System Features

Processor

The Dolphin® 7400/7450 terminal is equipped with a StrongARM® 206MHz RISC microprocessor that runs on a 100 MHz BUS and is the most powerful Windows® CE platform on the market.

Operating System

Microsoft® Windows® CE is a compact, highly efficient, scalable operating system. Its open architecture and minimal memory requirements facilitate development of applications for energy-efficient data collection devices like the Dolphin 7400/7450 terminal. The graphical interface also makes the device more user-friendly.

Memory

Main Board

The memory configuration for the Dolphin 7400/7450 terminals is 32 MB RAM and 32 MB FLASH.

Compact Flash Card

Dolphin 7400/7450 terminals have one Type I compact flash card socket for additional application and data storage capacity. Additional modular compact flash upgrades of 64 MB, 128 MB, and 256 MB are available through an authorized HHP service center. The compact flash card socket is not user accessible, to preserve the terminal's environmental rating.

Radio Options

Dolphin 7400/7450 terminals have one Type II PCMCIA card slot to allow for an interface with wireless network adapter cards. Radio options currently available include the Cisco® 342 (FCC #LDK102035) and Cisco® 352 (FCC #HD5-7400-352) series network cards and the Spectrum24® 2Mbs (FCC #HD5-7400-3021).

Front Panel Features

This section describes features on the Dolphin 7400/7450 terminal front panel.

Decode LED — Scan LED

1/4 VGA Display
(Optional
Touchscreen)

ON/SCAN Key

Cursor Key

Keypad with
epoxy-coated keys

LEDs

The red light emitting diode (LED) located at the upper right corner of the LCD display is SCAN LED. This LED illuminates when the user presses the ON/SCAN key and activates the scan engine. The green LED located at the upper left corner of the LCD display is DECODE LED. This LED illuminates when the bar code software successfully decodes a bar code. Both LEDs are software programmable.

1/4 VGA Display

The Dolphin 7400/7450 screen is a non-touch 240 x 320 pixel 1/4 VGA industrial protective lens display. The electroluminescent backlight allows you to view the display in low light conditions. To conserve power, the backlight may be programmed to automatically turn off after a prescribed amount of time. The contrast may be adjusted with the contrast keys.

The Dolphin 7400/7450 display may be equipped with a touchscreen that can be activated with a stylus or finger.

ON/SCAN Key

The ON/SCAN key is centrally located for easy use with the right or the left hand. On the 7450 terminal, the ON/SCAN key operates as an On or system wakeup control; scanning is activated with the handle trigger.

Cursor Keys

The centrally located cursor keys allow full Windows® navigation.

Audio Signals

The Dolphin 7400/7450 terminal has an internal speaker that sounds audio signals as you scan bar code labels and enter data. Signals are emitted at a sound level of 80 dB sound pressure level at two feet. The operating frequency range is 500 Hz up to 8 kHz. The speaker can also be used for playing sounds using WAV files.

Keyboard

The Dolphin 7400/7450 terminal's keyboard features epoxy-coated keys and is backlit for easy use in dark and dim lighting conditions. The keyboard's yellow background enhances the readability of the numeric keys. The centrally located ON/SCAN key and other important keys allow for easy imaging, bar code scanning and application navigation. All keyboard versions are suited for right-handed and left-handed use.

There are three keyboard options for the Dolphin 7400/7450 terminals:

- 43-key alpha/numeric
- 35-key numeric/alpha only
- 56-key alpha/numeric

43-key
alpha/numeric keyboard

35-key numeric/alpha
keyboard

56-key
alpha/numeric keyboard

RF Antenna

The Dolphin 7400/7450 RF terminal's antenna is a unity gain, quarter-wave, monopole antenna.

Back Panel Features

This section describes features on the back panels of the Dolphin 7400 and Dolphin 7450 terminals.

Dolphin 7400

All versions of the 7400 terminal have similar back panels except for the safety labels specific to how the the terminal is equipped.

Image Engine/
Laser Engine
Window

Battery Well

Hand Strap

Battery

Battery Charging
Contacts

RS-232 Port

IrDA Port

Image Engine

Dolphin 7400/7450 terminals are equipped with an image engine that reads and decodes linear, stacked linear (PDF417) and 2D matrix bar code symbologies. With the latest CMOS-based technology, the engine works like a digital camera and adds functionality and value to the Dolphin 7400/7450 by adding additional capabilities, such as digital image capture, signature capture and reading OCR characters. Digital images taken with the 7400/7450 terminal have a maximum image size of 640 x 480 pixels and may have up to a 256 gray scale image definition. Files formats supported for image storage include Bitmap (bmp), JPEG (jpg) and Portable Network Graphics (png).

Laser Engine

Dolphin 7400/7450 terminals are also available with an optional Advanced Long Range (ALR) laser scanner for long range scanning applications prevelant in warehousing and distribution centers.

A clear window with anti-reflective, scratch-proof coating covers the image/laser engine to protect it from dust and dirt.

Battery Well

The Battery well is a recessed area on the back of the Dolphin that holds the 2700 mAh NiMH battery pack.

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 gold-plated contacts.

Hand Strap

The 7400 has an integrated elastic hand strap to provide the user with a comfortable, secure grip on the terminal. If desired, the strap may be removed.

Dolphin 7450

The bottom cover of the Dolphin 7450 terminal is similar to the Dolphin 7400 as described in the previous section with the following exceptions: the pistol-grip handle with imager/scanner trigger and the rubber bumpers. All versions of the 7450 terminal have similar bottom covers except for the safety labels specific to how the terminal is equipped.

Rubber Nose
Bumpers

Scan Trigger

Handle

Rubber Nose Bumpers

Rubber bumpers allow the Dolphin 7450 to rest in a stable, nose-down position when the unit is set on a flat surface by the user.

Rubber Bumpers

Scan Trigger

The scan trigger provides comfortable two-finger scan activation.

Pistol Grip Handle

The comfortable, ergonomic handle is designed especially for use in rapid, high volume scanning applications and features rubber surface details for improved handle grip, comfort, and shock absorption.

Communication

Micro-DB9 RS-232 Port

The industry-standard RS-232 port allows the user to connect with peripherals, such as printers, serial modems and desktop computers for serial communication to the Dolphin 7400/7450 terminal. The maximum speed is 115kbps with seven baud rate settings.

IrDA Port

The IrDA (Infrared Communications) Port allows the Dolphin to communicate through the Dolphin HomeBase, IntelliBase and IntelliBase+ to host serial devices or IrDA printers. The maximum speed is 115kbps.

RJ-45 Phone Jack (7400 only)

The optional phone jack is located on the back of Dolphin 7400 terminals equipped with a low power, high speed, V.90 56K FAX/modem to allow communications via an **analog** phone line.

CAUTION: Only connect the modem to an analog phone line. Connecting to a digital PBX phone line could result in damage to the modem.

Power

5 VDC Port

This port connects the Dolphin 7400/7450 to DC power for powering peripheral devices and charging the main and backup batteries.

Power is fed through the RS-232 communications port.

Batteries

CAUTION: Use only the 3.6V battery packs provided by HHP. The use of any other battery pack in the Dolphin 7400 terminal will void your warranty and may result in damage to the Dolphin terminal or battery.

There are two batteries in the Dolphin:

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. The internal backup battery is not user replaceable.

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

Internal NiHM Backup Battery

The Dolphin's internal backup battery prevents the terminal from being reset if you need to remove and replace the main battery pack. The battery retains RAM data and allows the real-time clock to remain operational for up to 30 minutes when the battery pack is removed. 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 backup battery is required.

If the backup battery becomes discharged of power after the initial charge cycle, it will require a minimum of 5 hours of charging time to perform and maintain the system as described above.

The internal backup battery is charged by the Dolphin's main battery pack when an external power source such as the Dolphin HomeBase, is not available. If the terminal is left without the main battery pack for more than 30 minutes, the internal backup battery will need to be recharged.

Note: Data and programs stored in FLASH remain safe even if the internal backup battery fails. However, you must reset the real-time clock using the Windows® CE Time and Date function.

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.

Main Battery Pack

The 3.6V, 2700 mAh Nickel-Metal-Hydride (NiMH) battery pack is the primary power source for the Dolphin. Other NiMH batteries may be approved by HHP to work with your Dolphin. Contact HHP for more information.

The 2700 mAh NiMH battery is designed to operate in a 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).

Managing Battery Power

Data and files saved on the Dolphin 7400/7450 terminal may be stored in RAM, so it is important to maintain a continuous power supply to the terminal. When the main battery pack becomes low, the Low Battery Charge icon will appear in the notification tray at the bottom of the screen. The Critical icon will appear when the battery is critically low. There is also a Low Battery icon that will appear when the back-up battery is low.

Letting the back-up battery become fully discharged will cause the terminal to lose all data in RAM. Therefore, you should 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 charged pack in the Dolphin. The internal battery will prematurely discharge if there is not at least a partially charged battery in the terminal.

A battery status indicator will display in the notification tray when the battery is low or critically low. If there is no indicator, the battery is adequately charged.

If the main battery is low and the terminal is in sleep mode, pressing the ON/ SCAN button or the scan trigger will not wake up the Dolphin 7400/7450 terminal; you must replace the discharged battery with a fully charged battery.

Setting Critical and Low Battery Points

The Dolphin 7400/7450 may be programmed to display warnings when the battery reaches critical and low battery points. There are two entries defined in the registry. The specific settings are:

[HKEY_LOCAL_MACHINE\System\CurrentControlSet\Control\Power]

"CriticalBatt"=dword:a

"LowBatt"=dword:19

"CriticalBatt"=dword:a

This sets the Critical Battery point to 10 percent (a hex = 10 decimal). The critical battery is the point at which the customer is warned that the battery charge is very low. This warning will be posted every 3 minutes until the situation is corrected.

"LowBatt"=dword:19

This sets the Low battery point to 25 percent (19 hex = 25 decimal). The low battery setting is the point at which the user is alerted that the battery is low. The user is notified only once for a low battery.

These are the default values. Developers can set these parameters from 0 (no warning at all) to 99 (would nearly always warn). The warnings do not appear when the terminal is on external power.

Using the Power Control Panel

The Power control panel displays information about current battery status and allows you to set options that can conserve battery power.

There is also a battery usage indicator displayed. This indicator represents the total cumulative time that the current main battery pack has been in use. If the main battery is replaced with a new battery pack, the indicator will reset to 0:00. Each battery is uniquely identified with a serial number that the Dolphin terminal uses to track cumulative time. Also, if the terminal is placed in a HomeBase and is running on external power, the indicator will cease counting. When the terminal is removed from the HomeBase, the timer will resume.

To open the Power control panel:

Touchscreen-equipped terminals:
1. Tap the Start button, tap Settings, and then tap Power. If the power plug icon is on the task bar, double-tap it.

2. Tap the Battery or Power Off tab.

3. Select your preferences. For more information, read the following paragraphs, or tap the Help ? button in the upper right corner of the screen.

4. Tap OK to save the changes and exit or tap the Close (X) button in the upper right corner to exit without saving the changes.

Non-touch screen terminals:
1. Use the cursor keys to navigate to the last program icon on the desktop.

2. Press the Tab and then the Enter key to open the Start menu.

3. Use the cursor keys to navigate to the Settings menu and then press Enter.

4. Press Enter again to select the Control Panel.

5. Use the Cursor keys to navigate to Power and then press Enter to open Power Properties.

6. Use the Cursor and Tab keys to navigate between the Battery and Power Off tabs and to select your preferences.

7. Press Enter to return to the Control Panel.

8. Press ALT to open the File menu and use the Cursor key to navigate to Close.

9. Press Enter to close the Control Panel.

Servicing the Battery Pack

For maximum battery life, you must service, or deep cycle, the battery twice before initial use. It is also recommended that you service the battery once per month. To deep cycle, insert the battery into the auxiliary well of the Dolphin Intellibase+ charging/communication cradle, Dolphin QuadCharger or use the Battery Conditioning Utility. See Chapter 6 for more information on using the IntelliBase+ and Chapter 7 for information on using the QuadCharger.

Using the Battery Conditioning Utility

The Battery Conditioning Utility is used to condition or deep cycle a battery in the Dolphin 7400/7450 terminal. The discharge/charge cycle minimizes battery memory effects and ensures the battery data is correct. A complete discharge/ charge cycle may take up to 15 hours for a fully charged battery. The actual cycle time will vary depending on the battery state when the cycle was initiated.

Follow these instructions to use the Battery Conditioning Utility to deep cycle the battery before initial use:

1. Put the battery pack in the Dolphin terminal.

2. Connect the Dolphin 7400/7450 terminal to external power or place the terminal in the HomeBase or IntelliBase. After starting the Battery Conditioning Utility, the Dolphin will beep and then indicate an error if the terminal is not on AC power.

3. Select **Start>Programs>HHP>Battery Conditioning** to start the Battery Conditioning Utility.

4. Touch the 'Start' button (or the 'S' key on non-touchscreen terminals) to start the battery conditioning process. The terminal will beep and the process will begin in approximately 60 seconds.

5. Touch the 'Abort' button (or the 'A' key on non-touchscreen terminals). The terminal will beep and the battery conditioning process will be aborted.

Charging the Battery Pack

You can charge the Dolphin's main battery pack with one of the following methods:

- Place the battery pack in the Dolphin 7400/7450 terminal and then place the terminal in the terminal well of a charging/communication cradle.
- Place the battery pack in the Dolphin Quad Battery Charger.
- Place the battery back in the Auxiliary Battery Well of the IntelliBase+.

Storing Batteries

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

Avoid storing batteries outside 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 a charger that is connected to a power source.

During long-term storage, battery deactivation may tend to occur, which may cause charging to stop early during recharging after storage. This issue can be handled by charging and discharging the battery several times. 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.