P37B Rugged PDA
User Manual

(Version: V3.2)

ACA Digital

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About This Manual

This manual explains how to install, operate and maintain the **P37B** Rugged PDA. 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.

ACA Digital has many years experience in designing computers to meet severe environmental applications. These applications include those found by military as well as industrial users. The **P37B** has been designed to comply with the relevant requirements of MIL_STD-810F, MIL-STD-461F and IP67. These include EMC, EMI, temperature, Shock, vibration, humidity, dust and water. In addition the **P37B** has been developed to be reliable under all operational conditions that may be encountered by military services throughout the world..

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Regulatory Compliance Statements

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.

CAUTION! Exposure to Radio Frequency Radiation. The radiated output power of this device is far below the FCC radio frequency exposure limits. For body worn operation, this device has been tested and meets the FCC RF exposure guidelines for use with an accessory that contains no metal and the positions the handset a minimum of 1.5 cm from the body. Use of other enhancements may not ensure compliance with FCC RF exposure guidelines.

Federal Communications Commission Notice

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.

The maximum SAR value reported is 0.231 W/kg.
Changes or modifications not expressly approved by the party responsible for compliance could void the user‘s authority to operate the equipment.

●The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Safety

Use the following safety guidelines to help protect yourself and the **P37B**.

• Do not attempt to service the **P37B** 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 **P37B**. 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 **P37B** between environments with very different temperature and/or humidity ranges, condensation may form on or within the **P37B**. To avoid damaging the **P37B**, allow sufficient time for the moisture to evaporate before using the **P37B**.

• 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 PDA may not power-on due to battery discharge as a result of storage.

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 ONE

1.1. Introduction

Thank you for purchasing the **P37B** Rugged PDA.

The **P37B** is an ultra rugged computer designed to military standards. The design incorporates the powerful Intel PXA270 624MHz CPU with Microsoft Windows CE 5.0 operating system. The **P37B** provides the highest performance and reliability whilst minimizing the Total Cost of Ownership (TCO). The **P37B** incorporates a transflective LCD with touch-screen, keypad, WWAN communication capability and handsfree ability. Currently available option include GPS.

To minimize the Total Cost of Ownership the **P37B** is sealed to meet IP67 standards and complies with IEC 68-2-32 5 foot drop to concrete.

1.1.1. Features

The **P37B** is a smart configurable PDA terminal which has been designed to meet the requirements of a wide range of applications including:

- Military & Law Enforcement
- Industrial & Manufacturing
- Emergency services and construction

P37B been developed to comply with MIL-STD-461F, MIL-STD-810F and IP67 standards, the main specifications are as detailed below.

P37B Rugged PDA Specification

Items	Description
OS	Windows CE 5.0
CPU	Intel PXA270 624MHz
Memory	256MB SDRAM on board 256MB up to 1GB Flash ROM on board
Display	3.7” transflective TFT LCD, VGA resolution (640 X 480)/QVGA resolution (320 X 240)
Touch screen	4-wire Resistive touch screen
Audio System	AC-97, Internal microphone and one speaker (stereo supported via earphone jack)
Application Buttons	One power on/suspend button One software reset switch Navigation Key+ Function Key (4 function keys in front) One HW reset key located right side door One Button for backlight on/off (using power on/ suspend button)
Communication	GSM/GPRS/WCDMA/HSDPA internal module (for data transmission only) GPS & GALILEO receiver module with antenna built-in(optional)
Status Indicator	Power LED (two color LED x1) (at right side) LED on the upper side for lighting usage One LED for GPRS (wireless connection) (at left side)
I/O Ports	Two USB type A connectors, USB1.1 Host (** Two USB Type A at Left Side) One USB mini type B connector, USB1.1 Slave (at Right Side Door) One RS-232(full) One RS-232/422/485 (OPTION) One RJ-45 for 10/100M ethernet (USB type) One 15 connector slot One stereo headphone jack One microphone jack One DC-In connector (At the right side) One MicroSD Slot
Main Battery	Rechargeable Li-ion smart battery, 7.4V, 1880mAh, 2S1P, 59X38X25mm
Power Adapter	Universal AC100V ~ 260V, 47~63Hz input, 12V, 3.5A output.
Physical	155 x 96 x 42mm , 650g(BASIC CONFIGURE)
Environment	Operating Temperature: -20 to +60C Storage Temperature -40 to +70C Charging Temperature 0 to +50C Operating Humidity 5% ~ 95% none condensing
Rugged Specification	IP67 5 ft drop to concrete

	MIL-STD-810F MIL-STD-461F
Certification	FCC
Accessories	1. Case: standard nylon (waterproof) case with belt loop; 2. Mount: Vehicle mount (using RAM mount) 3. elastic hand strap: prevent accidental drop 4. Stylus with tether kit 5. Power: DC-Adapter & power cord 12V Vehicle charger with 12V cable (option)

1.1.2. Package Contents

The standard **P37B** includes the following items:

1. **P37B** PDA unit
2. power cord & Adapter
3. battery
4. stylus & string
5. Hand strap
6. USB connecting cable

1.1.3. Optional Accessories

In addition the following optional accessories may be included:

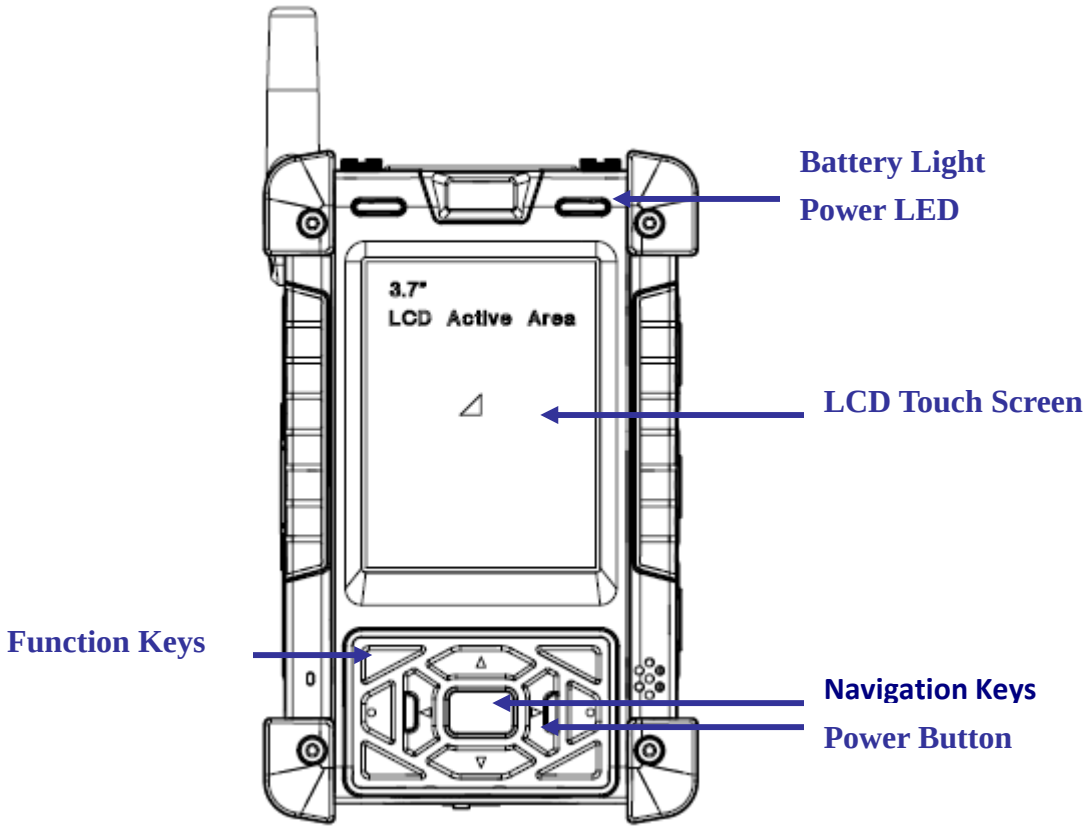
• Vehicle Mount

Please carefully check the delivery documents to ensure that all items are present.
In the unlikely event of a discrepancy please contact your supplier.

1.2. Familiarize with the P37B

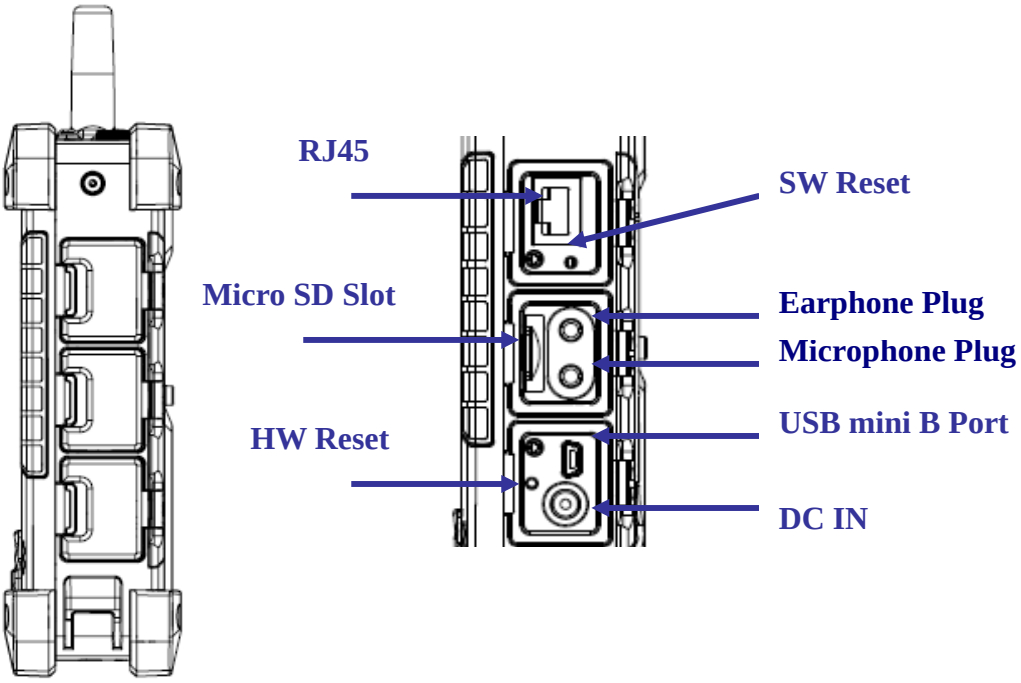
The following sections describe the main components and features of the **P37B**.

1.2.1. Front View



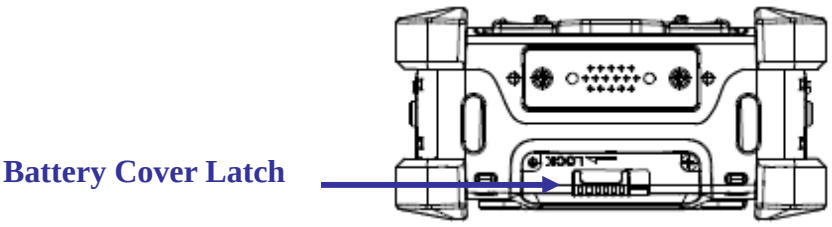
Item	Description
LCD touch screen	Displays the applications and data stored the **P37B**. It is a touch-sensitive screen and can be operated using the stylus or finger.
Navigation Keys	Press these keys to navigate in the **P37B** interface.
Function Keys	Programmable keypad interface for controlling the **P37B**.
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 **P37B** off.
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%. The battery should be recharged immediately.

1.2.2. Right View



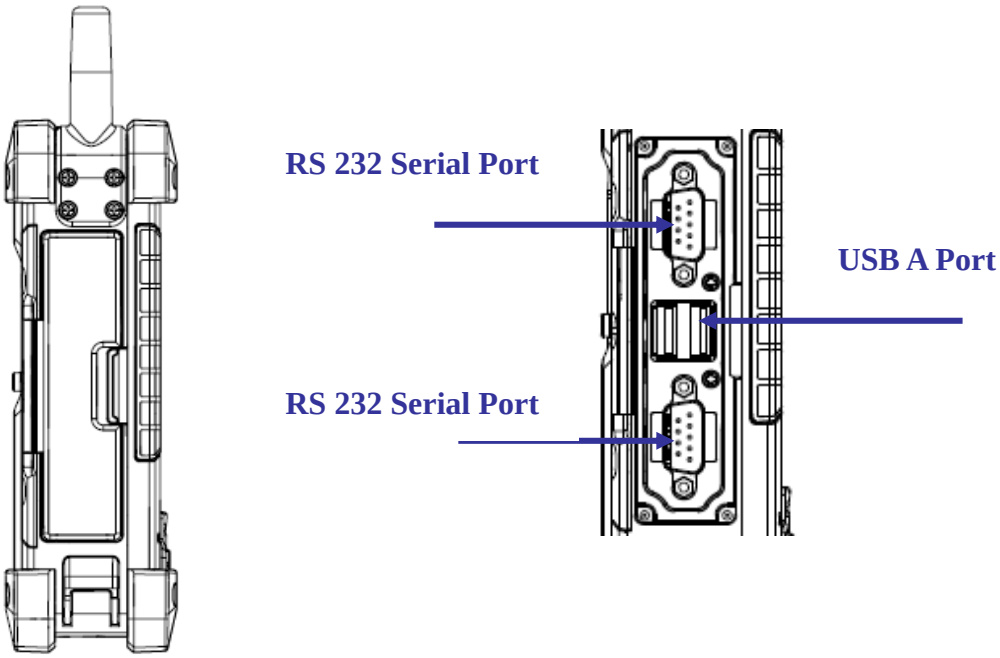
Item	Description
RJ45 Port	Connects to the LAN.
SW Reset Switch	Press the end of the stylus into the button to reset the **P37B**. A reset allows your device to get a fresh start, similar to warm rebooting a computer.
Earphone Plug	Connects to audio line-out devices (earphones or headphones) for use in noisy environments.
Microphone Plug	Enables the recording of voice using an external microphone
USB mini type B port	USB mini type B port (client).
Micro SD Slot	Accommodates Micro Secure Digital memory cards.
HW Reset Switch	Press the end of the stylus into the button to reset **P37B**.
DC IN Jack	Connect the AC adapter to this jack to supply power to charge the **P37B** battery.

1.2.3. Bottom View



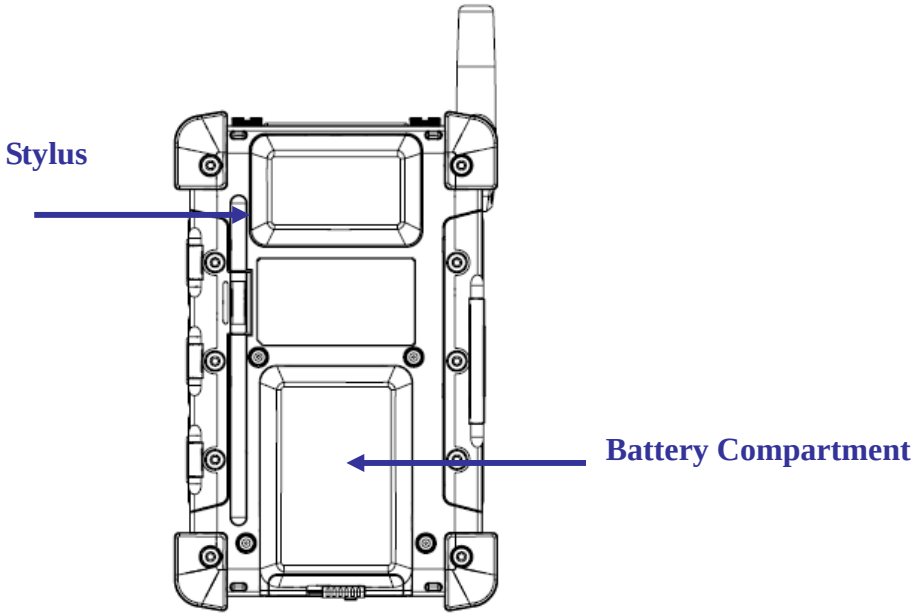
Item	Description
Battery Cover Latch	Unlock the latch to open the battery compartment cover, to place or remove battery.

1.2.4. Left View



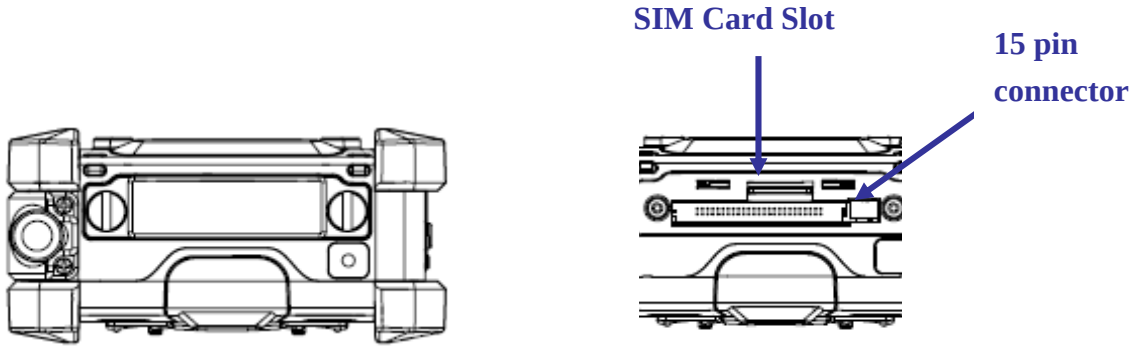
Item	Description
RS 232 Serial Port	Connects using a mini 9 way D type connector for this port for serial communications.
USB type A port	Connects to USB type A port (host) to this port.

1.2.5. Back View



Item	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. For use with the touch screen..
Battery Compartment	Houses the removable and rechargeable battery pack.

1.2.6. Top View



Item	Description
15pin connector Slot	Additional functionality can be provided by using optional Reader cards.
SIM Card Slot	Additional functionality can be provided by using SIM cards. Only with WAN module included.

Chapter TWO

2.1. Getting Started

This chapter explains how to install and charge the battery, how to check the battery status, how to turn on the **P37B**, and how to calibrate the screen.

2.2. Connecting the P37B

2.2.1. Installing the battery

This part 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.

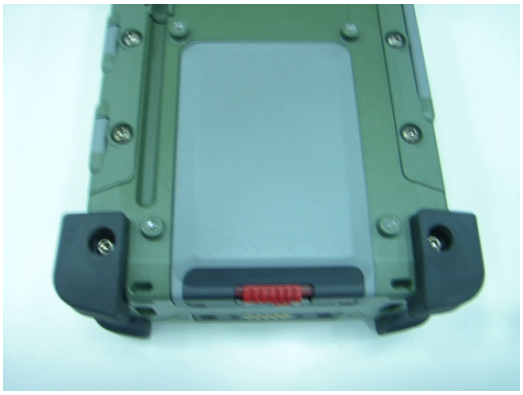
Dispose of used batteries according to local recycling guidelines in your area. A backup battery cell is embedded into your device to prevent data loss in instances when the removable battery pack is removed or completely discharged. This backup battery cell will only support the system for a maximum of 10 minutes. First time use, please charge PDA over night (8Hours) to ensure backup battery is fully charged.

Status	Charging	Ready
Power OFF	· Amber flashing light	· Amber light
Power ON	· Amber flashing with Green light	· Amber light

1. Remove the battery compartment cover.

2. Align the battery contacts with the contacts in the compartment and place the battery in the compartment as shown below.

3. Replace the battery compartment cover, and lock the battery latch.



2.2.2. Charging the Battery

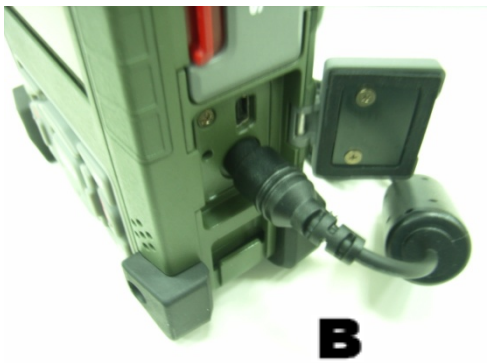
Before using the **P37B** for the first time it will need charging for about 4 hours at least. The **P37B** can be charged using the power adaptor.

> **NOTE:** When the battery power is below 10%, the **P37B** will enter suspend mode.

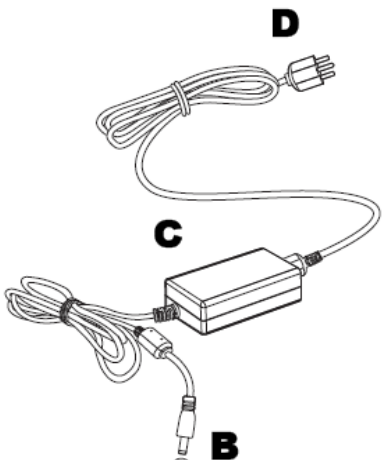
2.2.3. Charging the Battery with the Adapter Charger

1. Open the side door on the right bottom of the **P37B**.

2. Plug the adapter charger (**B**) into the side door (**A**).



3. Plug the power cord into the AC adapter (**C**).
4. Plug the AC adapter (**D**) into an electrical outlet.



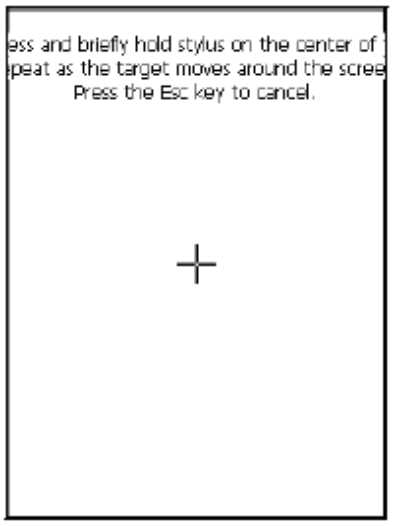
2.3. Powering up for the First Time

After you have charged the **P37B** for about 4 hours the device is ready to be used. You can now start up the **P37B** when you can calibrate the touch screen, practice with the stylus and set the date, time and zone. Turn on your device by pressing the power button on the front panel.

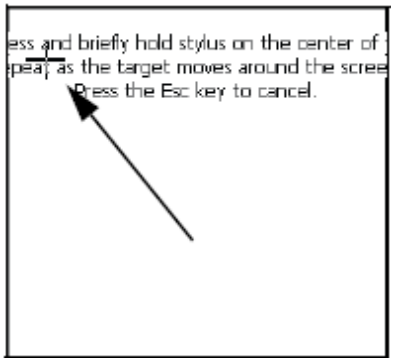
2.4. Calibrating the touch screen

The calibration 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.



2. Follow the cross hair and continue tapping until the screen has been calibrated.



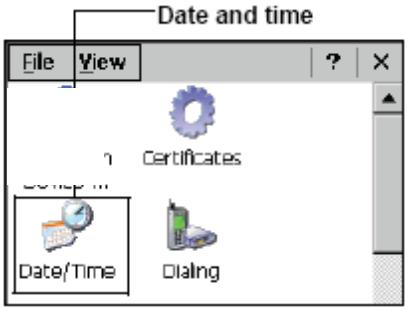
3. After calibration is finished, press the Enter key to save the settings or press Esc to revert to the previous settings.

NOTE: To recalibrate the screen at any time, tap **Start** → **Settings**→ **Control Panel**.

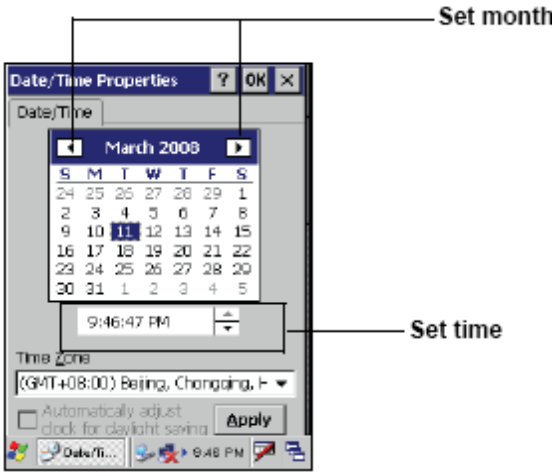
Then double-tap **Stylus**. Tap the Calibration tab, and tap **Recalibrate**.

2.5. Setting 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.

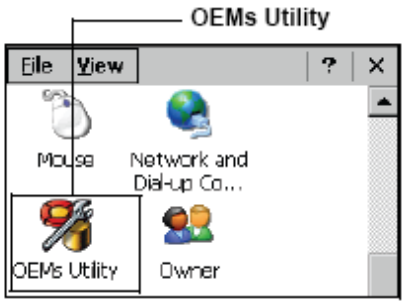


4. Select a field in the time box and tap the arrows next to the time to change the value of the field.
5. Tap the drop-down arrow next to Time Zone to select the correct time zone for your area.
6. Check the box next to **Automatically adjust...** to have the OS automatically uPDAte the time for daylight saving.

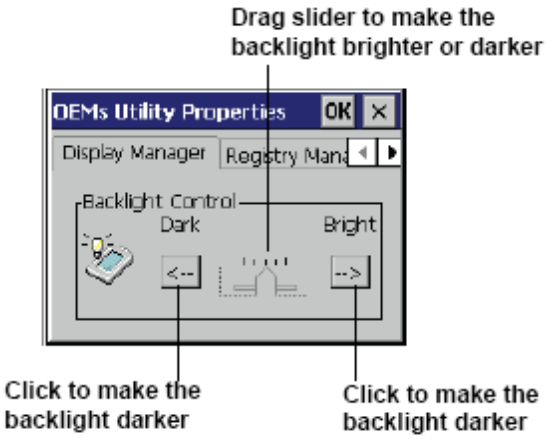
7. Tag **Apply** to save the settings.

2.6. Adjusting 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 a**rrow to make the screen brighter.



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

Chapter THREE

3.1. Using the Hardware

3.2. Keypads and Function Buttons

The keypad enables you to both enter information and interact with the **P37B** operating system.

3.2.1. 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.

3.3. Using the Stylus

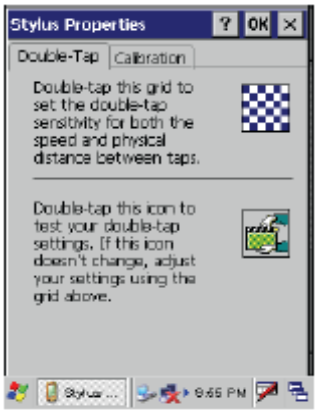
CAUTION! Never use anything other than the **P37B** stylus on the screen. Using another object as a stylus could cause permanent damage. You can use your finger to interact with the screen as well.

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

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.

3.4. Inserting an Micro SD Memory Card

The **P37B** has a SD card slot compatible with a wide range of Micro SD cards, which are primarily used to back up or transfer files and data. The slot also supports SDHC cards.

To insert a Micro SD card into the Micro SD slot.

1. Open the right centre door.

2. Insert the Micro SD card with the notched corner as oriented as shown below

3 Press the card into the slot. The card is secure when it is flush with the slot.

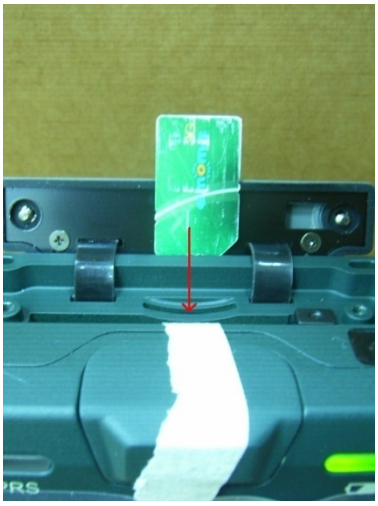
4. Close and lock the door.

3.5. Removing a Storage Card

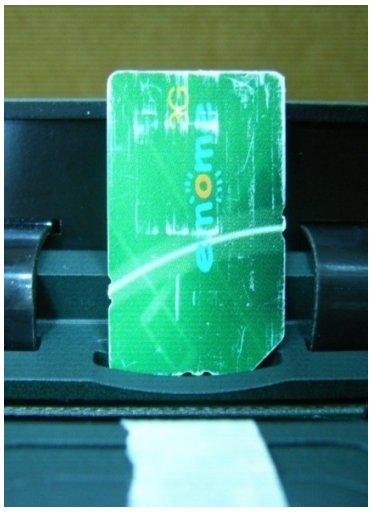
1. Open the right centre door.
2. Press the card in and release. The card pops out.
3. Remove the card from the slot.
4. Close and lock the door.

3.6. WWAN SIM Card Set Up

1. Remove the two hand screws on the top of the **P37B**.
2. Insert the SIM Card into the SIM Card slot as shown.



3. Push the card into the slot. The card is secure when it is flush with the slot.



Note! The battery must be removed before SIM card can be fitted.

3.7. Connecting Devices to the P37B

This section describes how to connect devices to the **P37B**. Connection can be made directly to the **P37B** or using the cradle.

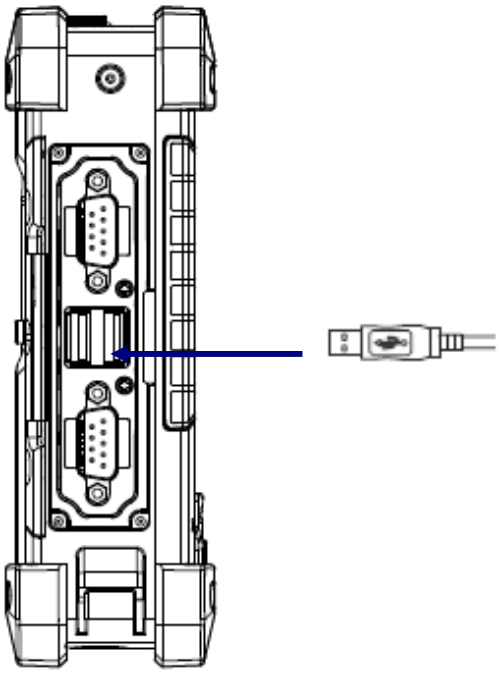
3.7.1. Connecting USB

The **P37B** can accommodate both USB Type A and USB mini Type B.

Connecting a USB Type A

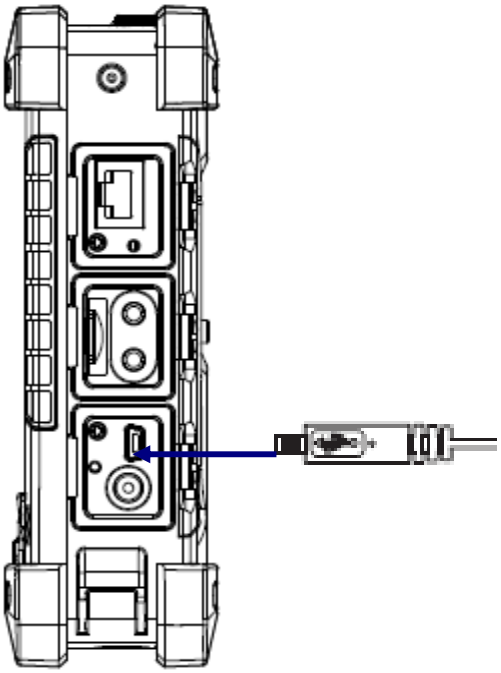
The illustration below shows how to connect a USB type A device to the **P37B**. The

connector can only go in one way. If it does not go in smoothly, check the orientation and try again.



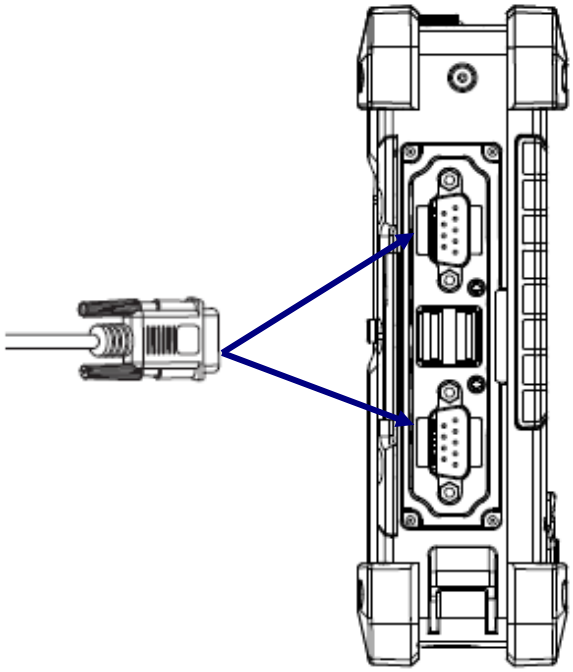
Connecting a MINI USB Type B

The illustration below shows how to connect a mini USB type B cable to the **P37B**. The connector is keyed to only go in one way. If it does not go in smoothly, check the orientation and try again.



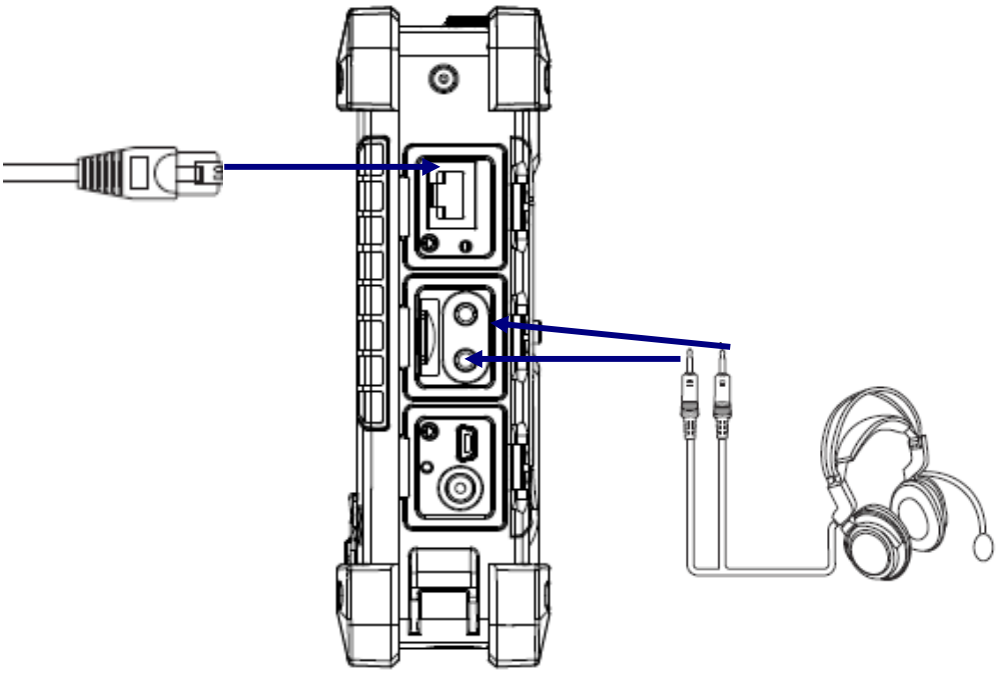
3.7.2. Connecting a Serial Device

Connect a serial device to the **P37B** to perform serial communications.
Please see below illustration



3.7.3. Connection to a LAN

The **P37B** is connected using a RJ-45 connector. See below:



3.7.4. Connecting Headphones and a Microphone

The **P37B** utilizes an external microphone and speaker. A headset and microphone can be used in noisy environments. See the illustration above.

4.1. Getting Connected

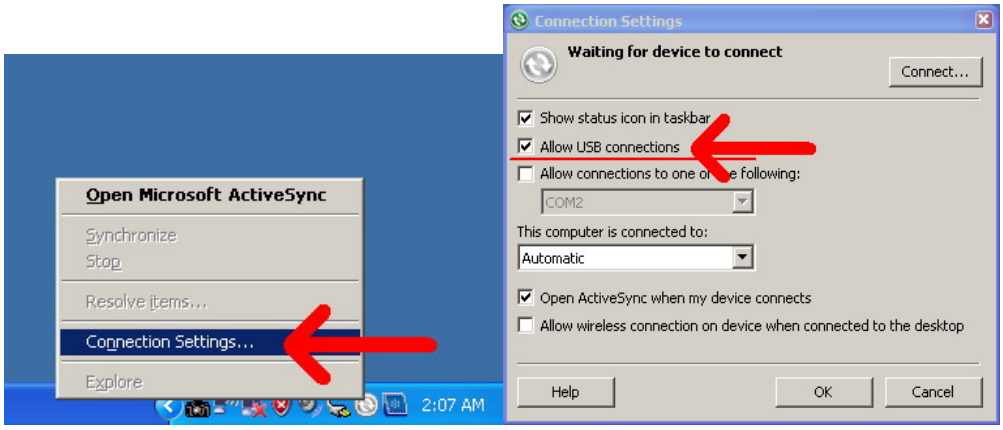
4.2. Installing Microsoft ActiveSync

In order to exchange data between your computer and the **P37B** and install extra applications or utilities to the **P37B**, Microsoft ActiveSync must be installed on your computer. Connect the **P37B** to a PC using a USB type B 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.

4.2.1. Connecting to Your Computer

1. After ActiveSync has been installed, connect the USB B cable to the USB port on your **P37B**.



2. Plug the other end of the USB cable into a USB port on your computer.

3. Turn the device on.

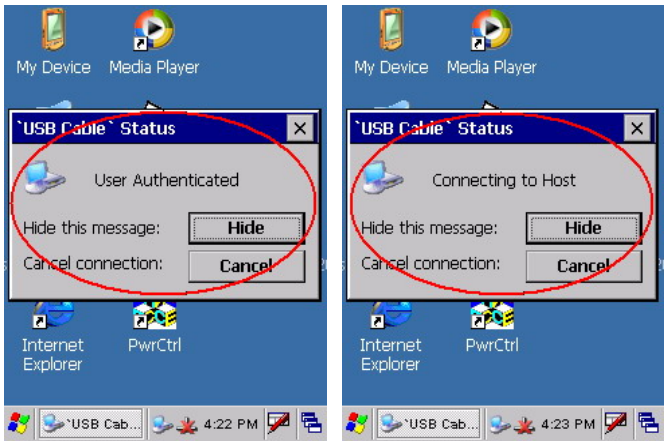
4. ActiveSync starts automatically and configure the USB port to work with the **P37B**. The New Partnership setup wizard will automatically start.

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.

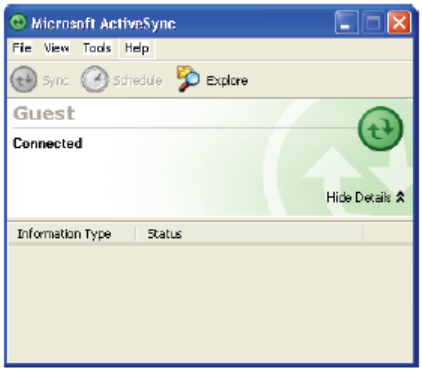
5. Follow the onscreen instructions.

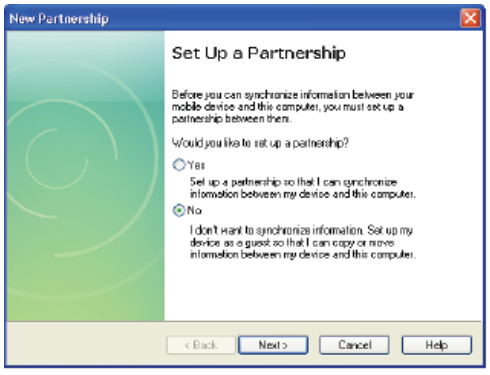


6. When the configuration process is complete, the ActiveSync window appears.

7. Synchronization will be initialized and will take place if you've chosen to synchronize periodically or upon connection.

8. ActiveSync detects the **P37B** and establishes a connection.



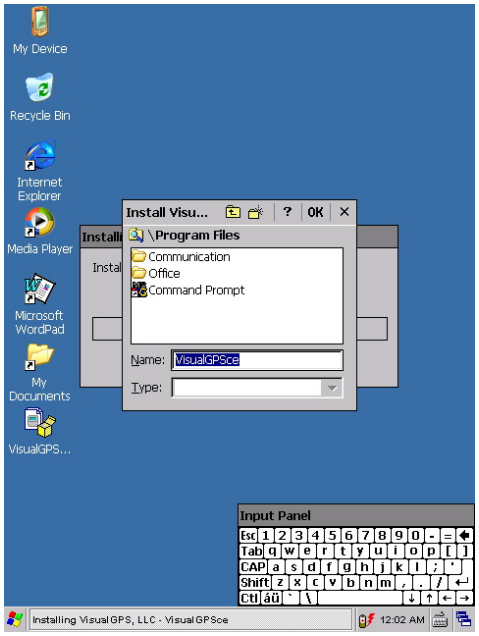


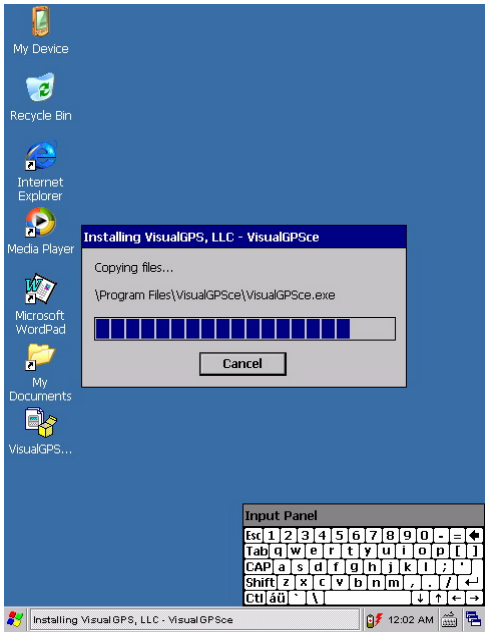
9. Click **No**, and then click **Next**.

4.3. Connecting GPS

To run GPS Demo program, it need to download VisualGPS from internet. Copy this program onto Deskonchip1 to save, and double tag to install VisualGPS as follow instruction.

Copy “visualGPSceinstall.CAB” to **P37B** – Desktop, and execute “visualGPSceinstall.CAB” on desktop.

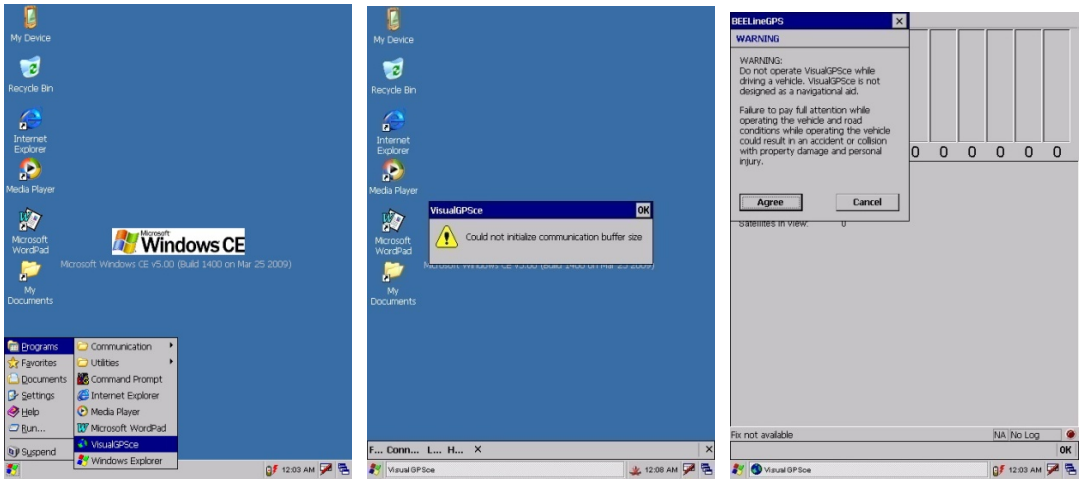




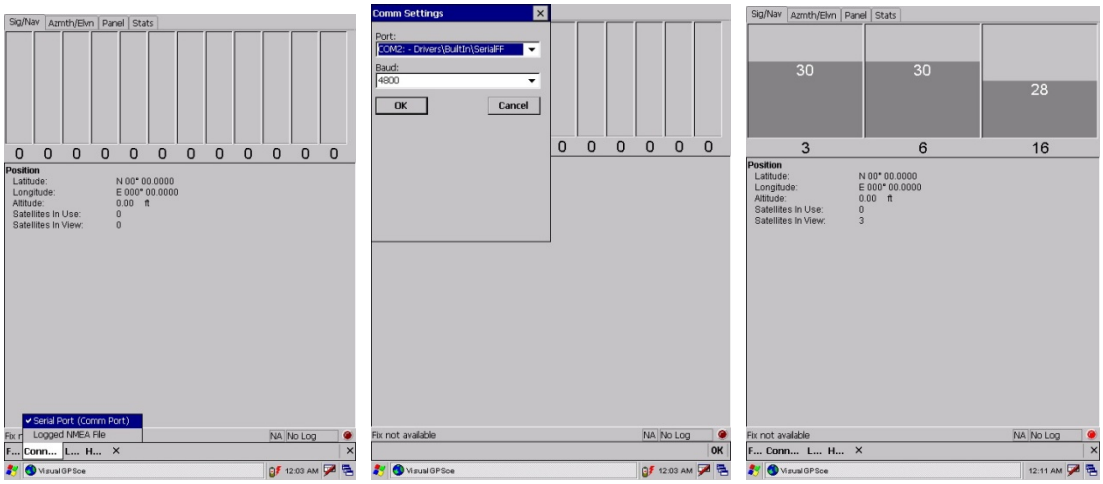
Follow these instructions to set up a GPS connection.

1.From START->PROGRAM->Utility ->“PwrCtrl”, and chose GPS “ON”

2. Tap **Start→ Program → VisualGPS**.



3. Click **COM2.** and Baudrate **9600.** Then, **OPEN GPS** to start the “GPS”.



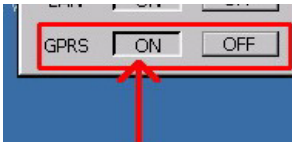
4. When GPS is active, click **GPS status** to display the satellite status.

5. Allow approximately 60 seconds (very first time) for GPS longitude and latitude display. **Note:** GPS display approximately time depend on the environment.

4.4. Connecting WWAN

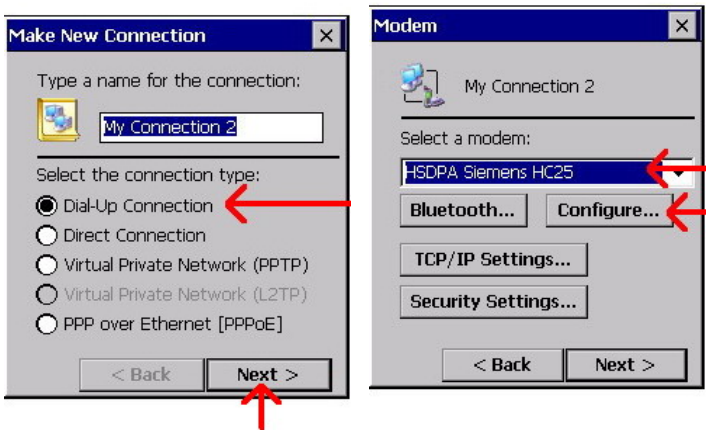
P37B equip WWAN (Wireless Wide Area Network) module as HSDPA 3.5G high speed connection, where supports GSM/GPRS/WCDMA/HSDPA 3.5G and Data transmission only.

1. From START->PROGRAM->Utility ->“PwrCtrl, and chose GPRS “ON”

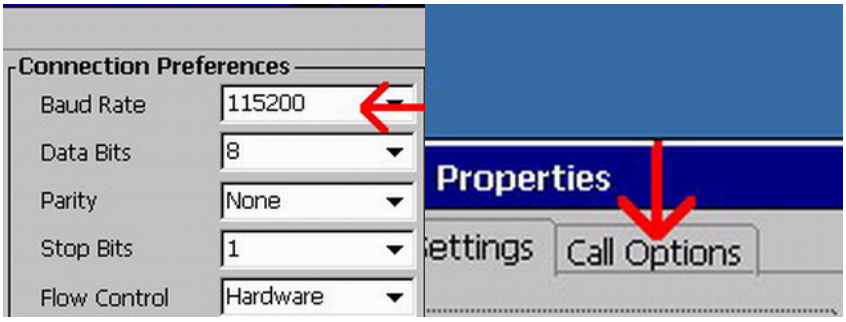


2. Chose Start→Settings→Control Panel→Network and Dial-up connections

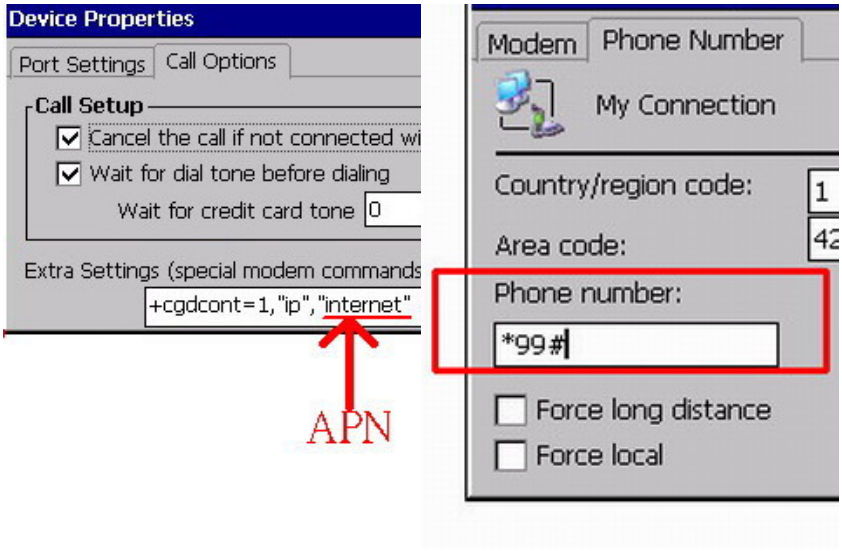
3. Tap Make New Connection➔ 『Dial-Up Connection』 ➔ 『HSDPA Siemens HC25』 ➔ 『Configure…』



4. Set 『Baud Rate』 115200, then chose 『Call Options』 to set up APN

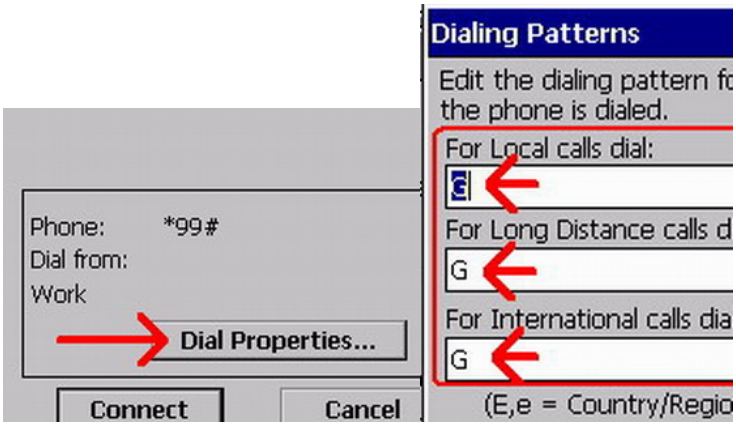


5. Input AT Command 『+cgdcont=1,”ip”,”internet”』, and 『Phone Number』 input 『*99#. Then, CLICK OK.



6. Click **Control Panel** then **Network and Dial-upConncetions**.

7. Click 『Dial Properties…』and 『Dialing Patterns…. Then, place "G" into each blank as follow:



8. Connection is successful when the **Status** screen displays **Connected**.

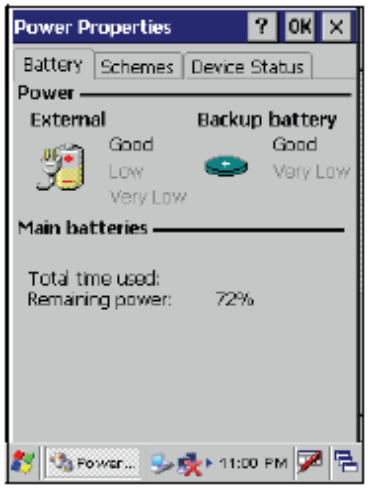
5.1. Advance Settings

5.2. 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.

5.3. Optimizing Battery Life

You can extend the **P37B** battery life by doing either of the following:

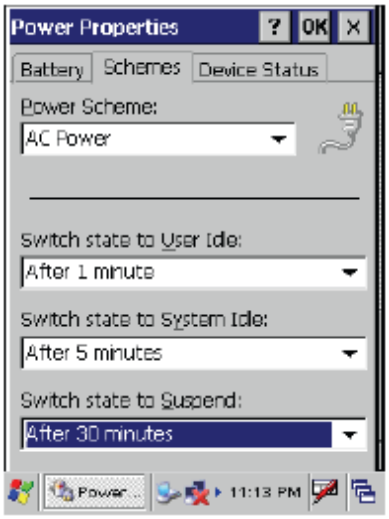
- Change the automatic power settings
- Minimize the use of the backlight

5.3.1. 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: P37B 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: P37B** 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: P37B** enters suspend mode when there is no user input or system activity after the selected timeout.

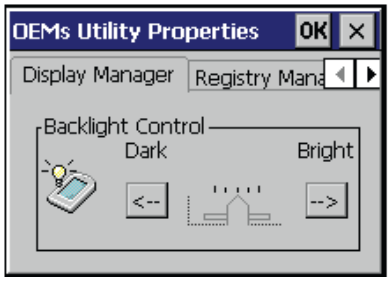
Time out values range from Never, and 4/5/10/30 minutes.

5.3.2. 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.



5.4. Performing a System Reset

You may need 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. Unsaved data in open programs may in some cases be lost.

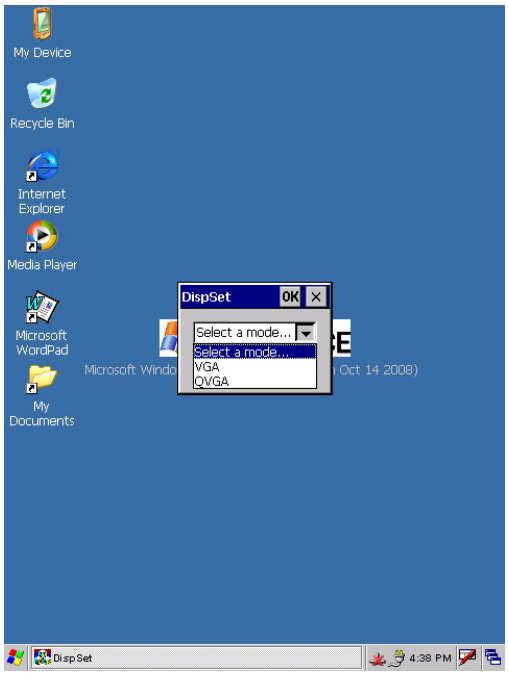
Performing a Software/Hardware reset

1. Remove the stylus from its holder.
2. Lightly press the tip of the stylus to the reset button located on the **P37B**.

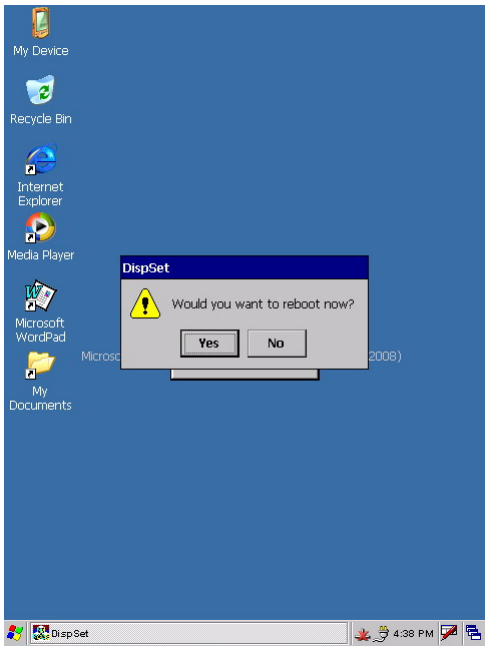
5.5. Changing the Screen Resolution

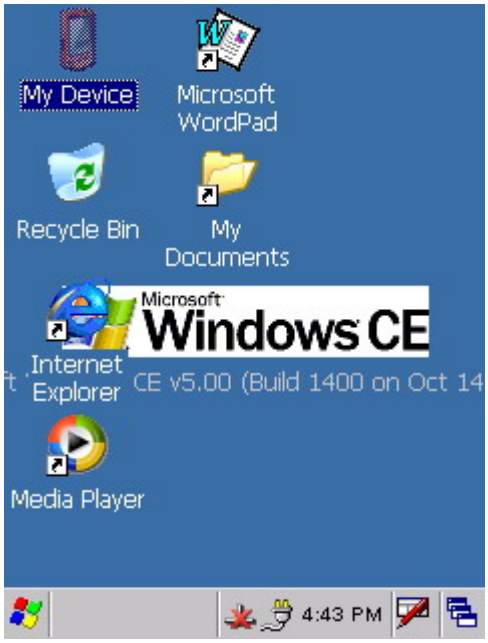
It may be necessary to change the screen resolution from VGA to QVGA, or from QVGA to VGA.

1. Start -> PROGRAM-> Utilizes-> DispSet



2. Wait for the **P37B** Re-start.

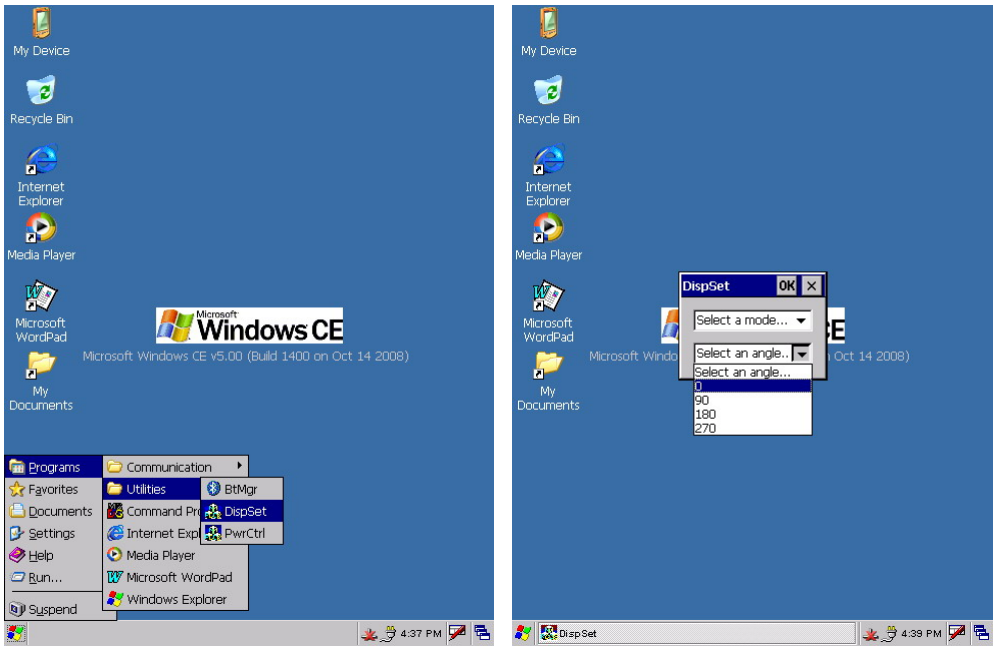
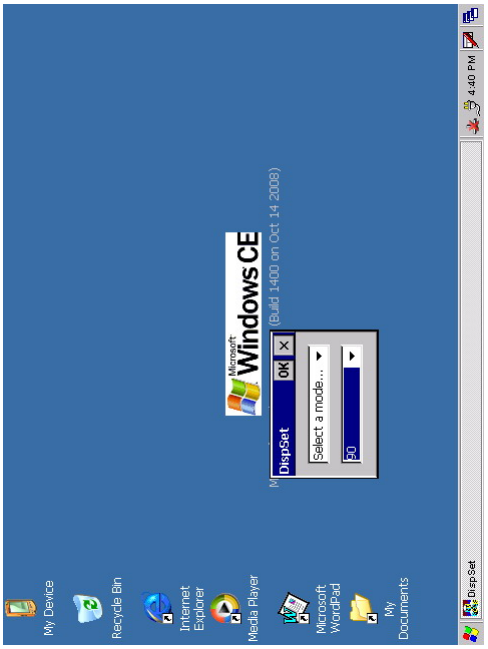




5.6. Rotate Screen

It may be necessary to rotate the screen display from standard throught either 90, 180 or 270 degrees.

1. Start -> PROGRAM-> Utilizes-> DispSet



2. Select the angle of rotation.