nextcell

PocketSpider®

CDPD MODEM

USER'S MANUAL

for

Windows CE 3.0

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PocketSpider® USER'S MANUAL

1.0   INTRODUCTION

Welcome to the world of wireless data. Your PocketSpider® is a compact, wireless data modem that uses the Cellular Digital Packet Data (CDPD) wireless communication system, allowing you to transfer data on the go (i.e., without wires). Wireless IP (Internet Protocol) supports browser-based applications, giving you feature rich capability with the Internet in your hand.

With this modem, you are taking advantage of the latest development in wireless data technology. The PocketSpider Modem offers the convenience of wireless data, the benefits of the CDPD network, ease of use, and minimal power consumption.

The PocketSpider is the first wireless IP (CDPD) modem designed exclusively for a compact flash slot. With the power of wireless data and GPS, Nextcell is revolutionizing the world of PocketPC®, Palm, and handheld PC devices.

This User's Manual describes the use of the PocketSpider Modem with a Handheld PC (H/PC) device. The PocketSpider is compatible with Windows CE version 3.0 (e.g., Pocket PC). Please read all instructions carefully before installing your PocketSpider modem into your H/PC.

Your PocketSpider kit includes the following:

- PocketSpider
- Battery Pack (Li ion)
- Battery Charger
- Charger Base
- Wall transformer (AC adapter) for charger
- Compact Flash card with installation software
- User's Manual

2.0   CDPD BASICS

CDPD, short for Cellular Digital Packet Data, is also known as "Wireless IP." It is a data transmission technology developed for use on cellular phone frequencies. CDPD uses unused cellular channels (in the 800- to 900-MHz range) to transmit data in packets. This technology offers data transfer rates of up to 19.2 Kbps, quicker call set up, and better error correction than using modems on an analog cellular channel. CDPD is based on TCP/IP, the same protocols that power the Internet.

2.1   Registering With a Carrier

Just as you would do with a cell phone, you must first register for service with a local CDPD carrier.

2.1.1 ACTIVATING YOUR SERVICE

The PocketSpider will work with any CDPD carrier. Decide which carrier offers the best plan to meet your CDPD needs, then register with that carrier.

Typically, two service carriers will be available to a CDPD user. One will be known as the **A-side carrier** and the other is known as the **B-side carrier**. You may register with the A-side carrier, the B-side carrier, or both of the carriers.

2.1.2 REGISTRATION

When you register with a CDPD carrier, the carrier should give you the following information:

- Internet Protocol (**IP**) address
- Carrier Side Identification (Either **A** or **B**)
- Service Provider Network Identifier (**SPNI**) Number

Be sure to record this information. This information may be needed in order to receive customer service and/or technical support.

You will be assigned a specific Internet Protocol (**IP**) address to use with your modem. Your carrier should also indicate whether they are the **A-side** carrier or the **B-side** carrier, and provide you with their **SPNI** number

Your cellular carrier may also provide you with additional information that is needed for use with your third-party protocol stack(s). Consult your protocol stack documentation for information regarding stack configuration and use.

The cellular carrier has the responsibility to warn you of any changes the carrier may make to its operations and/or procedures that would effect your usage of the service. You will be advised of your right to issue a complaint to the FCC regarding these changes.

2.1.3 CDPD CHARGES

For information about your CDPD charges, you will need to contact your CDPD carrier service. Charges will vary according to the CDPD service provider you choose and the plan you select. Most carriers will offer several CDPD plans that vary in rates and structure. Your carrier should explain these items to you in detail when you consult them about registration.

3.0   INSTALLATION AND SETUP

The PocketSpider Modem is an easy-to-use product that requires very little set up. This manual explains how to install and setup your PocketSpider Modem. The software installation can be accomplished in two ways: (1) using a compact flash card, or (2) input from a host computer to the handheld device.   Use of a compact flash as described below is the commonly used approach, and the alternative "remote" installation approach is provided as Appendix A to this manual.

3.1 Battery Operation

The PocketSpider derives all its power from a self-contained battery pack, thereby ensuring no adverse effects on battery life of the host H/PC device. Prior to using the PocketSpider, charge the new battery for at least 2 hours. Details on the battery charger and charging process are provided in Section 5 of this manual.

The Li ion (Lithium ion) battery is composed of Lithium, the lightest metal and the metal that has the highest electrochemical potential. Because of its light-weight and high energy density, Lithium-Ion batteries are ideal for portable devices.   Lithium-Ion batteries have no memory effect or poisonous metals, and they have long battery life.

Once charged, clip the battery into the back of the PocketSpider housing and you are ready to go.

The PocketSpider should operate for several hours under normal transmit and receive operating conditions, although sustained transmitting inherently reduces the time between charge. In the event of a low battery, either remove and insert a second charged battery, or remove the battery pack, recharge, and reinsert the pack into the PocketSpider.

3.2 Compact Flash Memory Card Installation

1.   Insert the setup memory card into Window CE device.

2.   "Autorun" on the compact flash card should run automatically on your Pocket PC device. The screen will ask if installation of the Nextcell Spider Modem software is desired. Click "Yes" to continue.
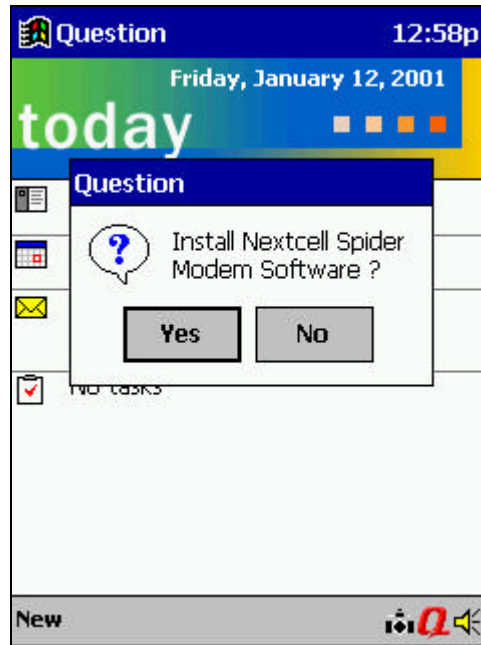
3. After installation is complete, click "**ok**" to close the install application and reset the Pocket PC device.
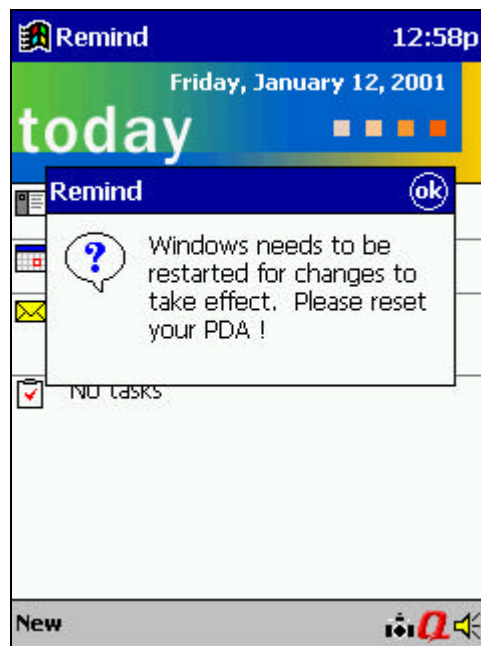

4. After reset is complete, **Setup** is required before running PocketSpider modem.

3.3 Setup

This section explains how to setup the PocketSpider Modem for use with the Windows CE 3.0 platform. The purpose of this application is to setup the PocketSpider and create an appropriate dial-up networking entry. This section describes only the basic PocketSpider parameters required for registering the modem with the CDPD carrier. For information on setting additional parameters, see the Modem Setup application. This should also be run when switching from one PocketSpider Modem to another or when network parameters are changed.

1. Access the PocketSpider Modem Setup application by choosing **Spider Modem** icon from the **Start > Settings > System**.
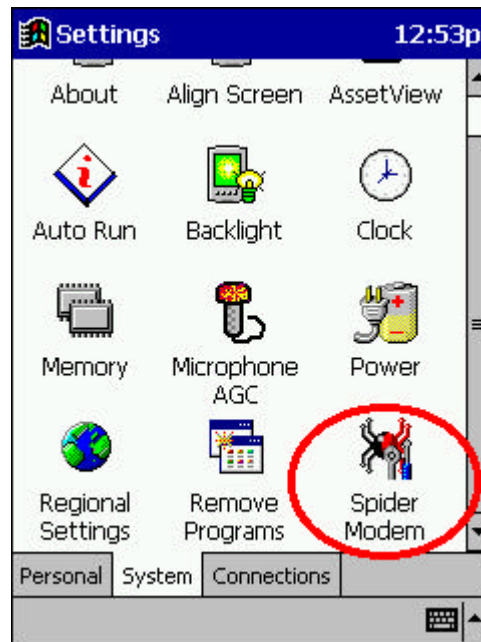

2. **PocketSpider Modem configuration information** will be displayed when the **General** tab (lower left screen) is clicked. The PocketSpider Setup application for Windows CE generates this information automatically, and no manual user entry is required.

   *Note:* Click "**ok**" to save any new values or changes.
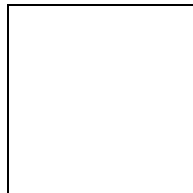
3.   The **Network** tab is used to set up and save the CDPD network information into the modem. Select the **Network** tab to setup your CDPD Service Provider information.   Enter Modem's **IP address**, **Primary DNS**, **Secondary DNS** (Optional), **Carrier** Preference, and additional PocketSpider Modem parameters.
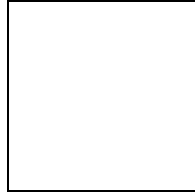
4.   The **Channel Scan** tab is used to configure the modem scan for the CDPD network setting. These settings are then used by the modem to connect to the CDPD network. Select **Channel Scan** tab to setup the PocketSpider Modem scan channel settings.
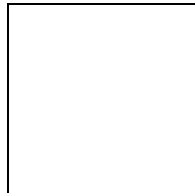
5.   The **RAS Entry** tab (lower right) is used to create an entry to dial up the CDPD network. After selecting the tab, enter your choice of RAS name; but note that Windows CE 3.0 limits the RAS entry name to 20 characters. Click on **Create New RAS Entry** button (the application may overwrite an existing RAS entry with the same entry name).
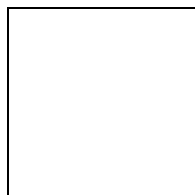
4.0   MONITORING MODEM STATUS

Operational status information is provided on the PocketSpider device and on the H/PC device screen.

4.1   LCD Display

The PocketSpider contains an LCD that shows basic information for the unit's operation and battery charge condition.

4.1.1 OPERATIONAL STATUS

- **SD RD** (Send Data Receive Data) is the default code when the PocketSpider is installed on the host H/PC device.

- **NEXTCELL** is displayed when the Spider Launch Manager utility is connecting.

- The window will display the following:
    - **SD**   Send Data
    - **RD**   Receive Data
    - **IDLE** Not connected, not trying (default)

- The following will appear when the Spider Launcher icon is clicked on the H/PC screen:
    - **TRYING**
    - **CONNECTED**

- **CH** indicates the channel number

- If no activity after 10 seconds, the LCD will power down to conserve battery life.

- The LCD will reappear when there is new data activity.

- If the LCD is "OFF", click the button on the top left corner of the PocketSpider:
    - 1st click shows screen power connected
    - 2nd click goes to:
        - **SIG**   Signal Strength (RSSI)
        - **BAT**   Battery Low
    - 3rd click goes back to 1st click (shows screen power connected)
    - 4th click goes back to 2nd click

- If the LCD is "ON", it is the same as the 2nd click above (i.e., SIG, BAT)

4.1.2 BATTERY LOW INDICATION

The LCD shows two basic conditions related to the battery:
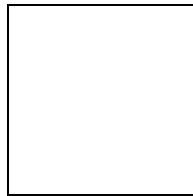
- **CONNECTED**
- **LOW BATTERY**

When **LOW BATTERY** is displayed:

- Shut down operation
- Close the **Spider MGR** on the H/PC or physically remove the PocketSpider from the H/PC device.
- Remove discharged battery
- Insert a charged battery

4.2 Handheld Device Screen

The Spider Modem Manager application displays on the H/PC screen the current/real-time status of the Modem.

1. To access the Spider Modem Manager, choose "**Spider Modem**" from **Start** menu. When Spider Modem application runs for the first time after its installation, "**Select RAS Connection**" pops up asking user which entry to connect. Select "**Pocket Spider I**" from the drop-down list and click on **Connect** button.

2. Spider Modem Manager will then detect PocketSpider by opening its port. Once Spider Modem Manager opens its port successfully, the PocketSpider is activated to search for CDPD channels and get it connected to the Network (Internet). The PocketSpider is successfully connected when "**Complete registration**" message is displayed under **Modem Status** (shown figure below).
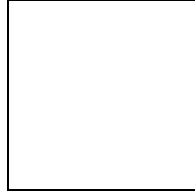
3.   The PocketSpider Modem Manager application is designed to display the most important status information to the user. When any data is passing to and from the PocketSpider, such as surfing the Internet and sending emails, **Send traffic** (red) and **Receive traffic** (blue) lines will become active (shown figure above).

5.0 BATTERY AND CHARGER

The PocketSpider is powered by a single rechargeable 0.700 A/hr Lithium Ion 3.6 VDC cell installed on the back of the device. A PocketSpider Battery Charger is the only device to be used for recharging these batteries. Only Nextcell chargers and Nextcell batteries should be used in ANY PocketSpider device.

5.1 Battery Installation and Removal

The battery and self-contained case clips in the back of the PocketSpider device. To remove the battery, depress the clip at the top and gently remove the battery.

5.2 Initial Set Up

1.   Attach the power cord to the charger.

2.   Plug the power cord in to a standard 110 VAC outlet.

3.   The Green LCD should illuminate. This LCD has two purposes:

      a.   Indicates that the charger is ready to accept a battery, or

      b.   Indicates that the current charge cycle is over.

4.   Insert a battery and let charge at least 2 hours or until green light illuminates.

NOTE

- Do not leave batteries in the charger for more than 8 hours.

- Do not leave the battery in the charger if the charger is not plugged into an electrical outlet via the 110 VAC wall mounted transformer supplied with the unit.

The charger was designed to operate from a standard 110 VAC 60 Hz electrical outlet. The charger should continue to operate as low as 85 VAC and as high as 120 VAC. The wall transformer should be able to supply approximately 12 VDC at 0.5 A. The power connector is a standard 2.1 mm DC power jack (center positive).

The charger has built-in surge arrestors, but serious overload conditions could result in damage to the circuitry.

5.3 Charger Operation

1.   Insert a battery into the charger. The Green LCD should turn off and the Red LCD should illuminate.

      Do not remove the battery from the charger or unplug the charger until the Green LCD illuminates.

2.   The charger has the following modes of operation:

      a.   When the battery is first inserted, the charger checks to determine if the battery is severely discharged. If the battery voltage is below

0.5 VDC, then the charger will consider the battery to be defective and will not attempt to charge the battery.

b.   If the battery is between 0.5 VDC and 2.5 VDC, the charger will drop to trickle charge mode and attempt to bring the battery up to a useable voltage without inducing any cell damage.

c.   When the charger gets above 2.5 VDC but is below 4.0 VDC the charger enters a "bulk charge" state. During this phase of the charge cycle, the charger will output a constant current of 0.45 A until the battery voltage reaches 4.0 VDC.

d.   When the battery voltage reaches 4.0VDC, a top-off charge timer starts. This timer will run for approximately 1.5 hours.

e.   When the top-off timer expires, the Red LCD will turn off and the Green LCD will illuminate, indicating that the battery may be removed.

NOTE

If the battery is removed prior to the completion of the charge cycle, or if power is lost during the charge cycle, then unplug the charger and then plug it back in to reset the charger.

If power to the charger is lost and reapplied prior to completion of charging, the green light will illuminate indicating the charger is ready for a new cycle. In such instances, remove and reinsert the battery into the charger to initiate a new charge cycle.

6.0 TECHNICAL SUPPORT

For problems stemming from your network access, contact your CDPD carrier service.

For technical support and customer service dealing with the modem itself, contact Nextcell by any of the following methods:

Web site: **www.nextcell.com**

Phone: **972-578-CDPD**   **972-578-2373**

Email: **techsupport@nextell.com**

Before you contact Technical Support, please have your modem's Equipment Identifier (**EID**) number ready for the Technical Support representative. If you did not record the EID number, you can find this number in the **PocketSpider Modem** window, shown previously in Section 3.3.

SAFETY AND REGULATORY INFORMATION

The equipment certifications appropriate to your device are marked on the device and product specific information.   The use of the equipment is subject to the following conditions:

FCC COMPLIANCE STATEMENT

This device complies with Part 15b 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.

This device also complies with FCC Part 22.

FCC RF EXPOSURE COMPLIANCE

The CDPD modem module has been tested for FCC RF exposure hand SAR compliance in a typical hand-held, hand-operated electronic organizer/PC. In order to comply with FCC RF exposure requirements the CDPD modem module must be operated in a hand-held and hand-operated electronic organizer, PC, or similar products. The use of this device in any other type of host configuration may not comply with FCC RF exposure requirements and should be avoided. During operation, a 20cm separation distance should be maintained between the antenna and the user's/bystander's body (excluding hands, wrists, feet, and ankles) to ensure FCC RF exposure compliance.

CAUTION

Changes or modifications without the express consent of Nextcell, Inc. voids the user's authority to use the equipment.

This equipment has been tested and found to comply with the limits pursuant to Part 15 Subpart B and Part 22 of the FCC rules.   These limits are designed to provide reasonable protection against harmful interference in an appropriate installation.   This equipment generates, uses, and can radiate radio frequency energy and, if not used in accordance with instructions, can cause harmful radiation to radio communication. However, there is no guarantee that interference will not occur in a particular installation.   If the equipment does cause harmful interference in radio and television reception, which can be determined by turning the equipment on and off, 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 distance between the equipment and the receiver

- Contact Nextcell, Inc. Technical Support for assistance.

NEXTCELL, INC. 12-MONTH LIMITED WARRANTY

Nextcell, Inc. warrants the products that it manufactures to be free from defects in materials and workmanship for a period of 12 months from the date of shipment from Nextcell. This warranty is limited to the original purchaser of the product and is not transferable.

During the 12-month warranty period, Nextcell will repair or replace, at its option, any defective products or parts at no additional charge provided that the product is returned, shipping prepaid, to Nextcell. The purchaser is responsible for insuring any product so returned and assumes the risk of loss during shipping. All replaced parts become the property of Nextcell.

During the 12-month warranty period, Nextcell will also provide any software updates/upgrades, at its option, at no additional charge. Any additional hardware that may be required to support the upgrade will be quoted as an option on request by the customer.

Equipment add-ons, software modules, or software upgrades purchased or provided at no charge for existing equipment are warranted for the length of the existing equipment warranty, extended warranty or 90 days (whichever is less).

THIS LIMITED WARRANTY DOES NOT EXTEND TO ANY PRODUCTS WHICH HAVE BEEN DAMAGED AS A RESULT OF ACCIDENT, MISUSE, ABUSE, OR AS A RESULT OF SERVICE OR MODIFICATION BY ANYONE OTHER THAN NEXTCELL.

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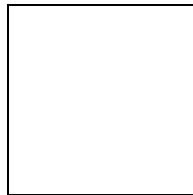
APPENDIX A

REMOTE INSTALLATION PROCESS

Establish CE Service

Before installing your modem, ensure that "Windows CE Services" (Microsoft ActiveSync, or similar) is installed on the host computer to connect to your Pocket PC. To determine the availability of Windows CE Services, look in the **Programs** folder of the **Start** Menu.

Windows CE Service is available if the Programs folder contains a sub-folder **Microsoft Windows CE Services**, **Microsoft ActiveSync**, or similar. If the services are not installed, please consult your H/PC (Handheld or Pocket PC) manual and install Windows CE Services on the host computer.

1. Using the appropriate cable, normally furnished with your H/PC, connect the H/PC to the appropriate COM port of the host computer.

2. Refer to then Nextcell website http://www.nextcell.com .

3. Download the Spider Tools to your host computer and follow on-screen directions. A "Main Menu" screen such as shown below should appear.

APPENDIX B

ABBREVIATIONS AND DEFINITIONS

A	Ampere
AT	(Command)
Ahr	Ampere hour
BAT	"Battery Low"
CDPD	Cellular Digital Packet Data
CD-ROM	Compact Disk - Read Only Memory
CF	Compact Flash
COM	Communications (port)
DNS	Domain Name Server
EID	Equipment Identification Number
EMI	Electromagnetic Interference
FCC	Federal Communications Commission
H/PC	Handheld/PC
Hz	Hertz; cycles per second
IP	Internet Protocol (address)
ISP	Internet Service Provider
LCD	Light Emitting Diode
MGR	"Manager"
RAS	Remote Access Service
RD	"Receive Data"
RSSI	Receive Signal Strength Indicator
SD	"Send Data"
SIG	Signal Strength
SPNI	Service Provider Network Identifier
TCP/IP	Transport Control Protocol/Internet Protocol
UL	Underwriter's Laboratory
VDC	Voltage Direct Current
VAC	Voltage Alternating Current

APPENDIX C

ADVANCED USER TOOLS

The PocketSpider Modem AT test application allows users to view or modify advanced settings for the PocketSpider. It is not usually necessary to modify these advanced settings, as the default settings are adequate for most uses. Please contact Nextcell Technical Support or visit our website if more information is needed.
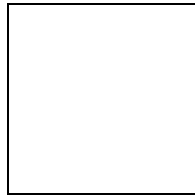
Please see the Nextcell web site http://www.nextcell.com for the AT Command set.