



**InData Systems LDS 9500
Dolphin**

**With Interchangeable Optics
M3, V2, UV (Ultra Violet)**

Portable Terminal

Users Manual

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Direct Part Mark Bar Code according to InData Systems

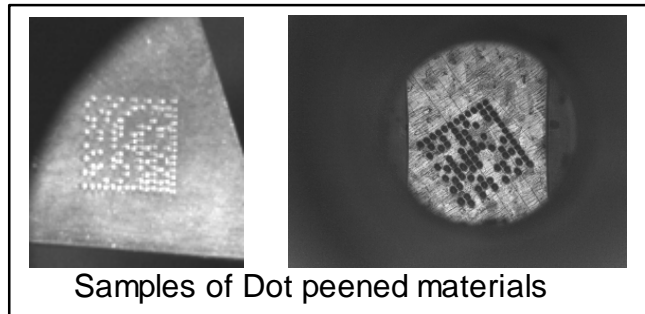
Direct Part marking with a bar code symbol has had increasing drive in recent times as the need for traceability of parts history (manufacturer, materials used, etc) for years after they have been put into service, has become necessary. Marks made with Laser etching, chemical etching and dot peening are a few of the methods adopted so far. We will mainly be focusing on the use of Data Matrix since it appears to be the bar code of choice by most small parts marking applications.



Data Matrix bar code, like that pictured above, can be printed with virtually any size of element as long as the rest of the criteria for the bar code is followed accurately. AIM (Automatic Identification Manufacturers) has established a standard for Data Matrix bar codes and we will assume the use of the ECC-200 (Error Correction Code methodology) standard for this document, although it is really not a restriction. The air transportation industry has adopted their "ATA SPEC2000", which is one of the first industry attempts to address the quality aspects of direct part marking.

Quality has been the biggest issue in the use of the marks. If the mark had been printed with a ribbon onto a paper label, there are many fine software products that can create the barcode with very accurate dimensions. The problem of etching onto the part directly causes not only the material but also the finish of the material to become part of the "quality" of the imprinting. Based on the metallurgical or chemical composition of the part to be identified, the best method of directly marking it varies. Some materials react very well with a low energy laser beam (like softer metals and some plastics) while other materials require significant care (like directly etching glass due to the "crazing" or micro-fractures that can occur under the instantaneous high heat of a laser).

The actual accuracy of the etched mark depends on the correct choices of power, frequency and software as it relates to the material being etched when using lasers, and similar considerations when using chemical etching and dot peening. It is easy to under-etch or over-etch the bar code if quality is not monitored closely. This process of over or under etching causes the individual elements to be outside of the parameters outlined by the AIM and other industry specifications. Some decoding algorithms do not consider a dot peened mark like that below, to be a “legal” formation of the code due to the “L-pattern” (which is used as a finder pattern for data matrix identification) having breaks between each dot instead of being a continuous, solid line, like the one shown in the image above.



A data matrix mark is either a square symbol, like above, or a rectangular format being twice as wide as it is high, but in both cases, it is formed by two sides being a “solid L-pattern”, with alternating timing marks on the other two sides. Marks are made with light and dark elements (reversed images are acceptable) but the ratio of dark and light elements should be 50% (with a minimum of 35% to maximum of 65% per the AIM standard). Please consult the AIM standard for more details.

InData Systems Scanning Options:

InData Systems offers several different methods of reading direct marked bar codes depending on the surface finish and curvature.



LDS 9500 with M3 Optic



LDS 9500 with V2 Optic



LDS 9500 with UV Optic

Generally, our LDS-V2 designs (InData Systems patent number 6,352,204 B2) are used when surfaces are smooth and the etched area is recessed or roughened. The concept is much like the use of a flashlight held parallel to the floor, showing every crumb and surface scratch as a shadow. With the LDS-V2 Designs, the actual mark usually appears as a white mark on a black background. There are cases where the etched mark needs only to cause the surface to become a different finish to use this method of illumination.

Our LDS-M3 design (Patent # 6,854,650) was designed initially, to address a shiny CURVED surface, which had been etched with a bar code. The surface was not of a consistent enough background, due to the curvature for use with the low-angle illumination of our LDS-V2. Our LDS-M3 has a broad “glowing surface” that is shining down onto the surface of the bar coded area with the marked object held at a precise angle relative to the “glowing surface” and the return optics also held at a precise angle to the imager. This set of angles causes the shiny background to appear lighter (rather than darker) than the marks by means of a broad illumination area. This application of a broad “glowing surface” works especially well on curved surfaces.

We have found selected cases where a target can be read with either style of optics due to selected properties of the material that is etched. Both styles of optics may also use specialty guides customized by InData Systems to assure the correct positioning of the scanner relative to the object, to make it easy to use.

Technical Considerations:

Due to the wide variety of surface finishes, depths of marks, and consistencies of the marks (voids and breaks in the “L-pattern” being the most detrimental effect) we may need to defocus the target which is usually done by drawing the scanner back away from the near contact position of the imager.

We have also found that the basis of the specifications that were incorporated into the SPEC 2000 quality standard are VERY relevant to the decodability of an etched (or even a labeled) bar code on a cylindrical object. The spec calls for no greater than 18 degrees of wrap around a round or curved object. It may be difficult to figure how large a target mark may be (or small the diameter of the object) before it is un-decodable. The principal problem is the distortion of the “straight” L-pattern and the timing marks. If the perceived curvature of any side of the bar code mark is greater than one half of an element – i.e. -down on both the left and right and up in the middle (our measurements imply this) then the scanner will probably not be able to read it.

One interesting fact that may be overlooked is that by making the mark SMALLER you can put that mark on a smaller diameter object. Accuracy of the mark is still a critical part of the process.

In Summary, InData Systems has developed and continues to refine, optics to read low contrast bar code symbols. We would welcome working with resellers, end customers and etched mark producers to improve the ease of reading direct part marks in a variety of environments. Our optics are available on hand held scanners, fixed mount scanners, and Portable data terminals for the most dynamic uses in the field. Please contact your local InData Systems reseller to get assistance in solving your toughest challenges in direct part mark reading

About InData Systems

InData Systems is an engineering, manufacturing and sales organization specializing in bar code and wireless based data collection systems. Our staff has extensive experience in varied wireless/data collection (RF/DC) installations and are qualified to consult, recommend and provide both hardware and software solutions concerning your company's unique requirements. By providing total systems solutions, InData Systems has earned a reputation for dependability, high quality, and an unwavering commitment to excellence. With over twenty years of service, we have developed a broad customer base including many companies of all sizes from manufacturing and distribution facilities to hospitals, universities and others.

Warranty Information – All InData Systems Products carry a standard 1 year warranty against defects in manufacturing.

Our Mission

Our goal is to provide customers with top-notch products, fully integrated solutions, and premier technical support at a price you can afford. Let InData Systems and our resellers' network be your exclusive wireless and bar code equipment supplier, and let your information and data collection systems do what they were meant to do: save time and money.

Introduction

InData Systems has developed optical systems to read some of the most difficult direct part markings. Using the power of the Adaptus™ Imaging technologies developed by Hand Held Products, the leader in the imaging readers and portable data terminals, combined with the patented optical and illumination systems developed by InData Systems, we can tackle some of the most challenging of direct part markings. The ATA (Air Transport Association) Spec2000 is starting to set standards for the industry but varying materials and finishes demand different solutions for reading those marks. The US Government driven UID program as well as Brand Protection schemes of covert UV Bar Code marks are just two of the many areas that InData Systems is solving tough problems.

Our unique optics based scanners and terminals have been developed for the rugged industrial challenges of the manufacturing workplace. Reliable, easy to use scanners and portable data terminals with the same optics, provide high value to companies needing to track direct part marked materials. Invisible UV barcodes are starting to be used for tracking registered brand, security based documents and other high sensitivity items.

Bar codes provide a quick and error free means for inputting data into an application running on a computer. By using bar codes, the potential for errors from manual data input is eliminated. Another typical application for bar codes is therefore for inputting data without having to type.

The InData Systems 4600, 4620, 4800, and FM450 LDS Etched family of Bar Code Scanners are capable of reading otherwise hard to read low contrast data matrix codes. Available with choices for different optics, the LDS product family offers superior performance and feedback to the user.

For more information on the LDS 4600, LDS 4620, and LDS 4800 family of products, see the LDS Product Family Users Guide.

LDS 9500

Dolphin 9500 Series terminals are Windows Mobile Second Edition-based with a unique, ergonomic shape designed for single-handed use and 64 MB RAM and 32 MB non-volatile Flash memory. To install additional memory, you can use the Secure Digital (SD) memory interface. The industrial, mechanical connector supports serial RS-232 up to 115 Kbps and USB communications up to 12 Mbps. The IrDA port enables you to exchange data with IrDA compliant devices, such as portable printers. For additional functionality, an integrated digital imager is available for imaging and decoding.

The Dolphin 9500 mobile computer delivers unparalleled performance and value for all mobile data collection and communication applications.



Its lightweight, ergonomic, and rugged design provides ease of use and operational reliability in robust mobile applications such as transportation, parcel delivery, retail, field service, route accounting, warehousing, and industrial/manufacturing. "The Dolphin 9500 high-tech architecture – Microsoft® Windows Mobile™ Second Edition, Intel™ XScale™ processor, and integrated Wireless Full Area Networking™ (WFAN) with co-located 802.11b, , and Bluetooth™ radios – provide real-time voice and data



acquisition and information access, anytime and anywhere." The Shift Plus high-capacity Lithium-Ion battery enables the mobile computers to operate longer in wireless, scan-intensive environments. Powered by Hand Held Products' exclusive Adaptus™ Imaging Technology, the Dolphin 9500 can be used by the worker to quickly read virtually all bar codes, take photos of damaged goods, capture signatures, and archive and retrieve data quickly.

InData Systems released the LDS 9500 product, the world's first portable, one-piece data terminal specifically designed to address the needs of the new government directive UID (Unique Identification) for government and military equipment in April of 2004. InData Systems patented optics have dramatically expanded the ability to have reasonable cost scanners that can read some of the most challenging of direct part bar code marks.

The new UID directive from the US Department of Defense has mandated that all government property with a value over \$5000 and equipment issued to contractors must be marked with a data matrix bar code (a high density, error-correcting barcode that looks like a miniature postage stamp). This two dimensional bar code contains a dramatic amount of data in a very small area, uniquely identifying the item. This marking requirement is being implemented in one of the most rapid rollouts in recent times, starting January 2004 and is projected to save the US government millions of dollars in lost or misplaced/un-tracked inventory.

The InData Systems LDS9500 system (LDS stands for Light Delivery System) is a compact, rugged portable terminal that has interchangeable optics allowing it to be used to scan etched data matrix marks on shiny curved surfaces, flat roughened surfaces and also conventional linear bar codes on diverse surfaces. With the optional Wireless LAN interface of 802.11b, Bluetooth (short distance wireless) interface and popular Pocket PC programmability, the LDS9500 allows operators to easily collect critical data from the diverse surfaces and materials, which are marked to the directives from the Department of Defense, and seamlessly pass the data into diverse databases and record keeping systems.

The Air Transportation Associations (ATA) Spec2000 (which the UID specification uses as a part of its references for the marking standards) has also cited the need to mark parts, which, up until now, required bulky fixed mount, or two-piece systems, which prevented employees from operating efficiently while collecting data, tracking critical parts. The ATA initiative has outlined that "every part of every aircraft shall be marked with a traceable identifying mark that lasts the life of the part"!

InData Systems has developed this terminal utilizing Hand Held Products Adaptus tm imaging technology. Their worldwide team of regional Value Added Resellers coupled with the flexible reading of difficult marked parts by the LDS 9500, enables customers to easily track their tools and valuable items with a rugged one-piece scanning terminal. Rugged but economical, cabled scanners such as the InData Systems LDS4600 are also available with their interchangeable unique optics allowing rapid data collection into desktop and other computers.

For more information on the UID directive from the Department of Defense, visit www.acq.osd.mil/uid on the Internet.



InData Systems Optics

LDS – V2

Our patented **LDS-V2** (Light Delivery System) **Optic** is typically used when surfaces are smooth and the etched area is recessed or roughened. The concept is much like the use of a flashlight held parallel to the floor, showing every crumb and surface scratch as a shadow. With this scheme, the actual mark usually appears as a white mark on a black background. There are cases where the etched mark only needs to be causing the surface to be of a different finish to use this method.



LDS-V2

LDS – M3

Our **LDS-M3 Optic** was designed initially, to address a shiny curved surface that had been etched with a bar code. This kind of surface is not of a consistent enough background, due to the curvature, for the low-angle illumination of our V2. Our M3 has a broad "glowing surface" that is shining down onto the surface of the bar coded area with the object that contains the code held at a controlled angle relative to the "glowing surface." This set of angles causes the shiny background to appear lighter (rather than darker as in the V2 above) than the marks by means of a broad illumination area. This works especially well on curved surfaces.



LDS-M3

Ultra Violet (UV) Optics

The InData Systems scanners using the InData Systems patented UV optics are very easy to carry around and use. They utilize the Adaptus™ technology from Hand Held products, but uses near-Ultra Violet illumination and enhanced optics to be able to see the "invisible" bar code marks printed with UV fluorescing inks. UV inks are used to mark items with marks that are not noticeable except when illuminated in Ultra Violet "Black Light".

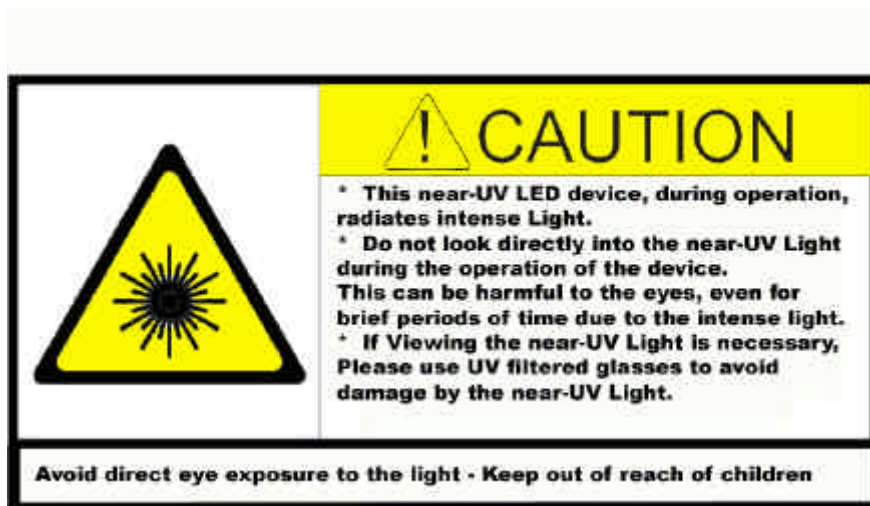


LDS-UV

Ultra Violet barcode
and text viewable
with UV optics



Our optics can be mounted on any of the InData Systems “Powered Socket” scanners including the LDS 4600, LDS 4800, LDS 4800, LDS 4620, FM 450, and the Dolphin 9500. For specific information on each scanner, consult the associated brochure or users guide.



Readability

Readability is the biggest issue in the use of direct part marks. If the codes are printed with a ribbon onto a paper label, there are many fine software products that can create the barcode with very accurate dimensions. The problem of etching onto the part directly causes not only the material but also the finish of the material to become part of the "quality" of the imprinting. Based on the metallurgical or chemical composition of the part to be identified, the best method of directly marking it varies. Some materials react very well with a low energy laser beam (like softer metals and some plastics) while other materials require significant care (like directly etching glass due to the "crazing" or micro-fractures that can occur under the instantaneous high heat of a laser).



Sample Data
Matrix Code

The actual accuracy of the etched mark depends on the correct choices of power, frequency and software as it relates to the material being etched when using lasers, and similar considerations when using chemical etching and dot peening. It is easy to under-etch or over-etch the bar code if quality is not monitored closely. This over or under etching causes the individual elements to be outside of the parameters outlined by the AIM and other specifications. Some decoding schemes do not consider a dot peened mark, to be a "legal" formation of the code due to the "L-pattern" (which is used as a finder pattern for data matrix identification) having breaks between each dot instead of being a continuous, solid line.

Using the LDS 9500

Step 1. Unpack the Carton and Verify its Contents

Verify that the carton contains the following items:

- Dolphin 9500 Series mobile computer (the terminal)
- Main battery pack (7.4v Li-ion)
- Microsoft Companion CD
- Dolphin 9500 Quick Start Guide

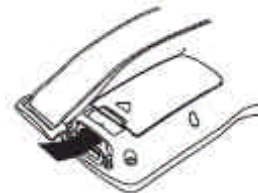
Be sure to keep the original packaging in the event that the Dolphin terminal should need to be returned for service. For details,

Each order includes a Dolphin Software Development Kit and User's Guide CD; verify that you received this CD with your order.

If you ordered accessories for your terminals, verify that they are also included with the order.

The Dolphin 9500 Hand Strap

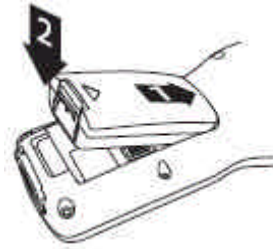
The Dolphin 9500 ships with the hand strap installed and fastened to the bottom panel with a clip. To install the battery pack, you must detach the hand strap. To detach the hand strap, push the hand strap clip down and away from the terminal. Move the strap up and away from the bottom panel. To re-attach the hand strap, slide the clip back into place on the bottom panel.



Step 2. Install the Main Battery Pack

Use only the Li-ion battery packs provided by InData Systems. The use of any battery pack not sold/manufactured by InData Systems in Dolphin 9500 Series terminals will void your warranty and may result in damage to the Dolphin terminal or battery.

1. Unpack the Li-ion battery pack. Hold the terminal with the front panel (keyboard) facing down.
2. Take the battery and insert the end without the locking tab into the top of the battery well and push down with a hinging motion until the locking tab snaps.



To Remove the Main Battery Pack

1. Put the terminal in suspend mode by pressing and holding the POWER key. The terminal goes into suspend mode automatically when the terminal is inactive for a programmed period of time. To wake the Dolphin terminal from suspend mode, press the Power or SCAN key.
2. Press the locking tab on the battery pack away from the bottom panel, and pull the battery pack up with a hinging motion.

Step 3. Charge the Main and Backup Batteries

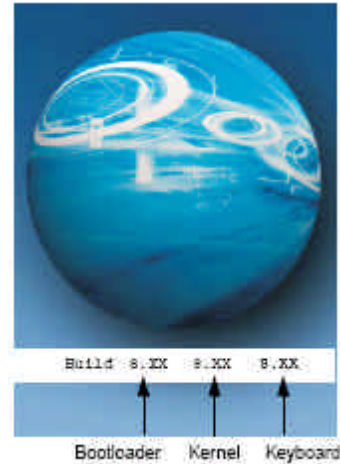
The power supply for the Dolphin mobile computer consists of two types of battery power: the main battery pack installed on the back panel, and the backup battery that resides inside the terminal. The main battery powers the terminal. The internal backup battery charges off the main battery and maintains the application data stored in RAM and system clock for up to 30 minutes when the terminal's main battery pack is completely discharged or removed.

Before Initial Use, The terminals are shipped with both batteries discharged of all power. Charge the main battery pack for a minimum of four hours before initial use. **Time to Charge** Four hours for the main battery pack, eight hours for the internal backup battery the first time.

Use only Dolphin 9500 Series peripherals, power cables, and power adapters. Use of peripherals, cables, or power adapters not sold/manufactured by Hand Held Products will void the warranty and may damage the terminal.

Step 4. Initialize the Mobile Computer

1. Power on the terminal by pressing the POWER or SCAN key. The decode LED lights and the scan LED blinks for approximately three seconds. Do NOT press any keys while the terminal is booting up.
2. The terminal initializes and the splash screen displays for a few seconds. The Build numbers indicate the software version.
3. The system performs a hard reset. When the display activates again, follow the instructions that appear.



Step 5. Align the Screen

You are prompted to align the screen by tapping the target five times. Use the stylus provided with the unit.



- Alignment should always be performed with a stylus designed for touch screen applications. The small point is required for accurate calibration.
- Press the stylus firmly into the center of the cross-hair target once and release. Do not “double-tap” the target.
- You can re-align the screen at any time by going to **Start > Settings > System tab > Screen**.

Step 6. Let Auto install Run

For each program that loads, a status bar indicates that the program is loading. Auto install occurs after each hard reset. Do NOT touch the keyboard or the screen while programs are loading. All configurations of the Dolphin 9500 Series install Demos and Utilities. If the terminal is configured with a wireless radio, the appropriate radio drivers and utilities for each radio install. After Auto install is complete, the terminal performs a soft reset automatically. When it finishes booting up after the soft reset, the Today screen appears. You can also display it by tapping **Start** and then **Today**.

Step 7. Set the Time and Date

You need to re-set the time and date after every hard reset of the terminal. It is a good idea to set the time and date now before you begin using the device. On the Today screen, tap the line that displays the time and date.



The Clock Settings screen appears.



The time zone defaults to **GMT-5 Eastern US**; tap the arrow to the right of GMT-5 Eastern US to select another time zone. Set the correct time and date in the remaining fields and tap **OK** to save.

Step 8. Verify Imaging and Decoding with Demos

Dolphin 9500 Series mobile computers come loaded with Demos you can use to verify imaging and decoding.

Verify Imaging

The Image Demo enables you to use the imager to capture an image on the Dolphin 9500.

1. Tap **Start > Demos > Image Demo**. The image demo opens.
2. Point the terminal at an object and press the SCAN key. A preview of the object appears on the terminal screen.
3. Release the SCAN key. The image is captured. By default, the image saves to the My Device folder as "imagedemo.jpg." To save to a different location, tap **File > Save As** and select a new location.
4. Press the ESC key to close the demo.

Verify Decoding

The Scan Demo enables you to decode a sample bar code.

1. Tap **Start > Demos > Scan Demo**.
2. Aim the terminal at a bar code and press the SCAN key. The scan LED lights red and a green aimer beam projects out from the scanner.
3. When a good scan is obtained, the decode LED lights solid green and the terminal beeps. The bar code readout appears on the screen.
4. Press the ESC key to close the demo.

Sample Bar Codes

You can use the following bar codes to verify decoding:

Sample 128



Code 128

Sample PDF417



PDF417 Test Message

Resetting the Terminal

There are two ways to reset the terminal: a soft and a hard reset.

Soft Reset (Warm Boot)

A soft reset re-boots the device without losing RAM data. You would perform a soft reset when:

- The terminal fails to respond.
- After installing some software applications.
- After making changes to certain system settings, such as network cards.

1. Press and hold the Control (CTRL) and the Shift (SFT) keys for approximately five seconds.
2. The decode and scan LEDs flash for approximately three seconds as the terminal resets.
3. When the reset is complete, the Today screen displays.

Hard Reset (Cold Boot)

A hard reset resets the operating system, restores the terminal back to factory defaults, and resets the terminal after a bootloader, keyboard, and kernel upgrade.

A hard reset erases all of the data stored in RAM memory and all RAM installed applications!

1. Press and hold the Control (CTRL) and the Escape (ESC) keys for approximately five seconds.
2. The decode and scan LEDs light for approximately three seconds.
3. The terminal re-initializes.

Suspend Mode

To put the Dolphin terminal into suspend mode manually, press and hold the POWER key. The terminal goes into suspend mode automatically when the terminal is inactive for a programmed period of time.

To wake the Dolphin terminal from suspend mode, press the Power or SCAN key.

Entering Data

To enter data, you may:

- Use the imager to capture images or scan bar code data into data fields
 - Use the 35-key, 43-key, or 56-key keyboards
 - Use the Soft Input Panel (SIP)
 - Use Microsoft® ActiveSync® to synchronize or copy information from your desktop computer.
- For more information, see following information on [Using ActiveSync](#).

Using ActiveSync

Using Microsoft ActiveSync, you can synchronize information in Microsoft Outlook or Microsoft® Exchange Server on your desktop computer with your Dolphin 9500 Series terminal. You can also synchronize this information directly with a Microsoft Exchange server. Synchronization compares the data on the desktop computer and the terminal and updates both with the most recent data so that the information on both is identical.

You can:

- Update the information in Microsoft Pocket Outlook® on your device by synchronizing it with Microsoft Outlook on your desktop computer.
- Synchronize Microsoft Word and Microsoft Excel files between your device and desktop computer. Your files are automatically converted to the correct format.

The most current version of ActiveSync can be downloaded from www.microsoft.com.

Additional Capabilities

With ActiveSync, you can also:

- Back up and restore your device data.
- Copy (rather than synchronize) files between your device and desktop computer.
- Control when synchronization occurs by selecting a synchronization mode. For example, you can synchronize continually while connected to your desktop computer or only when you choose the synchronize command.
- Select which information types are synchronized and control how much data is synchronized. For example, you can choose how many weeks of past appointments you want synchronized.

Requirements

To synchronize, ActiveSync version 3.7 or higher must be installed on both your desktop computer and Dolphin 9500 Series terminal. Dolphin 9500 Series terminals ship with ActiveSync 3.7 already installed. Therefore, you must install ActiveSync 3.7 on your desktop computer from the Microsoft Companion CD that came with your terminal.

To install ActiveSync on your desktop computer, insert the Microsoft Companion CD into the CD-ROM drive of your desktop computer. Click the **yellow arrow**, then **Start Here**, and follow the directions on your screen. When communicating via ActiveSync, your terminal must be connected to the host PC with a peripheral device sold/manufactured by Hand Held Products, such as the Dolphin Home Base, Dolphin Mobile Base, Dolphin Net Base, Dolphin Mobile Charger or other Dolphin 9500 Series charging/communication cable. Use of any peripheral not sold/manufactured by Hand Held Products may damage your terminal and will void the warranty.

Setting Up Your Desktop Computer

When installation of ActiveSync is complete on your desktop computer, the ActiveSync Setup Wizard helps you:

- connect your terminal to your desktop computer,
- set up a partnership so you can synchronize information, and
- customize your synchronization settings.

Synchronizing from Your Desktop Computer

Because ActiveSync is already installed on the Dolphin 9500 Series terminal, your first synchronization process begins automatically when you finish setting up your desktop computer in the wizard and your terminal is connected to the host PC. After your first synchronization, look at Calendar, Contacts, and Tasks on the terminal. Notice that the same information from Microsoft Outlook on your desktop computer is now on the terminal. Simply remove the Dolphin from the communication peripheral and you're ready to use it. By default, ActiveSync does **not** automatically synchronize all types of information. Use **ActiveSync Options** to specify the types of information you want to synchronize. The synchronization process makes the data (in the information types you select) identical on both your desktop computer and your device.



Touch Screen

InData Systems recommends using screen protectors to protect the touch screen; especially when used with applications that require high-volume interfacing with the touch screen. Screen protectors help prevent damage to the touch screen display and are easily installed, and can be purchased at any major computer retail store or directly from Hand Held Products.

For touch screen input, use the included stylus or your finger. The method you choose depends on which one is appropriate for your application. While there is a great deal of variation in different applications, for buttons or icons that are close together, you generally achieve greater accuracy with the stylus. Use of other objects, such as paper clips, pencils, or ink pens can damage the input panel and will void the warranty.

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 application environments.

Image Preview - When the imaging process is initiated, Dolphin touch screens display a preview of the object. This is a live video image of what the imager is currently viewing. The live video image has a slightly degraded appearance compared to the captured image. This is normal.

Scan Key - The SCAN key captures images on both the Dolphin 9500 and Dolphin 9550 terminals. The SCAN key is the only way to capture an image on the Dolphin 9500.

Image Files - The terminal is capable of saving images in a number of industry-standard file formats such as *.bmp, *.jpg and *.png. The default file format for images is a grayscale *.jpg. The image quality and related file size are determined by the data compression method used by the software application used to take images. The average size of the image file is approximately 4-8K. However, the size of the image depends on the content of the image - the more complex the content, the larger the file size. For the highest quality, take grayscale images.

Taking an Image

The following steps are basic guidelines for taking images:

1. Point the Dolphin terminal directly at the object. The imager points straight out the top panel.
2. To preview the image, press and hold the SCAN key.
3. The touch screen displays a preview of the object, and the decode and scan LEDs light red.
4. Adjust the terminal's position until the object appears on the screen the way you want it to appear in the image.
5. Hold the terminal still and release the SCAN key or Scan Trigger. The scan and decode LEDs flash red, the screen flashes, and the captured image appears on the screen.



6. Unless otherwise specified by the application in use, the image is saved to the My Device folder (**Start > Programs > File Explorer > My Device**).

Uploading Images

Image files can be uploaded to a host PC via Microsoft ActiveSync and a Dolphin communication peripheral or your wireless radio connection.

Settings

Connections Tab

The Connections tab enables you to manage your network connections.

Icon This icon ...

Beam Enables you to verify and adjust the infrared settings of the IrDA port.

Connections Enables you to configure network connections; this is the connections manager.

Radio Manager Enables you to enable and disable the radios installed on the terminal.

Network Cards - Enables you to view your network cards.

802.11b Settings This icon appears **only** if an 802.11b radio is installed on the terminal. Tapping the icon enables you to configure your 802.11b radio.

IrDA This icon appears **only** if a Bluetooth radio is installed on the terminal. Tapping the icon enables you to disable or enable the IrDA port.

Server-Assigned IP Addresses Please note that all server-assigned IP addresses use Dynamic Host Configuration Protocol (DHCP).

Zero-Config Wi-Fi Please note that the zero-config Wi-Fi feature of Windows Mobile is **disabled** on Dolphin 9500 series mobile computers.

Creating a Wireless Network Connection

On Dolphin 9500 Series terminals, wireless networks need to be configured according to the radio installed in the terminal.

Wireless LAN Communications with 802.11b

Dolphin 9500 Series terminals are available with an on-board 2.4 GHz 802.11b (Wireless Local Area Network) WLAN radio that uses Direct Sequence Spread Spectrum (DSSS) technology to spread the signal continuously over a wide frequency band at a data rate of up to 11 Mbps. In addition, the open software architecture makes the Dolphin 9500 Series a complete solution for a variety of wireless mobile data collection applications. The Dolphin 9500 Series is interoperable with other 802.11b Wi-Fi-compliant products including Access Points (APs), printers, PCs (via PC card adapters) and other wireless portable terminals.

Enabling the 802.11b Radio

The radio driver for 802.11b is installed when the Dolphin terminal is first initialized. The 802.11b radio must be enabled before you can configure it.



Enabling Radios and Radio Combinations

Requirements To successfully enable a radio, its hardware module and software driver must both be installed. If the module is present, the radio appears in the Radio Manager. However if the driver is not installed, you cannot successfully enable the radio.

Driver Sequence When working with radio combinations, the Radio Manager enables and disables the radio drivers as necessary and in the proper sequence.

Wireless PAN Communications with Bluetooth

Overview

Dolphin 9500 Series terminals are available with a Bluetooth radio for WPAN (Wireless Personal Area Network) usage. When the mobile computer is first initialized, the *.cab file and module for Bluetooth are installed.

Enabling the Bluetooth Radio

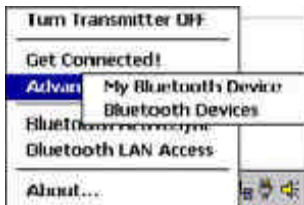
Before using the radio, make sure that the Bluetooth radio is powered up. When the radio driver is powered up, the Bluetooth icon appears in the task tray on the Today screen. Radios are enabled in the Radio Manager utility.



Setting Up Your Bluetooth Card

Note: If you use the Get Connected! Wizard, which is recommended for normal usage, then this step is not necessary. This step would be used to change the friendly name of your mobile computer.

1. Tap the Bluetooth icon that appears in the task tray on the Today screen.
2. In the pop-up menu, select **Advanced Features**, then **My Bluetooth Device**. (If you installed OBEX, the menu also lists Transfer via Bluetooth.)



3. In the **My Bluetooth Device** screen, you can modify the **Friendly Name** and make any desired configuration changes. When done, tap **OK**.



- In normal phone connect operation, **Discoverable** mode is not needed and should be disabled.
- If you do enable **Discoverable** mode (e.g., for ActiveSync), note that it does not shut off by itself. To save power, remember to disable it when not needed.
- **Connectable**, **Use Authentication**, and **Use Encryption** are also not required for printing or dial-up networking applications.
- Check Use **Authentication** to enable the **Use Encryption** option.

Assign COM Ports

Follow these steps to view and/or modify the Bluetooth COM ports. If you are not going to use the IrDA port, you can disable it to free up a port for Bluetooth devices.

1. Tap on the Bluetooth icon on the Today screen. Select **Advanced Features** then **My Bluetooth Device**.



Note: If you installed OBEX, the menu also lists Transfer via Bluetooth.

2. The **My Bluetooth Device** screen appears. Tap on the **COM Ports** tab.



3. As needed, view and/or enable/disable the Bluetooth COM port assignments. Tap **OK**.



Note: The Bluetooth Phone port cannot be disabled. See [Com Port Assignment Table](#) below.

Com Port Assignment Table

Com Port	Assignment
Com Port 1	Serial port. This is the 17-pin connector on the bottom panel of Dolphin 9500 Series terminals.
Com Port 2	Bluetooth Module. If there is no Bluetooth hardware installed on the terminal, this com port is unassigned.
Com Port 3	Raw Infrared
Com Port 4	
Com Port 5	USB virtual serial port
Com Port 6	IrDA. If IrDA is enabled. If IrDA is disabled, this com port becomes available. See Verify That the IrDA Port Is Enabled on page 6-5.
Com Ports 7-9	Unassigned. These are available for selection only when connecting to devices that use virtual com ports, such as Bluetooth.

Discover Bluetooth Device(s)

Follow these steps to discover other Bluetooth devices nearby, including non-phone devices. The Device Discovery Wizard is a more detailed alternative to using the Bluetooth “Get Connected!” Wizard or Bluetooth ActiveSync or Bluetooth LAN Access options. The Device Discovery Wizard allows you to discover any type of Bluetooth device.

1. If not open, launch the **Bluetooth Devices** folder. Tap on the Bluetooth icon on the **Today** screen. Select **Advanced Features** then **Bluetooth Devices**.
2. In the **Bluetooth Devices Folder**, tap on the **Device Discovery** icon. Or you can tap on **Tools**. In the pop-up menu, select Device Discovery.
3. Follow the Bluetooth Device Discovery Wizard to search for Bluetooth devices nearby. When prompted, select the device type you seek.



4. When the search is complete, a screen reports the discovered Bluetooth devices. Check the box next to any device you wish to save information about, (i.e., any devices you wish to connect to). Tap **Next**.



5. A service discovery phase begins, 5-10 seconds per chosen device.

6. In the next screen, tap **Finish**.

Bond With Discovered Device(s)

Follow these steps to bond with an already discovered Bluetooth device. In most cases, bonding is for establishing secure communications with a Bluetooth-enabled phone. This is a more detailed alternative to using the Bluetooth “Get Connected! Wizard.”

Important!

- Do not try to bond with a Motorola Timeport 270C or Nokia 6310!
- Do not use this method to bond with a printer! The third-party printing software included on the installation CD also handles bonding.

1. If not open, launch the **Bluetooth Devices** folder. Tap on the Bluetooth icon in the Today screen. Select **Advanced Features**, then **Bluetooth Devices**.

2. Tap and hold your stylus on the Bluetooth device you want to bond with. In the pop-up menu, select **Bond**.



3. Alternatively, after selecting a device, tap on the **Bond** icon. Or tap on **Device**, then select **Bond**.



4. The **Bluetooth Device Bonding Wizard** launches. Follow the wizard to bond with your selected device.



5. As prompted, make sure the Bluetooth device that you want to bond with is in Bondable mode.



6. If the remote device is set up to accept bonding, a **Bluetooth Passkey** screen appears. To continue bonding, enter the correct passkey and tap **Reply**.



7. When you have successfully bonded with the other device, tap **Finish**.

View Device Properties

Follow these steps to view the properties of an already discovered device.

1. If not open, launch the **Bluetooth Devices** folder. Tap on the Bluetooth icon on the Today screen. Select **Advanced Features** then **Bluetooth Devices**.
2. Select a device. Tap on the **Properties** icon, or tap on **Device** then select **Properties**. Alternatively, you can tap and hold your stylus on the Bluetooth device you want to view information about. In the pop-up menu, select **Properties**.



3. Use the **General** and **Services** screens to research device properties. If needed, assign a new device type icon by tapping on the arrow buttons in the **General** screen. You can also use the **Device name** field to rename the device. When done, tap **OK** for the setting to take effect.

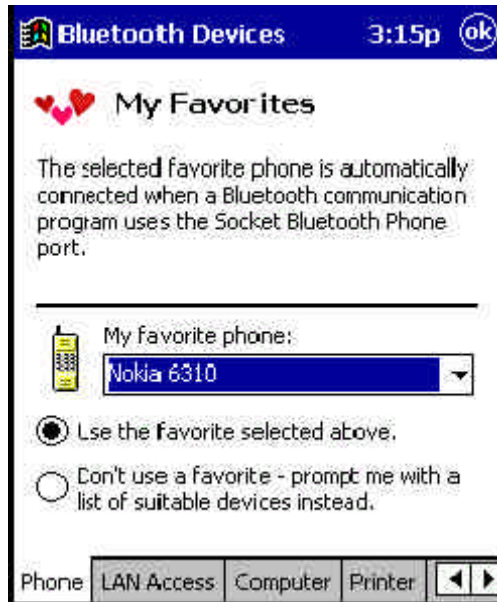


Set Up Your Favorite Device

Follow these steps to set up default devices in the **Bluetooth Devices** folder. Please note that the Get Connected! Wizard automatically assigns the favorite phone.

Complete these steps:

1. Tap on **Tools** and select **My Favorites**.
2. Tap on the tab for the type of device you would like to set a favorite for. If needed, use the arrow buttons to scroll and find the tab you need.



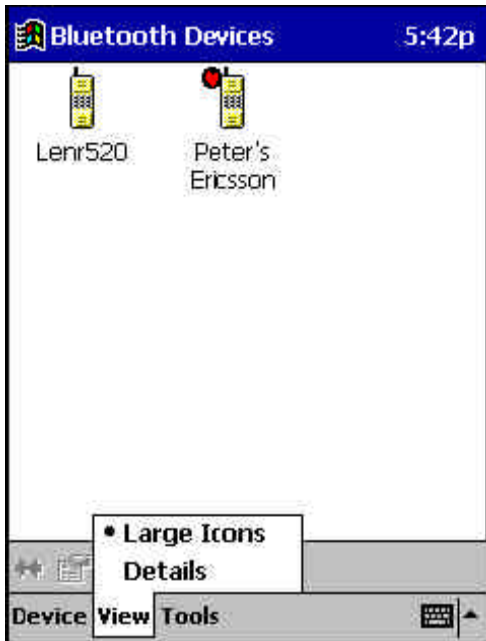
Note: Tabs appears only for COM ports you have enabled. To enable a port, refer to the “Assign COM Ports” section earlier in this chapter.

3. To select a favorite device, select **Use the favorite selected above**. In the drop-down list, select your device. Tap **OK**.
4. After setting a device as your favorite, its icon appears in the Bluetooth Devices folder with a heart next to it.

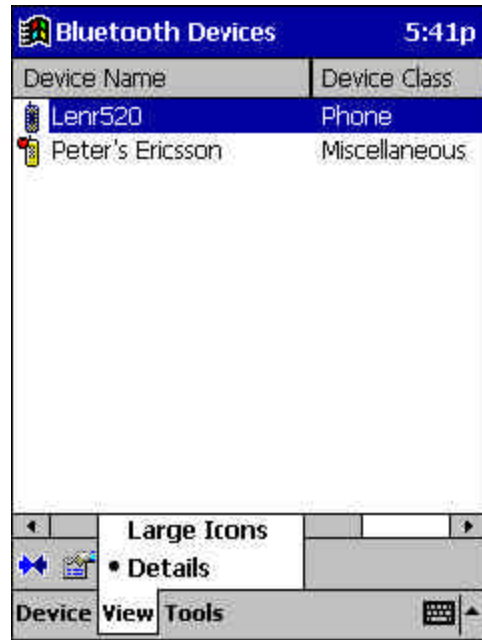
Change Views

You can switch between the **Large Icons** or **Details** views for the **Bluetooth Devices** folder.

1. In Bluetooth Devices, tap on **View**.
2. In the pop-up menu, choose between **Large Icons** or **Details**.



Large Icons



Details

Note: In Details view, you can see the Device Class and scroll right to see the current Bonded status.

Delete a Device From the Folder

If you no longer plan to connect with it, you can delete a device from the **Bluetooth Devices** folder.

1. If not open, launch the **Bluetooth Devices** folder.
2. Tap and hold your stylus on the device you wish to delete. In the pop-up menu, select **Delete**.



3. Alternatively, after selecting a device, tap on the **Delete** icon. Or tap on **Device** then select **Delete**.

4. A Confirm screen appears. Tap **Yes**.



Turn Radio Transmitter ON/OFF

You may want to turn off the radio transmitter to save power or if you are entering an area with radio restrictions (e.g., an airplane).

1. The Bluetooth icon should appear in the task tray on the **Today** screen. Tap on the icon.
2. In the pop-up menu, select **Turn Transmitter OFF**.



3. The Bluetooth Card radio transmitter shuts off. The Bluetooth icon in the task tray becomes gray, as well as relevant menu options (e.g., Get Connected!).

4. To turn the radio transmitter back on, tap on the gray **Bluetooth** icon. In the pop-up-menu, select **Turn Transmitter ON**.

Bluetooth ActiveSync

This section explains how to use the Bluetooth ActiveSync feature. It helps you quickly and easily ActiveSync to a notebook or desktop computer with ActiveSync v3.x installed.

1. Tap on the **Bluetooth** icon. In the pop-up menu, select **Bluetooth ActiveSync**.



2. The next screens varies depending on if your Bluetooth Devices folder contains any computers, and if one is chosen as your favorite. Please refer to the appropriate scenario:

SCENARIO #1: Your Bluetooth Devices folder contains a favorite desktop computer.

(a) When you tap **Bluetooth ActiveSync**, your mobile computer automatically tries to connect to your favorite computer.

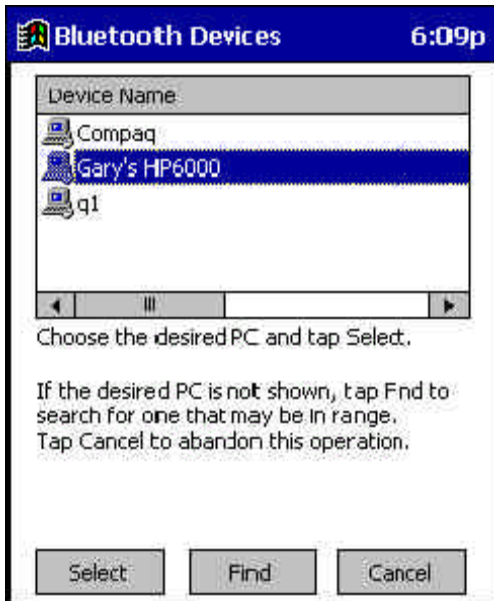
(b) The Connect To screen appears, reporting that it is trying to connect to Wireless ActiveSync.



(c) After a successful connection is made, the status screen reports Connected. Now you are ready to synchronize files, if desired.

SCENARIO #2: Your Bluetooth Devices folder contains no favorite desktop computer.

(a) When you tap on **Bluetooth ActiveSync**, a screen appears that allows you to choose which computer to connect to in your Bluetooth Devices folder. Choose a computer from the list and tap Select, or tap **Find** to search for another computer.



Note: If the computer you want to connect to is not listed, tap **Find** to begin a search. Proceed as described in Scenario #3 below.

(b) Your mobile computer attempts to connect to your selected computer.



(c) After a successful connection is made, the status screen reports Connected. Now you are ready to synchronize files, if desired.



SCENARIO #3: Your Bluetooth Devices folder contains no computers.

(a) When you tap on **Bluetooth ActiveSync**, a Bluetooth Device Search automatically begins.



Note: You can also start the device search by tapping Find in the Bluetooth Devices screen.

(b) After the search is complete, select the computer you wish to ActiveSync with and tap **Select**. If the computer is not listed, make sure the computer is discoverable and tap **Refresh** to search again.



(c) After you tap **Select**, a service discovery phase begins.

(d) The Connect To screen appears, reporting that it is trying to connect to Wireless ActiveSync.



(e) After a successful connection is made, the status screen reports Connected. Now you are ready to synchronize, if desired.

Bluetooth LAN Access

This section explains how to use the Bluetooth LAN Access feature to quickly and easily connect to a Bluetooth-enabled LAN access point.

1. Tap on the **Bluetooth** icon. In the pop-up menu, select **Bluetooth LAN Access**.



2. The next screens varies depending on if your Bluetooth Devices folder contains any access points, and if one is chosen as your favorite. Please refer to the appropriate scenario:

SCENARIO #1: Your Bluetooth Devices folder contains no favorite access point.

- (a) When you tap Bluetooth LAN Access, a screen appears that allows you to choose which access point to connect to in your Bluetooth Devices folder. Choose an access point from the list and tap **Select**.



Note: If your access point is not listed, tap Find and proceed as described in Scenario #3.

- (b) Your mobile computer tries to connect to the selected access point.



(c) If your LAN requires a passkey, a screen appears asking for the passkey. Enter the passkey, then tap **OK**.

(d) After a successful connection is made, the status screen reports Connected.



(e) Now you are ready to access your LAN for Internet access, files, etc.

SCENARIO #2: Your Bluetooth Devices folder contains a favorite access point.

(a) When you tap **Bluetooth LAN Access**, your mobile computer automatically tries to connect with your favorite access point.



(b) If your LAN requires a passkey, a screen appears, asking for the passkey. Enter the passkey, then tap **OK**.

(c) After a successful connection is made, the status screen reports Connected.



(d) Now you are ready to access your LAN for Internet access, files, etc.

SCENARIO #3: Your Bluetooth Devices folder has no access points.

(a) When you tap **Bluetooth LAN Access**, the mobile computer automatically begins to search for new Bluetooth devices.



Note: You can also start the device search by tapping Find in the Bluetooth Devices screen. See Scenario #2 on page 8-8.

(b) After the search is complete, select the access point you wish to connect to. Tap **Select**. If the access point is not listed, tap **Refresh** to search again.



(c) After you tap **Select**, a service discovery phase begins.



(d) If the LAN requires a Passkey, a screen appears, asking for the Passkey. Enter the passkey, then tap **OK**.

(e) After a successful connection is made, the screen reports Connected.



(f) Now you are ready to access your LAN for Internet access, files, etc.

Configuration Utilities

There are two configuration utilities for the 802.11b radio:

802.11b Settings - Use this configuration utility when you are not using Wired Equivalent Privacy (WEP) or standard WEP (64/128 bit) with no authentication. For more details, see [802.11b Settings](#) below.

802.11b Settings










You can access the configuration utility two ways:

1. Tap **Start > Settings > System tab > 802.11b Settings**.
This icon appears on the System tab only if there is an 802.11b radio installed on the terminal.
2. Tap the **Status** icon in the system tray.

The 802.11b Settings utility consists of four tabs: Status, Config, Advanced, and About. Each tab is described in its own section in this chapter.

Icons

This configuration utility contains icons that indicate the status of the network.

Icon	This icon means...
	Excellent signal strength. Excellent connection.
	Poor signal strength. Poor connection.
	Radio disabled. No radio connection.
	Access Point, AP Mode.
	Peer Station, Peer-to-Peer Mode.
	WEP enabled. Network needs a WEP Key to connect.
	WEP disabled. Network does not need a WEP Key to connect.
	Mismatched WEP Key configuration with your network.
	Online help button.

802.11b Wireless Security Supplement - Use this configuration utility when you are using WEP (beyond the standard), Wi-Fi Protected Access (WPA), and authentication. For details, see [802.11b Wireless Security Supplement](#) below.

802.11b Wireless Security Supplement

AEGIS Client® offers the most comprehensive IEEE 802.1X supplicant for securing wired and wireless networks. The Client is a standards-based implementation of IEEE 802.1X and can be configured to work with almost any network equipment - wired or wireless - that supports the 802.1X authentication standard. The Client is interoperable with 802.1X-capable wireless access points and authentication servers including Microsoft's IAS and Cisco's ACS. The Client solves the problem of key distribution in wireless LANs by using public key authentication and encryption between Wireless Access Points (WAP) and roaming stations to exchange dynamic Wired Equivalent Privacy (WEP) keys. In addition, network managers can control 802.1X user profiles from a centralized RADIUS server or, in the case of TTLS, from a RADIUS Diameter or other AAA servers. The Client supports both wireless (802.11a/b/g) and Ethernet interfaces.

Applications

Dolphin 9500 Series terminals ship with the following Microsoft applications installed:

- [Calendar](#)
- [Contacts](#)
- [Tasks](#)
- [Notes](#)
- [Inbox](#)
- [Pocket Internet Explorer](#)
- [Pocket Word](#)
- [Pocket Excel](#)
- [Windows Media Player for Pocket PC](#)
- [MSN Messenger](#)
- [Pictures](#)

Note: Microsoft® Money, Microsoft® Reader are NOT installed on Dolphin terminals when shipped but may be installed from the Microsoft Companion CD. For information on how to use these applications refer to the HandHeld manual included with this product.

Appendix A – Technical Support

Support By Phone

Please call our customer support department at 315-685-8311. Technical support is available during regular business hours from 8:30am to 5:00pm ET Monday through Friday. A 24-hour message system service is available for calls placed outside of regular business hours. Calls placed to this service are answered within one business day. Please leave the following information if calling outside of regular business hours:

- ? Name and Company Name
- ? Product Make, Model, and serial number (if applicable)
- ? Brief description of support needed
- ? Best time to be reached.

Telephone support outside of regular business hours may be available if arranged for in advance. There is an additional fee for this service. Please contact InData Systems during regular business hours for more information.

Support By FAX

Use our printable fax form Requests for technical support may be submitted by FAX 24 hours a day, seven days a week, at 315-685-8312. Faxed requests for technical support are responded to within one business day. An on-line printable request form is available from the indatasys.com website. To access the online fax form, click on the [click here](#) link under the Support by Fax heading. Simply print the form, fill in the relevant information, and FAX the form to us. If not using the above form, please be sure the following information is on your request for support:

- ? Name and Company Name
- ? Company Phone/Fax Number
- ? Product Make, Model, and serial number (if applicable)
- ? Brief description of support needed

Support By Internet / Email

To use our online support forms go to indatasys.com, and select the Support link on the left of the page. Click on the [click here](#) link under the Technical Support heading, to see the various forms of support available. To access the online support form, click on the [click here](#) link under the Support by Internet / Email heading. Requests for technical support may be submitted electronically 24 hours a day, seven days a week. Electronic requests for technical support are responded to within one business day. If you would rather send an E-mail request, contact us at support@directpartmark.com. Please be sure the following information is included in the request:

- ? Name and Company Name
- ? Company Phone / Fax / E-mail
- ? Product Make, Model, and serial number (if applicable)
- ? Brief description of support needed



Appendix B – Summary of Ordering Guide

Hand Held Scanners	
LDS460R3PF0	RS232 Base Scanner with Powered Interchangeable Socket
LDS460R5PF0	USB Keyboard Wedge Base Scanner with Powered Interchangeable Socket
LDS480R3PF0	RS232 Base Scanner with Powered Interchangeable Socket
LDS480R5PF0	USB Keyboard Wedge Base Scanner with Powered Interchangeable Socket
Fixed Mount Scanners	
LDS450R5200	LDS FM450 (Fixed Mt) USB Fixed Mount Scanner with Powered Interchangeable Socket
Portable Data Terminals	
LDS950R0PF0-00	Dolphin 9500 Batch only, with Powered Interchangeable Socket
LDS950R3PF0-00	Dolphin 9500 802.11b and Bluetooth radios, with Powered Interchangeable Socket
Cordless Scanners	
LDS460R2PF0	IT4620 2D cordless imager with battery pack and 10m Bluetooth radio Scanner Only with Powered Interchangeable Socket
Interchangeable Optics Assemblies	
UV Optics	
LDS4000UB0S	Ultra Violet Illuminated Interchangeable Optics Assembly with 80mm Lens
V2 Versions	
LDS4000060	V2 Interchangeable Optics Assembly with 40mm Lens
LDS4000010	V2 Interchangeable Optics Assembly with 80mm Lens
M3 Versions	
LDS4000070G	M3 Interchangeable Optics Assembly with 30mm Lens
LDS4000030G	M3 Interchangeable Optics Assembly with 40mm Lens
LDS4000090G	M3 Interchangeable Optics Assembly with 80mm Lens
LDS4000170G	M3 Interchangeable Optics Assembly with 30mm Lens Illuminated



LDS4000190G	M3 Interchangeable Optics Assembly with 80mm Lens Illuminated
ESD	
LDS40E00600	V2 Interchangeable Optics Assembly with 40mm Lens ESD Compliant
LDS40E0030G	M3 Interchangeable Optics Assembly with 40mm Lens ESD Compliant
Power Supplies	
PS-5U-4	5V Power Supply for use with RS232 Units as indicated above
PS9U-2	9V Power Supply for 2020-5 Base below
4620 Base unit	
WA-2020-5B	Host interface, Wireless link and charging for 4620 based solutions requires 9V power supply above
WA-2020-CB	Charge Base alone for 4620 solutions requires 9V powersupply above
Holsters/Covers	
9500 Cover	Dolphin 9500 Protective Enclosure with clear front and swivel belt clip
9500 Cover/2	Dolphin 9500 Protective Enclosure with swivel belt clip
9500 Holster	Dolphin 9500 Belt Holster
Home Base/Cradles	
9500-HB-1	Dolphin 9500/9550 RS 232 Charging and Communications Cable US kit
9500-HB-2	Dolphin 9500/9550 RS 232 Charging and Communications Cable Euro kit
WA-2020-CB	Charge Base alone for 4620 solutions requires 9V power supply above
Spare Batteries	
20000591-01	Dolphin 9500 7.4 V 14.8 Watt Hour Li-On Spare Battery
Chargers	
9500-QC-1	Dolphin Quad Charger™ US Kit Dolphin 9500/9550 four slot battery charging station. Includes US power cord and power supply
9500-QC-2	Dolphin Quad Charger™ Euro Kit Dolphin 9500/9550 fourslot battery charging station. Includes Euro power cord and power supply



Charging & Communications Cables	
9500 RS232-1	Dolphin 9500/9550 RS-232 Charging and Communications Cable US kit
9500 RS232-2	Dolphin 9500/9550 RS-232 Charging and Communications Cable Euro kit
Stands	
FM450 Flex base	FM450 Flex base
HFStand5-LDS	Hands free stand for InData LDS products
ESD-HFStand5-LDS	Hands free stand for InData LDS products ESD Compliant
Cables	
42206161-01	USB PC or MAC Interface Cable
42204253-04	True RS232 Interface Cable Requires Power Supply
42203758-04	TTL RS232 (for use with (5) Scanners) Interface Cable Requires 5V Power Supply
42206132-02	Keyboard Wedge Mini DIN Interface Cable
42203758-03	Power Link Interface Cable