



*Dolphin® 7400/7450
Hand Held Computer
User's Guide*



Patents

The Dolphin 7400 mobile computer is covered by the following U.S Patent:
D439,898 S.

The IMAGETEAM 4250 image engine is covered by one or more of the following U.S. Patents: 3,991,299; 4,570, 057; 5,021,642; 5,038,024; 5,081,343; 5,095,197; 5,144,119; 5,144,121; 5,182,441; 5,187,355; 5,187,356; 5,218,191; 5,233,172; 5,258,606; 5,286,960; 5,288,985; 5,420,409; 5,463,214; 5,541,419; 5,569,902; 5,591,956; 5,723,853; 5,723,868; 5,773,806; 5,773,810; 5,780,834; 5,784,102; 5,786,586; 5,825,006; 5,837,985; 5,838,495; 5,900,613; 5,914,476; D400,199; 5,292,418; 5,932,862; 5,942,741; 5,949,052; 5,965,863; 5,992,744; 6,045,047; 6,060,722.

Other U.S. and foreign patents pending.

Disclaimer

Hand Held Products, Inc. d/b/a Welch Allyn ("HHP") reserves the right to make changes in specifications and other information contained in this document without prior notice, and the reader should in all cases consult Welch Allyn to determine whether any such changes have been made. The information in this publication does not represent a commitment on the part of Welch Allyn.

Welch Allyn shall not be liable for technical or editorial errors or omissions contained herein; nor for incidental or consequential damages resulting from the furnishing, performance, or use of this material.

This document contains proprietary information which is protected by copyright. All rights are reserved. No part of this document may be photocopied, reproduced, or translated into another language without the prior written consent of Welch Allyn.

© 2001-2002 **Hand Held Products, Inc.** All rights reserved.

Web Address: www.hhp.com

Table of Contents

Chapter 1	Introduction	7
	Safety	8
	Required Safety Labels	8
	Batch Terminals.....	8
	If Your Dolphin 7400/7450 has a radio.....	9
	FCC Compliance	9
	Regulatory and Safety Agency Approvals	11
	Batteries.....	12
	Care and Cleaning of the Dolphin	12
Chapter 2	Getting Started.....	13
	Accessories for the Dolphin 7400/7450	13
	Dolphin 7400 Models and Options.....	14
	Image Engine Options and Bar Code Symbologies Supported...14	
	Laser Engine Options and Symbologies Supported	15
	Using Dolphin 7400/7450 for the First Time.....	16
Chapter 3	Dolphin 7400/7450 Overview	25
	System Features	25
	Processor	25
	Operating System	25
	Memory	25
	Radio Options	25
	Front Panel Features.....	26
	LEDs	26
	1/4 VGA Display	27
	ON/SCAN Key	27
	Cursor Keys	27
	Audio Signals	27
	Keyboard.....	27
	RF Antenna	28
	Back Panel Features	29
	Dolphin 7400	29
	Image Engine	29
	Laser Engine	30
	Battery Well	30
	Battery Charging Contacts.....	30
	Hand Strap.....	30
	Dolphin 7450	31
	Rubber Nose Bumpers	32

Scan Trigger.....	32
Pistol Grip Handle.....	32
Communication.....	32
Micro-DB9 RS-232 Port.....	32
IrDA Port	33
RJ-45 Phone Jack (7400 only)	33
Power	33
5 VDC Port.....	33
Batteries.....	33
Internal NiHM Backup Battery	33
Main Battery Pack.....	34
Managing Battery Power	34
Setting Critical and Low Battery Points	34
Using the Power Control Panel	35
Servicing the Battery Pack	36
Charging the Battery Pack	37
Storing Batteries	37
Chapter 4 Using the Dolphin 7400/7450	39
Entering Data.....	39
Via the Touchscreen Input	39
Via the Keyboard.....	39
Using the Image Reader	39
Communication.....	42
Communication Media.....	42
Software Communication Programs	42
Using the Keyboard.....	43
Using the Cursor Keys	44
Using the Modifier Keys	45
Other Special Keys	45
Key Combinations	46
Navigating the Keyboard	47
Using the Modem	49
Chapter 5 Dolphin 7400/7450 RF Terminal	51
Configuring Your Dolphin 7400 RF Terminal	52
Client Utilities for the 802.11b Radio	53
Configuring the Radio.....	54
Host Connectivity	55
Thick-Client Terminal Emulation	55
Thin-Client Terminal Emulation	56
Chapter 6 Dolphin Charging/Communication Cradles	57
Hub of the System.....	57
Power Conditioning.....	57

Convenient Storage	58
Dolphin Charging/Communication Cradle Parts & Functions ..	58
HomeBase/IntelliBase/USB HomeBase	58
IntelliBase+	59
Bottom Panel of HomeBase/IntelliBase/IntelliBase+	64
Powering the Dolphin Terminal	65
Charging Additional Battery Packs in the IntelliBase+ ..	65
Deep-Cycling Batteries	66
Setting Up For Communications	66
Installing The Charging/Communication Cradle	66
Configuring the Dolphin Terminal	68
Setting Up For Communications With The USB HomeBase	70
Communicating with the Dolphin Terminal	72
Mounting the HomeBase/IntelliBase/USB HomeBase	73
Chapter 7 Dolphin® QuadCharger	77
Dolphin QuadCharger Parts and Function	77
Top Panel	77
Rear Panel	78
Charging Batteries In The QuadCharger	79
Setting Up The QuadCharger	79
Supplying Power To The QuadCharger	79
Inserting and Removing Battery Packs	79
Servicing The Battery Pack	80
Storing Batteries	81
Troubleshooting	81
Chapter 8 Dolphin® Mobile IntelliBase™	83
Power Conditioning	83
Mobile IntelliBase Parts and Functions	84
Front Panel	84
Rear Panel	85
Bottom Panel of Mobile IntelliBase	86
Powering the Dolphin Terminal	87
Charging A Dolphin Terminal	87
Deep-Cycling Batteries	87
Setting Up For Communications with the Mobile IntelliBase ..	87
Installing The Dolphin Mobile IntelliBase	88
Configuring the Dolphin Terminal	90
Chapter 9 Developing Applications	93
Chapter 10 Warranty, Support and Service	95
Limited Warranty	95

How Problems Should Be Handled	96
Return Information	97
How To Extend Your Warranty	99
Application Support	99
Chapter 11 Appendix A	103
Using the Modifier Keys	104
43-Key Alpha/Numeric Keyboard	104
Key Combinations	105
35 Key Numeric/Alpha	106
Key Combinations	107
56 Key Full Alpha Numeric	108
Key Combinations	109
Chapter 12 Appendix B	111
Dolphin 7400/7450 Scan Maps	111

The Dolphin® 7400/7450 is a hand held computer/imager designed for easy, single-handed data collection. The terminal is equipped with a StrongARM™ 206MHz RISC processor built to run the Windows® CE™ operating system.

Dolphin 7400/7450 hand helds are available with different types of 2D imagers, wireless radios, and memory configurations to meet most any automated data collection requirement. Dolphin 7400 hand held computers may also be equipped with a low power, high speed, V.90 56K FAX/modem to allow communications via an analog phone line.

The Dolphin 7450 terminal's integrated pistol-grip handle provides comfortable ergonomics and intuitive point-and-shoot scanning for extended periods of use.

Offered with a memory configuration of 32 MB RAM and 32 MB FLASH, the device has three keyboard options and a 240 x 320 pixel, backlit 1/4 VGA display. The display also is available with a touch screen.

The Dolphin 7400/7450 platform is equipped with an integrated imager. The imager can take images like shipping manifests, recipient signatures, while at the same time, decode OCR (Optical Character Recognition) fonts. The imager can also decode standard linear and two-dimensional symbologies. An optional Advanced Long Range laser scanner is also available for both terminals.

Accessories for the Dolphin 7400/7450

The Dolphin 7400/7450 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, vehicle mounted charging/communication cradles.

You can use these accessories with the Dolphin:

Dolphin HomeBase™ Dolphin terminal charging and communication cradle, includes power adapter.

Dolphin IntelliBase™ Dolphin terminal charging and communication cradle for communicating with devices such as printers and modems without integrated IrDA protocol software, includes power adapter.

Dolphin USB HomeBase for communicating directly with a USB-compatible host computer, includes power adapter.

Dolphin IntelliBase+™ for communicating with devices such as printers and modems without integrated IrDA protocol software, and for charging and conditioning a spare battery, includes power adapter.

Dolphin Quad Battery Charger™ Charges four batteries in under three hours and conditions in under eight hours.

Dolphin HomeBase™ Power Adapter Replacement power adapter for Dolphin HomeBase.

Note: Use only power adapters approved for use by HHP. Failure to do so may result in improper operation or damage to the unit and will void the warranty.

NiMH Battery Pack Nickel Metal Hydride (NiMH) 2700mAh rechargeable battery for the Dolphin.

RS-232 Serial Cable Allows Dolphin 7400 to connect to other computer systems for file transfer or to connect Dolphin 7400 terminal using the terminal's serial RS-232 interface.

Contact your Value-Added Reseller for more information. For details about how to install or use any of these accessories, refer to the documentation provided with the product. Documentation may also be downloaded from our website, www.hhp.com.

Dolphin 7400 Models and Options

Hand Held Product's family of Dolphin 7400 hand held portable data collection terminals includes these models:

The **Dolphin® 7400 Batch** terminal is a Windows® CE™ programmable hand held computer with a unique, ergonomic shape designed for single-handed use. The standard Dolphin 7400 is available with 32 MB RAM and 32 MB FLASH and an integrated digital imager or Advanced Long Range (ALR) laser scanner. An optional compact FLASH card offers up to 256MB of additional memory. The terminal's RS-232 connector supports external plug-in scanners, land line modems and printers. It also features an IrDA infrared transceiver for data communicate to portable printers and cradles.

The **Dolphin® 7450 Batch** hand held computer offers the same enhanced productivity features of the Dolphin® 7400 terminal with the added convenience of a pistol grip-style form factor for high volume scanning applications.

The **Dolphin® 7400 RF** and **Dolphin® 7450 RF** terminals integrate the basic functionality of the Batch terminals with an 802.11b direct sequence radio that allows the terminal to communicate with a host computer via radio wireless local area network (WLAN).

Image Engine Options and Bar Code Symbolologies Supported

Dolphin 7400/7450 terminals may be equipped with one of three image engines options:

- LX: scans from 2.0 to 15.0 in. (5.1 to 38.1 cm.)
- LR: scans from 1.9 to 9.4 in. (4.8 to 23.9 cm.)

-
- HD: scans from 1.6 to 3.9 in. (4.1 to 9.9 cm.)

1D symbologies supported are: Code 3 of 9, Interleaved 2 of 5, EAN, Codabar, Code 11, Code 128, Code 93, TLC39, Universal Product Code (UPC).

2D symbologies supported are: PDF417, MaxiCode, Data Matrix, Vericode, RSS, EAN.UCC, Aztec, QR Code, Code 49.

Composite codes supported are: RSS-14, CODABLOCK, Aztec Mesa.

OCR codes supported include: OCR A and OCR B.

Postal codes supported include: Postnet and most international 4 state codes, PLANET CODE, BPO 4 STATE, Canadian 4 State, DUTCH POSTAL, AUSTRALIAN 4 STATE, JAPANESE POSTAL.

Laser Engine Options and Symbologies Supported

Dolphin 7400/7450 terminals may be equipped with an Advanced Long Range (ALR) laser engine. The ALR engine reads 30mil bar codes from 2.75 to 8 ft (0.83 to 2.4 m) and 100mil reflective bar codes out to 30 ft (9.1 m), making it ideal for use in warehouse applications.

1D symbologies supported are: UPC/EAN, Code 39, Interleaved 2 of 5, Codabar, Code 128, MSI, Plessey.

Using Dolphin 7400/7450 for the First Time

Follow these steps to begin using your Dolphin 7400/7450 terminal.

1. Unpack and check the terminal and documentation.
2. Charge the main battery pack and internal back-up battery.
3. Turn the Dolphin on.
4. Calibrate the screen, set the date/time, and user information.
5. Verify that the Dolphin 7400/7450 terminal is working properly.

1 Unpack the Carton and Check Its Contents

Inspect the package to see that the following standard items and accessories (if ordered) are included in the standard Dolphin 7400/7450 kit:

- Dolphin 7400/7450 hand held computer/imager/scanner
- Battery (2700 mAh, Nickel Metal Hydride [NiMH])
- Dolphin HomeBase
- RS-232 Serial Cable
- AC-DC Power Adapter for Dolphin Terminal/HomeBase
- Dolphin 7400/7450 Software Development Kit & User's Guide CD-ROM

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

2 Charging the Main Battery and Backup Battery

WARNING Use only 2700 mAh NiMH battery packs provided by HHP. The use of any other battery pack in the Dolphin terminal will void your warranty and may result in damage to the Dolphin terminal or battery.

The terminal's NiMH battery is not conditioned at the factory and is shipped discharged of all power and inserted in the Dolphin terminal.

WARNING Although the Dolphin 7400/7450 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.

For maximum battery life, HHP recommends that you deep-cycle the battery **twice** before initial use. It is also recommended that you service the battery once per month. Refer to the section on Managing Battery Power in Chapter 3 for further information on deep-cycling the battery.

After deep-cycling the battery, the terminal's NiMH battery must be charged before using it for the first time. To charge the main battery pack:

1. Place the main battery pack in the Dolphin 7400/7450 terminal.
2. Place the terminal in the terminal well of the Dolphin HomeBase™. Time to Charge: 3.5 hours for the main battery; 8 hours for the back-up battery

As the main battery pack charges, the internal back-up battery also charges. For the initial charging cycle, it is recommended that the terminal be charged for approximately 8 hours to allow adequate charging time for the back-up battery. Not doing so may result in the terminal becoming unstable should the unit lose

power and the back-up battery is required. The back-up battery maintains the RAM and clock when the NiMH main battery pack is discharged or removed from the terminal.

Removing the Battery Pack

Follow these steps to remove the Dolphin battery pack.

1. Hold the Dolphin with the front panel (keyboard) facing down.
2. On the 7400, remove the handstrap by pushing its clip down and forward to unhook it from the terminal; move the strap away from the battery compartment.
3. Push the locking tab on the battery pack up and pull the battery out from the Dolphin terminal with a hinging motion.

Inserting the Battery Pack

Follow these steps to install the Dolphin 7400 battery pack.

1. The Dolphin 7400 ships with the handstrap installed. Hold the terminal with the front panel (keyboard) facing down. Push the clip of the handstrap down and away from the terminal to unhook it; move the strap up and away from the battery compartment.
2. Insert the end without the locking tab into the top of the battery opening and snap the battery into place with a hinging motion. Press the battery into the well until the clip is engaged. The battery case serves as the back cover of the Dolphin.
3. Reattach the handstrap by positioning it down over the battery case and sliding the clip back into the place at the bottom end of the 7400.
4. The terminal will initialize and, after a few seconds, will show the splash screen for the Dolphin 7400 demo program.

Follow these steps to install the Dolphin 7450 battery pack.

1. Hold the terminal with the front panel (keyboard) facing down.
2. Insert the end without the locking tab into the top 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.
3. The terminal will initialize and, after a few seconds, will show the splash screen for the Dolphin 7400 demo program.

3 Turning the Dolphin On And Off

Turning the Dolphin On For the First Time

Turning on the Dolphin 7400/7450 for the first time is a **cold boot**. Follow these steps to turn on your Dolphin 7400/7450 terminal.

1. Install the charged battery pack in the Dolphin.
2. The red LED will come on and the green LED will blink for approximately three seconds.
NOTE: DO NOT PRESS ANY KEYS WHILE THE TERMINAL IS BOOTING UP.

-
3. The terminal will initialize and after a few seconds will display the Dolphin 7400 splash screen shown below:



Dolphin 7400 Splash Screen

Waking the Dolphin From Sleep Mode

The Dolphin 7400/7450 terminal is never actually turned off. To conserve power, the Dolphin suspends operation, or 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." Press the ON/SCAN key to wake the Dolphin terminal from sleep mode, and you can start working where you left off.

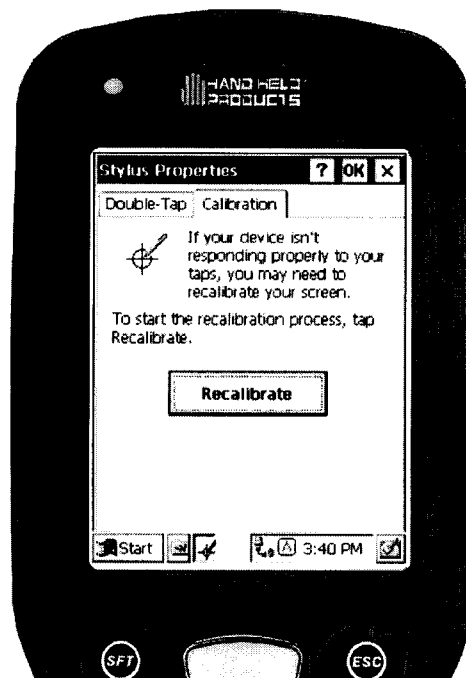
The Dolphin terminal also goes into sleep mode if you remove the main battery pack. To wake the Dolphin terminal from sleep mode, install a charged battery and press the ON/SCAN key.

WARNING If the main battery and back-up battery are ever fully discharged of power, the terminal will cold boot. The terminal will be restored to its original state. All data stored in RAM memory also will be lost.

4 Calibrating the Screen, Setting the Date/Time and Modem (if equipped)

Calibrating the Screen

If your Dolphin 7400/7450 is equipped with a touchscreen, you need to calibrate the screen after a cold boot. After the Welcome Splash Screen appears, you will be prompted to calibrate the screen. Follow the directions on the screen to calibrate the screen. After calibrating the screen, you will be prompted to set the date and time on the terminal. The Dolphin 7400/7450 Demo Program main menu appears after you set the date and time.

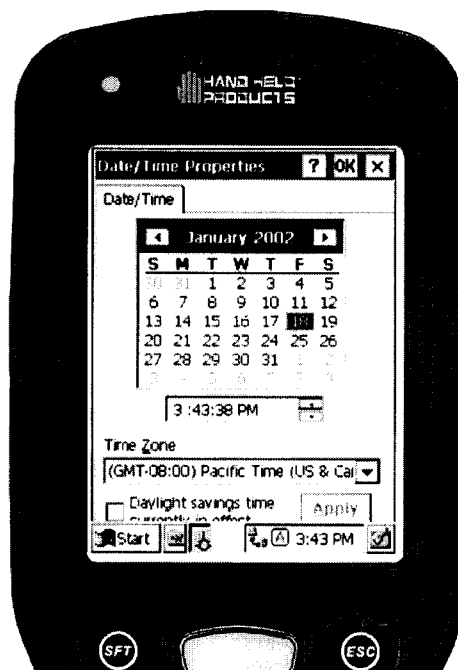


Stylus Properties Screen

Setting the Date/Time

Use the Windows® CE Date/Time function to set the correct date and time for your Dolphin 7400/7450 terminal. Use the Dolphin 7400/7450 mouse utility to navigate through the screens if your terminal does not have a touchscreen. For more information about the mouse utility, see Navigating the Keyboard in Chapter 4.

Note: Exit the mouse utility before adjusting the contrast.



Date/Time Properties Screen

Touchscreen-equipped terminals:

1. From Control Panel, select Date/Time to set the date and time for your terminal.
2. Touch OK to accept the settings and to exit Date/Time. The main screen for the Dolphin 7400 demo will come up on the screen.

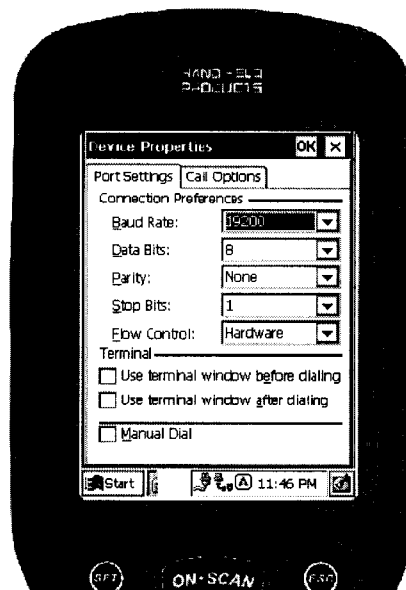
Terminals without touchscreens:

1. Use the Cursor keys to navigate to Date/Time and then press <Enter> to open Date/Time Properties.
2. Use the Cursor and Tab keys to navigate around the screen and to set the date and time for your terminal.
3. Press <Enter> to return to the Control Panel.

Configuring the Modem

If your Dolphin 7400 hand held computer is equipped with a modem, follow these configuration instructions. Use the Dolphin 7400 mouse utility to navigate through the configuration process if your terminal does not have a touchscreen. For more information about the mouse utility, see Navigating the Keyboard in Chapter 4.

1. From the Start menu, select Programs>Communication>Remote Networking.
2. Select Make New Connection. Type in the name for the connection. Select Dial-Up Connection and touch Next.
3. Select the modem from the drop-down menu, CIRRUS LOGIC 56K MODEM and then touch Configure.
4. Set the option on Port Settings tab as shown below and then touch OK.



5. Touch Next and enter the country code, area code and phone number in the appropriate fields. Touch Finish and the terminal will return to the Connection window.

For information on using the modem, see Using the Modem in Chapter 4.

5 Verifying that Dolphin 7400/7450 is Working Properly

After the main battery pack is charged and installed and you have calibrated the the screen and set the time and date, the Dolphin 7400 terminal is ready to use. Choose the IMAGE DEMO or SCAN DEMO to verify that the terminal is operating properly.

Touchscreen-equipped terminals:

To take an image:

1. Select IMAGE DEMO.
2. Press F1 (red key + Q) to view the set-up utility for the IMAGE DEMO.
3. Press the <ON/SCAN> button and the image you take will appear on the terminal's screen.
4. Touch <ESCAPE> to go back to the main menu.

To scan a bar code label:

1. Select SCAN DEMO.
2. Press F1 (red key + Q) to view the set-up utility for the SCAN DEMO.
3. Press the <ON/SCAN> button, aim the terminal at a bar code and the red SCAN LED will illuminate. The green SCAN LED will illuminate and the terminal will beep when a good scan is obtained. Information about the bar code scanned will appear on the screen.
4. Press <ESCAPE> to exit the demo and return to the main menu.

Terminals without touchscreens:

To take an image:

1. Using the Cursor keys, navigate down to the IMAGE DEMO button and press an <ENTER> key.
2. Press F1 (red key + Q) to view the set-up utility for the IMAGE DEMO.
3. Press ON/SCAN button and the image you take will appear on the terminal's screen.
4. Press <ESCAPE> to go back to the main menu.

To scan a bar code label:

1. Using the Cursor keys, navigate down to the SCAN DEMO button and press an <ENTER> key.
2. Press F1 (red key + Q) to view the set-up utility for the SCAN DEMO.
3. Press ON/SCAN button, aim the terminal at a bar code and the red SCAN LED will illuminate. The green SCAN LED will illuminate and the terminal will beep when a good scan is obtained. Information about the bar code scanned will appear on the screen.
4. Press <ESCAPE> to go back to the main menu.

Resetting the Dolphin (Cold Boot)

Under some conditions, you may need to reset the Dolphin 7400/7450 terminal with a cold boot. These may include:

- Resetting the operating system
- Resetting the terminal back to factory defaults
- Resetting the terminal after a bootloader, keyboard, and kernel upgrade.

To perform a cold boot:

1. Press and hold the Control (CTRL) and the Escape (ESC) keys for about 10 seconds.
2. Release the keys and the terminal will reset. The red LED will come on and the green LED will blink for approximately 3 seconds.
3. The terminal will behave as described in the section about Turning the Dolphin On for the First Time.

Resetting the Dolphin (Warm Boot)

There are times when you may need to warm boot the Dolphin 7400/7450 terminal, such as after loading a software application that requires a warm boot after installing new software. To warm boot the Dolphin 7400 terminal:

1. Press and hold the Control (CTRL) and the SHIFT (SFT) keys for about 10 seconds, then release.
2. Release the keys and the terminal will reset. The red LED will come on and the green LED will blink for approximately 3 seconds.
3. The terminal will initialize and after a few seconds will display the main menu screen for the Dolphin 7400/7450 Demo Program.

4

Using the Dolphin 7400/7450

Entering Data

Data can be entered into the Dolphin 7400/7450 through a variety of ways, including the optional touchscreen, keyboard, image engine, laser scanner, via radio or the optional modem (7400 only).

Via the Touchscreen Input

If so equipped, you can use the Dolphin 7400/7450 terminal's touchscreen to operate the terminal and enter data.

To enter data, use a stylus to select menu options, functions, etc.

Note: For touchscreen input, only use a stylus or your finger. Use of other objects, such as paper clips, pencils, ink pens can damage the touchscreen and will void the warranty.

Via the Keyboard

Data can be entered into the Dolphin 7400/7450 terminal via the keyboard. The Dolphin 7400 has three keyboard options: 43-key alpha/numeric, 35-key numeric/alpha, and 56-key full alpha/numeric.

To enter data, press the appropriate key and the corresponding number or letter appears on the screen.

See Appendix A for a list of keyboard shortcuts for navigating the keyboard.

A mouse utility is also available to help with navigating around the Dolphin 7400/7450 terminal screen.*

** Exit the mouse utility prior to adjusting the contrast.*

Using the Image Reader

Dolphin 7400/7450 terminals equipped an image reader can read 1D and 2D bar codes, OCR characters and can capture images, such as signatures.

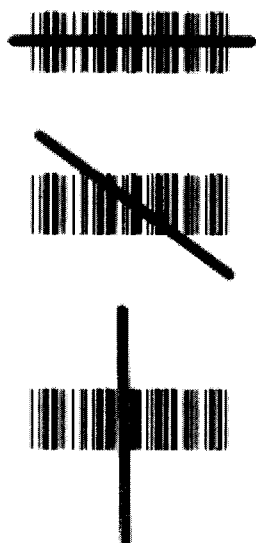
The imager has a viewfinder that projects a bright red aiming beam. Center the aiming beam over the bar code for the best read, though a good read can be obtained from most any position.

The omni-directional scanning capabilities of the Dolphin 7400 and 7450 terminals greatly simplify operation and training and will increase productivity.

Reading A Bar code

1. Press the **ON/SCAN** button on the 7400 or the **Scan Trigger** on the 7450 to project the scanner's bright red aiming beam. The aiming beam should be oriented in line with the bar code to achieve the quickest read. A range of 4-10 inches (10-25 cm) is recommended.
2. Center the aiming beam over the bar code. 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 and the terminal beeps.

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 an intuitive, 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. Basic steps for acquiring images using the Dolphin 7400 terminal include:

-
1. To aim, point the display end of the 7400 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.

Basic steps for acquiring images using the Dolphin 7450 terminal are:

1. Point the display end of the 7450 directly at the target.
2. Pull the **Scan Trigger** to take the 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 **Scan Trigger** 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.

The image quality and related file size are 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.

Communication

Communication Media

Via the RS232 Port

The industry-standard RS-232 port supplies 5 volts of power and allows the user to connect external devices such as scanners and printers, to the Dolphin 7400 and 7450 terminals.

Via the IrDA Port

The IrDA port allows the Dolphin 7400/7450 to send data via pulses of light to and from other IrDA-compliant devices, such as printers and PCs.

Via the Radio

The Dolphin 7400/7450 RF is equipped with a 2.4 GHz 802.11b-compliant direct sequence spread-spectrum local area network (LAN) radio.

Via the Modem

The Dolphin 7400 may be equipped with a low power, high speed, V.90 56K FAX/modem to allow communications via an analog phone line.

Software Communication Programs

Microsoft® ActiveSync®

In the Dolphin 7400/7450 development environment, Microsoft® ActiveSync® is a tool for developers. It allows CE devices like the 7400/7450 to connect to and exchange data with a desktop computer.

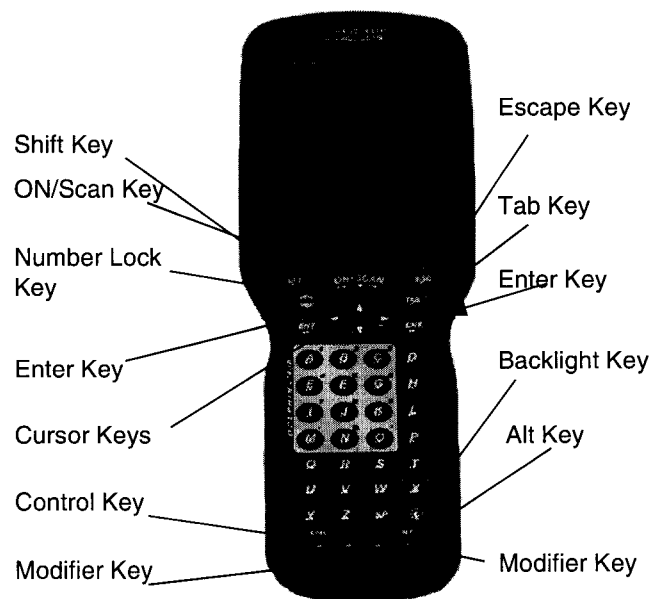
RAS

Short for *Remote Access Services*, a feature built into Windows NT® that enables users to log into an NT-based LAN using a modem, X.25 connection or WAN link. RAS is fully supported and allows the use of PPP or SLIP connections for network connectivity.

Using the Keyboard

Using the Special Keys

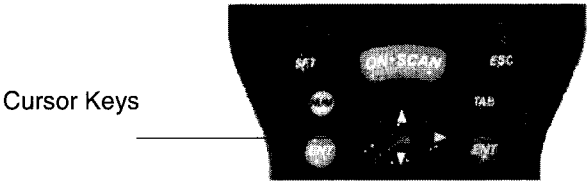
The Dolphin 7400 and 7450 keyboards have special keys and key combinations that you use to type characters or perform functions. See the chart in **Appendix A** for key combinations for keyboard functions and special characters that use these keys.



Dolphin 7400/7450 43-Key Front View

Using the Cursor Keys

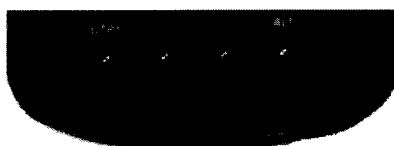
Use the cursor keys to navigate around on an application screen. The use of these keys can vary depending on the application.



Cursor Keys

To Use This Cursor Key	Press	Description
Arrow up		Moves cursor up one row or line.
Arrow down		Moves cursor down one row or line.
Arrow right		Moves cursor one character to the right.
Arrow left		Moves cursor one character to the left.

Using the Modifier Keys



Modifier Keys

All three versions of the Dolphin 7400's keyboard feature the standard Windows modifier keys, **Alt**, **Ctrl** and **Shift**. For single-handed operation, the **Shift** key only modifies the next key pressed; it must be pressed and released before each key you wish to make **lower** case. For multiple **lower** case characters, hold the Shift key down with one hand while typing with the other. Functions of the Alt and Ctrl keys are dependent on the software application in use.

There are two additional modifier keys located on the bottom row of the keyboard. Use these keys in combination with other keys to type the corresponding color-coded characters and functions. The Red and Blue keys only modify the next key pressed; these keys must be pressed and released before each key you wish to modify to the Blue or Red case. See the chart in **Appendix A** for key combinations for keyboard functions and special characters that use these keys.

Other Special Keys

ON/SCAN Key

The ON/SCAN key "wakes" the terminal from sleep mode. Its position also allows convenient one-handed image-taking and/or bar code scanning. On the 7450 terminal, the ON/SCAN key operates as an On or system wakeup control -- scanning is activated with the handle trigger.

Shift (SFT)

The Shift key toggles the keyboard from upper case alphabet mode to lower case alphabet mode and back. Caps Lock may also be toggled by pressing the red modifier key followed by the Shift key or by double-tapping the Shift key. When Caps Lock is toggled on, the Shift key makes characters upper case; when it is toggled off, the Shift key makes keys lower case.

Enter (ENT)

The Enter key confirms data entry.

Escape (ESC)

The Escape key performs a cancel action.

Tab

The Tab key moves the cursor to the next tab stop or the next control on a form.

Light

The Light key toggles the LCD and keyboard backlights on and off.

Number Lock (NUM)

This key is included only on the 43-key keyboard option which defaults to alphabetic mode. The Number Lock key toggles between the alphabetic and numeric modes.

Alpha Lock (ALPHA)

This key is included only on the 35-key keyboard option which defaults to numeric mode. The Alpha key toggles between the numeric and alphabetic modes.

Backspace (BKSP)

This key appears on both the 35 and 56-keyboard options. The Backspace key moves the cursor back one space for each time the key is pressed. Backspace is a shifted function on the 43-key keyboard version. To delete a single character, press Red key + SP. To delete multiple characters, press Red key + SP and hold down the SP key.

Delete (DEL)

This key appears on both the 35 and 56-keyboard options. The Delete key deletes one character for each time the key is pressed. Delete is a shifted function on the 43-key keyboard version.

Key Combinations

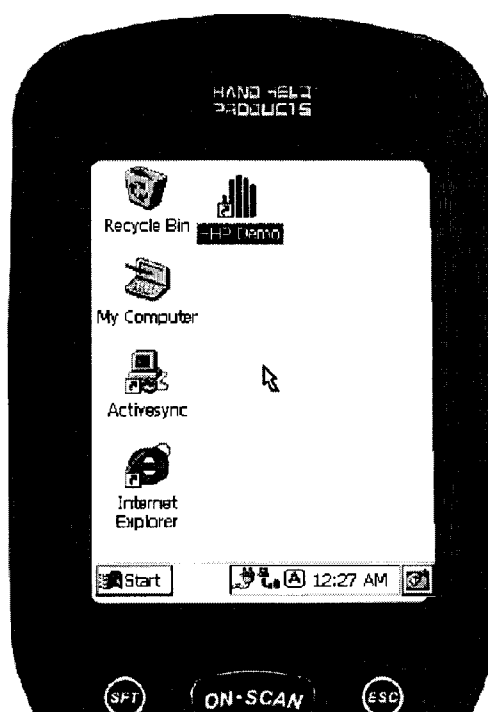
There are some keyboard functions and special characters not defined on the Dolphin 7400 and 7450 keyboards. See the charts in **Appendix A** for the key combinations used to access these functions and special characters on your terminal.

Navigating the Keyboard

The Dolphin 7400/7450 terminals have a mouse utility to simplify navigating around the screen, especially for non-touchscreen equipped terminals.

Note: Exit the mouse utility prior to adjusting the contrast.

To activate the mouse utility at any time in any window, double-tap the blue modifier key and the mouse pointer will appear in the middle of the screen as shown in the screen shot below. To deactivate the mouse, double-tap the blue modifier key again and the mouse pointer will disappear.



Use the cursor keys to navigate around the screen. For a left mouse click, press either one of the ENT keys. Use a left mouse click to select an item or launch a program. For a right mouse click, use the TAB key. When you use a right mouse click, a menu of items pops up and tells you what actions you can perform, and shows you shortcuts. To open files or applications with a double click, tap the ENT key twice in rapid succession.

In mouse mode, you can also scroll the active window for dialog boxes that are not formatted for the 1/4 VGA display. Move the cursor to one of the four screen edges and continue to hold down the arrow key to initiate the scrolling feature.

To adjust the double-click speed for the mouse utility, go to Control Panel>Settings>Stylus. Follow the directions on the Double-Tap tab to adjust the settings. **Note: The Double-Tap setting for the stylus also applies to the mouse.**

Using the Modem

If your Dolphin 7400 is equipped with the optional integrated modem, you can allow communications via an analog phone line for dial-up applications. A phone jack is built into the back of the Dolphin 7400. The optional integrated modem is not available on the Dolphin 7450 terminal.



Phone Jack on rear of Dolphin 7400

To communicate via the modem, remove the rubber plug from the phone jack and connect the analog phone line. **Note: The rubber plug should be inserted in the phone jack when it is not in use to protect the integrity of the connector.**

If you have not already configured the modem, refer to **Configuring the Modem** in Chapter 2.

To make a connection:

1. From the Control Panel, select Start>Programs>Communication>Remote Networking.
2. Enter your User Name and Password.
3. Touch Dial Properties and select Tone Dialing. **Note: Check Dialing Patterns and edit, if necessary, i.e., if 9 or the area code must be dialed with local calls.**
4. Touch Connect.

Hub of the System

As the hub of your Dolphin system, Dolphin Charging/Communication cradles perform three important functions – power conditioning, communications and storage. Four versions of the charging/communications cradle are available:

- **HomeBase** for communicating with PC-based equipment using a half duplex serial mode
- **IntelliBase** for communicating with devices such as printers and modems without integrated IrDA protocol software
- **IntelliBase+** for communicating with devices without integrated IrDA protocol software and charging and conditioning a spare battery
- **USB HomeBase** for communicating directly with a USB-compatible host computer

Power Conditioning

Dolphin charging/communication cradles provide power to the intelligent battery charging system incorporated into Dolphin terminals.

The IntelliBase+ has an auxiliary battery well, located on the back of the cradle, allowing users to charge and condition a spare battery.

Ir/IrDA Optical Communications

The infrared, or Ir communications port, on the HomeBase, IntelliBase, and IntelliBase+ connects with the IrDA port on the Dolphin terminal. With no pins or contacts to break, Ir will work reliably for years. Reliable data communications at speeds of up to 115k baud can be transmitted by the HomeBase, IntelliBase and IntelliBase+; data transmission rates with the USB HomeBase up to 4Mbps are possible but, at this time, are limited to 115 kbps as the Dolphin 7400 does not currently support 4 Mbps data transfer.

The IntelliBase and IntelliBase+ infrared connection to the terminal uses IrDA-compliant hardware and software for a reliable connection. Communications between the HomeBase and other devices occur at half duplex serial mode. Half duplex refers to the transmission of data in just one direction at a time.

The USB HomeBase enables direct communication with USB-compatible host computers at rates of up 115 kbps. The USB HomeBase also is IrDA 1.3 compliant.

These peripherals cannot be “daisy-chained” but can be networked together using a serial or USB hub.

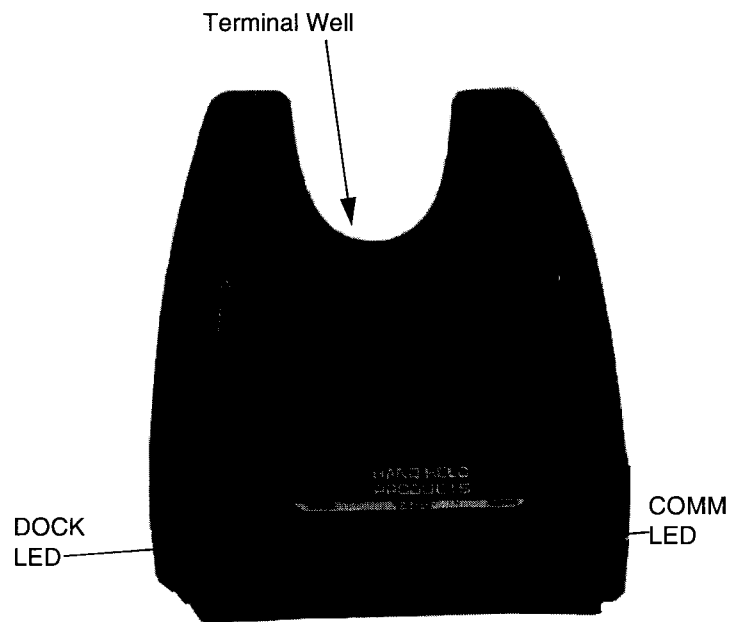
Convenient Storage

Dolphin charging/communication peripherals provide a safe and convenient storage receptacle for your Dolphin terminal.

Dolphin Charging/Communication Cradle Parts & Functions

Front Panel

HomeBase/IntelliBase/USB HomeBase



Front View of HomeBase/IntelliBase/USB HomeBase

Dolphin Terminal Well Place the Dolphin in this well to communicate with a host device and to charge the Dolphin's battery.

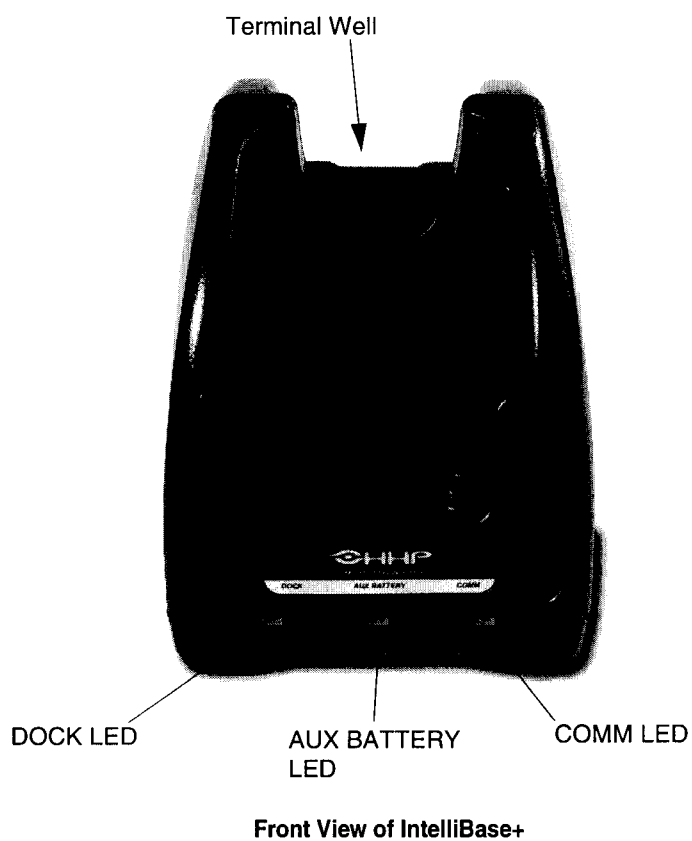
LEDs There are two LEDs on the front panel of the HomeBase/IntelliBase/USB HomeBase.

1. **Dock LED** Turns solid green when the Dolphin Terminal is properly seated into the Dolphin HomeBase.
2. **COMM LED** Indicates the status of data transfer between the Host Device and the Dolphin Terminal as described below:

Table 1:

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.

IntelliBase+



Dolphin Terminal Well Place the Dolphin in this well to communicate with a host device and to charge the Dolphin's battery.

LEDs There are three LEDs on the front panel of the IntelliBase+.

1. **Dock LED** Turns solid green when the Dolphin Terminal is properly seated into the Dolphin HomeBase.
2. **AUX Battery** Indicates charging/calibration status of battery as described below:

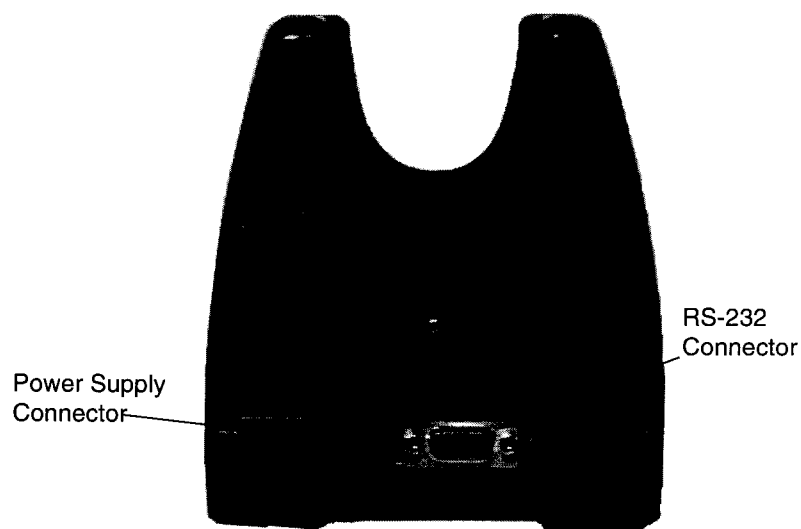
AUX Battery LED	Description
Orange LED	Solid indicates that battery pack is being charged. Flashing indicates battery is being conditioned.
Red LED	Indicates faulty battery.
Green LED	Indicates battery charged and ready for use

3. **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 IntelliBase+.
Green LED	Data is being sent from the IntelliBase+ to the Host Device.
Orange LED	Data is being sent at high data rates.

Back Panel

HomeBase/IntelliBase



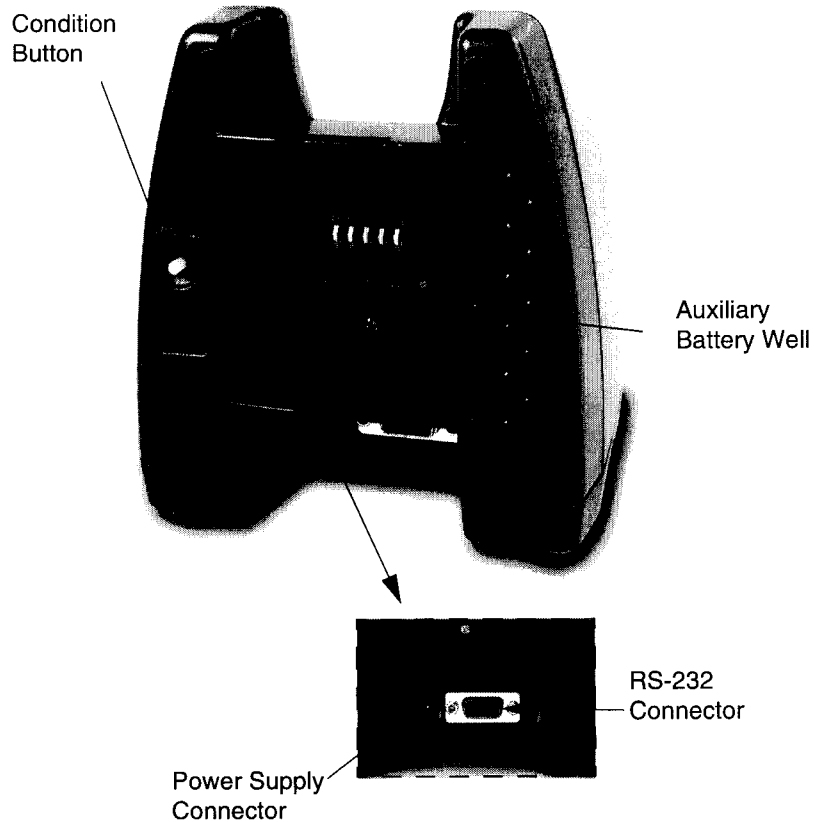
Rear View of Dolphin HomeBase/IntelliBase

There is a 5V DC power supply connector and an RS-232 connector:

Power supply connector Use this connector to attach a power supply to the HomeBase. The power supply provides 5V 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.

IntelliBase+



Rear View of Dolphin IntelliBase+

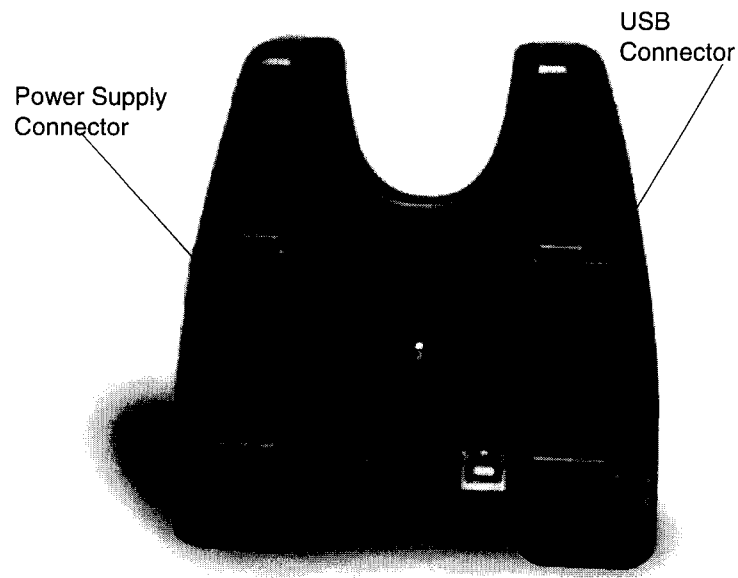
Power supply connector Use this connector to attach a power supply to the HomeBase. The power supply provides 5V DC input for communications and battery charging.

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

Auxiliary Battery Well Insert a battery into the well to charge or condition and calibrate a battery pack.

Condition Button Press and release the button to service the battery in the auxiliary battery well.

USB HomeBase



Rear View of Dolphin USB HomeBase

There is a 5V DC power supply connector and a USB connector:

Power supply connector Use this connector to attach a power supply to the HomeBase. The power supply provides 5V DC input for communications and battery charging.

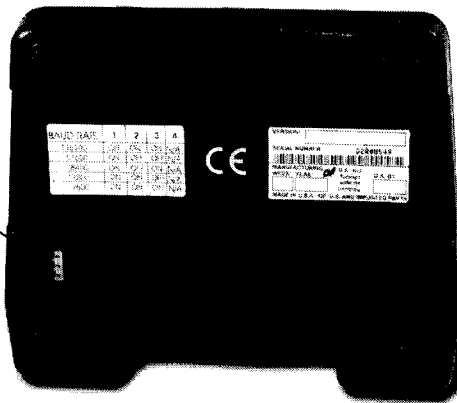
USB Communications Port Use a USB full-speed detachable cable to connect this downstream device port to an upstream USB Host or Hub. The USB HomeBase is USB 1.3 compliant.

Bottom Panel of HomeBase/IntelliBase/IntelliBase+

A Baud Rate switch used to select the communication baud rate is located on the bottom of the HomeBase, IntelliBase and IntelliBase+. The Baud Rate Switch on the HomeBase is a three-position switch; four-position on the IntelliBase and IntelliBase+. Switch position and the corresponding baud rates are shown in the charts below.

The USB HomeBase does not require a baud rate switch.

Baud Rate
Switch



Bottom View of HomeBase/IntelliBase/IntelliBase+

Table 2: HomeBase Switch Settings

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

Table 3: IntelliBase/IntelliBase+ Switch Settings

Baud Rate	Switch 1	Switch 2	Switch 3	Switch 4
115200	OFF	ON	ON	N/A
57600	ON	OFF	OFF	N/A
38400	ON	OFF	ON	N/A
19200	ON	ON	OFF	N/A
9600	ON	ON	ON	N/A

Powering the Dolphin Terminal

Dolphin charging/communication cradles provide power to the intelligent battery charging system incorporated into Dolphin terminals. This charging method protects the battery from being damaged by overcharging. Therefore, Dolphin terminals may be stored indefinitely in the charging/communication cradles without damage to the terminals, battery packs, or peripherals.

To charge a Dolphin terminal, follow these steps:

1. Insert a battery pack into the Dolphin terminal.
2. Place the terminal, imager/laser engine window up and the LCD visible, in the terminal well of the cradle.
3. Let it glide down into the well until it stops.
4. Once the Dolphin terminal is properly seated, the Dock LED on the front of the cradle will be solid GREEN.

Charging Additional Battery Packs in the IntelliBase+

The auxiliary battery well located on the back of the IntelliBase+ allows users to charge and condition a spare battery. Charging a Dolphin terminal and a spare battery pack can be done simultaneously as the charging slots work independently to control charging and conditioning of the individual batteries. The IntelliBase+ senses when a battery pack is fully charged and automatically switches to trickle charge to maintain the battery at full capacity indefinitely.

To charge a spare battery in the IntelliBase+, insert the end of the battery without the locking tab into the bottom of the auxiliary well opening and snap the battery into place with a hinging motion. Once the battery is inserted, you can use the AUX BATTERY LED to monitor the charging progress.

Deep-Cycling Batteries

For maximum battery life, HHP recommends that you deep-cycle (service) the battery **twice** before initial use and then once a month thereafter.

The IntelliBase+ is the only Dolphin charging/communication cradle with deep cycling capabilities. Since the Dolphin HomeBase, Intellibase, and USB HomeBase **do not** have deep-cycling capabilities, it is recommended that you use the Battery Conditioning Utility software when using those peripherals or use the Dolphin Quad Battery Charger.

To deep-cycle a battery using the IntelliBase+, insert the battery into the auxiliary battery well. Then, press and release the Condition button. The deep-cycling process takes 8-12 hours depending on the battery's capacity or state of charge.

See the Battery Management section in Chapter 3 for more information.

Setting Up For Communications

The HomeBase, IntelliBase, and IntelliBase+ support RS-232 communications through the RS-232 Communications Port located on the back of the device. The HomeBase/IntelliBase translates the RS-232 signals from the host computer into infrared signals to communicate with the Dolphin Terminal.

The HomeBase/IntelliBase 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.

HomeBase

The HomeBase is designed for users needing a half duplex serial communications connection. Any device capable of using half duplex RS-232 communications can be connected to the HomeBase for communications. To use this mode, set the baud rate switches to the desired communications speed and the Ir-enable switch to on (See Table 2).

IntelliBase/IntelliBase+

The IrDA 1.0 software stack is integrated into the IntelliBase and IntelliBase+ cradles to allow communication between the cradle and devices such as modems or printers that are not IrDA ready or do not communicate with a half duplex serial protocol. This allows any full or half duplex RS-232 device to communicate through the IntelliBase/IntelliBase+ with no IrDA protocol software. See Table 2 for the baud rate switch settings.

Installing The Charging/Communication Cradle

To install and use the HomeBase, IntelliBase or IntelliBase+, you need the following equipment:

- HomeBase/IntelliBase/IntelliBase+ with power supply
- Serial cable

Set the Dolphin HomeBase/IntelliBase/IntelliBase+ on a dry, stable surface, such as a desktop near an 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/IntelliBase.

Connecting the Cables

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

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

Pin Configuration

HomeBase /Host Port (DCE)	IBM AT DB9 (DTE)	IBM XT DB25 (DTE)	Modem DB25 (DCE)
Pin / Input Signal			
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

The HomeBase/IntelliBase **cannot** be daisy-chained.

Connect the power supply to the charging/communication cradle. Plug the AC transformer into the Dolphin HomeBase/IntelliBase 5 Volt DC power supply connector. The AC wall transformer provided can power only one HomeBase/IntelliBase. HHP recommends that you leave the Dolphin HomeBase/IntelliBase/IntelliBase+ connected to its power source at all times, so that it is always ready to use.

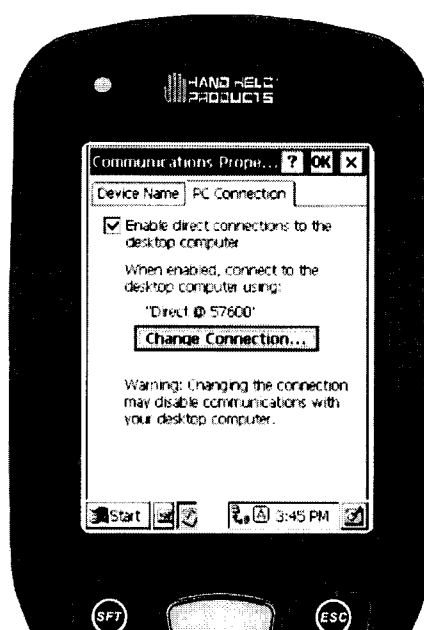
Set the baud rate switch to the communication mode you are going to use. Refer to Table 2 for HomeBase switch settings or Table 3 for IntelliBase/IntelliBase+ switch settings.

Configuring the Dolphin Terminal

The Communications Properties must be configured on the Dolphin 7400/7450 in order for the terminal to communicate with the Dolphin charging/communication cradles.

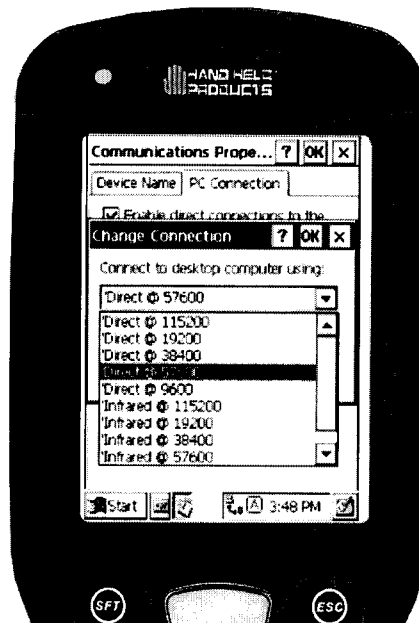
To set Communications Properties:

1. Select **Start>Settings>Control Panel>Communication Settings**.
2. Select the **PC Connection** tab.



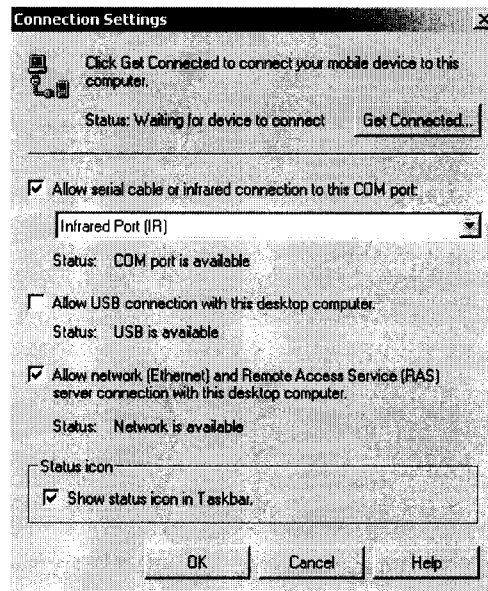
Communications Properties

3. Select Change Connection and choose the desired option for connecting to the desktop computer. Choose **Direct** if you are using a serial connection; choose **Infrared** for a HomeBase connection; and **IrDA** for IntelliBase/IntelliBase+ connection or USB HomeBase IrDA connection and click **OK**.
4. Place the Dolphin in the cradle.
5. On the Dolphin 7400/7450 desktop, double-tap on ActiveSync.



Change Connection Screen

6. In the ActiveSync connection settings, add check mark to "Allow serial cable or infrared connection to this COM port" and select "Infrared Port (IR)" for the COM port as shown below.



ActiveSync Connection Settings

To configure the Dolphin 7400/7450 terminal for communications, see the previous section on **Configuring the Dolphin Terminal**.

Setting Up For Communications With The USB HomeBase

To use the USB HomeBase, you need the following equipment:

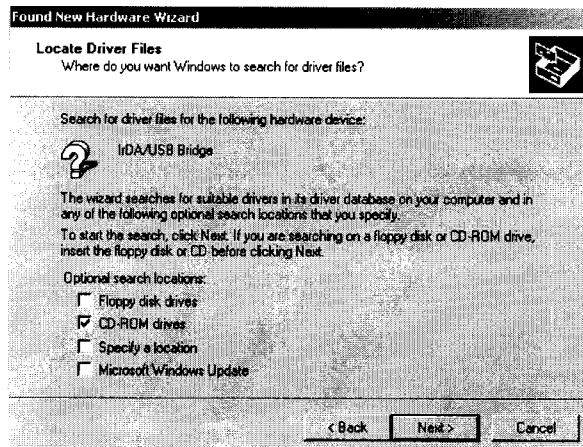
- USB HomeBase with power supply
- USB Cable
- CD with USB-IrDA drivers
- Windows® 98, Windows® Me or Windows® 2000 computer.

Note: The USB HomeBase does not support Windows NT®

To install the USB HomeBase, follow these steps:

1. Plug in the power supply and connect it to the back of the USB HomeBase.
2. Plug the USB cable into the back of the USB home base.
3. Plug the other end of the USB cable into your PC.

At this point, a dialog box appears on your PC instructing you that the system has detected new hardware and it is searching for the HHP USB-IrDA driver. Unless you have previously installed the USB HomeBase, the OS will be unable to find one and the Found New Hardware Wizard screen shown below will display on your PC's screen.



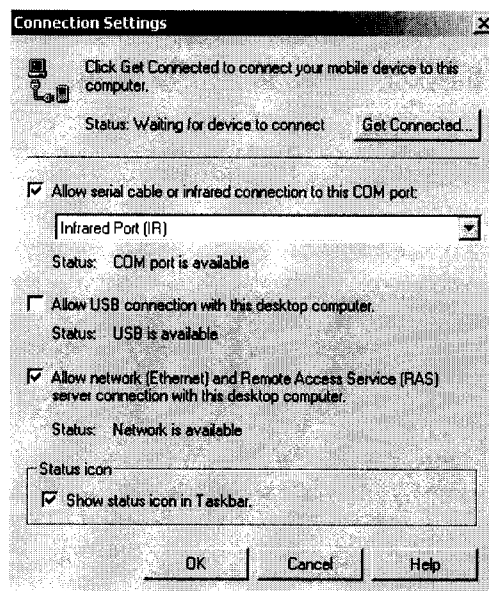
In the "Locate Drive Files" dialog, check the CD-ROM drives check box and insert the driver CD provided into the CD tray on your PC. There are sub-directories in this directory for each type of Windows OS supported. Select stirusb.sys file in the correct sub-directory for your PC:

- w2k - Windows® 2000
- win98 - Windows® 98
- winme - Windows® Me

At this point, the hardware is installed and operating. You may need to reset your PC to complete the installation process. You can verify that the USB driver is functioning by watching the COMM LED on the USB home base. It should be flashing red approximately every three seconds.

Once the USB HomeBase is installed, you can use ActiveSync to connect to a Dolphin 7400. These instructions assume that ActiveSync v3.1 is installed on your PC.

In the ActiveSync connection settings, add check mark to "Allow serial cable or infrared connection to this COM port" and select "Infrared Port (IR)" for the COM port as shown below. Do not check "Allow USB connection with this desktop computer". It has no effect for the USB HomeBase.



ActiveSync Connection Settings

To configure the Dolphin 7400/7450 terminal for communications, see the previous section on **Configuring the Dolphin Terminal**.

Communicating with the Dolphin Terminal

To communicate with the Dolphin and any other devices connected to the Dolphin Charging/Communication cradle:

1. Insert the Dolphin into the terminal well of the HomeBase/IntelliBase/USB HomeBase. If the Dolphin is in sleep mode, it will awaken into active state.
2. The DOCK LED on the cradle will illuminate. 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 cradle 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 cradle.

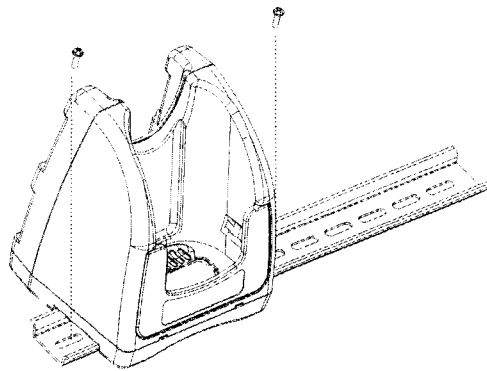
When data transfer begins, the COMM LED on the cradle will blink red and green. If the HomeBase/IntelliBase/HomeBase will not communicate with the Dolphin, check the port connections to ensure that the cradle is correctly configured.

Mounting the HomeBase/IntelliBase/USB HomeBase

The HomeBase, IntelliBase, and USB HomeBase may be desk or wall-mounted for convenience and storage. The IntelliBase+ may be desk-mounted as long as room is allowed for accessibility to the auxiliary battery well.

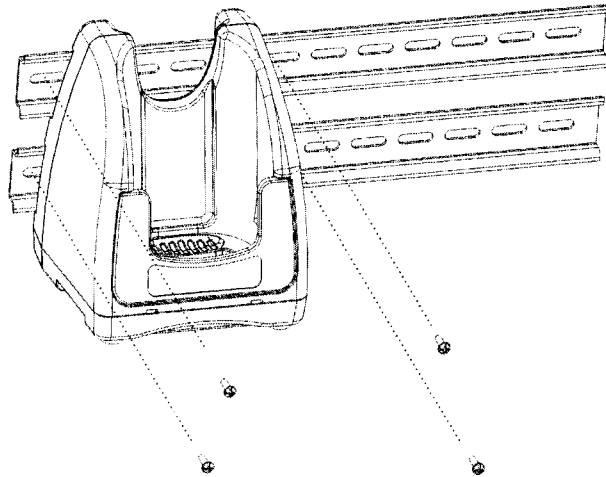
Desk Mounting:

Dolphin charging/communication cradles have a DIN rail (7.5 X 35 mm) slot on the bottom to allow for secure desk attachment of the unit if desired.

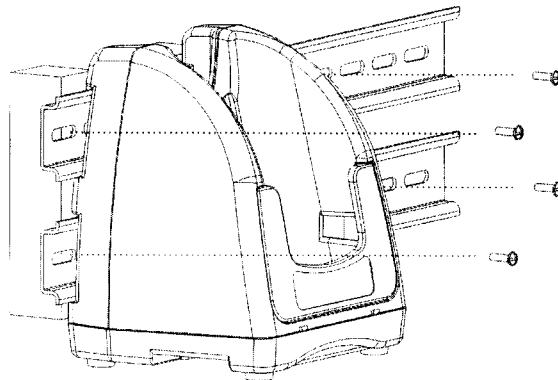


Wall Mounting:

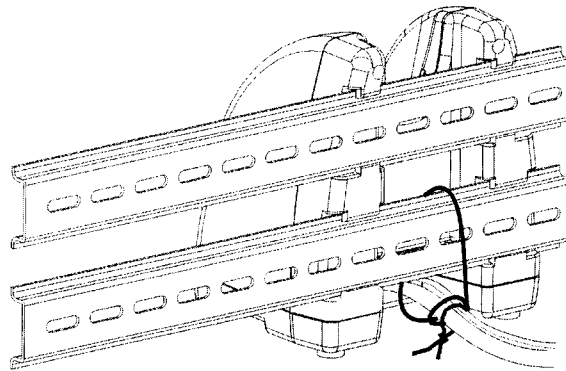
The HomeBase/IntelliBase/USB HomeBase also has two DIN rail (7.5 X 35mm) slots on the back to allow for secure wall mounting of the unit if desired. **The IntelliBase+ may not be wall-mounted.**



When using right-angle style RS-232 connector cable, the DIN rails may be mounted directly to the wall. When using standard RS-232 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.



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 HomeBase/IntelliBase/USB 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.
