Pocket-Sized Personal Data Collector

User's Manual

Laser Safety

The portable data terminal complies with safety standard IEC 60825 for a Class I laser product. It also complies with CDRH as applicable to a Class IIa laser product. Avoid long term staring into direct laser light.

Radiant Energy: The advanced portable data terminal uses two low-power visible laser diodes operating at 650nm in an opto-mechanical scanner resulting in less than 3.9µW radiated power as observed through a 7mm aperture and averaged over 10 seconds.

Do not attempt to remove the protective housing of the scanner, as unscanned laser light with a peak output up to 0.8mW would be accessible inside.

Laser Light Viewing: The scan window is the only aperture through which laser light may be observed from this product. A failure of the scanner motor, while the laser diode continues to emit a laser beam, may cause emission levels to exceed those for safe operation. The scanner has safeguards to prevent this occurrence. If, however, a stationary laser beam is emitted, the failing scanner should be disconnected from its power source immediately.

Adjustments: Do not attempt any adjustments or alteration of this product. Do not remove the protective housing of the scanner. There are no

user-serviceable parts inside.

Caution: Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser light exposure.

Optical: The use of optical instruments with this product will increase the eye hazard. Optical instruments include binoculars, magnifying glasses, and microscopes but do not include normal eye glasses worn by the user.

Table of Contents

Table of Figures

v

Congratulations on your purchase of the Personal Data Collector (PDC) with LCD display. Along with superior portability and visually safe scanning LEDs, the PDC features a real-time clock, a buzzer, a dual-color status LED, and a UART port for direct connection to external equipment.

The on-board 32K EEPROM provides a robust, stable, programmable memory space. Some of this non-volatile memory is dedicated to storing scanned data. The PDC can retain more than 1000 records.

The Personal Data Collector comes already programmed with a basic data collection program, called FREETASK, that can scan and store barcodes, and do simple edits on the stored data. Data can be uploaded to a PC through the RS-232 / USB cable.

WinTaskGen, a program on the included CD-ROM, can be used to create data collection programs (Tasks) for download and use with the PDC. A Task can have up to four data forms with up to 16 separate data fields per form.

For more advanced requirements, there are available libraries for developing programs under the Keil C environment.

Contact your agent if you are interested in this approach.

Unpacking

The PDC package should contain:

- 1 ea. Pocket-Sized Personal Data Collector

- 1 ea. DB-9(F) serial
       communication cable

- 1 ea. USB cable (Optional)

- 3 ea. AA NiMH rechargeable batteries

- 1 ea Power Adapter

- 1 ea. CD-ROM support disk

- 1 ea. User's Manual

If any package contents are damaged or missing, please contact your dealer immediately.

Finding Your Way Around

Scan Window

LCD Display

LED Lamp

Up Key

Down Key

Function key

Scan Key

RS-232 port

Figure 1: Pocket-Sized Personal Data Collector

Battery Care

In the interests of providing the best product performance possible, the Personal Data Collector comes with high quality, rechargeable Nickel Metal Hydride (NiMH) batteries and a Power Adapter. After NiMH batteries are installed, connect the Power Adapter cable and the batteries charge right in the unit.

Before you use new NiMH batteries for the first time you should charge them fully. Please note that new NiMH batteries need to go through three to five charge-dis-charge cycles before they reach peak performance and capacity. The first several times that you use new NiMH batteries you may find that they discharge fairly quickly during use. This is normal until the batteries mature.

It is highly recommended that NiMH batteries always be operated until fully discharged before recharging. If you recharge NiMH batteries before they are fully discharged, they may develop a pattern of inhibited output.

Under favorable conditions, NiMH batteries can last through hundreds of recharges. You will get better performance if you keep battery teams together. Don't mix new and old batteries.

Note:

1. If the PDC will remain unused for an extended period (two months or more) the batteries should be removed. Even when the PDC is turned off, there is a very small amount of power consumed, which can, over time, have a bad effect on batteries.

2. When the first time use Personal Data Collector after NiMH batteries already loaded, please keep press v and ^ keys for 30 sec. to turn on the PDC

3. 3 pcs AA 700mAH NiMH rechargeable batteries (Use ZEBEX supplied rechargeable batteries only)

4

Installing Batteries

Battery Cover Screw

Figure 2: Inserting Batteries

1. Loosen the battery cover screw and remove the cover.

2. Insert three batteries according to the orientation in the picture

3. Replace the cover and tighten the screw.

5

Charging Batteries

Warning!
Use the Power Adapter with NiMH batteries ONLY! Connecting the Power Adapter with any other type of batteries in the PDC voids the warranty, ruins batteries, can burn up the Personal Data Collector, and could possibly cause harm to persons or property! You may use regular disposable alkaline cells to operate the PDC, but never mix NiMH with alkaline batteries, and never, never connect the Power Adapter when there are disposable (alkaline) batteries in the unit.

To charge NiMH batteries:

1. With NiMH rechargeable batteries (ONLY!) in the PDC unit, plug the Power Adapter connector into the socket on the side of the large end connector of the Communication Cable.

2. Plug the Power Adapter into an outlet. While charging, the LED on the PDC lights up red. The LED turns off when the batteries are fully charged. Charging takes 3 to 5 hours.

Figure 3: Connecting the Power Adapter

It is normal for the Power Adapter and the NiMH battery cells themselves to become warm during charging.

Note:
If needed when NiMH batteries are low, the PDC may be operated with the Power Adapter connected. Never use the Power Adapter with any other type of batteries in the PDC unit!

Getting Started

The Personal Data Collector comes already pro-grammed with a basic data collection program, FREETASK, that can read and store barcodes, do simple edits, and upload data to a PC through the Communication Cable.

Scanning and Storing Data

1. Turn on the Personal Data Collector by pressing the v and ^ keys together.

Figure 4: Turning On

2. The bootup (power on) screen appears.

Figure 5: Bootup Screen

3. Press the **scan** key to go to the Main Menu.

Figure 6: Main Menu

4. With Run Task selected, press the **scan** key. Display shows <REC>, for record number, and is ready to scan a barcode.

5. Hold the Personal Data Collector in front of the barcode to be scanned, press the **scan** key, and sweep the red light vertically across the barcode.

correct   wrong

9

When the scan is successful, a short beep is emitted and the LED indicator flashes green. While the scan key is still depressed, the display shows the alphanumeric data scanned. When the scan key is released, the display reverts to <REC>, ready for the next scan. If the scan fails, the PDC remains silent, the LED gives a red flash, and the display reverts to <REC> for the next try.

6. Continue adding scanned data by repeating step 4. The PDC can retain more than 1000 records.

7. To review stored data, press the ^ key.

8. To end review of stored data, press the **FN** key.

9. To exit scanning mode, press the **FN** key.

10. **To turn off the Personal Data Collector, press and hold FN. The screen goes blank; data is retained.**

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* Depending on the Beep Volume setting (page 17).

Uploading Data to a PC

The PDC can communicate data to a PC using either WinTaskGen, the supplied software interface, or another RS-232 / USB communications interface, such as HyperTerminal, which comes with Windows.

Communications settings are:
- baud rate: 9600 bps
- data bits: 8
- parity: none
- stop bits: 1
- flow control: none

To upload data:

1. If not on already, turn on the computer.

2. Connect the PDC with a PC COM port using the supplied communication cable.

**To COM
port on PC**

Figure 7: Communication Cable

To COM port
on the PC

11

3. Turn on the Personal Data Collector by pressing the v and ^ keys together. (Actually, steps 1 thorough 3 may done in any order.)

4. Run the desired communications software and upload data. See the following two sections for more detailed software instructions.

12

Uploading Data with WinTaskGen

WinTaskGen is provided on the CD that came with your PDC. With it you can upload data from the PDC to the computer, edit or create programs (tasks) for use with the PDC, download these tasks to the PDC, adjust the barcode filter for the PDC, setup the computer COM port, and adjust PDC settings such as the clock, beep volume, etc. Install WinTaskGen into your Windows environment from the supplied CD.

To upload data from the PDC to the computer:

1. Run WinTaskGen.

2. Use the supplied Communications Cable to connect the PDC to the computer.

3. Turn on the Personal Data Collector by pressing the v and ^ keys together. The boot up screen appears.

Figure 8: Bootup Screen

4. On the WinTaskGen toolbar, press the upload icon. The upload workspace appears.

13

5. Press the Connect button near the lower left corner. The PDC beeps twice.

[Connect]

6. Press the Upload button. The PDC beeps once, and the data appears in the WinTaskGen workspace.

[Save]

7. Save the data to file by pressing the Save button.

[Upload]

14

Uploading Data with HyperTerminal

HyperTerminal is an RS-232 communications program that comes with Windows. This example for uploading data is from Windows XP:

1. Use the supplied cable to connect the PDC to the PC COM port (e.g.: COM 1).

2. In Windows, go to Start→Programs→Accessories→Communications→HyperTerminal.

3. Set up a Connection Description name; pick an icon.

4. Make port settings as per Upload Data to a PC, above. When port settings are done, the HyperTerminal interface appears.

5. Turn on the PDC by pressing the v and ^ keys together.

6. Press the s key to go to the Main Menu.

7. Use v and ^ keys to select Upload Data, and press the s key. <Upload> shows on the screen.

8. Press the **scan** key again. <Ready to upload!> appears.

9. Press the **scan** key. The data uploads and appears in the HyperTerminal workspace.

10. To turn off the PDC, press and hold **FN**. The screen goes blank; data is retained.

Setup

It is very easy to set the clock and other PDC parameters by connecting the PDC to a PC and running Win-TaskGen→Remote Device Setting. But for those times when a PC connection is not readily available, all parameters can be set directly, using the PDC keypad. Here's how:

1. Turn the PDC on by pressing the v and ^ keys together.

2. Press the scan key to go to the Main Menu.

Figure 9: Main Menu

3. Press v a couple times till <Setup> is selected, then press the **scan** key. The Setup Menu appears:
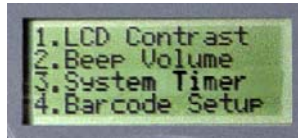

Figure 10: Setup Menu

16

LCD Contrast

1. From the Setup menu, make sure that LCD Contrast is selected, then press the s key.

2. Contrast may be adjusted from high contrast (1) to very low contrast (30) by pressing the v and ^ keys. Settings "wrap around" if you go lower than 1 or higher than 30. Default is medium contrast at 14.

3. When contrast is properly adjusted, hit the s key to save the setting and automatically return to the Setup Menu. Or hit f to return without saving a new setting. The PDC remembers your settings, and will use them each time the PDC is turned on until they are modified.

Beep Volume

You can set beep "volume" on the PDC in four settings: Low, Medium, Loud, and Quiet. Low means a low, quiet tone (C#7). Medium means a medium tone (F#7). High means a higher tone (A#7).

Note: "Quiet" means silent, no tone at all.

1. From the Setup Menu (page 16), pressing the v to select Beep Volume, then press scan. You enter Beep Volume setup and see the current

Beep Volume setting.

2. Adjust the setting with the v and ^ keys, then press s to actually set the beep "volume" and return to the Setup Menu. (Or press f to exit without changing the setting.) The PDC remembers your settings, and will use them each time the PDC is turned on until they are modified.

System Timer

The PDC has an onboard clock that keeps track of the year, month, day, hour, minute, and second, allowing two digits for each. The PDC system timer keeps track of time and date even for brief intervals when there are no batteries in the unit. If batteries are removed for an extended period though, the system timer must be reset.

1. From the Setup Menu (page 16), press v till System Timer is selected, then press the s key. The PDC date shows on the left of the screen as 6 digits, with the last selected. Note MMDDYY format.

2. To delete the selected digit, use the ^ or v key to navigate to the < (backspace) character in the right menu. The right menu consists of these characters: 1234567890.<v The backspace (<),

18

when selected and scan pressed, deletes whatever character is selected in the left, or edit, field. You can use the backspace to delete a row of digits by pressing scan repeatedly.

The v character, when selected and scan pressed acts as <escape> to the next menu.

3. Press **scan** to delete the target digit. The digit is deleted and its now-blank position is selected. To move the selector one position to the left, press s again. The digit in the next position to the left is selected.

4. To write (or overwrite) a digit, position left selector in the required position (by deleting and writing digits), then use the v and ^ keys to select the desired new digit from the right-hand menu.

5. Press the **scan** key to enter. The digit appears on the left in the previously selected position and the cursor advances right to the next position (except when writing the rightmost digit, in which case the cursor stays there).

6. When MMDDYY is set, press the f key to jump to HHMMSS setup. Following 24 hour format, the procedure is similar to setting MMDDYY.

7. When finished, press the **FN** key to escape.

Barcode Setup

Use this parameter to assign which types of barcodes the PDC will read, and which not.

1. From the Setup Menu (page 16), press ^ or v till Barcode Setup is selected, then press the s key. The screen shows a page for (example) EAN/UPC with the designation On or Off below the code type. On means that the PDC will read this type of code.

2. Change the setting if needed with the trusty v and ^ keys, then press s to actually make the setting and proceed to the next code type page.

3. To flip through the pages rapidly, just press s repeatedly. A typical list of code type pages might be: EAN/UPC, Code 39, Codabar, ITF 25, Code 128, Code 93.

4. When finished, press **FN** to exit. The PDC remembers your settings, and will use them each time the PDC is turned on until they are modified.

Note:
FREETASK includes the ability to read the most popular types of barcodes. To set up the PDC for reading barcodes beyond this limited list, use the PC setup program, WinTaskGen, to adjust settings.

20

Specifications

Specifications*

SYSTEM

CPU	8-bit Processor
Memory	32KB non-volatile memory
LCD Display	FSTN, 96 x 32 dots graphic (16 x 4 characters)

POWER

Main Battery	3 ea. 1.5V AA alkaline batteries, or 3 ea. NiMH rechargeable batteries
Battery Life	Min. 24 hours at 6 scans per minute

SCANNER

Light Source	630 nm LED (CCD); 650 nm visible diode (laser)
Optical System	1,024 pixels C-MOS image sensor (CCD); Laser engine (laser)
Depth of Field	15 – 40 mm (CCD); 45 – 600 mm (Laser)
Width of Field	44 mm (CCD)
Scan Rate	100 scans per sec.
Print Contrast	45% @ UPC/EAN 100% (CCD); 30% @ UPC/EAN 100% (Laser)
System Interfaces	C-MOS serial interface (RS-232) USB cable - optional

21

INTERFACES

Bluetooth	Class 1 (100m range) optional
RS-232	Programmable up to 115,200 bps

PHYSICAL

Length	108.0 mm
Width	44.4 mm
Height	25.5 mm
Weight	Approx. 93 g (batteries included)

ENVIRONMENTAL

Operating Temp.	0°C – 50°C (32°F – 122°F)
Storage Temp.	-10°C – 60°C (14°F – 140°F)
Humidity	5% – 95% RH (non-condensing)

SOFTWARE & DEVELOPMENT

(a) Built-in Free Task;
(b) Support the Task Gen Software;
(c) Hardware library for customized application

* Product availability & specifications depend on territory market strategy; all are subjects to change without prior notice.

15.105(b)
This equipment has been tested and found to comply with the limits
for a Class B digital device, pursuant to part 15 of the FCC rules. These
limits are designed to provide reasonable protection against harmful
interference in a residential installation. This equipment generates,
uses and can radiate radio frequency energy and, if not installed and
used in the accordance with the instructions, may cause harmful
interference to radio communications. However, there is no guarantee
that interference will not occur in a particular installation. If this
equipment does cause harmful interference to radio or television
reception, which can be determined by turning the equipment off and
on, the user is encouraged to try to correct the interference by one or
more of the following measures:
• Reorient or relocate the receiving antenna.
• Increase the separation between the equipment and receiver.
• Connect the equipment into an outlet on a circuit different from that
to which the receiver is connected.
• Consult the dealer or an experienced radio/TV technician for help.
Operation is subject to the following two conditions:

23

This device may not cause interference;
This device must accept any interference, including interference that
may cause undesired operation of the device.
FCC RF Radiation Exposure Statement
This equipment complies with FCC radiation exposure limits set forth
for an uncontrolled environment. End users must follow the specific
operating instructions for satisfying RF exposure compliance. This
transmitter must not be co-located or operated in conjuction with any
other antenna or transmitter.

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

Per FCC 15.21, you are cautioned that changes or modifications not expressly
approved by the part responsible for compliance could void the user's authority
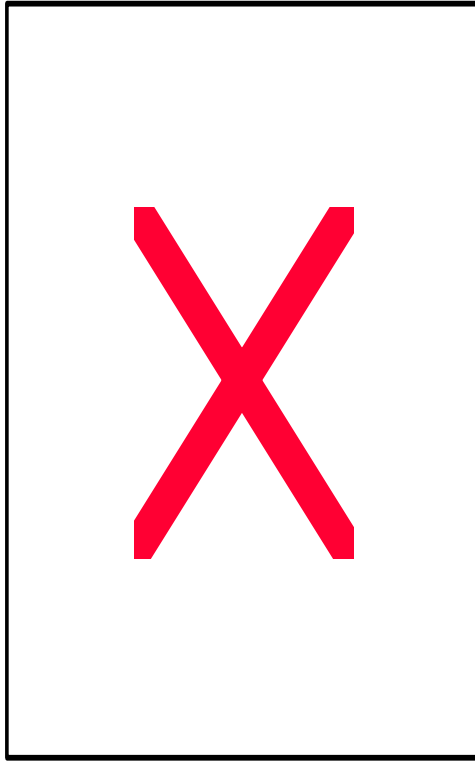to operate the equipment.

24

Dimensions

Figure 11: PDC Dimensions