of battery charging and communications status:
1. **Charging Main Batt**	Turns solid green when the Dolphin terminal is properly seated into the Dolphin HomeBase. The Charging Main Batt LED does not indicate the battery status of the Dolphin terminal.
2. **COMM**	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.

3. **Charging Aux Batt**	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

Charging Aux Batt LED	Description
Blinking orange LED	Battery charging at the maximum rate
Solid green LED	Trickle charging; battery pack is ready for use

Back Panel

Auxiliary Battery Well (without battery inserted)

SINGLE ▲ ▲ PROGRAM
MULTI ▼ ▼ FIXED BPS

SERVICE
AUX BATT

DC 12V 1.5A
– ⦵ +

Configuration
Switches

Service Aux
Battery Switch

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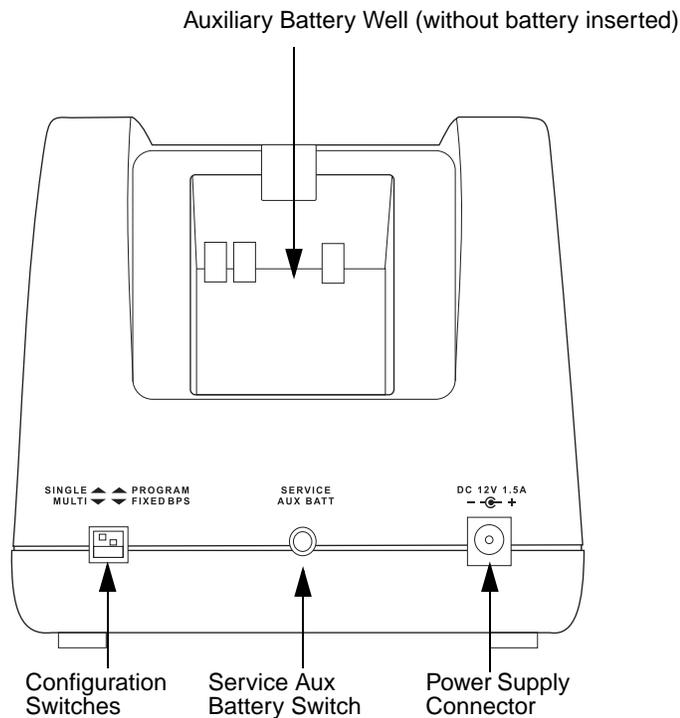
Auxiliary Battery Well   Insert a battery into the well to charge a second battery and you will always have a spare. The auxiliary battery well can also service your battery pack.

Configuration Switches   Use these switches to select the network and communications modes for your Dolphin. See Chapter 8 for more on the configuration switch settings. 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

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

**RS-232
MAIN COMM PORT**
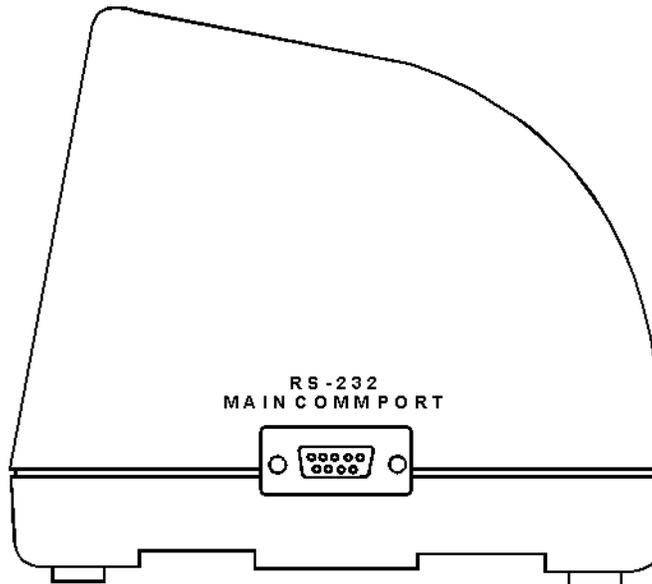
Use a standard serial cable to connect this port to a host RS-232 device if the Dolphin HomeBase is the first unit of HomeBase network. Otherwise, the main communications port connects to another Dolphin HomeBase Multi-HomeBase Port to form a daisy-chained network; see Configuration Switch Settings for a HomeBase Network on page 8-10.

Multi-HomeBase Port

**RS-232
MULTI-HOMEBASE PORT**
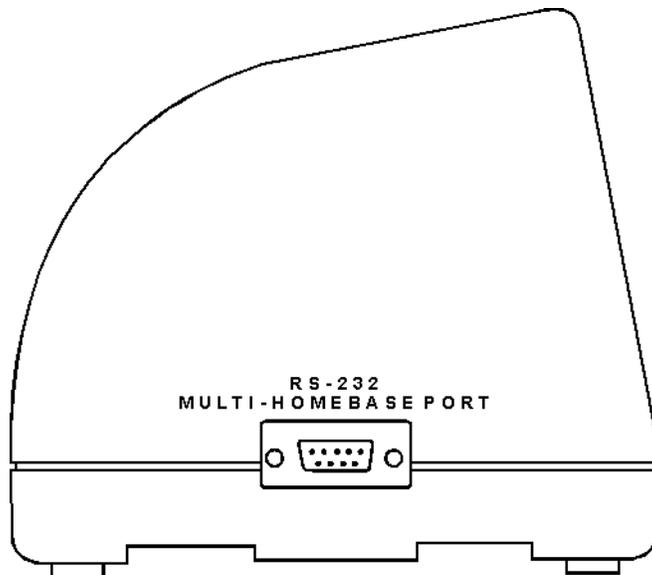
Use this port to form a Dolphin HomeBase Network. This port mates with the next HomeBase's main communications port to form an addressable network.

Note: The Multi-HomeBase Port cannot be used for communications to standard serial devices.

Charging Batteries in the Dolphin 7200 HomeBase

⚠️ 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 battery pack in the Dolphin terminal 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.
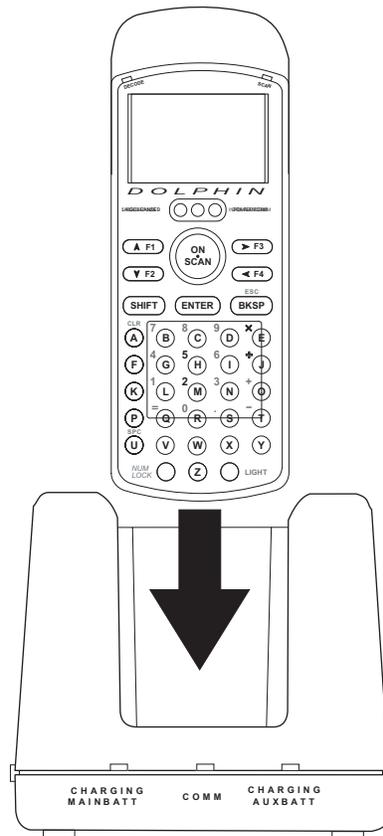
Charging an Additional NiMH Battery Pack

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

Battery contacts on
the HomeBase

SINGLE ▲ ▲ PROGRAM
MULTI ▼ ▼ FIXED BPS

SERVICE
AUX BATT

DC 12V 1.5A
— –⦶– +
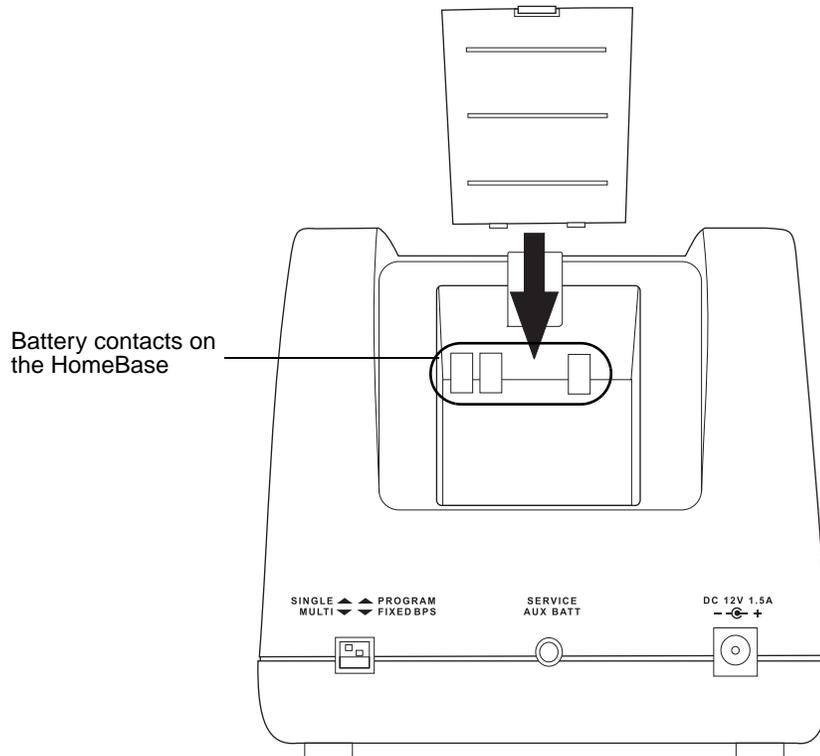
After the battery is inserted into the auxiliary battery well of the Dolphin HomeBase you can use the CHARGING AUXBATT LED to monitor the charging progress.

Deep-Cycling the Battery

For maximum battery life, Hand Held Products recommends that you deep- cycle (service) the battery twice before initial use and then, once a month thereafter. To deep-cycle, insert the battery into the HomeBase auxiliary battery well. Then, push and hold the Service Aux Batt button for at least 4 seconds. The deep-cycling process takes approximately **6.5 hours**.

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.

Communications

The Dolphin terminal and Dolphin HomeBase support RS-232 communications through the RS-232 Main Communications Port (page 8-4) located on the side of the Dolphin 7200 HomeBase. This port 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.

1. Setup the Dolphin HomeBase (see Setting up the Dolphin HomeBase on page 8-7).

2. Insert the Dolphin terminal.

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

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 workspace with good lighting for the user to view and operate the Dolphin terminal while it is in the HomeBase. Setting up the HomeBase involves three steps:

1. Connecting the cables

2. Setting the configuration switches

3. Setting the baud rate

Connecting the Cables

Connect the HomeBase to the host computer or other device by plugging an RS-232 serial cable into the RS-232 Communications Port on the rear of the HomeBase. 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 HomeBase RS-232 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

With the Dolphin 7200 HomeBase, 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.

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.

Note: 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.

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. The configuration switch must be in the program position to change the baud rate.

Setting the Baud Rate

You may use the HomeBase Configuration utility program to select the baud rate. The program can also be used to change the host system's COM port and will run a diagnostic check for optimal communications. After changing the baud rate, you must power the HomeBase off and then on again. The program is one of the utility programs that come with the Dolphin OS and Development System. For more on HomeBase Configuration, see the chapter 9.

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  [>100ms<1s] Next Command`

where ESC is an ASCII 27 character.

The escape string should be followed by a >100ms<1second 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.

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 7200 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 retrieve the version number for the Dolphin HomeBase:

1. Enter or send the escape and command strings:

`<ESC>HHP  >100ms< 1s V`

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

Baud Rate Selection

The Dolphin HomeBase baud rate is set to 57600 at the factory. Use the configuration switches on the HomeBase's back panel to select the network and communications modes for your Dolphin.

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.

The baud rate is stored in Non-Volatile Memory and is retained even if the power is removed from the network.

The following table outlines the configuration switch settings:

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

To ensure 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 by entering or sending the escape and command strings:

`<ESC>HHP >100ms< 1s Bn`

where **n** is the ASCII number corresponding to the baud rate shown in the table below.

Baud Rate per Value of n

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		

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.

Note: You can also the HomeBase Configuration Utility program to alter the baud rate.

Creating a Dolphin 7200 HomeBase Network

This information applies **only** to the Dolphin 7200 HomeBase. The Dolphin 7200 Compact HomeBase is not networkable.

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.

• 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:

1. Address Assignment,

2. Baud Rate Selection, and

3. 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 setup the configuration mode and establish the beginning unit ID number:

<p align="center"><code><ESC>HHP >100 ms< C >100 ms< 1s In</code></p>

where **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:

<p align="center"><code><SYN></code></p>

where **`<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:

<p align="center"><code><ACK>n</code></p>

where **`<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:

<p align="center"><code><ESC>HHP >100ms< C >100ms< 1s I1</code></p>

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 57600 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:

Configuration Switch Settings for a HomeBase Network

Switch	Setting	Function
2	FIXED BPS (DOWN)	Baud rate fixed at 9600
2	FIXED BPS (DOWN)	Baud rate fixed at 9600

When Switch 2 is in the 'PROGRAM' position, the baud rate can be changed using the following procedure or by using the HomeBase Configuration Utility.

Enter or send the escape and command strings:

`<ESC>HHP >100ms< 1s Bn`

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.

Baud Rate per Value of n

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		

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:

<div align="center">

<ESC>HHP >100ms< 1s Sn

</div>

   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:

<div align="center">

<ACK>n

</div>

   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.

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.

9

Compact HomeBase

Hub of the System

As the hub of your Dolphin system, the Dolphin 7200 Compact HomeBase performs three important functions - battery management, communications and storage.

*Note: The Dolphin 7200 Compact HomeBase is **not** networkable.*

Battery Management

The Dolphin 7200 Compact 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. The battery pack does not need to be discharged before recharging because this method protects the battery from damage caused by overcharging.

The Dolphin 7200 Compact HomeBase provides power to the Dolphin terminal to enable the terminal to charge its battery.

IrDA Optical Communications

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

Convenient Storage

The Dolphin 7200 Compact HomeBase is a safe and convenient storage receptacle for the Dolphin terminal.

Dolphin 7200 Compact HomeBase Parts and Functions

Front Panel

Dolphin Terminal Well

DOCK LED   COMM LED
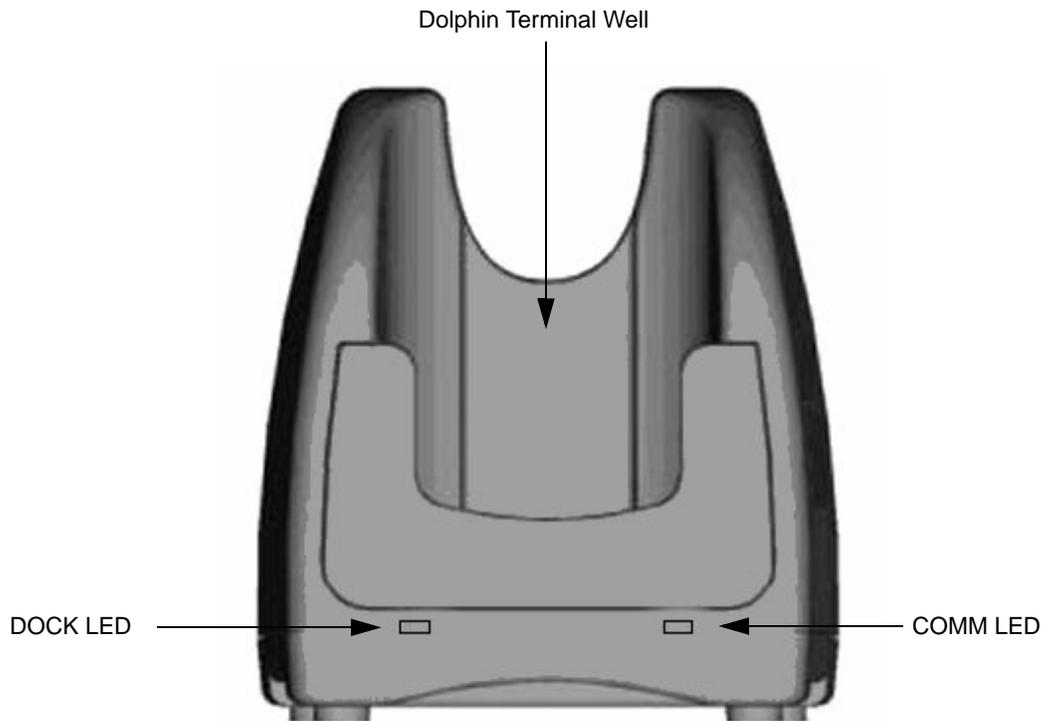
Dolphin Terminal Well   The Compact HomeBase's front panel has one slot. Put the Dolphin terminal in this well to communicate with a host device and to charge the Dolphin's batteries.

DOCK LED   Turns solid green when the Dolphin terminal is properly seated into the Dolphin HomeBase.

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.

Back Panel
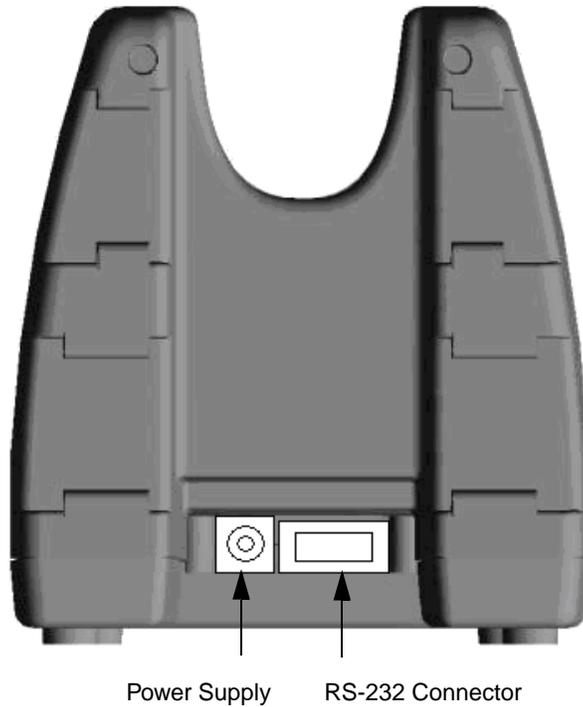
Power Supply   RS-232 Connector

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.

RS-232 Communications Port

Use a standard serial cable to connect this port to a host RS-232 device.

Bottom Panel

A Baud Rate DIP switch is located on the bottom of the HomeBase. The three-position DIP switch is used to select the communication baud rate. Switch position and the corresponding baud rates are shown in the chart below.
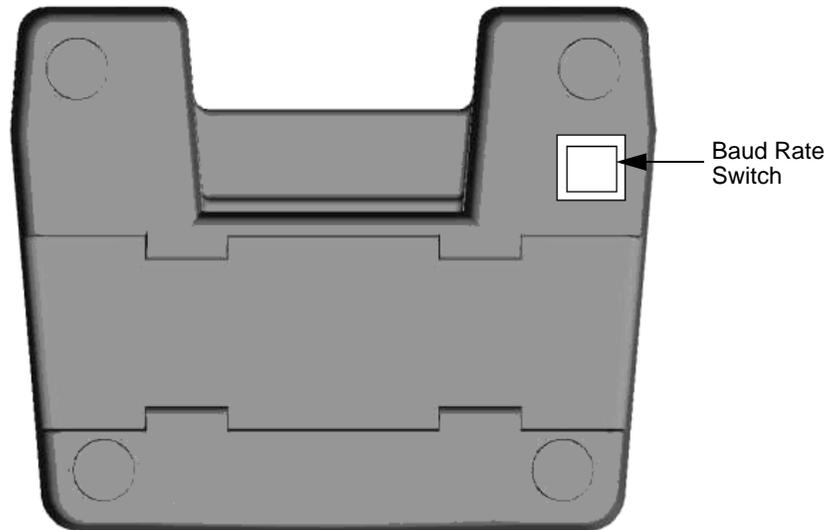
Baud Rate
Switch

Baud Rate Switches

Baud Rate	Switch 1	Switch 2	Switch 3
115200	0	0	0
57600	1	0	0
19200	0	1	0
9600	1	1	0
38400	0	0	1
4800	1	0	1
2400	0	1	1

Note: The HomeBase Configuration program cannot be used to select the baud rate on the Compact HomeBase.

Powering the Dolphin Terminal

When seated in the HomeBase, the Dolphin terminal receives the power it needs to charge the battery and to run its internal circuitry.

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

Charging a Dolphin Terminal

The HomeBase supplies charging power to the Dolphin terminal so that the terminal can monitor the charging of its battery pack. This charging method protects the battery from being damaged by overcharging. Therefore, the Dolphin terminal may be stored indefinitely in the HomeBase without damage to the terminal, the battery pack, or the HomeBase.

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 Dock LED on the HomeBase will be solid green.

Deep-Cycling Batteries

For maximum battery life, Hand Held Products recommends that you deep- cycle (service) the battery twice before initial use and then, once a month thereafter. Since the Dolphin 7200 Compact HomeBase does not have deep-cycling capabilities, it is recommended that you use the Dolphin 7200 Multicharger or the Dolphin 7200 HomeBase.

The deep-cycling process using the Multicharger takes approximately 9.5 hours. For more information, see the Dolphin 7200 **Multicharger User's Guide**.

Mounting the Dolphin 7200 Compact HomeBase

The Dolphin 7200 Compact HomeBase may be desk or wall-mounted for convenience and storage.

Desk Mounting:

The Compact HomeBase has a DIN rail (7.5 X 35 mm) slot on the bottom to allow for secure desk attachment of the unit if desired.
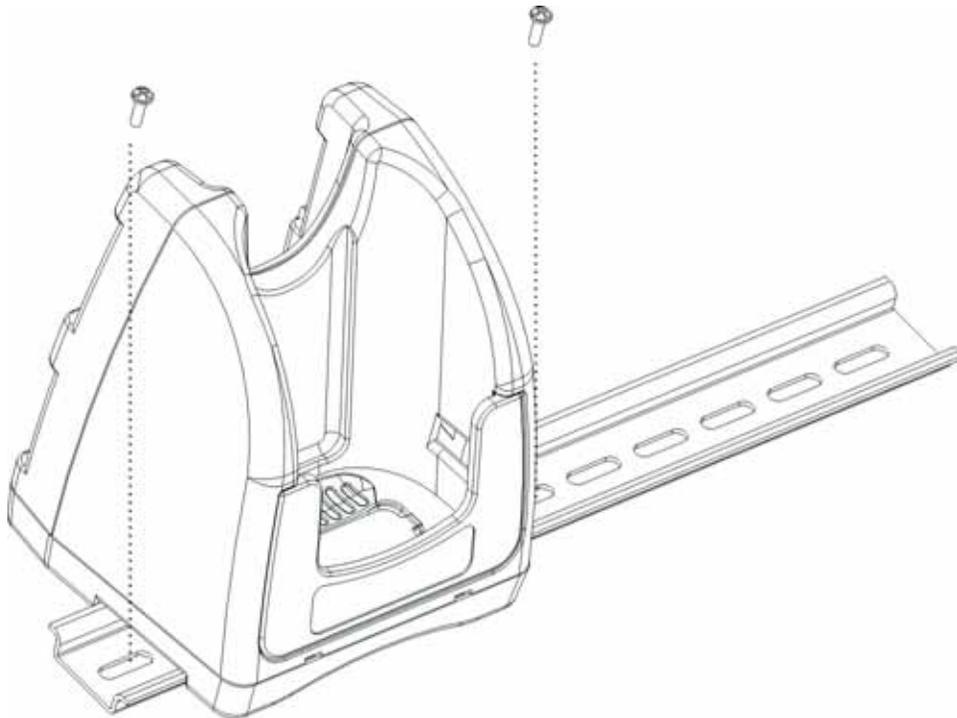
Wall Mounting:

The Compact HomeBase also has two DIN rail (7.5 X 35mm) slots on the back to allow for secure wall mounting of the unit if desired.

When using right-angle style RS232 connector cable, the DIN rails may be mounted directly to the wall.
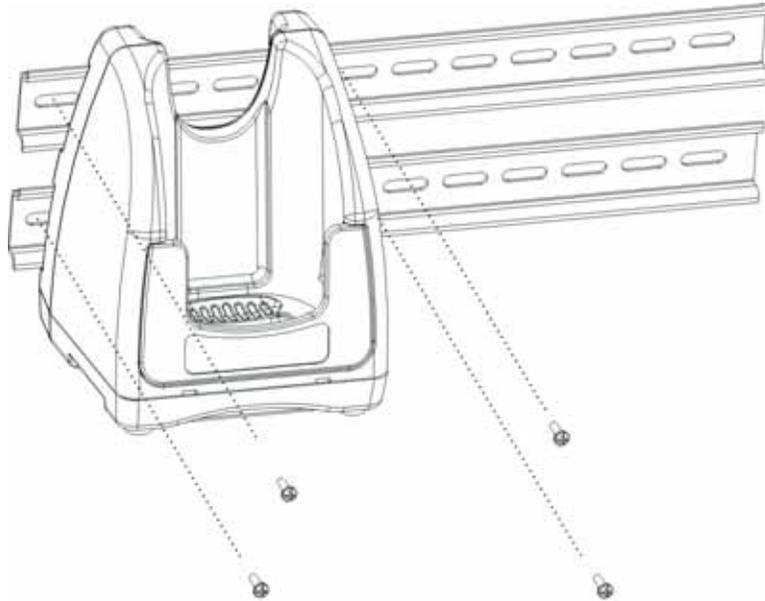
When using standard RS232 connector cables, it is recommended that the rails be mounted to the wall using a 25mm (1 in.) spacer to allow for appropriate strain relief of the cables.

Spacer
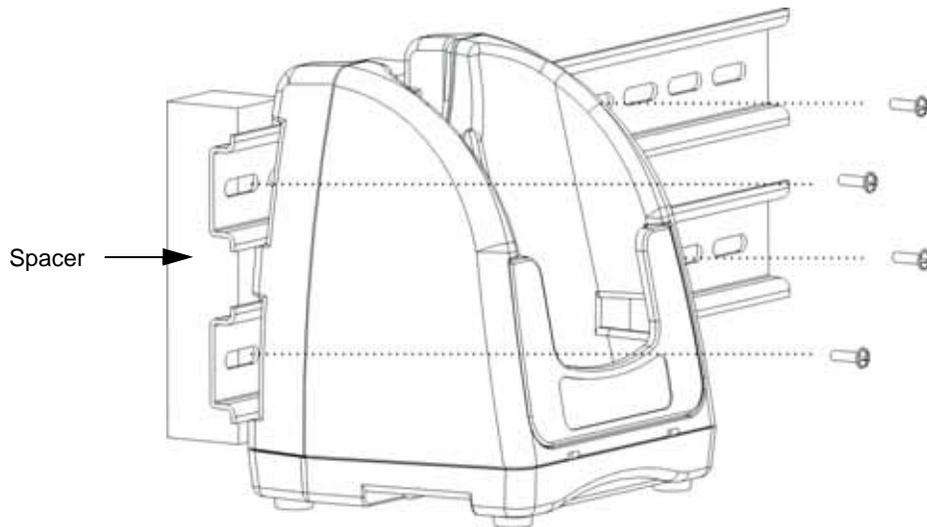
In either case, after wall mounting, it is recommended that the cables be secured to the DIN rail through use of a wire tie to prevent damage to the Compact HomeBase unit in case accidental or excessive force is applied to the cables.
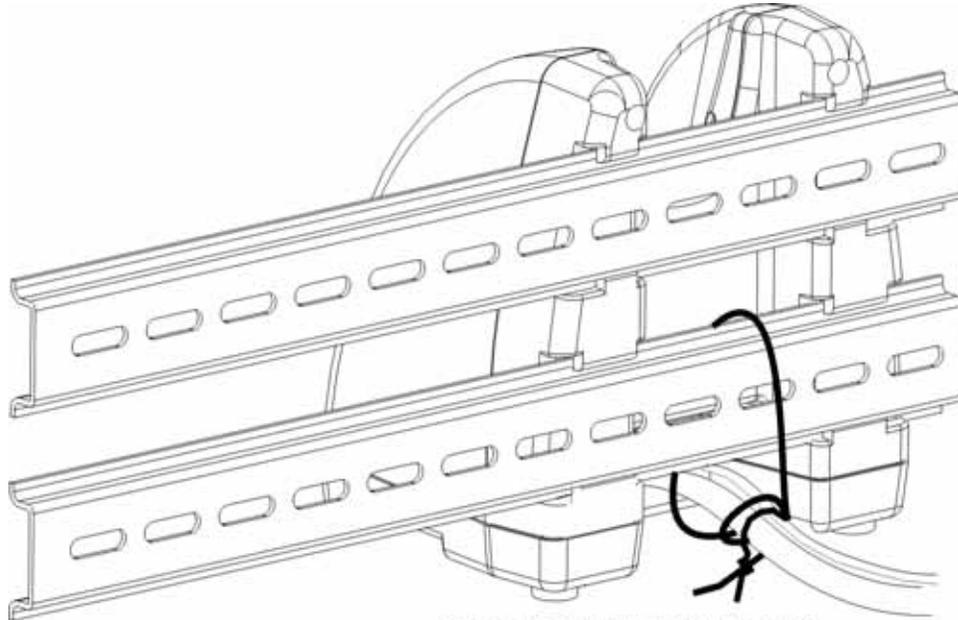
SECURE THE PROTRUDING
WIRES TO THE DIN RAIL WITH
A WIRE TIE OR EQUIVALENT.

Setting Up for Communications

The Dolphin terminal and Dolphin Compact HomeBase support RS-232 communications through the RS-232 Main Communications Port on the back of the Dolphin 7200 Compact 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 Compact HomeBase.

2. Set-up the Dolphin terminal.

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

Setting up the Dolphin Compact HomeBase

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

Connecting the Cables

Connect the Compact HomeBase to the host computer or other device by plugging an RS-232 serial cable into the RS-232 Communications Port on the rear of the HomeBase. The wiring of your cable depends on whether the other device is set up as a Data Communications Equipment (DCE) or Data Terminal Equipment (DTE) device.

The HomeBase RS-232 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.

Pin Configuration

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

With the Dolphin 7200 Compact HomeBase, connect each device to the RS-232 Communications Port on the back of the HomeBase. The Compact HomeBase cannot be networked.

Connect the power supply to the Compact 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 Compact HomeBase.

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

Communicating with the Dolphin Terminal

To communicate with the Dolphin and any other devices connected to the Compact 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.

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.

10

Dolphin Vehicle Base

Introduction

The Dolphin VehicleBase serves as a safe and convenient storage receptacle for the Dolphin terminal.

There are two options available for the Dolphin VehicleBase:

1. Charging/communications version provides standard communications functions and serves as a docking base for the Dolphin terminal. The optical communications port on the VehicleBase mates with the IrDA port on the Dolphin. This allows reliable data communications at speeds up to 115K baud.

2. Charge-only version serves as a docking base for the Dolphin terminal

Basic Features

The Dolphin VehicleBase

• Provides a convenient interface from the Dolphin terminal to any standard RS-232 device. (Applies **only** to the charging/communication version of the Dolphin VehicleBase.)
• Protects the Dolphin terminal when not in use.
• Provides power to the Dolphin terminal for battery charging.

Bottom Panel

RS-232 Main Comm Port Connector

Baud Rate Switch

DC 12 Volt Input Power Connector
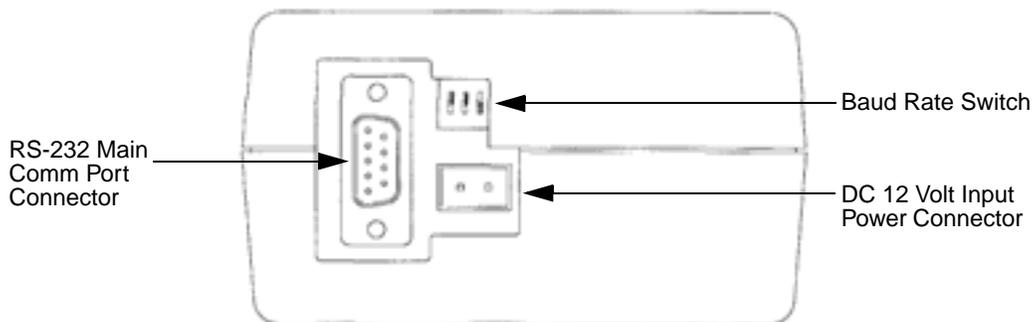
Setting Up the Dolphin VehicleBase

The Dolphin VehicleBase should be set up on any dry, stable surface.

You must connect the Dolphin VehicleBase to a power source for any type of operation.

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

Connecting The Serial Cable

The following instructions apply **only** to the charging/communication version of the Dolphin VehicleBase.

1. Plug the RS-232 serial cable into the RS-232 Main Comm Port Connector (page 10-1) on the bottom panel.

2. Plug the other end of the RS-232 serial cable into the correct port on your host RS-232 device.
   Because the location for RS-232 ports can vary on different devices, we suggest you check with your host system operator, or the host computer/peripheral setup manual, to tell you the location of your RS-232 port.

For additional information on serial cable configuration, see Cables for the VehicleBase on page 10-5.

Supplying Power to the Dolphin VehicleBase

The Dolphin VehicleBase can be powered from either a 12 or 24 volt DC source. Power is connected to the DC 12 Volt Input Power Connector (page 10-1) on the bottom panel.

Two connection options are available:

1. Cigarette lighter adapter for 12 volt automotive systems and portable applications.

2. Direct connection through a fused cable assembly for 12 and 24 volt automotive systems.

The optional Power Condition Module (PCM) is inserted in-line with the fused cable assembly to provide protection against high voltage surges which can occur during certain fault conditions in an automotive electrical system (i.e. load dump). If the PCM is used for transient voltage protection, its input power cable should be connected to automotive power and its filtered output connected to the mating connector located on the bottom of the Dolphin VehicleBase.

Note: The PCM is optional for 12 volt automotive systems. However, it is recommended for 24 volt applications.

Selecting the Baud Rate

The following information applies **only** to the charging/communication version of the Dolphin VehicleBase.

The Baud Rate Switch (page 10-1) is located on the bottom panel. This three position raised rocker DIP switch is used to select the communication baud rate. The Dolphin VehicleBase comes preset at 9600.

The following table outlines the available baud rate selections:

Switch Position 1 2 3	Binary Value	Baud Rate
D D D	0	1200
U D D	1	2400
D U D	2	4800
U U D	3	9600
D D U	4	19200
U D U	5	38400
D U U	6	57600
U U U	7	115200
U = Up D = Down		

Note: Baud Rate switches are checked at power up. Changes in the switch settings will not be recognized until power is cycled.

Side Panel Features

This section contains information regarding features located on the side of the Dolphin VehicleBase.

Dolphin
Terminal
Well
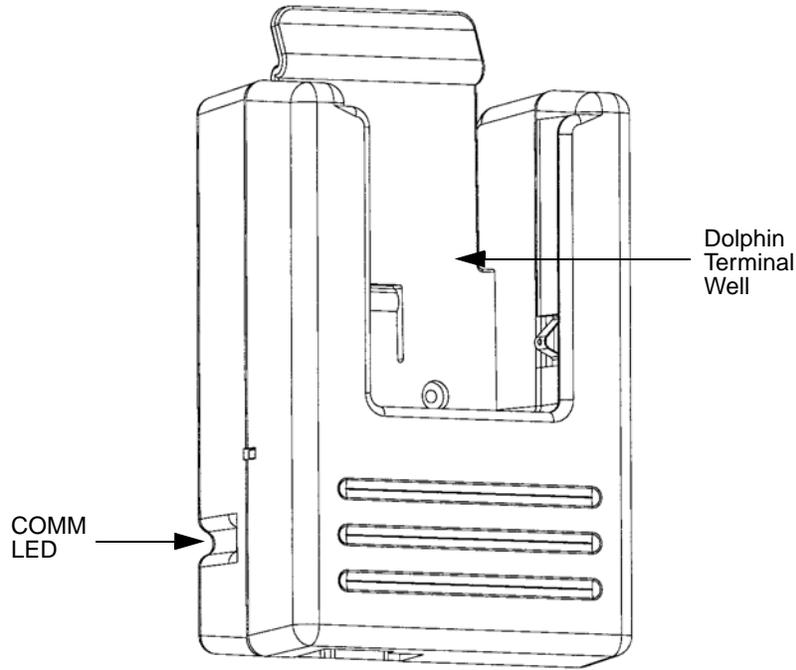
COMM
LED

Dolphin Terminal Well   The Dolphin terminal slides into this well during both battery charging and communications with the host device.

COMM LED   For the charging/communication version of the Dolphin VehicleBase, the COMM LED indicates the status of data transfer between the host device and the Dolphin terminal.

Red means that data is being sent from the host device to the Dolphin VehicleBase.
Green means that data is being sent from the Dolphin VehicleBase to the host device.
Orange means that data is transferring at high data rates.

For the charge-only version of the Dolphin VehicleBase, the COMM LED functions as a terminal detection indicator. The LED lights green when the Dolphin terminal is properly seated in the well.

Inserting the Dolphin Terminal into the VehicleBase

Slide the Dolphin terminal into the terminal well until it stops.
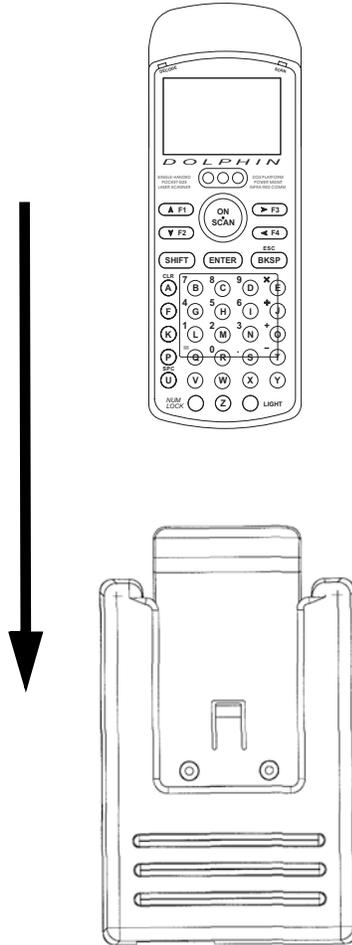
Charging Batteries in the VehicleBase

The Dolphin VehicleBase supplies charging power to the Dolphin terminal so that the Dolphin terminal can monitor the charging of its own battery pack. This charging method protects the battery from being damaged by overcharging. Therefore, the Dolphin terminal may be stored indefinitely in the VehicleBase without damage to the Dolphin terminal, the battery pack, or the VehicleBase. Remember to keep the VehicleBase plugged in if you are using it to store the Dolphin terminal. This will keep the Dolphin terminal battery pack fully charged.

Battery Temperatures

If possible, bring your rechargeable NiCad or NiMH battery packs to room temperature before recharging them; temperature has a marked effect on charging. The recommended temperature range is 10 to 35 C.

Do **not** attempt to recharge any battery pack in the Dolphin terminal that is not manufactured by Hand Held Products especially for this device. To do so will void your warranty and can damage the Dolphin VehicleBase or the Dolphin terminal.

Cables for the VehicleBase

Standard Serial Cable

The following information applies **only** to the charging/communication version of the Dolphin VehicleBase.

The Dolphin VehicleBase provides a convenient interface that allows the Dolphin terminal to interface to a PC, printer, or any other standard RS-232 device; see RS-232 Main Comm Port Connector on page 10-1. To connect the Dolphin VehicleBase to your RS-232 device, you will need an RS-232 cable. The wiring of your cable depends on whether the other device is set up as a Data Communications Equipment (DCE) or Data Terminal Equipment (DTE) device.

The Dolphin VehicleBase 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 use a null modem serial cable.

Making Your Own Cable

Before making a cable, you need to determine if your host RS-232 device is 9-pin or 25-pin, and whether the device is DCE or DTE. Then, you can make your own cables by following the pin configuration in the following table.

VehicleBase /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

11

Dolphin MultiCharger

Introduction

The Dolphin MultiCharger provides intelligent battery management for 10 Dolphin battery packs.

Basic Features

The Dolphin MultiCharger

• Can charge as many as 10 Dolphin battery packs independently.
• Charges 3.6V NiMH rechargeable battery packs. A two-level charging algorithm switches from fast charge to trickle charge when the battery is fully charged. This method provides rapid charging without overcharging.
• Incorporates a Condition and Calibrate cycle to correct errors associated with rechargeable batteries.

Intelligent Battery Charging

The battery charging circuitry is intelligent and can sense changes in temperature and voltage. When charging a battery, the Dolphin MultiCharger charges at the maximum rate. When the Dolphin MultiCharger senses that the battery pack is fully charged, the charging rate drops to a trickle charge. The trickle charge keeps the battery pack at full capacity. This charging method protects the battery from being damaged by overcharging.

The Dolphin MultiCharger can charge 10 battery packs simultaneously with individual charge control circuitry for each of the 10 battery pocket locations.

Top Panel

This section contains information regarding features located on the top panel of the Dolphin MultiCharger.
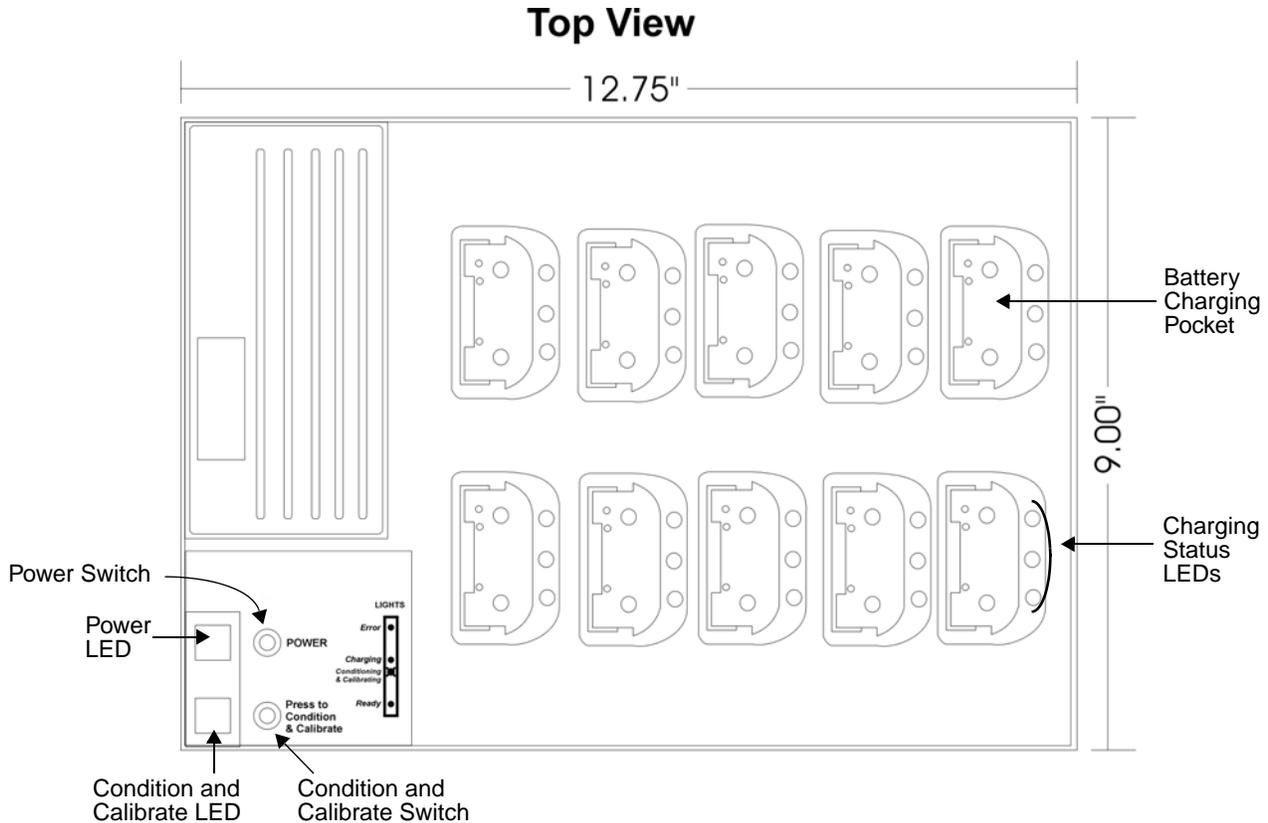
Setting Up the Dolphin MultiCharger

The Dolphin MultiCharger should be setup on any dry, stable surface.

You must connect the Dolphin MultiCharger to a power source for any type of operation.

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

Supplying Power to the Dolphin MultiCharger

Locate the AC power cord that came with your Dolphin MultiCharger. Plug the power cord into the Dolphin MultiCharger Universal wide input voltage AC input, then plug the power cord into a wall socket.

*Using a non-*Hand Held Products *power cord will void your warranty and can result in serious damage to the Dolphin MultiCharger circuitry.*

Press the Power Switch (see page 11-2) located in the bottom left-hand corner of the top panel. The Power LED (see page 11-2) lights green and the unit performs a self diagnostic test.

Inserting the Dolphin Battery Pack

Place the Dolphin battery pack in the Battery Charging Pocket (see page 11-2) of the Dolphin MultiCharger. Let the Dolphin battery pack glide down into the charging pocket until it stops. Asserting a downward and forward motion, apply enough pressure to latch the Dolphin battery pack in the charging pocket. Once the Dolphin battery pack is properly seated, the Status LED for that particular pocket lights orange.

Charging Batteries in the Dolphin MultiCharger

The Dolphin MultiCharger is designed to charge a NiMH rechargeable battery pack. Each charging pocket charges one battery and contains three LEDs to indicate charging status; see Charging Status LEDs on page 11-2.

When a battery is inserted into a charging pocket of the Dolphin MultiCharger, the unit will start charging the battery at the highest rate possible. This state is indicated by a steady orange status LED.

When the Dolphin MultiCharger senses that the battery pack is fully charged, the charging rate drops to a trickle charge and the green status LED lights. The trickle charge keeps the battery pack at full capacity. A dead battery will charge to full capacity in approximately three hours. This charging method protects the battery from being damaged by overcharging.

The Charging Status LEDs (see page 11-2) on each charging pocket indicate the current charging status of the Dolphin battery pack inserted in that pocket. The following chart shows a summary of each charging state.

Status LED	When lit, it means …
ORANGE/Charging	The battery is being charged at the maximum charge rate.
GREEN	Battery charging is complete and battery is ready for service. A trickle charge remains until the battery is removed.
RED/Error	An error was encountered during charging.

Battery Temperatures

If possible, bring your rechargeable NiMH battery packs to room temperature before recharging them; temperature has a marked effect on charging. The recommended temperature range is 10 to 35 C.

> *Do not attempt to recharge a battery pack that is not manufactured by* Hand Held Products *especially for this device. To do so will void your warranty can damage the Dolphin MultiCharger.*

Servicing the Battery Pack

The Condition and Calibrate cycle is used to update the Battery Pack Data Record stored in the Dolphin Battery Pack. This cycle records battery conditions during a charge and discharge cycle and stores these values in the battery pack. These stored values are then used to minimize errors associated with rechargeable batteries such as battery wear out, voltage depression, and self discharge. As a general rule, battery packs should be calibrated once a month.

1. Insert all the batteries that require servicing into the charging pockets and press the yellow Condition and Calibrate Switch (see page 11-2).

2. The Condition and Calibrate LED (see page 11-2) flashes red to indicate that the cycle has begun.

3. The Dolphin MultiCharger begins to totally discharge and fully recharge the battery pack, automatically. This cycle requires approximately 8 hours to complete.

4. In each charging pocket, the orange Status LED will begin to flash in sync with the Condition and Calibrate LED.
   Any batteries inserted after the Condition and Calibrate switch has been depressed will receive a standard charge.

5. A complete cycle is indicated by a green Status LED.
   Because the Dolphin MultiCharger is accumulating battery pack information during the entire Condition and Calibrate cycle, do NOT remove the battery until the cycle has been completed.

6. Once all batteries have completed the Condition and Calibrate cycle, the Condition and Calibrate LED will turn off.

7. At this point, another Condition and Calibrate cycle can be initiated.

Troubleshooting

If you encounter problems with your Dolphin MultiCharger, first, please go through the list of problems and solutions in this chapter.

Problem	Issue
The Green/Charging LED does not come on when I insert a battery pack into the Dolphin MultiCharger	Check the power connections on the Dolphin MultiCharger. Ensure that the POWER switch is ON and the battery pack is properly seated.
The Red/Error LED comes on during charging.	Attempt to charge the battery in another pocket location. If the Red/Error LED follows the battery, then the problem is associated with the battery pack. If the Red/Error LED stays with the pocket then the problem is associated with the charging circuitry.
The Red/Error LED remains on, without a battery in the charging pocket.	An error occurred during the self diagnostic test for that particular pocket location. Refer problem to Hand Held Products Technical Support.

If problem persist, please contact Hand Held Products Technical Support.

Declaration of Conformity

DECLARATION OF CONFORMITY

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

1. Product Identification

Product name	: Multiple Battery Charger
Line of business	: Auto ID
Model/type	: N/A
Version	: N/A
Additional information	: N/A

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:
Fleuri Kets V B.V.
Kaatsheuvel
The Netherlands

Trading as:
Hand Held Products Europe
Hondsruglaan 87d
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

Product Standard	Basic Standard (Test Specification)	Description
EN 55022:1995	EN 55022:1995	Conducted/Radiated Emissions
EN 50082-1	EN 61000-4-2:1995	Electrostatic Discharge
	EN 61000-4-4:1995	Electrical Fast Transient
	IEC 801-3:1984	Radiated RF EM Field

5. Test report

EMC Test Report #64655

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 : 6 October 1998   Place : Charlotte, USA

Customer Support

Product Service and Repair

Hand Held Products provides service for all its products through service centers throughout the world. To obtain warranty or non-warranty service, return the unit to Hand Held Products (postage paid) with a copy of the dated purchase record attached. Contact the appropriate location below to obtain a Return Material Authorization number (RMA #) before returning the product.

North America

Hand Held Products Corporate Offices
Telephone: (800) 782-4263, option 3
Fax: (704) 566-6015
E-mail: naservice@handheld.com

América Latina

Hand Held Products América Latina
Teléfono: (704) 998-3998, opción 8, opción 4
Fax: (239) 263-9689
E-mail: laservice@handheld.com

Brasil

Hand Held Products São Paulo
Teléfono: Int+55 (11) 2178-0500
Fax: Int+55 (11) 2178-0502

Hand Held Products Rio de Janeiro
Teléfono: Int+55 (21) 2178-0500
Fax: Int+55 (21) 2178-0505

São Paulo and Rio de Janeiro
E-mail: brservice@handheld.com

México

Hand Held Products México
Teléfono: Intl+52 (55) 5203-2100
Fax: Intl+52 (55) 5531-3672
E-mail: mxservice@handheld.com

Europe, Middle East, and Africa

Hand Held Products Europe
Telephone: +31 (0) 40 29 01 633
Fax: +31 (0) 40 2901631
E-mail: euservice@handheld.com

Asia Pacific

Hand Held Products Asia/Pacific
Telephone: +852-2511-3050
Fax: +852-2511-3557
E-mail: apservice@handheld.com

Japan

Hand Held Products Japan
Telephone: +81-3-5770-6312
Fax: +81-3-5770-6313
E-mail: apservice@handheld.com

Online Product Service and Repair Assistance

You can also access product service and repair assistance online at www.handheld.com.

Technical Assistance

If you need assistance installing or troubleshooting, please call your Distributor or the nearest Hand Held Products technical support office:

North America/Canada:

Telephone: (800) 782-4263, option 4 (8 a.m. to 6 p.m. EST)
Fax number: (315) 685-4960
E-mail: *natechsupport@handheld.com*

América Latina:

Teléfono: (704) 998-3998, opción 8, opción 3
E-mail: *latechsupport@handheld.com*

Brasil

São Paulo
Teléfono: Int+55 (11) 2178-0500
Fax: Int+55 (11) 2178-0502

Rio de Janeiro
Teléfono: Int+55 (21) 2178-0500
Fax: Int+55 (21) 2178-0505

São Paulo and Rio de Janeiro
E-mail: *brtechsupport@handheld.com*

México

Teléfono: (704) 998-3998, opción 8, opción 3
E-mail: *latechsupport@handheld.com*

Europe, Middle East, and Africa:

Telephone-
European Ofc: Int+31 (0) 40 79 99 393
U.K. Ofc: Int+44 1925 240055
E-mail: *eutechsupport@handheld.com*

Asia Pacific:

Telephone: Int+852-3188-3485 *or* 2511-3050
E-mail: *aptechsupport@handheld.com*

Online Technical Assistance

You can also access technical assistance online at www.handheld.com.

Limited Warranty

Hand Held Products, Inc. ("Hand Held Products") warrants its products to be free from defects in materials and workmanship and to conform to Hand Held Products' published specifications applicable to the products purchased at the time of shipment. This warranty does not cover any Hand Held Products product which is (i) improperly installed or used; (ii) damaged by accident or negligence, including failure to follow the proper maintenance, service, and cleaning schedule; or (iii) damaged as a result of (A) modification or alteration by the purchaser or other party, (B) excessive voltage or current supplied to or drawn from the interface connections, (C) static electricity or electro-static discharge, (D) operation under conditions beyond the specified operating parameters, or (E) repair or service of the product by anyone other than Hand Held Products or its authorized representatives.

This warranty shall extend from the time of shipment for the duration published by Hand Held Products for the product at the time of purchase ("Warranty Period"). Any defective product must be returned (at purchaser's expense) during the Warranty Period to Hand Held Products' factory or authorized service center for inspection. No product will be accepted by Hand Held Products without a Return Materials Authorization, which may be obtained by contacting Hand Held Products. In the event that the product is returned to Hand Held Products or its authorized service center within the Warranty Period and Hand Held Products determines to its satisfaction that the product is defective due to defects in materials or workmanship, Hand Held Products, at its sole option, will either repair or replace the product without charge, except for return shipping to Hand Held Products.

EXCEPT AS MAY BE OTHERWISE PROVIDED BY APPLICABLE LAW, THE FOREGOING WARRANTY IS IN LIEU OF ALL OTHER COVENANTS OR WARRANTIES, EITHER EXPRESSED OR IMPLIED, ORAL OR WRITTEN, INCLUDING, WITHOUT LIMITATION, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

HAND HELD PRODUCTS' RESPONSIBILITY AND PURCHASER'S EXCLUSIVE REMEDY UNDER THIS WARRANTY IS LIMITED TO THE REPAIR OR REPLACEMENT OF THE DEFECTIVE PRODUCT. IN NO EVENT SHALL HAND HELD PRODUCTS BE LIABLE FOR INDIRECT, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, AND, IN NO EVENT, SHALL ANY LIABILITY OF HAND HELD PRODUCTS ARISING IN CONNECTION WITH ANY PRODUCT SOLD HEREUNDER (WHETHER SUCH LIABILITY ARISES FROM A CLAIM BASED ON CONTRACT, WARRANTY, TORT, OR OTHERWISE) EXCEED THE ACTUAL AMOUNT PAID TO HAND HELD PRODUCTS FOR THE PRODUCT. THESE LIMITATIONS ON LIABILITY SHALL REMAIN IN FULL FORCE AND EFFECT EVEN WHEN HAND HELD PRODUCTS MAY HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH INJURIES, LOSSES, OR DAMAGES. SOME STATES, PROVINCES, OR COUNTRIES DO NOT ALLOW THE EXCLUSION OR LIMITATIONS OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

All provisions of this Limited Warranty are separate and severable, which means that if any provision is held invalid and unenforceable, such determination shall not affect the validity of enforceability of the other provisions hereof. Use of any peripherals not manufactured/sold by Hand Held Products voids the warranty. This includes but is not limited to: cables, power supplies, cradles, and docking stations. Hand Held Products, Inc. extends these warranties only to the first end-users of the products. These warranties are nontransferable.

See table below for the limited duration of the warranty for the configuration of Dolphin 7200 or peripheral you have purchased.

Product	Standard Factory Warranty
Dolphin 7200 Batch Laser	1 year
Dolphin 7200 Batch RS-232	1 year
Dolphin 7200-2D Batch	2 years
Standard HomeBase	1 year
Compact HomeBase	1 year
Dolphin MultiCharger	1 year
Dolphin VehicleBase	1 year

The limited duration of the warranty for batteries is one year. The battery life will be greatly increased when following the specific battery instructions in the user guide. Rechargeable batteries are highly susceptible to "battery memory" and if instructions are not followed, the amount of hours of usage and the life of the battery are greatly reduced.

A

Technical Specifications

Dolphin 7200 Terminal Specifications

	Batch	RS-232	2D
Case Material	Polycarbonate ABS Blend, Splash-resistant, one-piece module		
Dimensions	Length: 6.85 in. (17 cm) Width: 2.63 in. (7 cm) Depth at handle: 1.62 in. (4 cm) Depth at front: 1.83 in. (5 cm)	Length: 6.85 in. (174 mm) Width: 2.63 in. (7 cm) Depth at handle: 1.62 in. (4 cm) Depth at front: 2.25 in. (5 cm)	Length: 6.85 in. (17 cm) Width: 2.63 in. (7 cm) Depth at handle: 1.62 in. (4 cm) Depth at front: 2.25 in. (5 cm)
Ergonomics	Patented shape one-handed operation; fits either hand comfortably		
Weight (including battery)	12 oz (340 gm)	12 oz (340 gm)	14.3 oz. (406 gm)
Display	8 lines of 20 characters per line, 119 x 73 graphics pixels, alphanumeric, scrollable, application software controllable pixel graphics, 6 x 8 pixel matrix, electroluminescent backlight		
Keypad	Alphanumeric keypad-36 keys Numeric keyboard-20 keys with shifted alpha keys		
Communication Interface	Optical IRDA optical, max 115kbs		
Visual Indicators	LEDs on the top panel - During laser scanning, the red LED lights and the green LED blinks when after a successful decode		
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			
Primary	Rechargeable 3.6V 3 cell battery pack @ 1,500 mAh Length: 2.2 in. (5.6 cm) Width: 1.8 in. (4.6 cm) Depth: .0.8 (2 cm)		
Backup	Internal NiHM Back-up battery retains memory & clock for up to 30 minutes		
Power Management	Low-battery detection & automatic shut-off with battery voltage levels.		
Processing Specifications			
CPU	AMD ELAN SC310 386SX microprocessor		
Memory	2 MB RAM with 8 MB non-volatile FLASH memory - expandable to 16 MB	2 MB RAM with 8 MB non-volatile FLASH memory No expansion FLASH	
Real Time Clock	Accurate, crystal-controlled real time clock/calendar Application software controllable time/date stamping		

Dolphin 7200 Terminal Specifications

	Batch	RS-232	2D
Operating System	GS-DOS architecture programmable with standard x86 development tools; Microsoft C/C++ libraries provided for non-PC standard functions (**scan** engine support, communication & power management)		GS-DOS architecture programmable with standard x86 development tools; Microsoft C/C++ libraries provided for non-PC standard functions (**image** engine support, communication & power management)
Environmental Specifications			
Operating Temperature	-10 to 50°C (14 to 122°F);Operates at -20° for a short time with little loss of LCD quality		
Storage Temperature	-20 to 70°C (-4 to 158°F)		
Humidity	Operates in up to 95% non-condensing humidity		
Structural Integrity	Survives multiple 5 ft (1.5 m) drops to concrete Independently certified to meet IP-64 standards for moisture & particle resistance	Independently certified to meet IP-54 standards for moisture & particle resistance	
Electrical Static Discharge	15KV		
Fire Retardant Rating	UL 94-VO		
Bar Code Specifications			
Standard scan engine	Standard HP, scans 2 - 36" (5 - 91cm); scans in high ambient light		----
Optional scan engines	Long-Range (LR) Scans up to 15 ft. (4.6 ft.) with reflective labels High-Density (HD) Scans small bar codes >2 mil No Scan Engine		----

Dolphin 7200 Terminal Specifications

	Batch	RS-232	2D
Bar code symbol types	Code 3 of 9, Interleaved 2 of 5, EAN, Codabar, Code 128, Plessey MSI, Code 11, Code 93, UPC		**1D Linear Codes:** Code 3 of 9, Interleaved 2 of 5, Code 11, TLC Code 39, IATA 2 of 5, MSI, UPC A, UPC EO, UPC EI, EAN/EAN13, Codabar, Code 128, Code 93 **2D Codes:** PDF417, microPDF, Maxicode, Datamatrix, Aztec, QR Code, Code 49 **Composite Codes:** RSS-14, CODABLOCK, AZTEC MESA **OCR Codes:** OCR A & OCR B **Postal Codes:** Postnet and most international 4 state codes, PLANET CODE, BPO 4 STATE, CANADIAN 4 STATE, DUTCH POSTAL, AUSTRALIAN 4 STATE, JAPANESE POSTAL
Digital Camera			
CMOS Camera	----	----	CMOS Sensor: 640 x 480 Pixel 2 to 9 in. (5 to 23 cm) operating range 256 level gray scale image Operates in range of light from outdoors to total darkness
4250 Image Engine			
Image Engine Options	----	----	**1D Linear Codes:** Code 3 of 9, Interleaved 2 of 5, Code 11, TLC Code 39, IATA 2 of 5, MSI, UPC A, UPC EO, UPC EI, EAN/EAN13, Codabar, Code 128, Code 93 **2D Codes:** PDF417, microPDF, Maxicode, Datamatrix, Aztec, QR Code, Code 49 **Composite Codes:** RSS-14, CODABLOCK, AZTEC MESA **OCR Codes:** OCR A and OCR B **Postal Codes:** Postnet and most international 4 state codes, PLANET CODE, BPO 4 STATE, CANADIAN 4 STATE, DUTCH POSTAL, AUSTRALIAN 4 STATE, JAPANESE POSTAL

B

Bar Code Samples

With the 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)
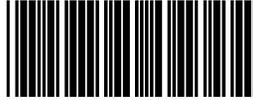
Correct Readout - `BC321`

Code 128

Correct Readout - `Code 128`

UPC-A

Correct Readout - `012345678905`

Interleave 2 of 5 (I2of5)
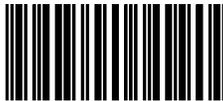
Correct Readout - `1234567890`

C

Decoding Demo Menu Layout

2D Decoding Demo Diagram

The following flow diagram shows the layout of the menus available in the 2D Decoding Demo.

```
F3 - Setup ■
        ├─F1 - Display Options ■
        │          Show Functions
        │
        ├─F2 - Symbologies ■
        │          Listing of symbologies and status
        │                  Setup for specific Symbol
        │
        ├─F3 - Decoding Options ■
        │         ├─F1 - Decode Mode ■
        │         │           ├─F1 - Standard Omni
        │         │           ├─F2 - Reduced Omni
        │         │           └─F3 - Advanced Linear
        │         │
        │         ├─F2 - Centering Window ■
        │         │           ├─F1 - Enable / Disable
        │         │           ├─F2 - Cycle Setting
        │         │           ├─F3 - Default Setting
        │         │           ├─F4 - Quit
        │         │           ├─ H - Help
        │         │           └─Enter - Save Settings
        │         │
        │         ├─F3 - ALD Window ■
        │         │           ├─F1 - Window Size Cycling
        │         │           ├─F2 - Use default size
        │         │           ├─F4 - Quit
        │         │           ├─ H - Help
        │         │           └─Enter - Save Settings
        │         │
        │         └─Esc - Quit
        │
        └─Esc - Quit


        ■= Screen shot
```

2D Decoding Demo Screen Shots

Shown below are screen shots of the different menus listed above.

Example: Selecting ALD decoding mode.

- Press F3 to get main menu screen
- Press F3 to set a decoding option
- Press F1 to select the desired decoding mode
- Press F3 to select ALD Mode

Setup Menu

```
        Select what you
     would like to edit


F1-Display Options
F2-Symbologies
F3-Decoding Options


ESC-Quit
```

Display Options Menu

```
         Display Options
F1-Up          F2-Down
F4-Quit      ENTER-Select
==========================
Save Setting
Quit without Saving
Show Functions
```

Symbologies

Configure the Dolphin 7200 for reading specific bar code symbologies as well as enabling, disabling, or defaulting all available symbologies.

```
         Display Options
F1-Up          F2-Down
F4-Quit      ENTER-Select
==========================
Enable  All Symbols
Disable All Symbols
Default All Symbols
Aztec Code
Mesa                    --
```

Decoding Options

```
      Select what you
    would like to edit

F1-Decode Mode
F2-Centering Window
F3-ALD Window

ESC-Quit
```

Decode Mode

The top of the screen will show the decode mode currently active on the Dolphin 7200 terminal.

```
      Standard Omni Mode

Choose Desired Mode
F1-Standard Omni
F2-Reduced Omni
F3-Advanced Linear

ESC-Quit
```

To set the Mode, Press:

F1 - Standard Omni	Hand Held Products' traditional search and decode routine. Gives full omni-directional decoding over the whole image area.
F2 - Reduced Omni	Uses the same search and decode method but only applies it to the center portion of the image. This makes for shorter and faster search times.
F3 - Advanced Linear Decoding (ALD)	This decoding mode applies a linear search routine across the center of the image. This menu is for setting the size of the search area. ALD is the quickest search and decode routine, but only works on linear bar codes positioned horizontally in the image.

The terminal will return to the main screen after the mode is selected.

Centering Window

Press F2 for the Centering Window and the screen below will display.

```
┌──────────────────────────┐
│                          │
├──────────────────────────┤
│                          │
│      DISABLED!!!!         │
│                          │
├──────────────────────────┤
│                          │
│                          │
│                          │
│  Press: H for Help       │
│          Enter to save   │
│                          │
└──────────────────────────┘
```
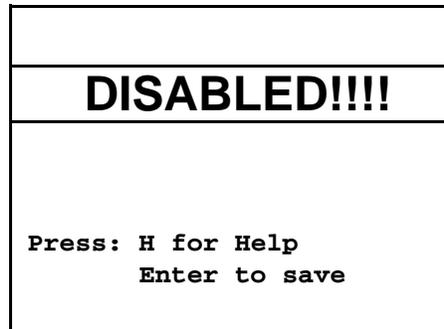
This is the default setting for the Centering Window function. The Centering Window is used to keep the image engine from decoding the wrong symbol when you have several bar codes located close together.

The following key presses configure this feature:

F1	Enables or disables centering window function
F2	Cycles the window setting through several predetermined sizes
F3	Sets to default settings
F4	Quit without saving
H	Help
ENTER	Save settings

The decoder will only decode a target if it is inside the area defined by the Centering Window.

Centering Window Example
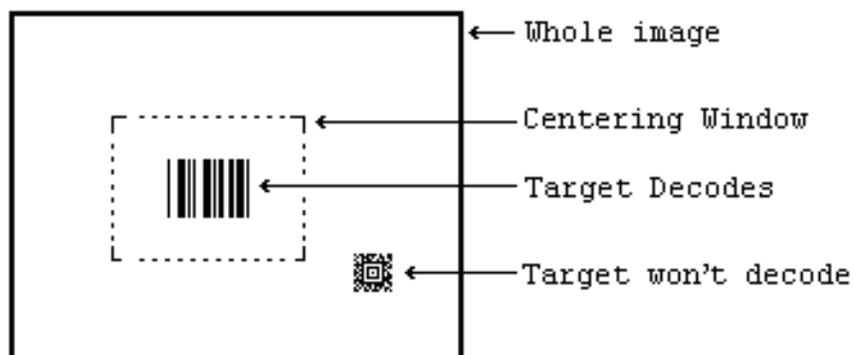
ALD Window

Press F3 and the ALD window shown below will display:

```
┌─────────────────────────────────┐
│      ┌──────────────────┐        │
│      │                  │        │
│      ├──────────────────┤        │
│      │                  │        │
│      ├──────────────────┤        │
│      │                  │        │
│      └──────────────────┘        │
│                                  │
│   Press: H for Help              │
│           Enter to save          │
│                                  │
└─────────────────────────────────┘
```
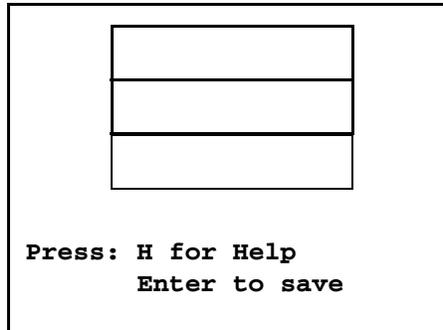
ALD mode searches for linear bar codes across the middle of the image. How much of the image is searched is controlled by the window size. This mode only works on linear symbologies and only decodes them horizontally. The following key presses configure this feature:

F1 - Cycles through window sizes   **F4** - Quit without saving   **ENTER** - Save settings

F2 - Use default sizes   **H** - Help

D

IQ Imaging Test Target

Make copies of this page to use with the Dolphin 7200-2D terminal IQ Imaging demo (see F3 - I.Q. Imaging Demo on page 5-5).

E
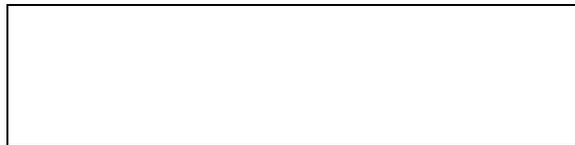
GS-DOS Commands

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.

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.

*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 [ONIOFF]

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-yyyy]

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 wildcard 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 [ONIOFFIstring]

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, 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:]

F

Declarations 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 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. Ind.	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 :

Signature On File

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 East Independence Blvd.
	Charlotte, North Carolina 28227-9411
Country	: United States of America
Authorized by Manufacturer	: <u>Corporate Body</u>: <u>Trading As</u>:

Fleuri Kets V B.V.	Hand Held Products Europe
Kaatsheuvel	Hondsruglaan 87d
The Netherlands	5628 DB Eindhoven
	The Netherlands

3. Test Labs

Name	: Teleficaton 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	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

Page 1 of 2

Revision C

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. Ind. (as listed above):   98302120

: SGS

: LVD Compliance   U0212

6. Type Approval Certifications

Country/Approval Number

: FCC/USA   : HD5RFDolphin-1

: Canada   : 16931021078A

: Netherlands, UK, Austria   : NL98062970

: Germany   : D800372K

: Switzerland   : 98.0517.L.P

: Denmark   : CEPT/RLAN/DK/9817

: Norway   : CEPT/RLAN N NO98000529-R

: Sweden   : Ue980117

: Belgium   : RTT/RL/X070

: Italy   : DGPGF/4/2/334473/2590/061098

: Hungary   : 1705-2/99

: Greece   : CEPT-RLAN-GR.YME TA 164

: Ireland   : IRL TRA 24/5/242/1

: Spain   : E/D.G.Tel./08/99/0221

: France   : 980321PPO

7. 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 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.

8. Authentication

Signature on behalf of authorized

Company mentioned at point 2:

Signature on file

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

Date : <u>October 27, 1998</u>   Place: <u>North Carolina, USA</u>

Page 2 of 2

Revision C

Hand Held Products, Inc.

700 Visions Drive
P.O. Box 208
Skaneateles Falls, NY 13153-0208