FCC ID: PQSWAVENET-DUAL-V

Exhibit 9

User's Manual

PDA Wireless Modem attachment for Palm V/V$_x$

Dualwave V

Model: DWV 100D

User Manual

This product contains a transmitter approved under the FCC rules: Parts 2 and 90.

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.

This device complies with the Industry Canada RSS119.

This device complies with the Class B limits for radio noise emissions as set out in the interference-causing equipment standard entitled "Digital Apparatus", IECS-003 of Industry Canada.

Contents

Introduction

The Dualwave V is a wireless modem developed for Personal Digital Assistants (PDAs), such as the Palm V/Vx™ and IBM Workpad 3™. It enables access to worldwide DataTAC wireless networks in the USA, Canada, Malaysia, Singapore, Hong Kong, Taiwan and Australia.

This technology offers the following unique benefits to the PDA user.

- Dualwave V's unique PUSH technology "wakes up" the PDA and immediately alerts you of a new message.

- The serial port provides three additional functions for the PDA user by:

  - Allowing the use of modem function for transmitting and receiving data to a PC

  - Exchanging and updating data between PDA and computer.

  - Allowing the simultaneous charging of the PDA and Modem batteries.

Using additional software, the Dualwave V effectively turns your PDA into a wireless window on the web and lets you use your existing e-mail accounts for mail.

This manual provides details on how to set up, charge and use the Dualwave V. There is a troubleshooting section to the rear of the manual and a section on the care and maintenance of your new Dualwave V. Specifications are displayed on the last page.

Features

The Dualwave V has the following features:

- Form hugging clip-on modem suitable for Palm V/Vx™ (and IBM Workpad® c3) PDAs.

- Secure locking mechanism.

- May be used independently as a wireless modem for PC/laptop by using additional software.

- Roaming capabilities as used in RDLAP system.

- Modem is always online using the DataTAC network.

- Auto wake up of PDAs from incoming messages.

- HotSync® button for synchronising data between PDA and PC.

- Extended battery life (5 days standby, 14 hours communication time).

- High sensitivity reception.

- Indicator lights shows the status of the network coverage and battery condition.

Compliance 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 and, if not installed and used in accordance with the manufacturer's instructions, may cause interference harmful to radio communications.

There is no guarantee, however, that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

* Reorient or relocate the receiving antenna.

* Increase the separation between the equipment and receiver.

* Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

* Consult your supplier or an experienced radio/TV technician for assistance.

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

Information for Your Safety

Please read these safety instructions and the operation instructions provided in this manual before operating the Dualwave V or the Battery Charger.

SAR (RF Absorption Levels into body)
Your Dualwave V wireless modem contains a low power transmitter and receiver. When it is ON, it receives and sends out radio frequency (RF) signals. In August 1996, the Federal Communications

Commission (FFC) adopted RF exposure (SAR) guidelines with safety levels for handheld wireless devices. These guidelines are consistent with safety standards previously set by both U.S. and International standards bodies: ANSI C95.1(1992), NCRP Report 89 (1986), ICNIP (1996)

Those standards were based upon comprehensive and periodic evaluation for the relevant scientific literature. The design of your Palm V wireless modem complies with these FCC guidelines and the standards above. It may be used next to the body or in the hand.

Safe Use

Switch the Dualwave off in areas where radio devices are forbidden, or when it may cause interference or danger. For example, fuel depots (fuel storage and distribution areas), chemical plants, locations in which hazardous or combustible gases may be present and where blasting operations are in progress.

Do not use the Dualwave V in an aircraft. Such use may affect aircraft instrumentation, communication and performance and may be illegal.

Be aware that the Dualwave V may interfere with the functionality of inadequately protected medical devices, including pacemakers. Additionally, the effect of the radio signals from the Dualwave V on other electronic systems, including those in your car (such as electronic fuel-injection systems, electronic anti-skid braking systems, and electronic cruise-control systems) is unknown and malfunction of these systems may result.

Do not use accessories or attachments (for example, a charging unit) that is not manufactured or supplied by Wavenet Technology Pty Ltd. Do not place the Dualwave V on an unstable surface. It may fall, causing injury and damage the equipment.

Discard the Dualwave V properly. The unit contains a lithium battery, neither the lithium battery or the Dualwave V should be disposed of in a fire. Dispose the Dualwave V containing the lithium battery in accordance with the laws and regulations in your area governing disposal of such cell types. Contact Wavenet Technology Pty Ltd if you have any questions concerning disposal of the Dualwave V or the lithium battery.

Never push objects of any kind into the Dualwave V through openings as they may short out parts that could result in a fire or electrical shock. Never spill liquid of any kind on the Dualwave V. Do not use Dualwave V near water (for example near a bathtub or sink, in a wet basement, near a swimming pool etc.). The Dualwave V should be situated away from heat sources.

Unplug the Battery Charger from the power source before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth to clean the unit.

Unplug the Battery Charger from the power source and return the Battery Charger and Dualwave V to your supplier if:

- The power supply cord or plug is damaged.

- Liquid has been spilled or objects have fallen onto the Dualwave V or Battery Charger.

- The Dualwave V or Battery Charger has been exposed to rain or water.

- The Dualwave V or Battery Charger has been dropped or damaged in any way.

- The Dualwave V or Battery Charger does not operate normally by following the instructions contained in this manual.

- The Dualwave V or Battery Charger exhibits a distinct change in performance.

Failure to observe all these instructions will void the limited warranty.

System Requirements

To install the Dualwave V software, your computer system must meet the following minimum requirements:
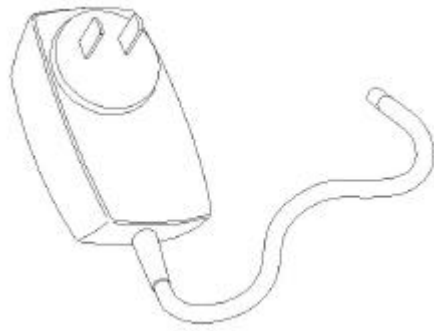
- Intel compatible 486 computer or higher

- Windows 95, Windows 98, or Windows NT 4.0

- 8 MB RAM (memory) minimum, 16 MB recommended

- 1 MB available hard disk space

- CD-ROM drive

- One available serial port (9-pin). A 25 to 9-pin adapter may be required if your system has a 25-pin serial port.

Checking the Package Contents
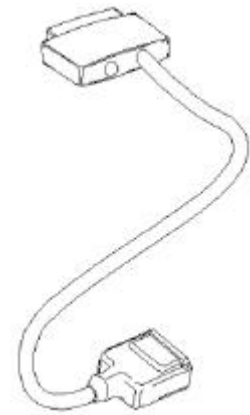
The following items should be included in the box.

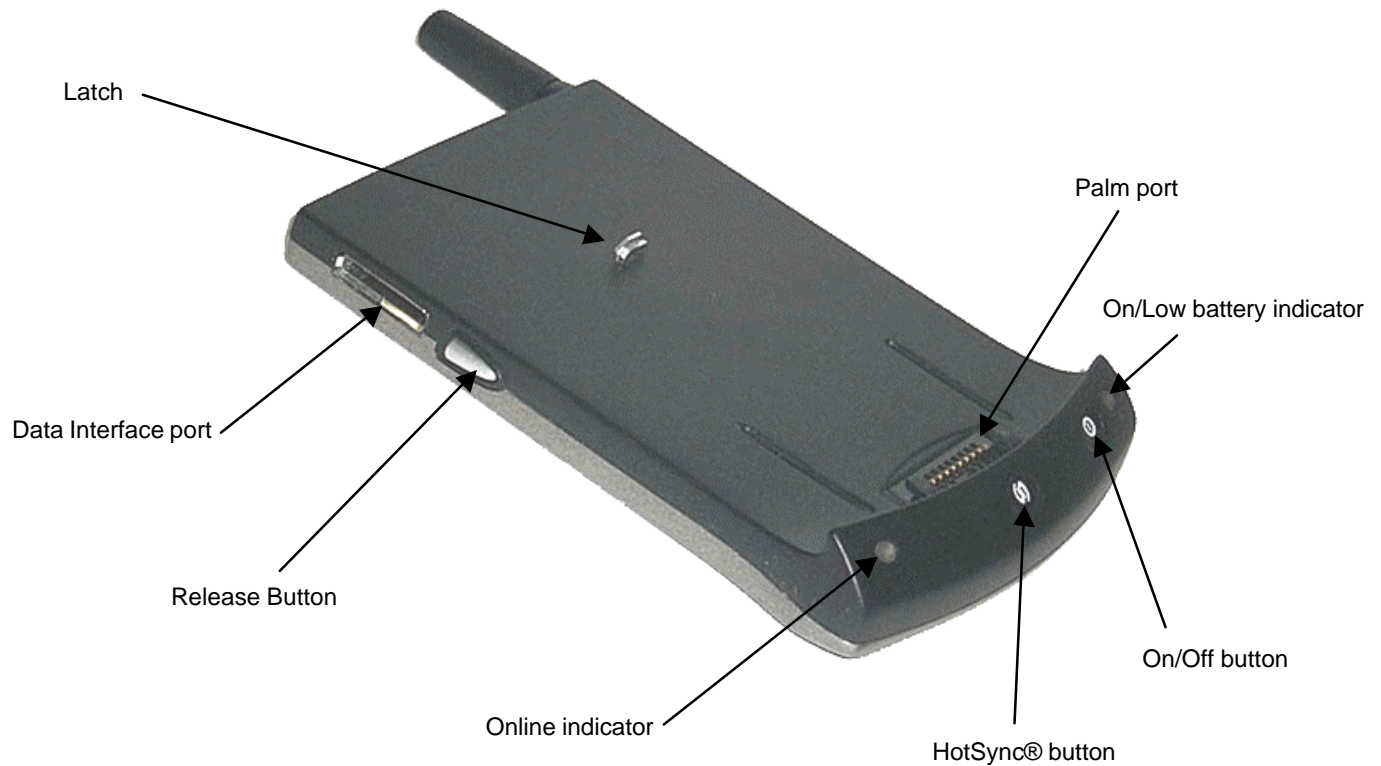Dualwave V   Battery Charger   Data Comms cable

The PC connector has 9 pins. Use a 25-pin to 9-pin adapter if your system has a 25-pin serial port.

You should also have the Installation CD-ROM, and this User Manual.

Exploring Your Dualwave V

Latch

Palm port

On/Low battery indicator

Data Interface port

Release Button

On/Off button

Online indicator

HotSync® button

The Dualwave V is made up of the following components:

Data Interface port   Provides a serial connection to the PC and connects the power supply to the modem.

Palm port   Provides a connection between the PDA and the modem.

Release Button and latch   Connects and releases the PDA from the Dualwave V.

HotSync® button   Synchronises data between the PDA and your computer.

On/Off button   Switches the Dualwave V on or off.

Online Indicator   Green indicates that the Dualwave V has registered with the wireless network.

On/low battery Indicator   Green indicates that the Dualwave V is on. Red indicates that the Dualwave V's battery needs charging.
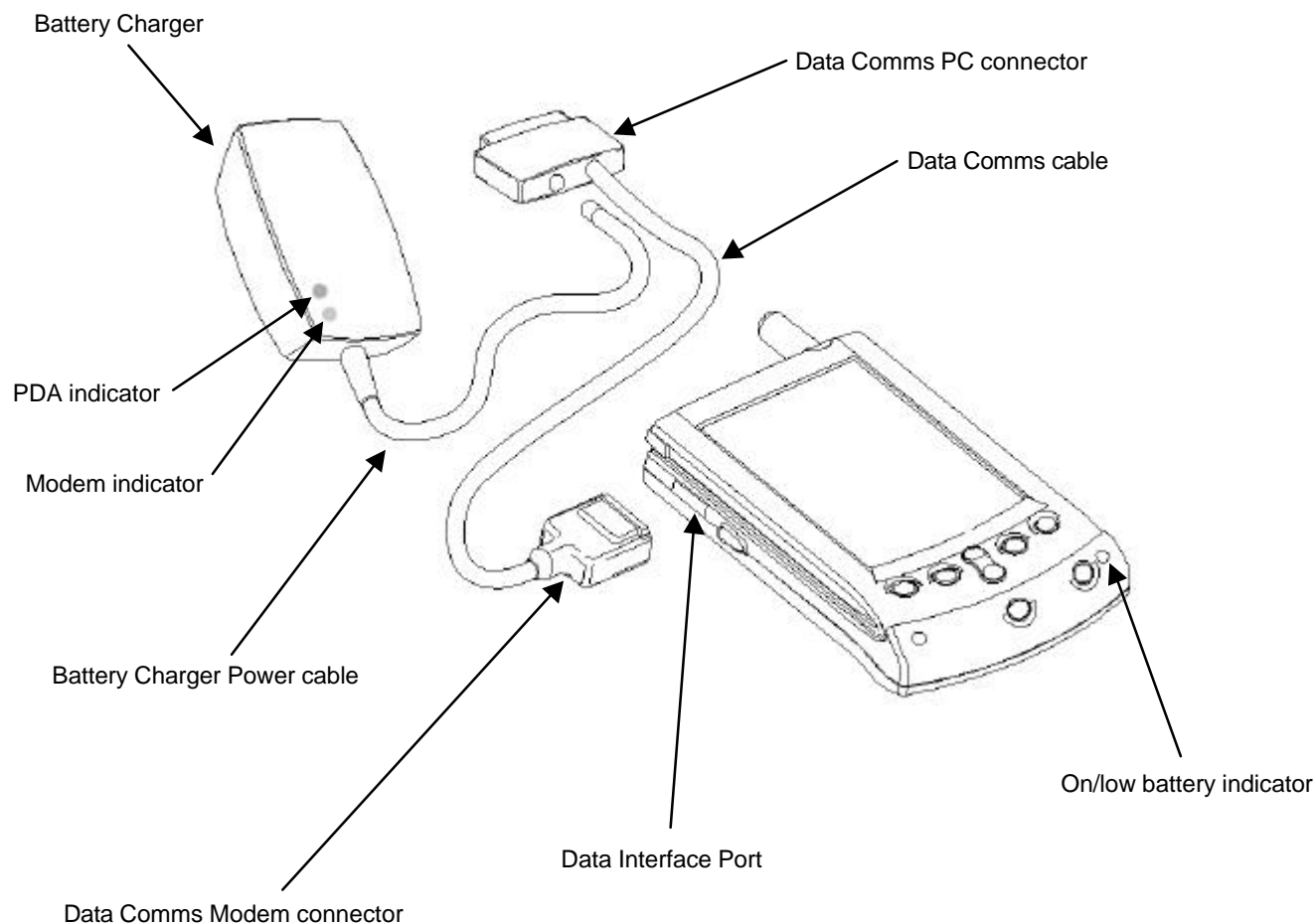
Getting Started

Before using your Dualwave V you must:

- Fully charge the Dualwave V's battery

- Connect the Dualwave V to your palm

- Install the installation software on your computer and your PDA

- Set your profile, USA or Canada

Charging the Dualwave V's Battery

Your Dualwave V's lithium battery is supplied discharged. For optimum performance, you should charge it fully before use. If during use, the Dualwave V's On/Low battery indicator displays red, the battery needs immediate recharging.

The Battery Charger charges both the PDA and the modem. However, The Dualwave V's battery powers only the modem, not the PDA.

Battery Charger

Data Comms PC connector

Data Comms cable

PDA indicator

Modem indicator

Battery Charger Power cable

On/low battery indicator

Data Interface Port

Data Comms Modem connector

Follow the steps below to charge the PDA and Dualwave V's battery:

1. Attach the Data Comms Modem connector to the Dualwave V's Data Interface port located on the left hand side of the unit.

2. Plug the Battery Charger's power cable into the Data Comms PC connector.

3. Plug the Battery Charger into a power source for approximately three hours. The PDA and Modem indicators on the Battery Charger display red while charging.

4. When the PDA and Modem indicators on the Battery Charger change to green, both batteries are fully charged. If only one indicator changes to green, only one battery is fully charged.

5. Unplug the Battery Charger from the power source.

6. Detach the Battery Charger power cable from the Data Comms PC connector.

If the indicators on the Battery Charger are flashing red, indicating a fault, return the Battery Charger and Dualwave V to your vendor for servicing

When the batteries are fully charged, the Battery Charger stops charging until the batteries capacity falls below a certain value. The Battery Charger will then automatically recharge the batteries again.

For optimum battery performance it is recommended that the Battery Charger is disconnected and reconnected to start the charge cycle from the beginning.

The Dualwave V's battery can operate for up to 14 hours communication time and up to five days standby.

Connecting Your Dualwave V to the PDA

To connect the Dualwave V to your PDA, follow the steps below:

1. Slide the PDA into the Dualwave V so that the palm ports are aligned.

2. Press the release button on the left hand side of the Dualwave V and press the back of the PDA into the Dualwave V until you hear a click. The button engages a latch that secures the PDA to the Dualwave V.

Latch

Palm ports
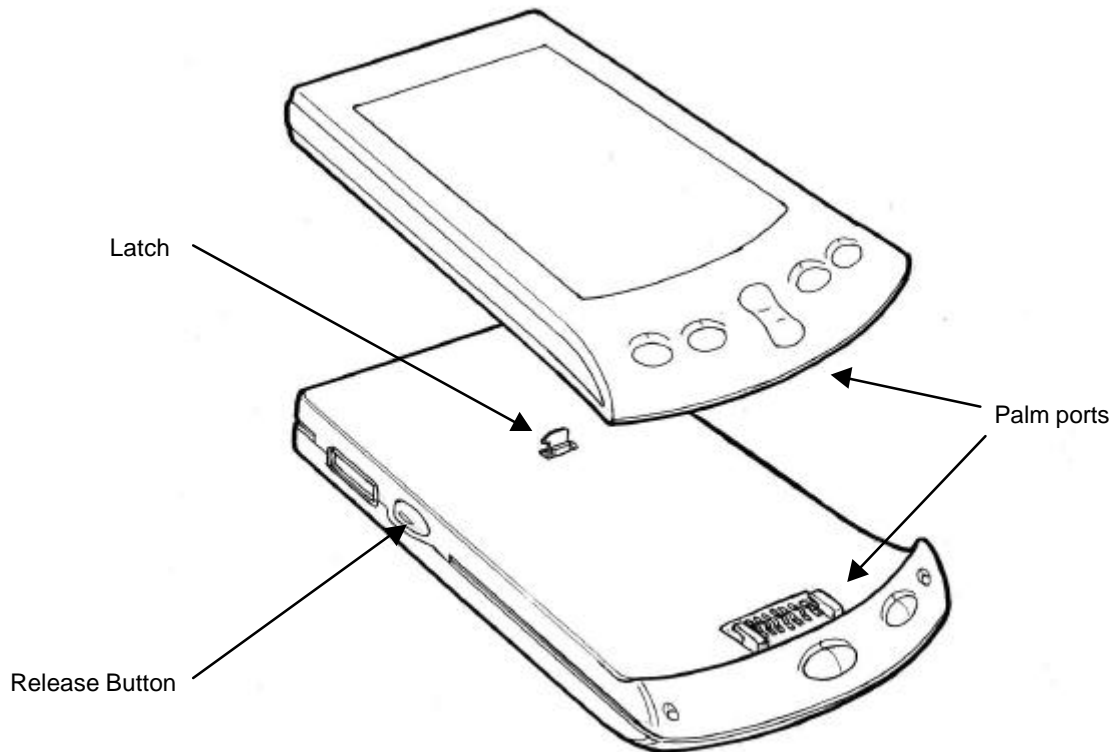
Release Button

Removing the Dualwave V

To remove the Dualwave V from your PDA, press the release button on the left hand side of the Dualwave V and gently pull the PDA up and away from the Dualwave V.

You must press the release button whilst disconnecting the Dualwave V or you may damage your PDA and the Dualwave V.

Installing the Software

To install the Dualwave V software installation application, attach the Dualwave V to your PDA, as described in the previous section.

Connect the Data Comms Modem connector to the Dualwave V's Data Interface port. This is located on the left hand side of the Dualwave V.

Connect the Data Comms PC connector to a COM (serial) port on your computer. Note that the Data Comms PC connector is a 9-pin plug. If your computer has a 25-pin serial port you will need a 9-pin to 25-pin adapter.

Data Comms PC connector
(9-pin)

Data Comms Modem connector
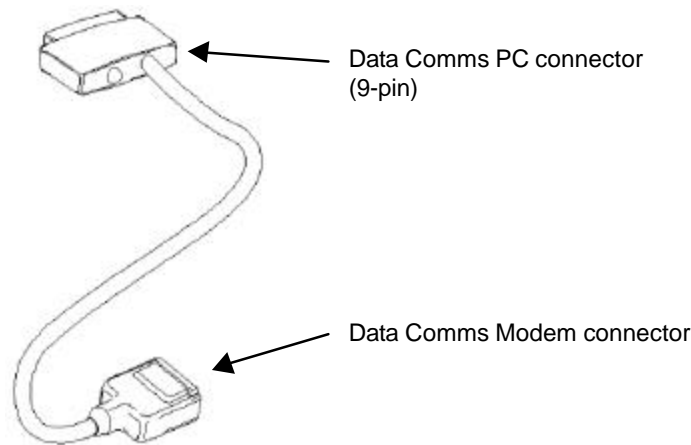
Insert the CD-ROM into your CD-ROM drive. When the menu appears, click the Install button and follow the instructions on the screen.

Transfer the application to your PDA by pressing the HotSync® button on the Dualwave V.
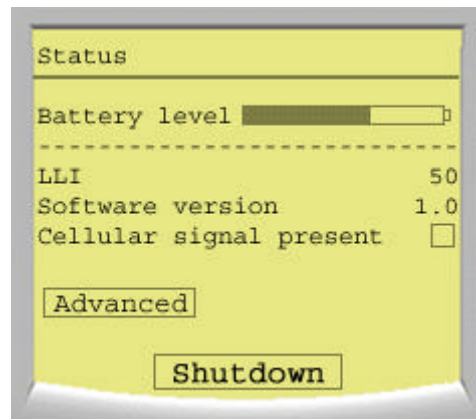
HotSync® button
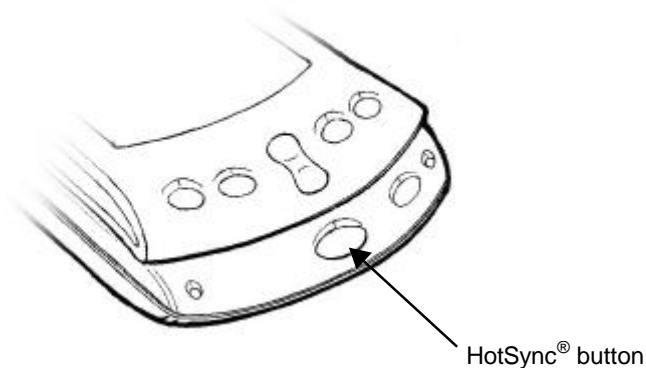
Removing the Software
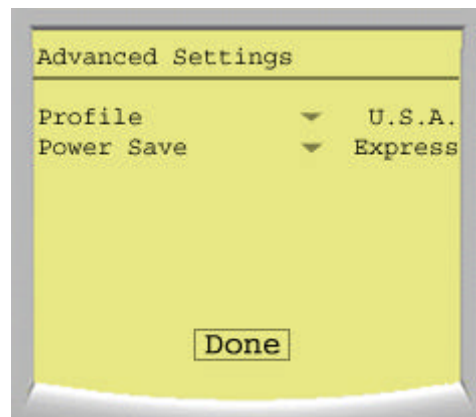
To remove the software, follow the procedure below:

1. Tap the Applications icon on the main screen of your PDA.
2. Tap the Menu icon.
3. Tap App.
4. Tap Delete.
5. Tap the Dualwave V application.
6. Tap Delete.
7. Tap Yes.
8. Tap Done.

Setting Your Profile

The default profile is U.S.A. To change your profile, tap **ẏ** from your PDA's main screen to display the Status screen shown below:

```
Status

Battery level ▓▓▓▓▓▓▓▓▓▓▓▓       ▯
- - - - - - - - - - - - - - - - - - - - - - - - -
LLI                         50
Software version           1.0
Cellular signal present     ☐

 Advanced

          Shutdown
```

Tap Advanced to display the Advanced Settings screen.

```
Advanced Settings

Profile          ▼   U.S.A.
Power Save       ▼   Express




          Done
```

The profile's default setting is U.S.A. To change the setting, tap ▼ and select Canada from the drop down menu.

Tap Done to save the settings and return to the Main screen.

Using Your Dualwave V
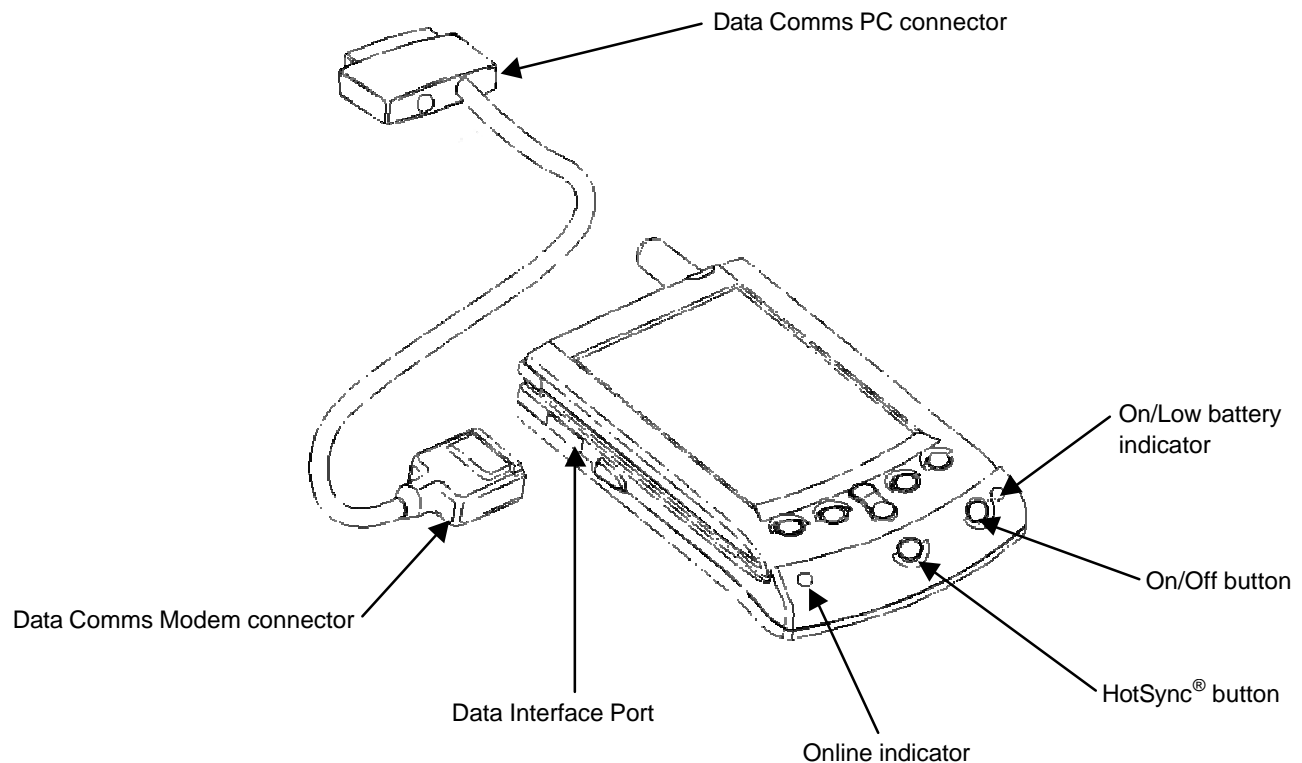
Ensure your Dualwave V is fully charged and is attached to the PDA before use, as described earlier.

Press the On/Off button on the Dualwave V. The On/Low battery indicator should display green. If it displays red, the battery needs charging. See the previous section, Charging the Dualwave V's Battery on page 10, for further information.

The Online indicator will display green when the modem has registered with the wireless network.

Switch your PDA on. The PDA is now ready for use.

## Exchanging Data Between Your PDA and Computer

1. Attach the Data Comms Modem connector to the Dualwave V's Data Interface port located on the left hand side of the Dualwave V.

2. Attach the Data Comms PC connector to a COM (serial) port on your computer.

3. Press the HotSync® button.

When you are finished using the Dualwave V, press the On/Off button.

Setting the Power Save Option

The Dualwave V is designed to stay on so that it can notify you when it receives incoming messages and so you can quickly access your e-mail messages and information from the web. To conserve power, the Dualwave V can be pre-set to go to sleep when not in use.

To pre-set the power save option, tap **ÿ** on your PDA's main screen to display the Status screen shown below:
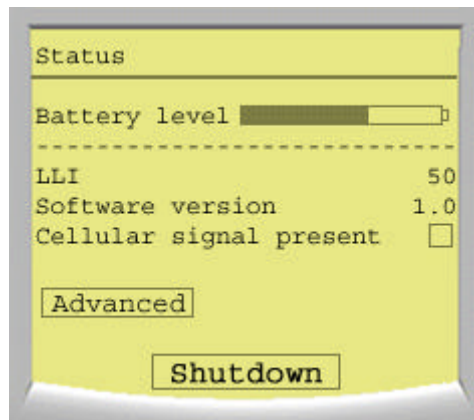
Tap Advanced to display the Advanced Settings screen.
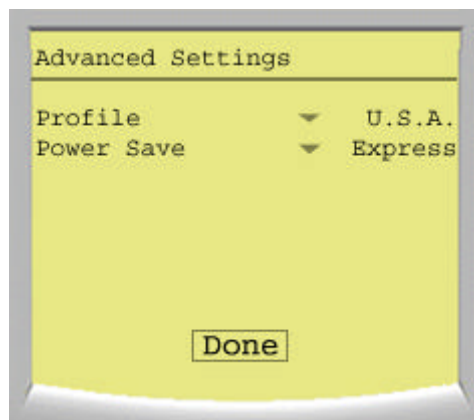
By default, the Power Save option is set to Express. Tap ▼ and select one of the following options from the drop down menu.

Express – The power save option is disabled

Minimum – Wakes up and receives every 16 seconds

Average – Wakes up and receives every 32 seconds

Maximum – Wakes up and receives every 64 seconds

Tap Done to save the settings and return to the PDA's Main screen.

Troubleshooting

Before contacting technical support, try the following:

- Charge the Dualwave V as described earlier.

- Ensure all connections are secure and the Dualwave V's On/Low battery indicator is green.

- Perform a soft reset by pressing the reset button located on the back of the Dualwave V. The reset button is recessed; simply insert the tip of your stylus or other pointed object into the recession and press.

- If the Dualwave V still doesn't respond, perform a hard reset by pressing the On/Off button. Please note however, that a hard reset will erase all records and entries on your PDA.

For technical support, service or repair, contact your local vendor or Wavenet Technology. Contact details are shown on page 2 of this manual.

Checking the Connection Status

Check the online indicator. This should display green for a good connection. The wireless signal needs a clear path; avoid metal buildings or tunnels. Tree leaves and windows may also affect the signal strength, as can environmental conditions, for example, rain and clouds.
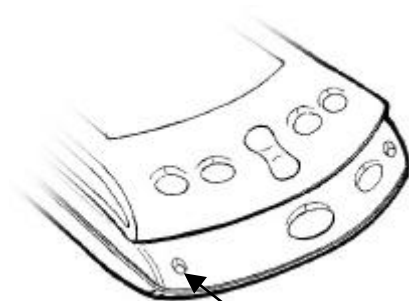
Online indicator
This should display green
for a good connection.

To check the connection status, tap **ÿ** on your PDA's main screen to display the following screen.
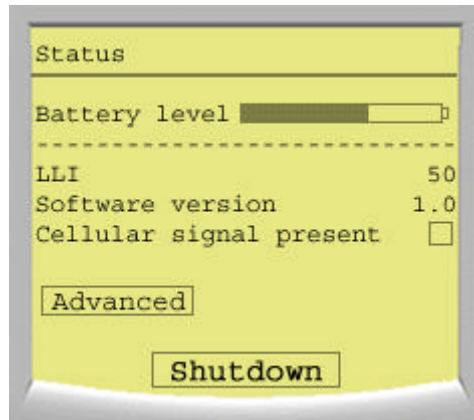
A description of the screen layout is shown below:

Battery level	This indicates the status of the battery. Low battery levels can affect the connection.
LLI	Logical link Identifier. This is the unique identity of the modem.
Software version	The software version of the Dualwave V Installation program.
Cellular Signal Present	This indicates the cellular coverage. If the checkbox is not ticked, there is no cellular signal at your location. Try moving to detect the signal. If moving does not help, there is no coverage at that location.
Advanced	Tap this button to access advanced settings. See page 14 for information on profile settings. See page 17 for information on power save settings
Shutdown	Tap this button to turn off the Dualwave V.

Tap to return to the main screen.

Care & Maintenance

Your Dualwave V is supplied maintenance free. However, periodically clean off the dirt and dust that may adhere to the exterior casing. Use the following procedures:

1. Disconnect the Battery Charger and cables from the Dualwave V.

2. Dampen a clean, soft cloth with water and wring the cloth well.

3. Use the well rung cloth to gently remove dirt and dust.

Do no dampen the connectors or ports. Immediately remove any moisture that contacts these components by wiping them with a dry cloth.

Do not use a sodden cloth or apply a liquid to any portion of the Dualwave V.

Never use substances containing alcohol, thinners or benzene on the equipment. Use of these substances may deform, discolour or dissolve the casing.

Specifications

Physical Properties	
Weight	Approximately 150 g
Size (L x W x H)	127 mm x 80 mm x 12 mm
Power	
Lithium-ion battery (3.6 V)	1400 mA/hour 3.6 V nominal
Life	5 days standby, 14 hours communication time
Size (L x W x H)	33 mm x 47 mm 8 mm
Temperature range	0°C to 45°C
Protection circuit	Prevents overcharge and deep discharge
Communication Protocols	
Modem to radio network protocol	MDC, RD-LAP 3.1, 3.2, 3.3
Modem to terminal (e.g. handheld) protocol	NCL 1.2
Environmental Conditions	
Operating temperature	0°C to 45°C
Storage temperature	-20°C to 70°C
Relative humidity	5-95% Non condensing
Extreme temperature operation will degrade battery life.	
Transmitter	
Frequency range	806 – 821 MHz (US) 806 – 825 MHz (other)
Data rate	RDLAP 19.2 kbps
	MDC – 4.8 kbps
RF output power	1.6 W $\pm$ 10% (at 50 Ω antenna port)
Turn on time	< 5 ms
Frequency error	$\pm$ 1.5 ppm
Spurious emission	< - 30 dBm
Adjacent channel power	< -60 dBc
Receiver	
Frequency range	851 – 866 MHz (US) 851 – 870 MHz (other)
Channel spacing	25 kHz
Settling time	< 5 ms
Sensitivity	< -109 dB at 5% PER
Spurious emission (of modem in receive mode)	< -57 dBm
Channel selectivity	> 50 dB (5kHz dev 1 kHz tone)
Spurious rejection	> 60 dB
Image rejection	> 60 dB
RSSI	-120 dBm ~ -45 dBm
Ports	

Data Interface Port	RS-232 compatible serial port, operating speeds up to 115200 baud
Palm Port	Palm compatible port

LED Indicators

Power on/off and battery status	Green - Power on, battery charged Red - Low battery
Online	Green - Online

Battery Charger

External dual output 4.1/4.2 V DC battery charger

Type	Constant current / constant voltage
Weight	Approx. 500 g
Size (L x W x H)	100 mm x 50 mm x 40 mm
Operating temperature	0°C to 50°C
Storage temperature	-10°C to 55°C
Maximum charge current	600 mA (modem), 400mA (PDA)
Maximum charging voltage	4.2 V (modem), 4.1 V (PDA)
Mains voltage range	100 ~ 250 V AC (50 ~ 60 Hz)
Typical charge time	4 hours
LED indicators	Two, modem and PDA
	Green: Fully charged Red: Charging Flashing red: Error