Pocket-Sized Personal Data Collector

User's Manual

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General Information

1.1. Introduction

Congratulations on your purchase of the Bluetooth Personal Data Collector (PDC) with LCD display. Along with superior portability and visually safe scanning Engine of, the PDC features a real-time clock, a buzzer, a dual-color status LED, also an UART port with optional Bluetooth or various communication cable for connection to external equipment.

The on-board 64K EEPROM provides a robust, stable memory space dedicated to storing scanned data. The PDC can retain more than 2000 records construct by an UPC code with timestamp.

The Personal Data Collector comes with a built-in basic data collection firmware, 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 Bluetooth or RS-232 / USB cable.

WinTaskGen, a software program on the ZEBEX website, can be used to create customized programs (Tasks) for download and use with the PDC. A Task can have up to four operation procedures to manage four data forms each with 16 separate data fields.

For more advanced requirements, there are available libraries for developing programs under the GCC environment. Contact your agent if you are interested in this approach.

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1.2. Unpacking

The PDC package should contain:

- 1 ea. Pocket-Sized Personal Data Collector

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

(For data upload and download)

- 3 ea. AAA NiMH rechargeable batteries

- 1 ea Power Adapter

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

Optional Accessory

- Bluetooth USB Dongle

- USB-232 or USB-HID cable

(To transfer data from PDC to a PC)

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1.3. Device Outline

LCD

Up Key

LED

Down

Function

Scan

UART port

Figure 1: Pocket-Sized Personal Data Collector

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1.4. 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 Personal Data Collector and new NiMH batteries for the first time you should charge them fully at least 6 hours. Please note that new NiMH batteries need to go through three to five charge-dis-charge cycles before they reach peak performance and capacity. For the first few 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. At the first time using Personal Data Collector after NiMH

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batteries already loaded, please press and hold both v and ^ keys for 30 sec. to turn on the PDC

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

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1.5. Bluetooth® Communication (Optional)

The PDC supports to connect with a Bluetooth® radio device via Serial Protocol Profile (SPP). It works like virtual serial cable once connection pair between two devices is established.

Please make sure the Bluetooth® function is finely equipped on the host device, as well as an application program is installed. If an optional Bluetooth USB dongle is purchased, please refer to a separate product manual on website for IVT software instruction. For further enquiries, please contact your dealer.

1.5.1. Connection Mode:

Before establish a Bluetooth® connection between two devices, it is necessary to define which device to be the "Master" during the communication. The "Master" device holds the initiative to connect or disconnect the "Slave" device. The "Slave" device waits for the command from "Master" when it's power on.

1.5.2. Bluetooth Device Address:

Each Bluetooth® device has a unique hex number with 12 digits to identify itself during communication, as so called Bluetooth Device (BD) address. It is essential to set up a target BD address before making a pairing of SPP connection.

1.5.3. Personal Identify Number code:

A Personal Identify Number (PIN) code is used as a validation password.

1.5.4. Pairing PDC as SPP Master:

When a pairing process is initiated by PDC, PDC is known as SPP

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Master. PDC has to know the BD address of a target device as well as sets a PIN code. PDC will send out the paring request to the target device. The target device has to reply by the correct PIN code set by PDC in order to establish a successful pairing connection.

The PDC will show a successful pairing status after receiving positive response from the target device, or a failed connection with negative response. Otherwise, a timeout status will be shown as if PDC has been waiting too long.

1.5.5. Pairing PDC as SPP Slave:

When PDC is powered on and Bluetooth® is activated, PDC is ready for pairing process as a SPP Slave device. A PIN code has to be set in PDC. At pairing process, the host device shall enter the right PIN code to make a successful pairing.

1.5.6. Connect/disconnect with target devices:

The Master device decides to connect/disconnect with target devices.

1.5.7. Reliable RF communication:

During transmission, each data is featured with protocol coding. Transmission response would be made once data is received, ACK or NAK. ACK indicates "acknowledged", data is received and decoded. NAK is meant "non-acknowledged" data is received but cannot be recognized. Also use a STX/ETX packed and/or data checksum is helped for verify if data is valid at receive host.
Data Format of packet

To send a data (record) to the remote application, the data is

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encapsulated as below format if the item is set to enable:

STX	SEQ	Data	Terminator	CKS	ETX
1 Byte	1 Byte	Varies	1 or 2 Byte	1 Byte	1 Byte

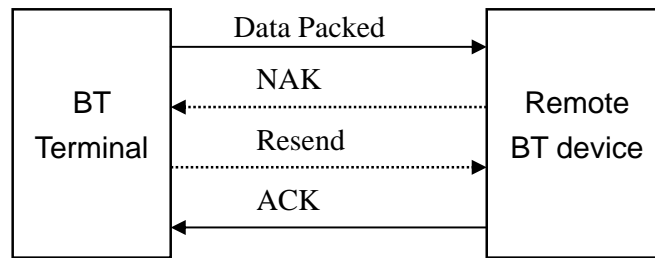| Title	Definition
STX	Start of packed data 02H
SEQ	Sequential number of packed, Use 020H to 07FH
DATA	Record data
Terminator	Data terminator
CKS	Checksum, Use 020H to 07FH
ETX	End of packed data 03H

1.5.8. Packed Example:

If record data is "ABCD" with STX/ETX, SEQ and CKS enable, assume SEQ is '0' (030H) the send out data is format as:

02H + 030H + "ABCD "+ 03AH + 03H

Checksum is calculated by add all data byte in the packed except STX and ETX. If the result is over 07FH (ASCII extend) subtract result by 080H, if the result is less than 020H (ASCII control code) add result by 020H. This will let the checksum keep in ASCII visible character.

030H + 041H (A) + 042H (B) + 043H (C) + 044H (D) = 013AH

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ACK/NAK control:

```
┌──────────┐    Data Packed    ┌──────────┐
│          │ ────────────────▶ │          │
│          │       NAK         │          │
│    BT    │ ◀ · · · · · · · · │  Remote  │
│ Terminal │      Resend       │ BT device│
│          │ · · · · · · · · ▶ │          │
│          │       ACK         │          │
│          │ ◀──────────────── │          │
└──────────┘                   └──────────┘
```

1.5.9. Connection lost:

As time has exceeded the set waiting time for a response, it would be the case of TIMEOUT. On the screen, it will show "Connection lost".

For full instruction of Bluetooth® setting operation, please refer to Device Setup, Communication.

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1.6.Use Bluetooth® Dongle

If an optional Bluetooth USB dongle is purchased with PDC, find the IVT BlueSoleil software on Zebex Website with the dongle. Or visit the website of IVT company to download trial version.

1.6.1. Software installation:

Execute the setup.exe file and follow the instructions of software. Plug the dongle into USB port, the dongle should detect by system and Bluetooth icon will became blue.

1.6.2. Bluetooth Device Address:

Double click the Bluetooth icon to open BlueSoleil main window. Hover mouse on red ball to display the local Bluetooth device's name and address.



```
My Device
Name: 2521-EUJENEW2K
Address: 00:11:B1:07:A8:70
```
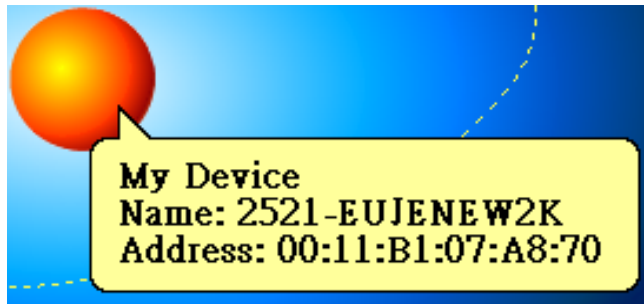
1.6.3. Pairing with SPP Master PDC:

Set dongle address with PIN code to PDC then start pairing. (Refer to the description "**PDC as Master**" of "**Communication**" of "**device Setup**" section of this manual.) While pairing a Bluetooth passkey window will pop out. Type the PIN code as passkey to enable remote connection pair. See below picture.

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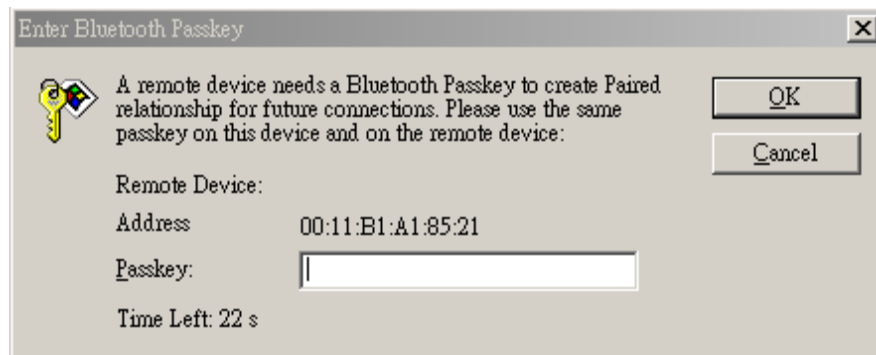
A Bluetooth service Authorization window will pop out. Set always allow the device access to enable and click "Yes".
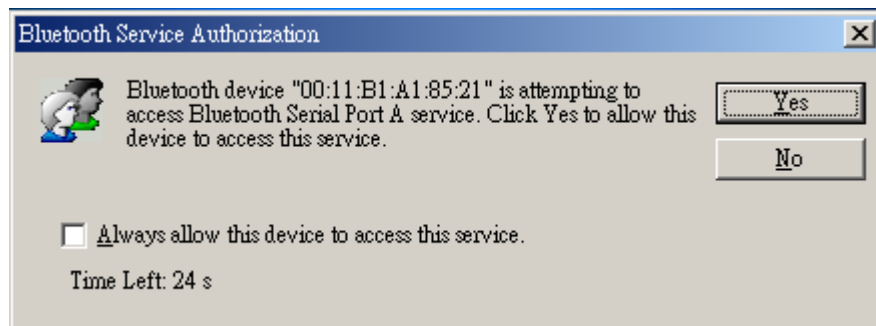
After pairing the PDC try to connect to PC. The connect massage appear at right corner to indicate COM port number to connect. Set the COMM port number to the software you used.
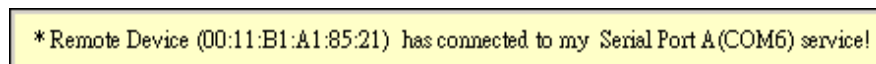
The PDC can start communication with PC by "WinTaskGen" software or "Upload" mode. Please refer to section "**Use Windows Task Generator**" and "**Upload Data**"

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1.6.4. Pairing and connect to a SPP Slave PDC:

To pairing and connect a SPP slave PDC, the slave mode and PIN code must set before operation. Power on the PDC and press **FN** to show "Remote Screen", follow by press **^** to start connect. The PDC is waiting for master dongle operation.

Single-click red ball in main window of BlueSoleil. PC start inquiry devices within radio range. All found devices icon will appear in main window.

Right click the PDC icon to enable device service list, select "Pair Device" to start pairing operation.
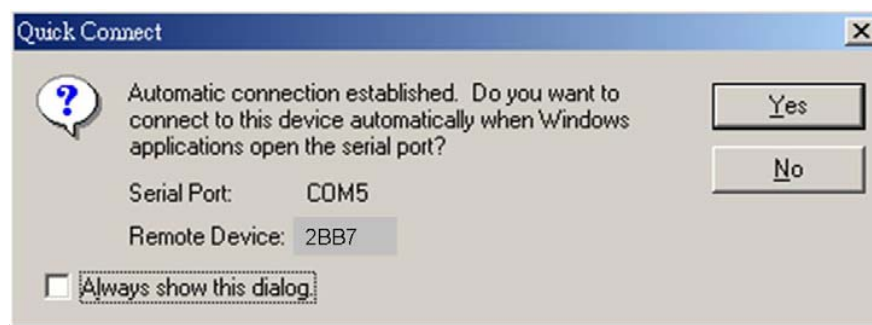

Bluetooth passkey window will pop out. Type the PIN code as passkey to finish pair. Same as picture at page 10.

Right click PDC icon and select connect to "Bluetooth Serial Port Service.

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A "Quick Connect" window pop out after success connect.

Use PC software to connect with PDC, set the COMM port show in "Quick Connect" window. Right click device icon and select "status" can find connected COM port number too.

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Getting Start

2.1. Installing and charging battery

Battery Cover Lock

Figure 2: Inserting Batteries

Press the battery cover lock to remove the cover.

Insert batteries according to the orientation in the picture

Replace the cover and lock it back.

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 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, connect PDC with the Communication Cable.

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2. Plug the Power Adapter connector into the socket on the side of the large end connector of the Communication Cable.

3. 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.
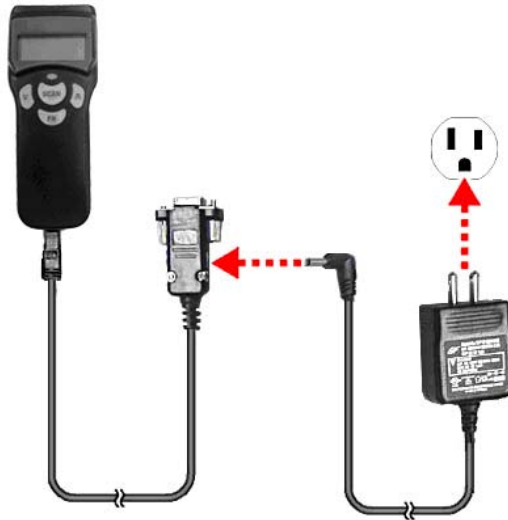

Figure 3: Connecting the Power Adapter

It is normal that the Power Adapter and the NiMH battery cells 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 other types of batteries inside the PDC unit!

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2.2. Power on device to collect data

The Personal Data Collector is pre-programmed 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.

2.2.1. Power on device

Press and hold the **v** and **^** keys together to turn on the Personal Data Collector, then the screen will direct jump to Power-on scan screen.

Figure 4: Power-on Scan Screen

Press the **FN** key to Remote Screen.

Figure 5: Remote Screen

Then, press **SCAN** to the Main Menu.

Figure 6: Main Menu

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2.2.2. Menu operation

The menu items show on LCD and a reverse item indicates current selection. Use **^** and **v** keys to change the item selection and confirm by pressing **SCAN** key.

Menu tree list

1. Run Task

2. Delete Data

3. Setup

    1. LCD Contrast

    2. Beep Volume

    3. System Clock

    4. Barcode Set

    5. Communication

    6. Auto Power Off

4. Upload Data

Select the **Run Task** under Main Menu. The LCD shows <Rec>, for record number, and is ready to scan and collect data.
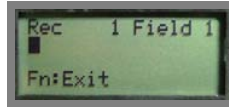

Figure 7: FREETASK screen
Without downloading TASK from PC, display show as above
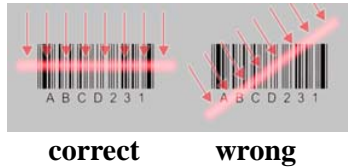
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2.3. Scan barcode

Select **1.Run Task** under Main menu

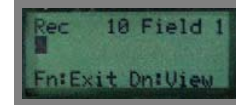Enter into data input mode.
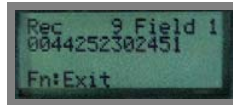
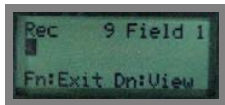Press **SCAN** key to scan barcode.

Hold PDC to point at the targeted barcode. Sweep the red light vertically across the barcode

correct   **wrong**

If decode success, a short beep emit *, LED flashes green

Hold **SCAN** key will keep scanned data display on LCD

Release to revert to "input mode" ready for the next scan

* Only if Beep Volume is activated. Please refer to Device Setup,

Beep Volume.

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2.4. Key in data

When requiring to key in data manually, there are two modes of data entry.

<u>Mode One</u>:

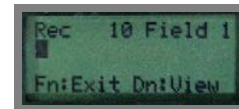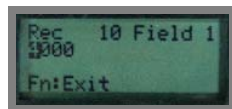| Press **^** key once start edit numeric	Cursor digit add by one each **^** key	Press **v** to move cursor right 1 digit

Rec 10 Field 1 ▮ Fn:Exit	Rec 10 Field 1 ▮ Fn:Exit	Rec 10 Field 1 4000▮ Fn:Exit

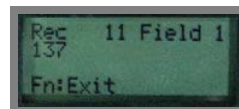| Empty digit cause cursor back to start	Press **Scan** key to confirm input data	Press **FN** to give up and back to "input"

Rec 10 Field 1 4000 Fn:Exit	Rec 10 Field 1 4000 Fn:Exit	Rec 10 Field 1 ▮ Fn:Exit Dn:View

<u>Mode Two</u>:

Press and hold **^** key to run numbers	Release to stop	Press **^** keys to increase data

Rec 11 Field 1 137 Fn:Exit	Rec 11 Field 1 137 Fn:Exit	Rec 11 Field 1 143 Fn:Exit

Press **v** keys to decrease data	Press **Scan** key to confirm input data	Press **FN** to go mode one

Rec 11 Field 1 137 Fn:Exit	Rec 11 Field 1 137 Fn:Exit	Rec 11 Field 1 137 Fn:Exit

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Data storage

The PDC can retain more than 2,000 records. To review stored data, press the ^ key.

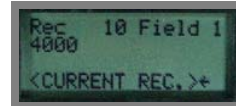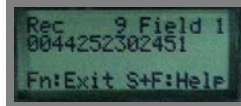To end review of stored data, press the **FN** key.

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

To view scanned data:

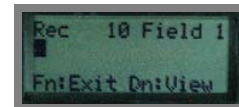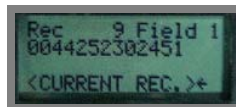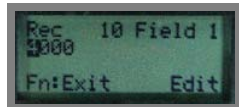| Press **v** key in input mode to start view	Use **^** key move to previous record	Use **v** keys move to next record

Rec 10 Field 1 4000 <CURRENT REC.>←	Rec 9 Field 1 0044252302451 Fn:Exit S+F:Help	Rec 10 Field 1 4000 <CURRENT REC.>←

Use **Scan + ^** key edit field data, **FN** to exit	Use **Scan + v** key for 2 seconds to delete record data	Press **FN** key to exit to input mode Record 10 deleted

Rec 10 Field 1 4000 Fn:Exit Edit	Rec 9 Field 1 0044252302451 <CURRENT REC.>←	Rec 10 Field 1 ■ Fn:Exit Dn:View

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2.5. Upload Data

There are three kinds of interface to upload data, Bluetooth®, RS-232 and HID. Once a communication device is set up (please refer to Device Setup, Communication), PDC will automatically detect its readiness before starting uploading data.

Figure 8: Upload Data

2.6. Upload data with Windows Software

You can also upload data by specified PC software, please refer to section Use WinTaskGen.

2.7. Delete Data

Use **v** and **^** keys to commend "Y" (yes) or "N" (no) to delete data. Follow by **SCAN** key to confirm.

Figure 9**: Delete Data**

2.8. Power off device

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

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Device Setup

Select **3.Setup** under Main Menu to enter Setup sub-menu.

3.1. LCD Contrast

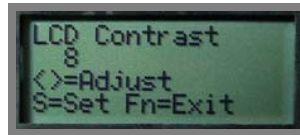Use **v** and **^** keys to adjust LCD contrast from 1 to 22. Follow by **SCAN** to confirm.

Figure 10: LCD Contrast

3.2. Beep Volume

Use **v** and **^** keys to select Volume from Low, Medium, Loud and Quiet. Follow by **SCAN** to confirm.
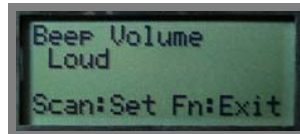

Figure 11: Beep Volume

3.3. System Clock

Set Date   **Set Time**

Use **^ and v** key

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3.4. Barcode Setup

Use **SCAN** key to confirm setting and to go through different types of barcode, EAN/UPC, Code 39, Codabar, ITF 25, Code 128, Code 93, RSS14, RSS14 Expanded, RSS14 Limited. Press **v** and **^** keys to select On/Off.
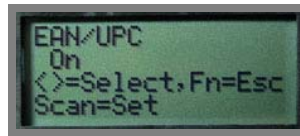

Figure 12: Barcode Setup

3.5. Communication

3.5.1.Select communication device

There are three kinds of interface for communication, Bluetooth®, RS-232 and HID. The Bluetooth® include master and slave mode SPP profile is simulate a wired RS232 interface, the USB-HID is same as USB keyboard can easy adapt to any host computer like a standard keyboard.

3.5.2.RF Device – PDC as Master

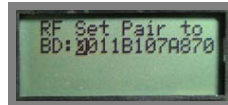Select **RF Device**   Select **1. Master Mode**   Previously paired BD is shown.

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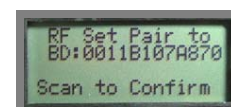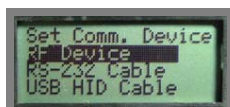
Modify existing BD:

Press **^** key to modify BD at Edit mode.	**^**: Hexadecimal character **v**: move cursor **FN**: undo all **SCAN**: confirm	Press **SCAN** to confirm again, or **v**, **^** or **FN** to edit mode.

RF Set Pair to
BD:0011B107A870
Up:Edit DN:Clr
SC:Scan FN:Exit

RF Set Pair to
BD:0011B107A870

RF Set Pair to
BD:0011B107A870

Scan to Confirm

Enter new BD:

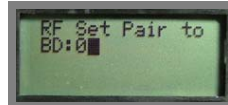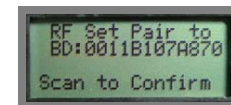|		
Press **v** key to clear existing BD at Edit mode.	**^**: Hexadecimal **v**: move cursor **FN**: undo all **SCAN**: confirm	Press **SCAN** to confirm again, or **v**, **^** or **FN** to edit mode.

RF Set Pair to
BD:0011B107A870
Up:Edit DN:Clr
SC:Scan FN:Exit

RF Set Pair to
BD:0■

RF Set Pair to
BD:0011B107A870

Scan to Confirm

SCAN new BD:

Press **SCAN** key to enter scanning mode	Point at a targeted barcode and press **SCAN**	Press **SCAN** to confirm

RF Set Pair to
BD:0011B107A870
Up:Edit DN:Clr
SC:Scan FN:Exit

ABCD231

RF Set Pair to
BD:0011B107A870

Scan to Confirm

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<u>Set PIN code</u>:

Previously paired PIN is shown. Press **v**, **^** or **FN** and enter to edit mode.

Same as setting BD. **^** key to modify existing PIN. **v** key to clear existing PIN. **SCAN** key for scanning a new PIN. Follow by **SCAN** to confirm.
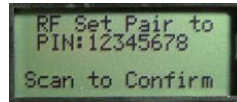
<u>Pairing to slave device</u>:

BD and PIN are shown. Press **SCAN** to confirm.

Press **SCAN** to start pairing or **FN** to exit.

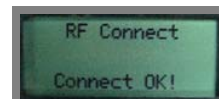Starting pairing to slave device
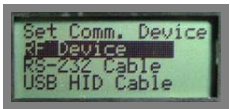

Pairing fail

Pairing Success Try connect

Connect to slave Success

After success pairing to slave device and establish connection once, the PDC finish pair operation. The left communication parameter is same as RS-232 setting.
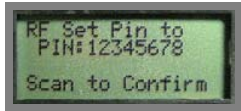
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3.5.3. RF Device – PDC as Slave

Select **RF Device**	Select **2. Slave Mode**	Previously PIN is shown.

The left communication parameter is same as RS-232 setting.
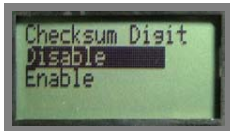
3.5.4. RS-232 Cable

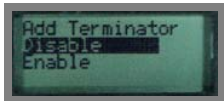| Select **RS-232 Cable**	Disable/Enable **Sequential Num.** Press **SCAN** to select	Disable/Enable **Checksum Digit**. Press **SCAN** to select
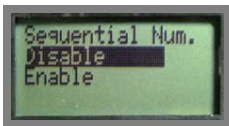
Disable/Enable **STX/ETX Packet**. Press **SCAN** to select	If enable STX/ETX you will asked set **Add Terminator**.	Select **Data Terminator**. Press **SCAN** to confirm

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Disable/Enable **Xon/Xoff Control**. Press **SCAN** to select

Dis/Enable **Host ACK/NAK**. Press **SCAN** to select

Set **Host Response** time. Press **SCAN** to select

Dis/Enable **Online Send Rec.** Press **SCAN** to select

Disable/Enable **Offline Operate.** Press **SCAN** to select
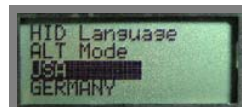

3.5.5. USB HID Cable

Select **USB HID Cable**

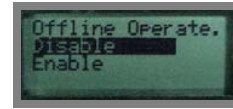Set **HID Language**. Press **SCAN** to select

Set **Delay Setup**.
^: numbers and letters
v: move cursor
FN: undo
SCAN: confirm

Set **Data Terminator**. Press **SCAN** to select

Disable/Enable **Online Send Rec.** Press **SCAN** to select

Disable/Enable **Offline Operate.** Press **SCAN** to select

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3.6. Auto Power off

Use **v** and **^** keys to select the wait time of Auto Power off. Select to the setting of 1, 3, 5, 10, 30 minutes or Disable. Follow by **SCAN** key to confirm.

Figure 13: Auto Power Off

3.7. Default Parameter

The default settings will be restored whenever performing "**User reset**" operation, the "**Comm. Device**" parameter will not be changed by reset operation and the parameter tables are different according to different communication devices.

Parameter	Default
Basic parameter	
LCD Contrast	8
Beep Volume	Loud
Auto Power OFF	5 min.
Barcode Set	
EAN/UPC	Enable
CODE 39	Enable

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Codabar	Enable
ITF 25	Enable
Code 128	Enable
Code 93	Enable
MSI Code	Enable
RSS14	Disable
RSS14 Expanded	Disable
RSS14 Limited	Disable
Communication	
RF Device	
Communication Mode	Master
Sequential Num.	Disable
Checksum Digit	Disable
STX/ETX Packet	Disable
Send Terminator	Disable (STX/ETX on only)
Data Terminator	CR/LF
Host ACK/NAK	Enable
Host Response	300 mS (ACK/NAK on only)
Online Send Rec.	Disable
Offline Operate	Disable (Online enable only)
RS-232 Cable	
Sequential Num.	Disable
Checksum Digit	Disable
STX/ETX Packet	Disable
Add Terminator	Disable (STX/ETX on only)

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Data Terminator	CR/LF
Host ACK/NAK	Enable
Host Response	300 mS (ACK/NAK on only)
Online Send Rec.	Disable
Offline Operate	Disable (Online enable only)
USB-HID Cable	
HID Language	USA
Delay Setup	50 mS
Data Terminator	CR
Online Send Rec.	Disable
Offline Operate	Disable (Online enable only)

User Reset

While PDC is powered off, press and hold **SCAN** key for more than 1.5 Sec. As soon as the green LED Lit-up, press **FN** key. Then, the user reset screen will appear. Press **SCAN** key to confirm reset.

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Federal Communication Commission (FCC) Statement

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.

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: 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 conjunction with any other antenna or transmitter.