About This Manual

This manual explains how to install, operate and maintain the PWS-430 Handheld Device. No part of this publication may be reproduced or used in any form, or by any electrical or mechanical means, without permission in writing from the manufacturer. This includes electronic or mechanical means, such as photocopying, recording, or information storage and retrieval systems. The material in this manual is subject to change without notice.

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Bluetooth is a registered trademark of Bluetooth SIG. Microsoft, Windows and ActiveSync are either registered trademarks or trademarks of Microsoft Corporation. Other product names mentioned in this manual may be trademarks or registered trademarks of their respective companies and are hereby acknowledged.

Regulatory Compliance Statements

Federal Communications Commission (FCC) Statement

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.

▶ RF Exposure Information

This device meets the government's requirements for exposure to radio waves.

This device is designed and manufactured not to exceed the emission limits for exposure to radio frequency (RF) energy set by the Federal Communications Commission of the U.S. Government.

●This device complies with FCC radiation exposure limits set forth for an uncontrolled environment.

FCC Radio Frequency Interference Statement

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. 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 and correct the interference by one or more of the following measures: • Reorient or relocate the receiving antenna. • Increase the distance between the equipment and the receiver. • Connect the equipment to 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.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Europe-European Union Notice

Radio products with the CE alert marking comply with the R&TTE Directive (1999/5/EC) issued by the Commission of the European Community. Compliance with this directive implies conformity to the following European Norms (in brackets are the equivalent international standards).
   • EN 60950-1 (IEC60950-1) - Product Safety
   • EN 300 328 Technical requirement for radio equipment
   • ETS 301 489 General EMC requirements for radio equipment.
Products that contain the radio transmitter are labeled with CE alert marking and may also carry the CE logo.

Safety

Use the following safety guidelines to help protect yourself and the PWS-430.
   • Do not attempt to service the PWS-430 yourself. Always follow installation instructions closely.
   • Be sure that nothing rests on the AC adapter's power cable and that the cable is not located where it can be tripped over or stepped on.
   • Do not cover the AC adapter with papers or other items that will reduce cooling; also, do not use the AC adapter while it is inside a carrying case.
   • Use only the AC adapter, power cord, and batteries that are approved for use with this PWS-430. Use of another type of battery or AC adapter may cause risk of fire or explosion.
   • If you use an extension cable with the AC adapter, ensure that the total ampere rating of the products plugged in to the extension cable does not exceed the ampere rating of the extension cable.
   • When you move the PWS-430 between environments with very different temperature

and/or humidity ranges, condensation may form on or within the PWS-430. To avoid damaging the PWS-430, allow sufficient time for the moisture to evaporate before using the PWS-430.

• When you disconnect a cable, pull on its connector or on its strain relief loop, not on the cable itself. As you pull out the connector, keep it evenly aligned to avoid bending any connector pins. Also, before you connect a cable make sure both connectors are correctly oriented and aligned.

Battery Safety

• There is a risk of explosion if the battery is replaced by an incorrect type.

• Dispose of used batteries according to the instructions.

• Do not dispose of batteries in a fire. They may explode. Check with local authorities for disposal instructions.

Notices

This unit is equipped with a battery pack and backup battery. It is possible that the PWS-430 may not power-on due to battery discharge as a result of storage.

In the above situation, insert the PWS-430 into the cradle and connect the AC adapter to the cradle. Recharge the unit for 3 hours in order to fully charge its battery.

The backup battery will recharge from external power when the AC adapter is connected.

Battery charge notice

It is important to consider the environment temperature whenever you are charging the Lithium-Ion battery pack. The process is most efficient at normal room temperature or slightly cooler. It is essential that you charge batteries within the stated range of 0°C to 50°C. Charging batteries outside of the specified range could damage the batteries and shorten their charging life cycle.

Storage and safety notice

Although charged Lithium-Ion batteries may be left unused for several months, their capacity may be depleted due to build up of internal resistance. If this happens they will require recharging prior to use. Lithium-Ion batteries may be stored at temperatures between-20°C to 50°C, however they may be depleted more rapidly at the high end of this range. It is recommended to store batteries within normal room temperature ranges.

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Chapter 1

Introducing the PWS-430

Thank you for purchasing the PWS-430 Handheld Device.

The PWS-430 is an ultra rugged and compact handheld computer with a powerful Marvell PXA310 806MHz CPU and Microsoft Windows CE 6.0, this handy terminal creates the most performance and reliability to save your TCO (Total Cost of Ownership). The PWS-430 incorporates a transflective LCD with touch screen, keypad, Wi-Fi, and Bluetooth communication capability. Options provide extra functions and those options are GPS, Barcode. To reduce TCO and enhance industrial applications, the PWS-430 is sealed to meet IP65 standards and has undergone multiple 5 feet drop tests to prevent downtime.

Features

With powerful wireless communication and data capture functionality, the PWS-430 is a smart configurable handheld terminal with applications in several target markets including:

- Government & Law Enforcement
- Transportation & Logistics
- Retail & Warehousing
- Industrial & Manufacturing
- Emergency services and construction
- Health care

The PWS-430 comes with the following features:

Powerful system
- Microsoft Windows CE 6.0 operating system
- Marvell PXA310 at 806MHz

System memory
- 256MB DDR RAM on board
- 1GB Flash ROM on board

Display
- 3.5-inch transflective TFT LCD, QVGA resolution (320 X 240)

Communication
- 802.11b/g WLAN module built-in
- Bluetooth class 2, V1.2 built-in
- GPS

Data capture
- BARCODE

Audio
- AC-97 codec
- Internal speaker x2

• Internal microphone

Expansion slot

• Micro SD

Battery life

• Normal usage: 8 hours continuous use

• Charging time: 3 hours

User-friendly interface

• Resistive touch panel

• Power on/suspend button x1

• QWERTY keys + Numeric keys

• Barcode scan button (right side)

• Volume control buttons

• LCD light switch button

Package Contents

After opening the box, ensure the following accessories for the PWS-430 are present:

• PWS-430 device

• Stylus

• Rechargeable Li-ion battery

• AC adapter and power cord

• External power charger and USB convertor cable

A Tour of the PWS-430

The following sections describe the main components and features of the PWS-430.

Front View

Component	Description
Power button	• If the device is off, press this button to turn it on. • When the unit is on, press this button for 3 seconds to turn the PWS-430 off.
LCD Touch Screen	Displays the applications and data stored on your device. It is touch-sensitive and responds to the stylus or finger.
QWERTY keys	Keypad interface for controlling the PWS-430. See *Keypads and Function Buttons* on page ? for more information.
Power LED	Indicates the battery charging power status. **Green** - Battery is fully charged or the device is running on battery power. When LED flashes, the battery charge is at 13%. Recharge the battery immediately. **Amber** - Battery is charging.

Right View

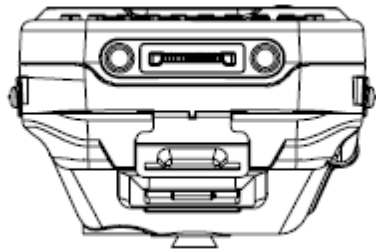| Component	Description
Barcode scan button	Press to activate the barcode scanner.
LCD light switch button	Press to turn on/off the LCD light.

Left View

Component	Description
Volume control button	Press to turn up/down the volume.

Back View

Component	Description
Stylus	Enables you to interact with the operating system. Remove the stylus from the holder and hold and use it the same way you would a pen or pencil.
5 Mega Pixel Camera	Displays
LED	
Speaker	Enables you to hear audio from the PWS-430.
Battery pack compartment	Houses the removable and rechargeable battery pack. See *Installing the Battery* on page ?.
Internal card slots	Accommodates Micro SD memory card. See *Inserting a Micro SD Memory Card* on page ?.

Bottom View

Component	Description
Cradle connector	Connects the PWS-430 to the cradle, enabling you to charge the battery, connects the PWS-430 to a computer to synchronize data, and connects USB devices.

Getting Started

This chapter explains how to install and charge the battery, how to check battery status, how to turn on the PWS-430, and how to calibrate the screen.

Connecting the PWS-430

Installing the Battery

This section explains how to install the battery.

WARNING! There is a risk of fire and burns if the battery pack is handled improperly. DO NOT disassemble, crush, puncture, short external contacts, or dispose the battery pack in fire or water. DO NOT attempt to open or service the battery pack. Dispose of used batteries according to local recycling guidelines in your area.

A backup battery cell is embedded into your device to prevent data loss in instances when the removable battery pack is removed or completely discharged. This backup battery cell will only

support the system for a maximum of 3 minutes.

1. Remove the stylus from the holder.

2. Push the latch to remove the battery compartment cover from the chassis.

3. Align the battery contacts with the contacts in the compartment and place the battery in the compartment as shown in the following illustration.

4. Replace the battery compartment cover.

Charging the Battery

Before using the PWS-430 for the first time, you need to charge it for about 3 hours. Charge the PWS-430 using the charger or the docking station.

   NOTE: When the battery power is below 10%, the PWS-430 will enter suspend mode.

Charging the Battery with the External Battery Charger

1. Plug the external battery charger clip into the connector at the bottom.

2. Plug the AC adapter cable into the other end of the external battery charger.

3. Plug the power cable connector into the AC adapter.

4. Plug the AC adapter into an electrical outlet.

The charging LED (right) on the PWS-430 flashes.

LED Status

LED	Status	Meaning
Right	Off	Power Off.
	Solid Green	Power On

	Blinking Green	Battery very low (<13%)
	Blinking Amber	Charging
	Solid Amber	Charging complete.
Left	TBD	For Customization

Connecting the PWS-430 to a PC

Use the USB convertor cable to connect the PWS-430 to a PC with Active-Sync utility.

Refer to See *Installing Microsoft ActiveSync* on page ?.

Turning on for the First Time

After you have initially charged your device for about 3 hours the device is ready to be used. You can now start up your device where you'll calibrate the display, learn some basic stylus usage, and set up the system time zone, date and time.

Turn on your device by pressing the red power button on the top of the front panel.

Calibrating the PWS-430 Screen

The calibrate screen automatically appears when the unit is powered on for the first time or after the system is reset.

1. Tap the center cross hair firmly and accurately with the stylus. The cross hair moves to the next location.

ess and briefly hold stylus on the center of
epeat as the target moves around the scree
Press the Esc key to cancel.
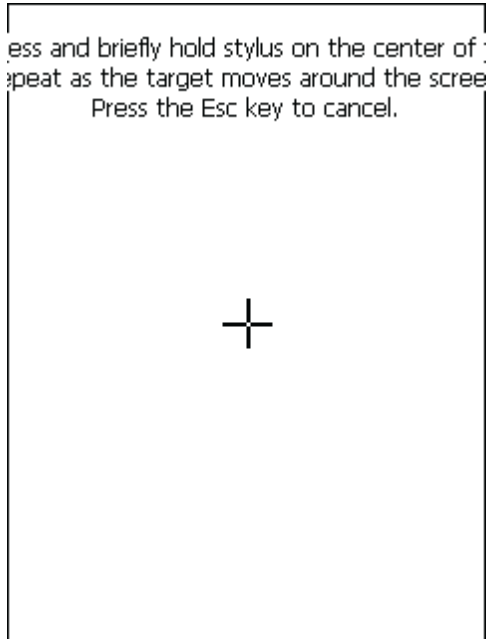
2. Follow the cross hair and continue tapping until the screen has been calibrated.

ess and briefly hold stylus on the center of
epeat as the target moves around the scree
Press the Esc key to cancel.
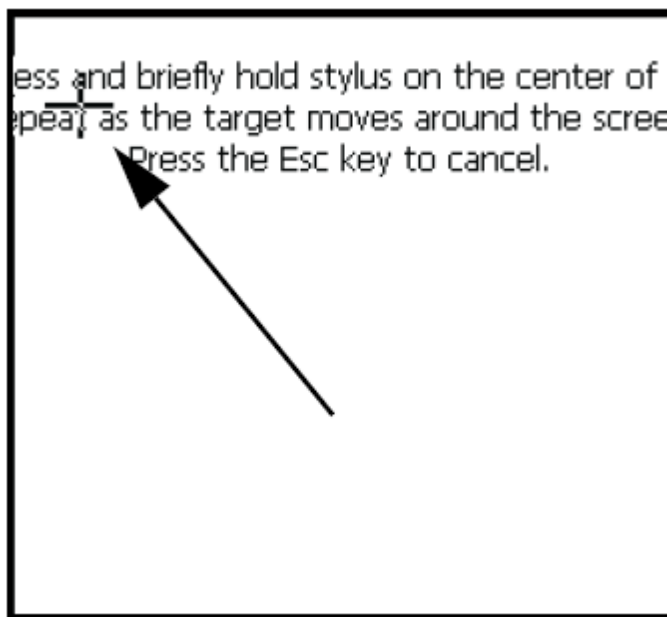
3. After calibration is finished, press the Enter key to save the settings or press Esc to revert to the previous settings.

NOTE: To recalibrate the screen at any time, tap **Start** → **Settings**→ **Control Panel**, then double-tap **Stylus**. Tap the Calibration tab, and tap **Recalibrate**.

Setting the Time and Date

Follow these instructions to set the time and date.

1. Tap **Start→ Settings→ Control Panel**.
2. Double-tap Date/Time.
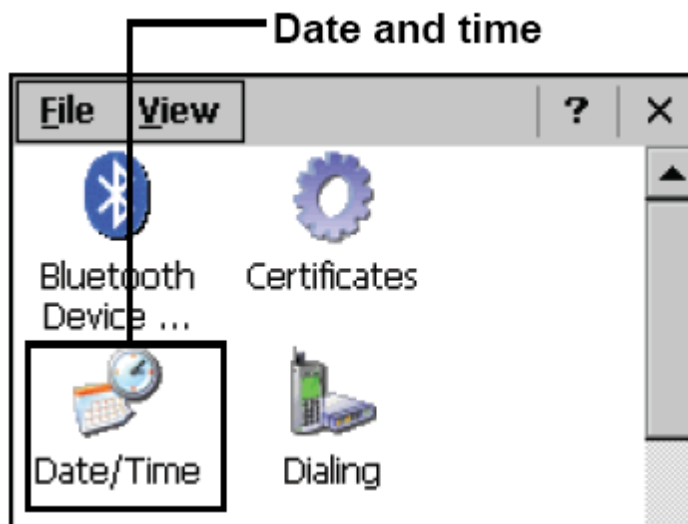
3. Tap the arrows next to the month to select the correct month.

Set month

Set time
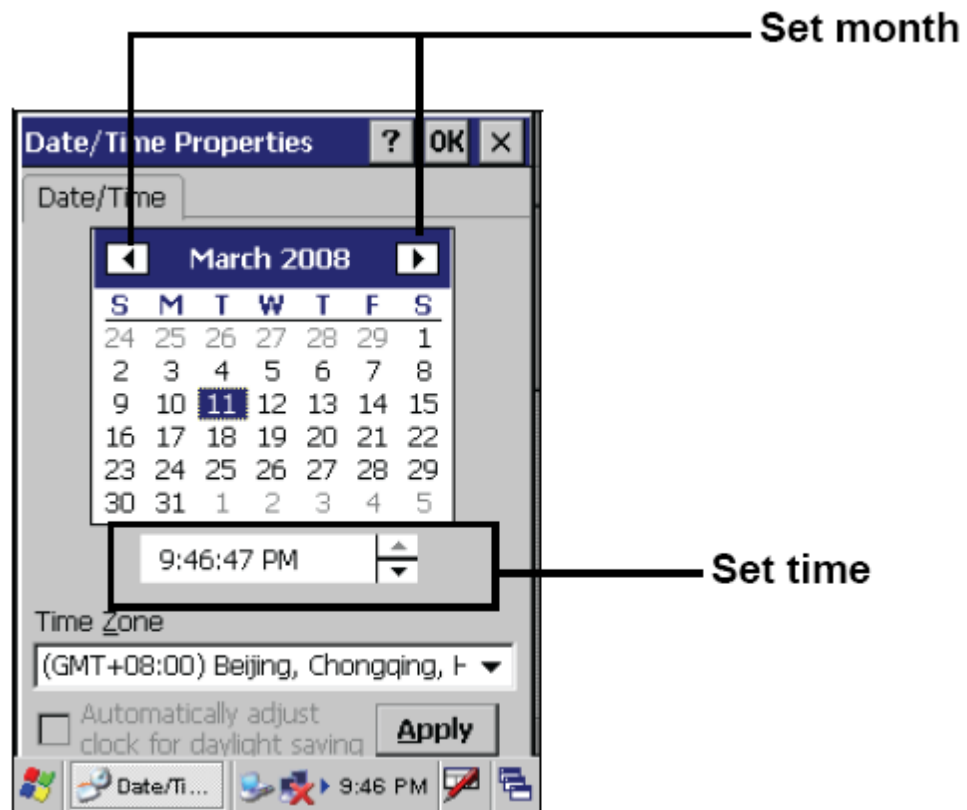
4. Select a field in the time box and tap the arrows next to the time to change the value of the field.

5. Tap the drop-down arrow next to Time Zone to select the correct time zone for your area.

6. Check the box next to **automatically adjust...** to have the OS automatically adjust for daylight saving time.

7. Click **Apply** to save the settings.

Adjusting the Screen Brightness

Follow these instructions to adjust the screen brightness.

1. Tap **Start→ Settings→ Control Panel**.

2. Double-tap **OEMs Utility**.
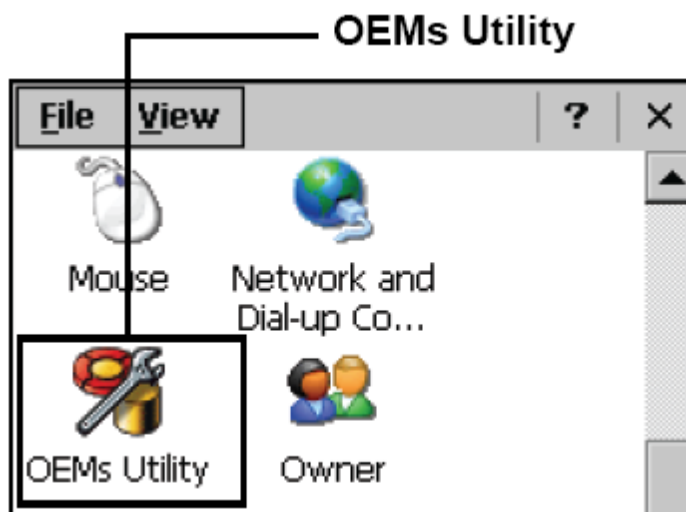
3. Click the **Display Manage**r tab.

4. Under Backlight Control, click the **Dark** arrow to make the screen darker, or click the **Bright** arrow to make the screen brighter.

Drag slider to make the backlight brighter or darker
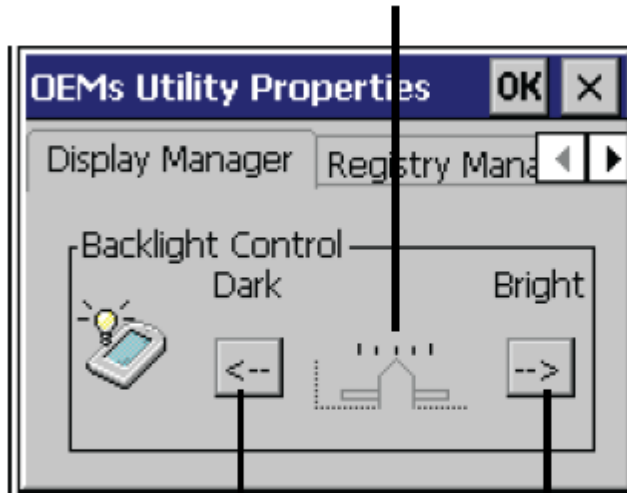
Click to make the backlight darker

Click to make the backlight darker

5. Click **OK** to exit the utility.

Chapter 3

Using the Hardware

Keypads and Function Buttons

The keypad enables you to both enter information and interact with the PWS-430 operating system, and also operate secondary functions using the function keys and Fn key.

The following illustration shows the keypad keys.

Entering Characters with the Keypad

The operating system has an onscreen keyboard that enables you to enter alphanumeric characters with the stylus.

Press the input panel icon in the system tray to view the input panel menu.

Tap **Keyboard** to view the onscreen keyboard.
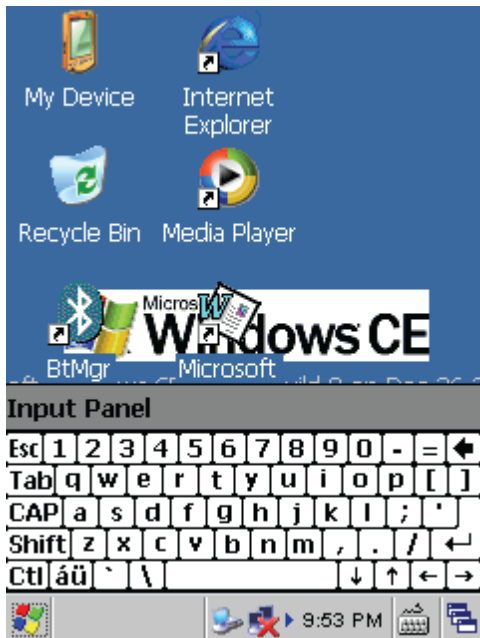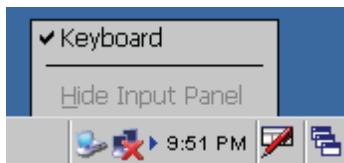
Tap **Hide Input Panel** to close the keyboard. The keyboard emulates a standard computer keyboard. Tap the onscreen keyboard to enter, edit, and delete text.

Using the Stylus

CAUTION! Never use anything other than the PWS-430 stylus on the screen. Using
another object as a stylus could cause permanent damage. You can use your finger to
interact with the screen as well.

1. Remove the stylus from its holder.
2. Hold the stylus as you would a pencil.
3. To make a choice from a menu, lightly tap the tip of the stylus on that choice.

Adjusting the Double-Tap Rate

Set the stylus double-tap rate as follows.

1. Tap **Start → Settings→ Control Panel**.
2. Double-tap **Stylus**.
3. Tap the Double-Tap tab.
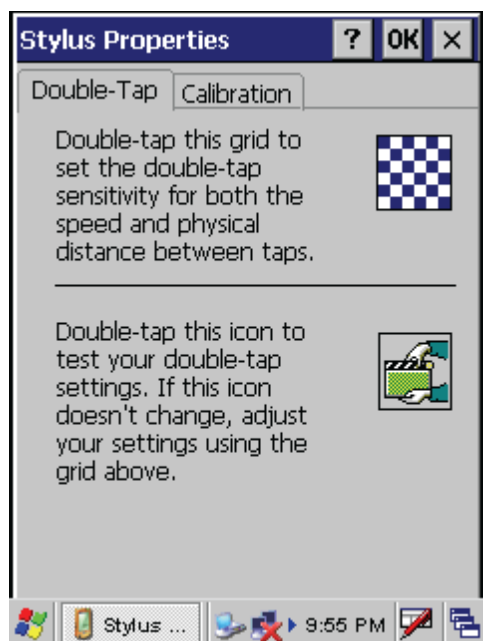
4. Double-tap on the checkerboard graphic to set your double tap rate.

Inserting a Micro SD Memory Card

Your PWS-430 has an expansion slot compatible with a range of Micro SD cards, which are primarily used to back up or transfer files and data. The slot also supports SDIO cards for added connectivity options.

Follow these instructions to insert a SD card into the SD slot.

1. Remove the battery compartment cover and battery. See *Installing the Battery* on page ?.

2. Open the Micro SD slot cover following the indicators on the cover.

3. Insert the Micro SD card as oriented as shown in the following illustration.

4. Replace and lock the cover.

Using the camera

The PWS-430 has camera demo software for basic picture taking function.

1. Before using the camera, please peel off the protective film on the camera lens.

2. Find the "**DDCam**" icon on the desktop, and double click it.
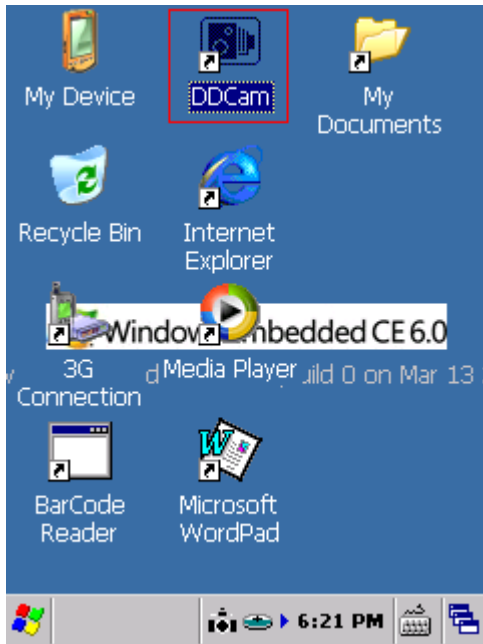
3. A preview window will show up in the middle of the screen. Click "**Still Capture**" on the lower left of the screen, the picture will be stored in directory **:\My Documents\My Pictures**
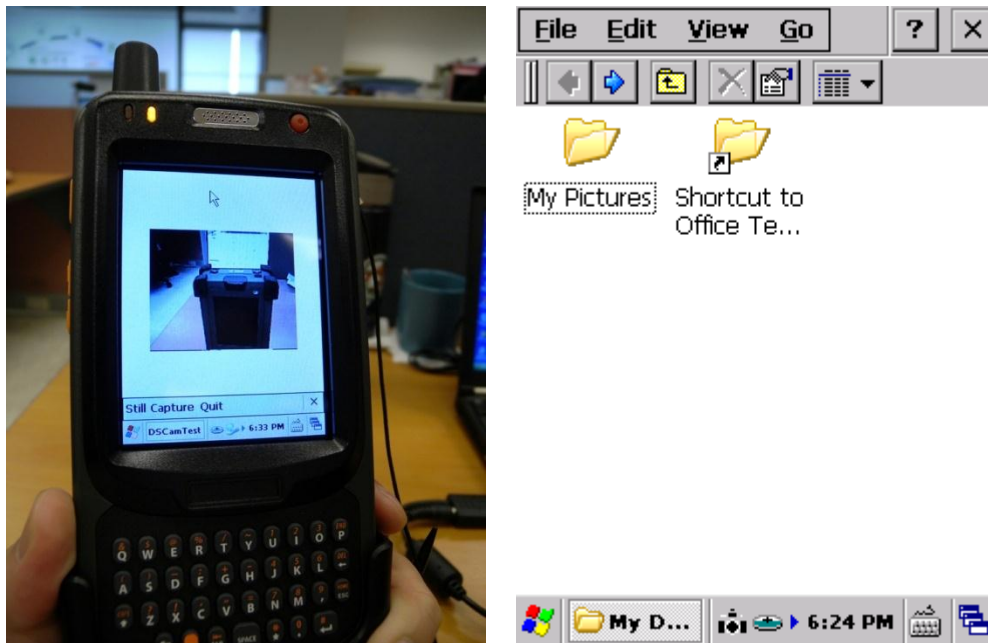
4. Due to the limitation of PWS-430 screen resolution, the picture shown on PWS-430 may not look very clear. You can download the picture to a PC to have a better view.

Installing Microsoft ActiveSync

In order to exchange data between your computer and the PWS-430 and install extra applications or utilities to the PWS-430, Microsoft ActiveSync must be installed on your computer. Connect the PWS-430 to a PC using the USB convertor cable. Download the latest version of Microsoft ActiveSync from the Microsoft website.

NOTE: If you have a previous version of the Microsoft ActiveSync installed in your computer, uninstall it first before installing the latest version of Microsoft ActiveSync.

Connecting to Your Computer

1. After ActiveSync has been installed, connect the USB convertor cable to your PWS-430. Refer to *Connecting the PWS-430 to a PC* on page ?.
2. Plug the other end of the USB cable into a USB port on your computer.
3. Turn the device on.
4. ActiveSync starts automatically and configure the USB port to work with the PWS-430. The New Partnership setup wizard will automatically start.

NOTE: If ActiveSync doesn't start automatically, click **Start → Programs → Microsoft ActiveSync**.

If a message appears indicating that it is unable to detect a connection, click the **Cancel** button and manually configure the communication settings.

5. Follow the onscreen instructions.
6. When the configuration process is complete, the ActiveSync window appears.
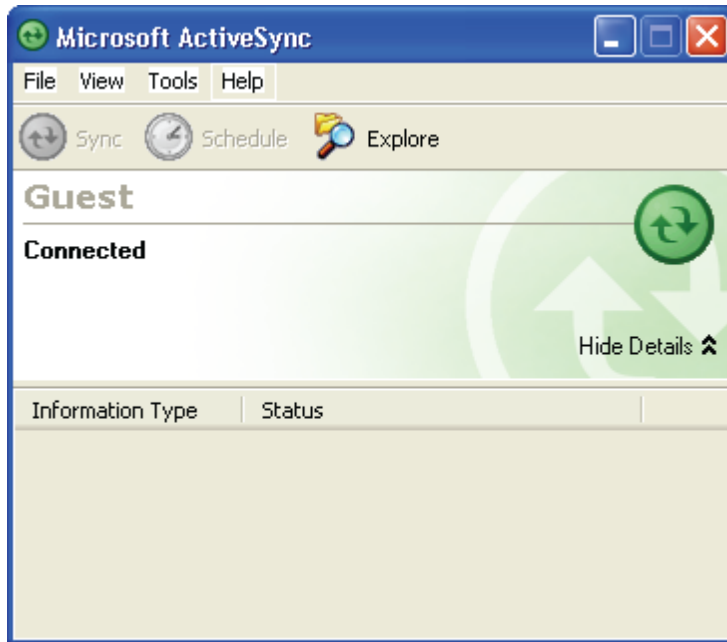
7. Synchronization will be initialized and will take place if you've chosen to synchronize periodically or upon connection.

8. ActiveSync detects the PWS-430 and establishes a connection.

9. Click **No**, and then click **Next**.

Connecting with Bluetooth

Your device is equipped with Bluetooth wireless technology that you can use to synchronize information with a computer equipped with a Bluetooth adapter or access point. Bluetooth wireless technology allows you to communicate with the computer whenever it is within range. Follow these instructions to set up a Bluetooth connection.

1. Tap **Start** → **Programs** → **Power Control** and click **"On"** to enable the BT.
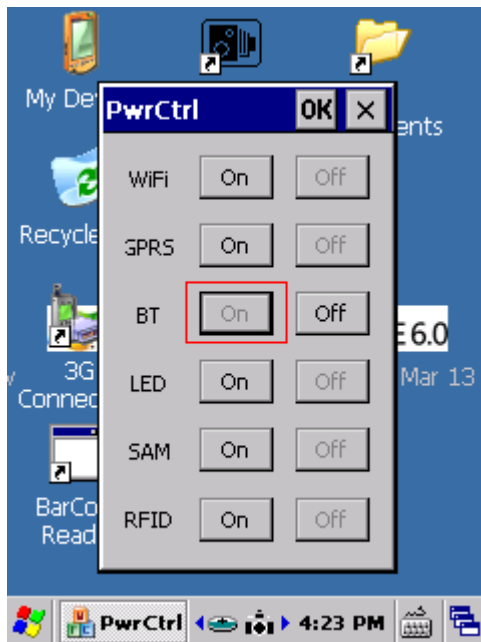
2. Tap **Start** → **Settings** → **Control Panel** and double-tap **Bluetooth Device Properties**.
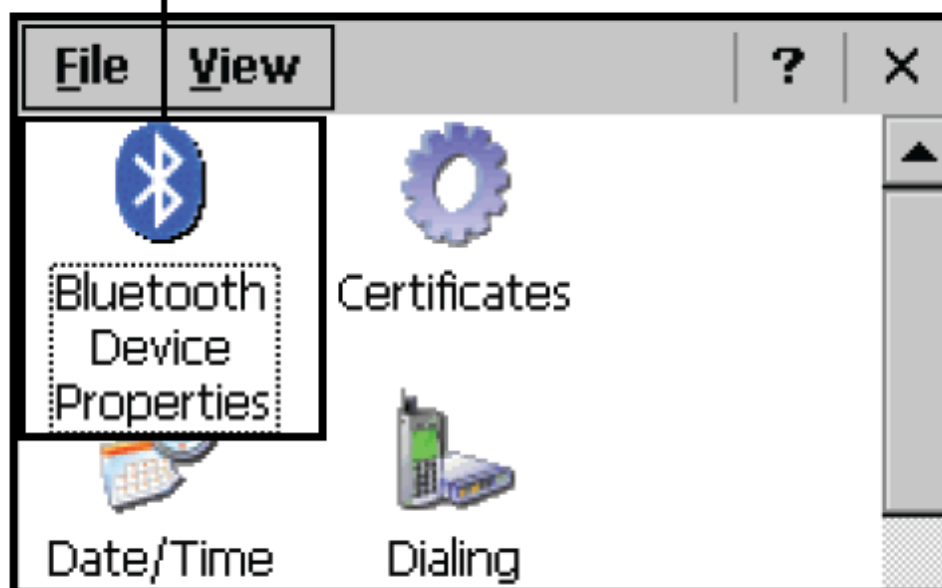
3. Tap **Scan Device**. Bluetooth Manager scans for local Bluetooth devices and displays a list of all Bluetooth enabled devices within range.
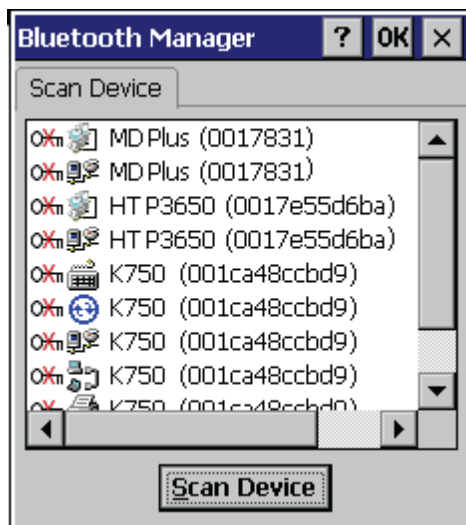
4. Double tap a device in the list to display a context menu.

5. Tap **Trusted** to add the device to the trusted Bluetooth devices list. You are prompted to authenticate the device.

6. Tap **Yes** to authenticate the device. You are prompted for the device's pin code.

NOTE: Authenticating the device ensures that you are only enabling trusted devices to the Bluetooth manager's list. You can mark the device as trusted without authenticating the device by tapping No when prompted to authenticate the device.

7. Enter the pin code and tap **OK** to authenticate the device. Tap **No** to cancel authentication.
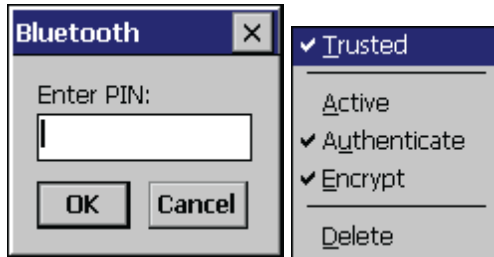
NOTE: If you enter the wrong pin code, an authentication fail message appears.

The red X disappears on the entry's key icon, and the context menu's additional options become available. The additional options are described as follows:

Trusted: Tap to add or remove the device from the trusted device list. When checked, the red X on the key next to the device is removed.

Active: tap to make the device active or inactive.

Authenticate: tap to authenticate the device and add the device to the trusted devices list.

Encrypt: tap to enable or disable encryption of data transferred between the PWS-430 and a Bluetooth device.

Delete: Deletes the device from the Bluetooth Manager list.

Connecting to a WLAN (Wi-Fi)

Through a Wi-Fi (wireless) connection you can add a new network, connect to an existing network, change the advanced wireless settings and view wireless networking log information. To establish a Wi-Fi connection, follow the steps below:

1. Tap **Start** → **Programs** → **Power Control** and click **"On"** to enable the Wi-Fi.
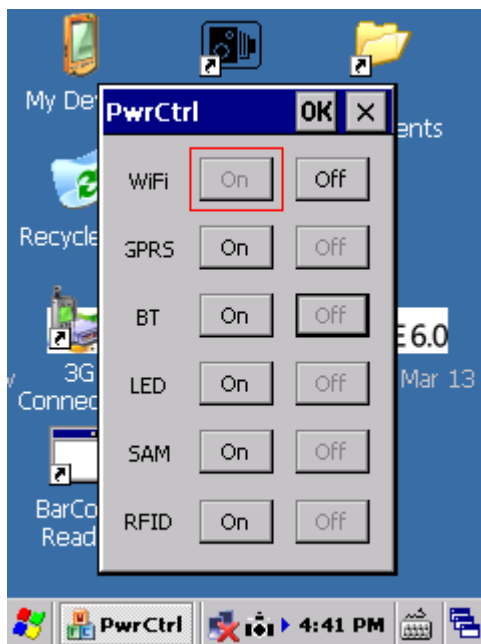
2. Click on the **SDIO86881** icon.

3. Select the **Wireless Information** tab to display the available options.
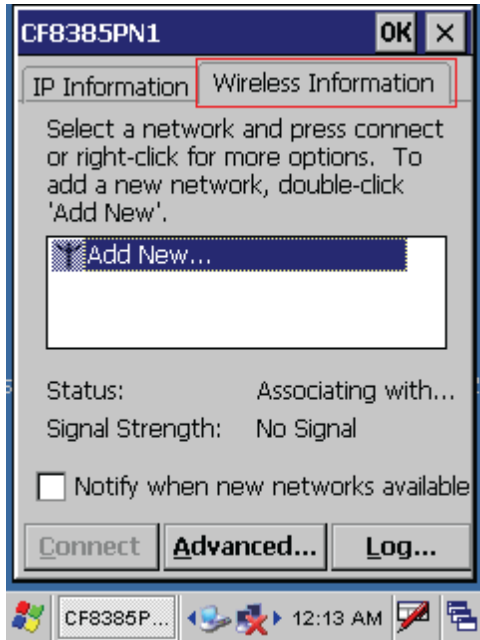
Add a New Network

1. To add a new network, double-click **Add New**.
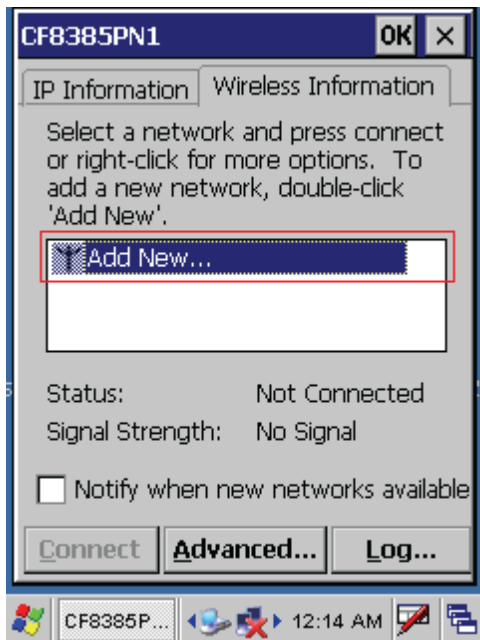
2. When the following screen displays, input the required parameters as explained in the following table:

Parameter	Description

|	
Network name (SSID)	Input the wireless network name.
This is an ad hoc network	Tick the box if required.
Encryption	Select from the drop-down list.
Authentication	Select from the drop-down list.
Network key	Input the network key (if required).
Key index	Input the key index (if required).
EAP type	Select the EAP type.

3.   Click **OK** to connect.
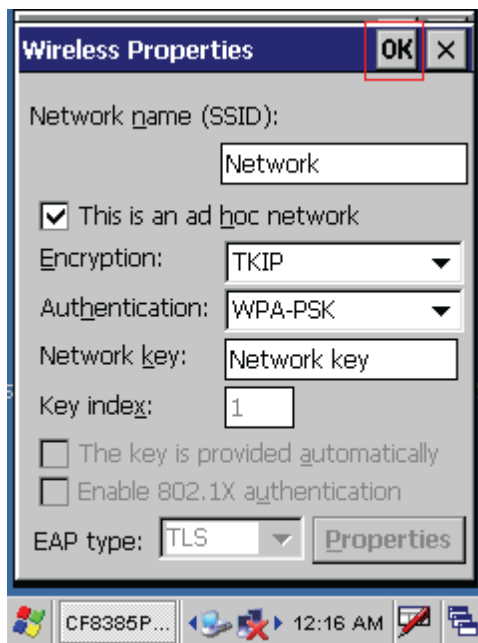
Connect to an Existing Network

1.   Select a network from the list and press **Connect** or right-click for more options.
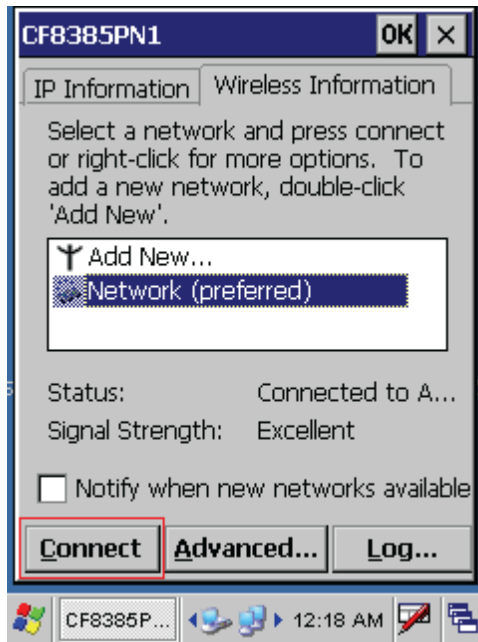
2. Click **OK** to connect.

Changing the Advanced Settings

1. Tap the **Advanced** button to display the advanced wireless settings (the preferred networks will be listed and preference is given to networks at the top of the list).
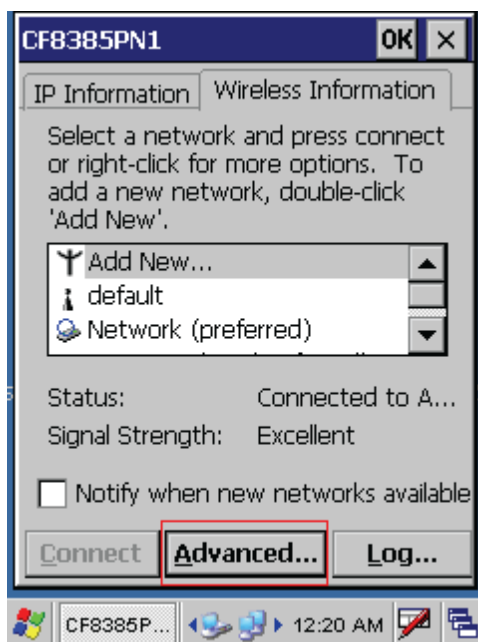
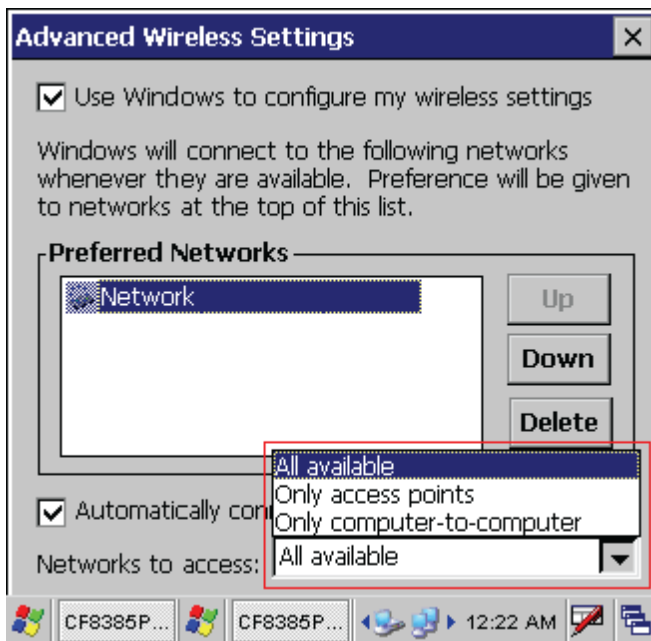2. To move a network up or down in priority, tap the **Up** or **Down** buttons.
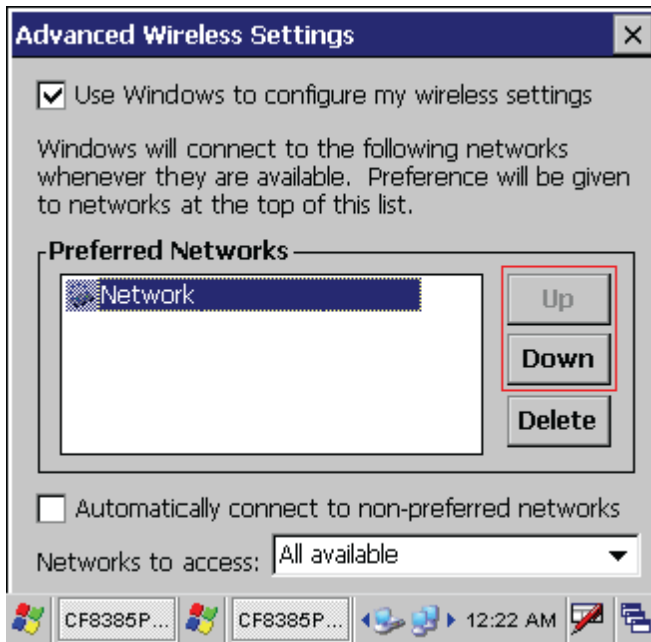
3. To delete a network from the list, tap the **Delete** button.
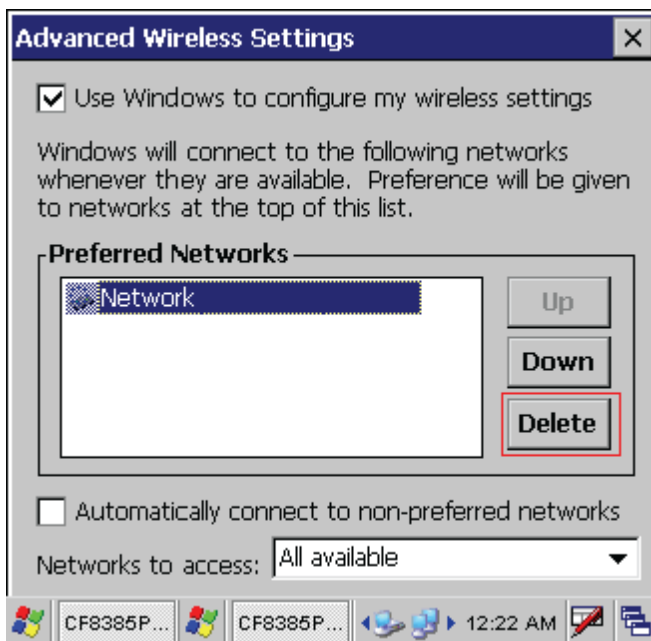
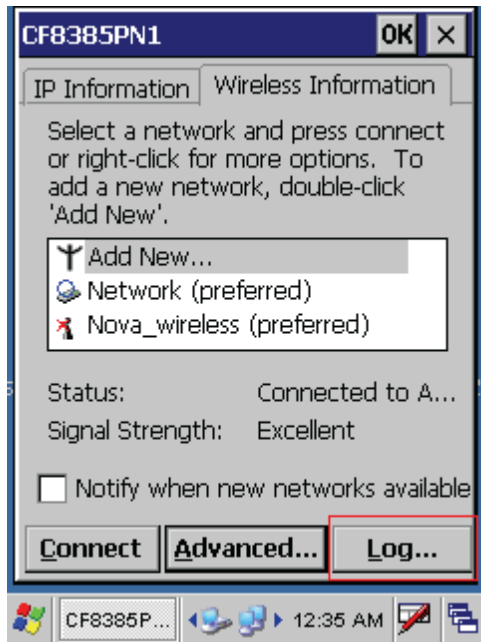4. To automatically connect to non-preferred networks, click the box.
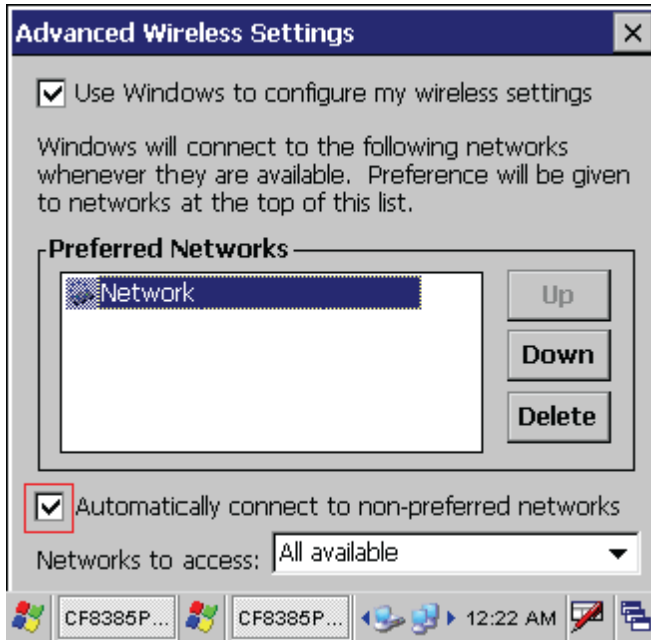
5. To select which networks to access, tap the dropdown menu and choose the required option.

View Wireless Networking Log Information

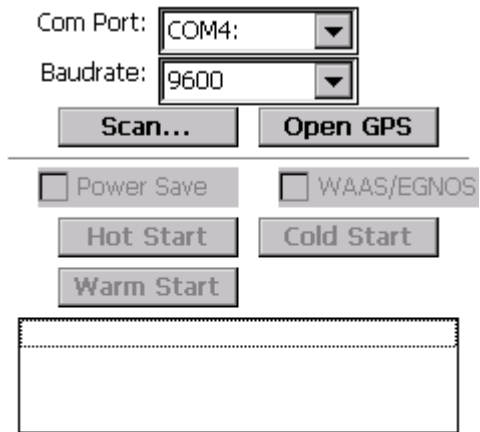Tap the **Log** button to display the log information.

Connecting GPS

The PWS-430 is not equipped with GPS application. You can download freeware GPS viewer or other GPS test programs from the Internet.
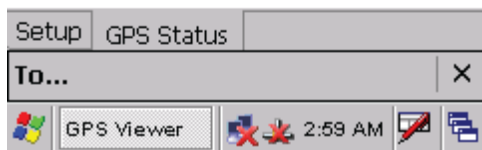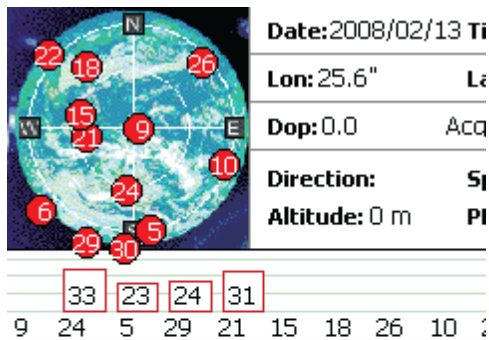
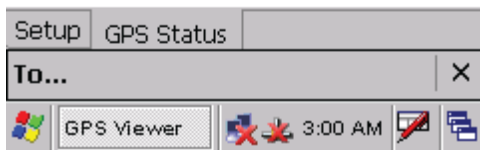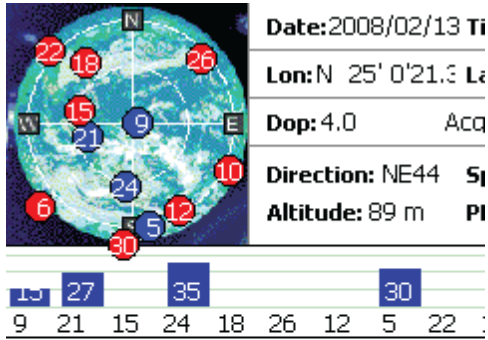1. Run the GPS Viewer program (download available from the Internet).

2. Select **COM4** and **Baudrate:9600,** then click **Open GPS** to start the "GPS".

3. When GPS is active, click **GPS status** to display the satellite status.

4. After approximately 60 seconds for GPS longitude and latitude display.

Using the Barcode Scanner

The PWS-430 integrated scanner reads all major barcode labels for maximum scanning coverage.

> **NOTE:** The PWS-430 has a testing utility for barcode reading on the desktop. Before performing a reading test, enable the testing utility in advance.

Activating the Barcode Scanner

Activate the barcode scanner by pressing the trigger key located on the right side of the unit.

| Mode	Symbology
Decoded	Codabar, Codablock A and F, Code 11, Code 39, Code 93/ 93i, Code 128 /ISBT 128 /UCC EAN 128, Industrial and Standard 2 of 5, Interleaved 2 of 5, Matrix, MSI, PDF417/ MicroPDF417/ MacroPDF417 (unbuffered mode), Plessey, RSS, Telepen, UPC/EAN/ISBN
Emulated DBP	Codabar, Code 11, Code 39, Code93/ 93i, Code 128/ UCC EAN 128, Standard 2 of 5, Interleaved 2 of 5, Matrix, MSI, PDF417/ MacroPDF417 (unbuffered mode), Plessey, RSS, Telepen, UPC/EAN/ISBN
Standard DBP	All symbologies supported by the host decoder

Scanning Performance

Light Source	617nm Highly visible LED
Scan Rate	Decoded operation = 500 scans/ s
	autoadaptive
	Undecoded operation = 200 scans/ s
Scan Angle	40°
Print Contrast	Down to 25%
Min. x. Dimension	0.1mm (4mils)
Reading Distance	Up to 90cm (35 inches)

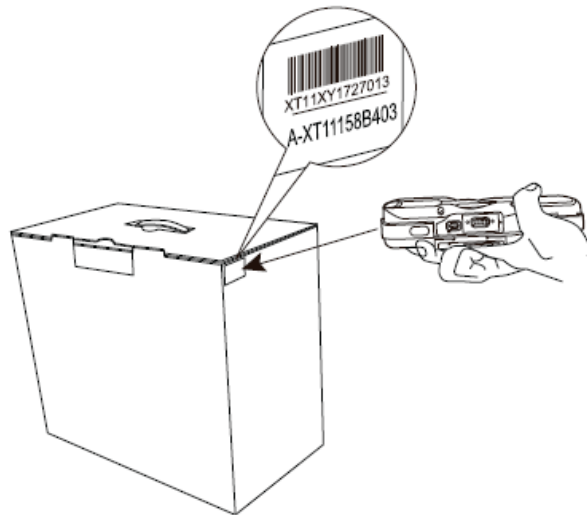1. Click the **BarCode Reader** icon on the desk top..

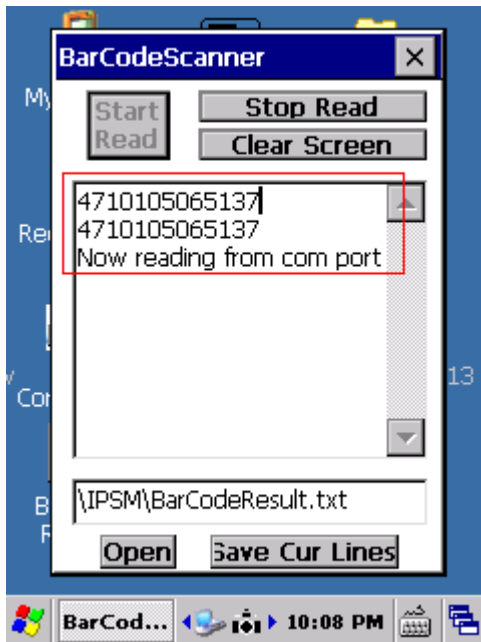2. On the Barcode Scanner Window, select **Start Read** (Text Message shows "Now reading form com port").
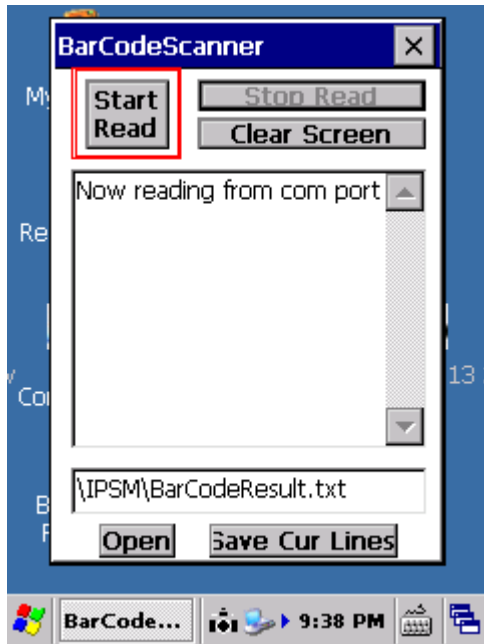
3. Activate the barcode scanner by pressing the trigger key located on the right side of the unit.

4. Text Message on the window displays the barcode value.

Checking the Battery Status

This section describes how to view the power level for both the main and backup battery and

how to set power saving options. To check the main and backup battery status:

1. Open Power Properties. Tap **Start** → **Settings** → **Control Panel**. Then double-tap
    Power.

The Power screen appears

2. The battery menu item displays the status of the main and backup batteries.
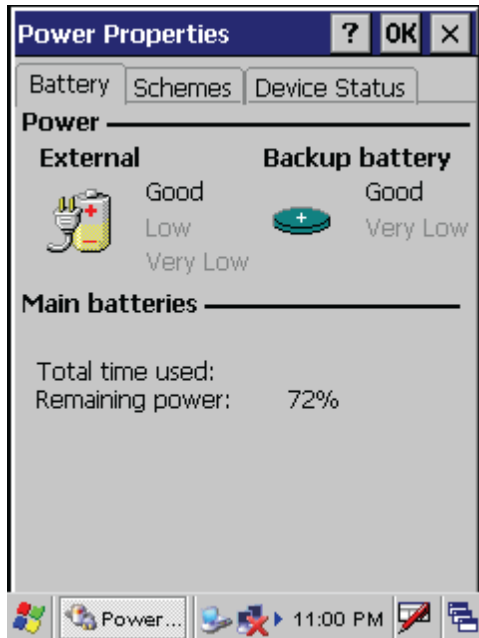
NOTE: It is necessary to charge the battery when the battery charge reaches below 13%. If
the battery does not accept a charge, contact Technical Support.
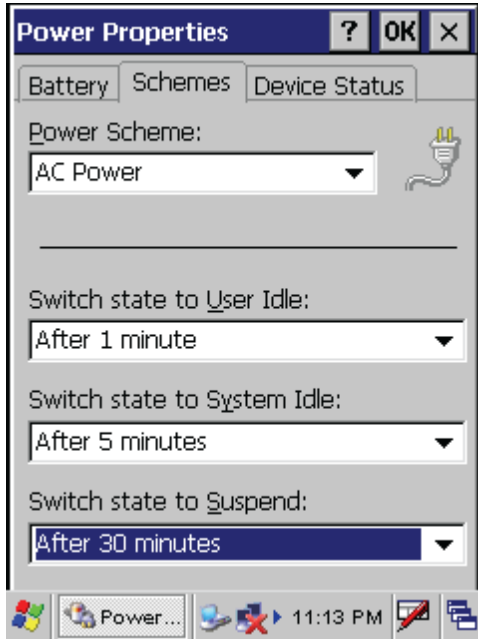
Extending Battery Life

You can extend the PWS-430 battery life by doing either of the following:

• Change the automatic power settings

• Minimize the use of the backlight

Changing the Automatic Power Settings

To change the automatic power settings:

1. In the Power Properties screen tap the **Schemes** tab.

2. Tap the arrow next to the Power Scheme and select Battery Power.

3. Tap the arrows next to the following three power saving scenarios and select the desired time out for each item.

   – **Switch state to User Idle:** PWS-430 enters power saving mode when there is no user input after the selected timeout. The backlight brightness is reduced. The backlight resumes normal brightness when the LCD is touched.

   – **Switch state to System Idle:** PWS-430 enters power saving mode when there is no system activity after the selected timeout. The backlight is turned off. The backlight turns on when the LCD is touched.

   – **Switch state to Suspend:** PWS-430 enters suspend mode when there is no user input or system activity after the selected timeout.

   Time out values range from Never, and 4/5/10/30 minutes.

Adjusting Backlight Settings

The power consumption of the LCD backlight may be high, turn off the backlight function if it is not necessary.

If a backlight is required, set "automatically turn off the backlight" function.

To change backlight settings:

1. Tap **Start** → **Settings** → **Control Panel**.

2. Tap **OEMs Utility**.

3. Select Display Manager, and tap the arrow next to Dark or drag the slider to the left to reduce the screen brightness.
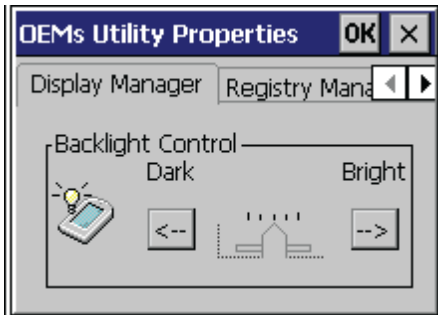
Performing a Reset

You may have to perform a reset if the device freezes (i.e., device no longer responds to the buttons on the screen).

A reset allows your device to get a fresh start, similar to rebooting a computer. This will restart your device and adjust memory allocation. All records and entries are retained after a reset.

Performing a Cold Boot

1. There is no reset button on PWS-430.
2. To perform a reset (cold boot), just remove the battery for at least 3 seconds, than reinstall the battery. The PWS-430 will reboot after pushing the power button.
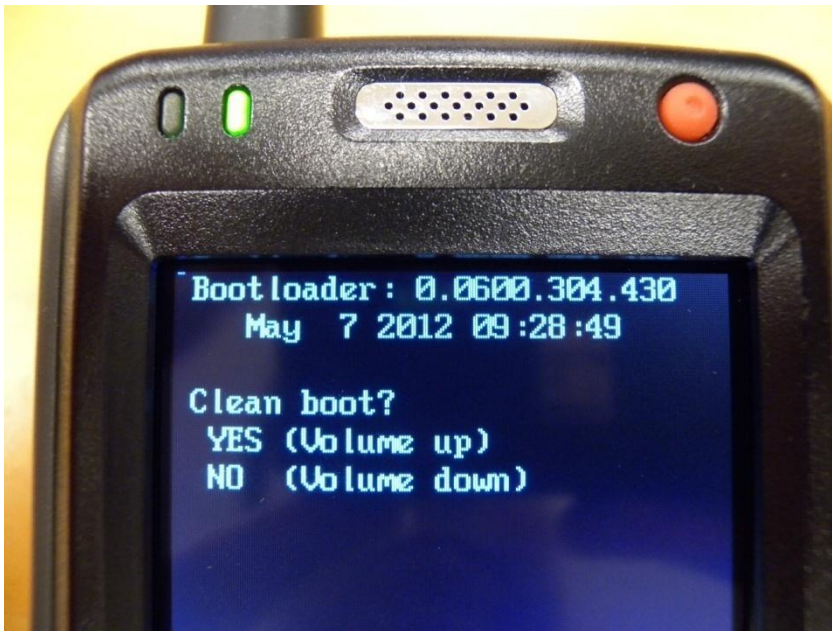
Performing a Clean Boot (Factory Default)

Clean boot will reset the PWS-430 back to factory default setting.

1. Press the LCD light switch button while power on the PWS-430

2. The device will confirm again whether the user wants to perform a clean boot. Use the volume control button to make a decision.

3. Once the clean boot is successful, the device will restart automatically.

Update Software

Visit Advantech's website "www.advantech.com" to download the latest version PWS-430 software (Boot loader & OS). Currently PWS-430 software can only be updated via Micro-SD card.
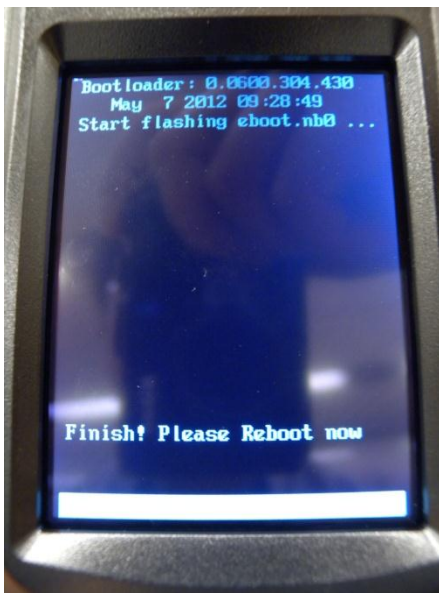
Update the Boot Loader.

1. Copy the latest version boot loader (Eboot file) into a Micro-SD card.

2. Press the Volume (**Down**) control button while power on the PWS-430. The PWS-430 will update the boot loader automatically.
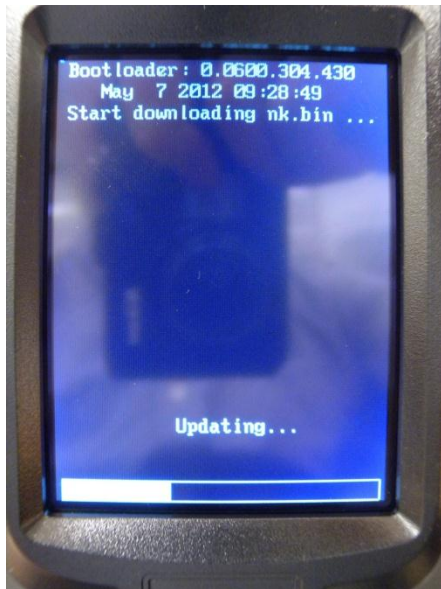
3. Restart the device after update completed.

Update the OS (Operating System)

1. Copy the latest version OS (NK file) into a Micro-SD card,
2. Press the Volume (**UP**) control button while power on the PWS-430. The whole OS update process may take 5~10 minutes.

3. Restart the computer after update completed.