Harmony OpenAir CompactFlash Card Model 7630 User's Guide
Part # 7360.0145
Rev. A

Warranty Return Policy

If you have a problem with your Harmony OpenAir CompactFlash Card, please call Proxim Technical Support at 1-408-731-2640. Proxim Technical Support will assist with resolving any technical difficulties you may have with your Proxim product.

After calling Proxim Technical Support, if your product is found to be defective, you may return the product to Proxim after obtaining an RMA (Return Merchandise Authorization) number from Proxim Customer Service. The product must be returned in its original packaging. The RMA number should be clearly marked on the outside of the box. Proxim cannot be held responsible for any product returned without an RMA number, and no product will be accepted without an RMA number.

FCC WARNING

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

- ❑ Reorient or relocate the receiving antenna.

- ❑ Increase the separation between the equipment and the receiver.

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

- ❑ Consult the dealer or an experienced radio/TV technician for help.

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1. Introduction

Congratulations on your purchase of the Harmony OpenAir CompactFlash™ Card Model 7630. The Harmony OpenAir CompactFlash Card is a long range, high performance, wireless LAN adapter that provides mobile network connectivity to a Compaq iPAQ™ Pocket PC.

The Harmony OpenAir CompactFlash Card fits into the iPAQ's CompactFlash Expansion Pack and supports the OpenAir and the HomeRF wireless standards.

Proxim is the leading supplier of wirefree networking solutions. Proxim's unmatched expertise in spread spectrum radio networking technology, combined with the company's extensive experience serving the communication needs of the mobile computing user, have kept Proxim at the forefront of the wireless LAN market.

The Harmony Family

The Harmony OpenAir CompactFlash Card Model 7630 is a member of a product family that provides a complete wirefree networking solution.

❑ The **Harmony Access Point Controller Model 7560** centralizes the management, security, and filtering capabilities of a wireless LAN. The Access Point Controller communicates with Harmony Access Points over the Ethernet network to provide wirefree network access for mobile clients. The Access Point Controller can support multiple Access Points, even if each Access Point follows a different wireless standard.

❑ The **Harmony Access Point** is a networking bridge that operates at Layer 2 of the OSI networking model. Working in conjunction with a Harmony Access Point Controller, the Access Point forwards packets between its radio and the Ethernet network. Two models of the Harmony Access Point are available to support either the OpenAir or IEEE 802.11b wireless standards: the **OpenAir Access Point Model 7550** and the **802.11b Access Point Model 8550**.

❑ The **Harmony PC Card** is a wireless LAN adapter that fits into a PCMCIA Type II slot in a laptop computer. Two models of the Harmony PC Cards are available to support either the OpenAir or IEEE 802.11b wireless standards.

❑ The **Harmony 802.11b PCI Card** is a wireless LAN adapter that fits into a standard PCI expansion slot and complies with the IEEE 802.11b wireless standard.

❑ The **Harmony OpenAir USB Adapter** is a wireless LAN adapter that connects to a Windows 98/2000 computer's Universal Serial Bus (USB) port and complies with the OpenAir wireless standard.

❑ The optional **Harmony Power System Model 7562** provides remote DC power to Harmony Access Points over the unused pins of a twisted pair Ethernet cable.

The Product Package

Each Harmony OpenAir CompactFlash Card comes with the following:

❑ One OpenAir CompactFlash Card

❑ One snap-on antenna

❑ One CD-ROM containing Proxim drivers and utilities

❑ One *Harmony OpenAir CompactFlash Card Model 7630 User's Guide*

❑ One warranty registration card

If any of these items are missing or damaged, please contact your reseller or Proxim Technical Support.

The OpenAir CompactFlash Card is shown in Figure 1.

Figure 1
Harmony OpenAir CompactFlash Card

System Requirements

To begin using the Harmony OpenAir CompactFlash Card, you must have the following minimum requirements:

❑ A Compaq iPAQ H3600 Series Pocket PC with a CF Card Expansion Pack

❑ At least one other OpenAir or HomeRF-compatible product installed on the network (this includes other Harmony OpenAir products, Proxim's RangeLAN2 products, or Proxim's Symphony products)

Note:
Harmony OpenAir products are fully interoperable with RangeLAN2 products. RangeLAN2 products also use the OpenAir protocol.

2. Installation

This chapter describes how to install the Harmony OpenAir CompactFlash Card and software in a Compaq iPAQ 3600 Series Pocket PC.

Driver Installation

Follow these steps to install the Proxim driver on a Compaq iPAQ Pocket PC:

1. Copy the *PROXIM.DLL* file from the Proxim CD-ROM (included with the card) to a folder on a host computer that has an ActiveSync connection with the Compaq iPAQ.

2. Establish an ActiveSync connection between the computer and the Compaq iPAQ over a serial cable, a USB cable, or an infrared link.

3. Within the Microsoft ActiveSync window, click <**Explore**> to view the file contents of the Mobile Device.

4. Click the **My Pocket PC** icon.

5. Open the *Windows* directory.

6. Copy the *PROXIM.DLL* file to the *Windows* directory on the Compaq iPAQ. Click <OK> if prompted that Microsoft ActiveSync may need to convert the file.

Note:
Refer to the documentation that shipped with iPAQ for instructions on how to create an ActiveSync connection and copy files from a computer to an iPAQ.

Hardware Installation

Follow these steps to install the OpenAir CompactFlash Card in a Compaq iPAQ:

1. If not already attached, connect the snap-on antenna to the CompactFlash Card.

2. Insert the Compaq iPAQ into the CompactFlash Expansion Pack (if not already attached).

3. If necessary, remove the cover from the CompactFlash slot.

4. Insert the OpenAir CompactFlash Card connector-side first into the CompactFlash slot.

Note:
The OpenAir Compact Flash Card will only fit into the CompactFlash slot in one direction so that the back of card faces out).

The Compaq iPAQ will automatically detect the OpenAir CompactFlash Card. Follow the Software Configuration instructions below to complete the installation of the CompactFlash Card.

Note:
If the iPAQ does not automatically recognize the OpenAir CompactFlash Card, reset the iPAQ. The reset button is located on the bottom of the iPAQ. Refer to the documentation that came with the iPAQ for more information.

Software Configuration

Follow these steps to configure the OpenAir Compact Flash Card:

1. When prompted to enter the name of the driver for the Unrecognized Card, enter "proxim," as shown below.

2. Click <**OK**> to continue.

The Proxim Status Monitor icon will load in the System Tray (visible in the Today screen only), and then the **PROXIM RangeLAN2 Driver** screen will appear, as shown in the following example.
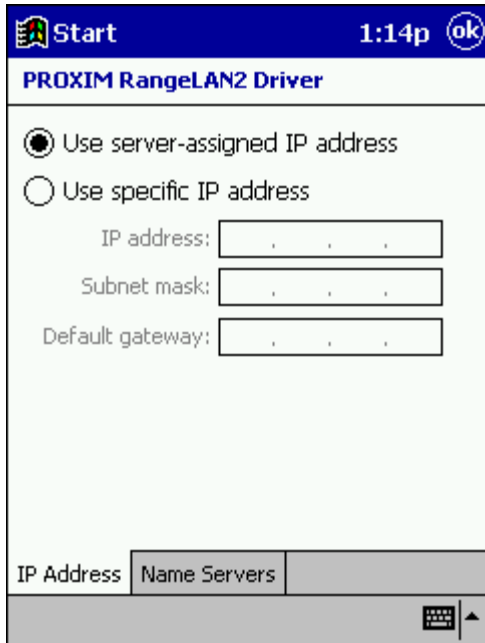
3. If the PROXIM RangeLAN2 Driver screen appears, proceed to Step #10. If the PROXIM RangeLAN2 Driver screen does not appear, proceed to Step #4.

4. Reset the iPAQ. The reset button is located on the bottom of the iPAQ. Refer to the documentation that came with the iPAQ for more information.

5. Tap the **Start** icon, located in the upper left-hand side of the iPAQ's screen.

6. Select **Settings** from the drop-down menu.

7. Tap the **Connections** tab.

8. Tap the **Network** icon.

9.   Select the **PROXIM RangeLAN2 Driver** from the list of installed adapters.

10.   Configure the TCP/IP settings for the CompactFlash Card.

Note:
Contact your network administrator for information about your network's IP addressing scheme.

10a.   If you have a DHCP server on the network, select **Use server-assigned IP address**. The CompactFlash Card will obtain an IP address automatically from a DHCP server the next time the Proxim driver is reset.

10b.   Select the **Use specific IP address** option if you want to assign static IP information to the CompactFlash Card. Enter an IP address, Subnet mask, and Default Gateway in the fields provided, as shown in the following example.
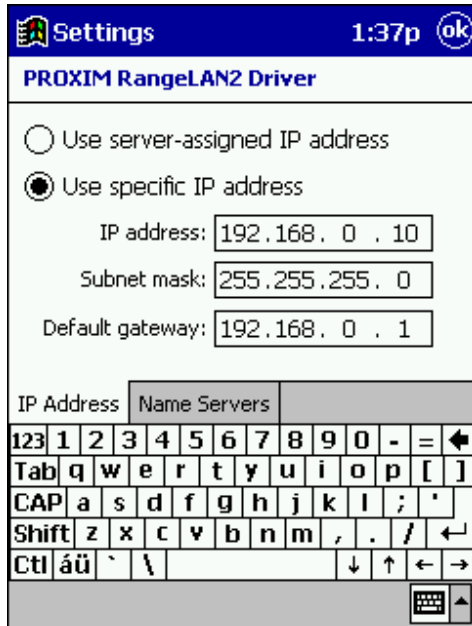
11. Select the **Name Servers** tab.

12. Enter the IP addresses for your network's DNS (Domain Name System) and WINS (Windows Internet Naming Service) servers, if applicable. Contact your network administrator for assistance.

Note:
If you have a DHCP server on the network, you may not need to configure these server addresses. In general, a DHCP server will automatically assign DNS and WINS server addresses.

13. If you do not have a WINS server on the network but you want to create a wireless ActiveSync connection over the network, enter the host computer's IP address in the **WINS** field.

    In the following example the host computer that has an ActiveSync partnership with the iPAQ has an IP address of 192.168.0.2.

14. Tap <**OK**> twice to return to the Network Connections page. The <OK> button is typically located in the upper right-hand corner of the screen.

15. Tap the **Identification** tab.

16. Enter a **User Name**, **Password**, and **Domain** in the field provided if these settings are required to access network resources. Contact your network administrator for assistance.

17. Tap <**OK**> to return to the Settings screen.

18. Remove and reinsert the iPAQ into the Compact Flash Expansion pack or reset the iPAQ for these changes to take effect.

Note:
Removing and reinserting the iPAQ into the Compact Flash Expansion pack will have the same effect as removing and reinserting the OpenAir CompactFlash Card into the CompactFlash slot.

19. Tap the ▨ **Start** icon and select **Today** from the drop-down list.

The Proxim Status Monitor icon should appear in the System Tray, located at the bottom of the Today screen, as shown in the following example.

Status Monitor

New	📶𝑸◁

Note:
The System Tray is only visible at the bottom of the Today screen.

20. Double-tap the Status Monitor icon to launch the Proxim
     Status screen, shown in the following example.

```
┌─────────────────────────────────────────┐
│ 📖 Proxim Status          2:22p  (ok)     │
│ ┌────┐                                    │
│ │ 🏠 │    Synchronized to                 │
│ │ ▮  │    0020a640ba99 CE                 │
│ └────┘                                    │
│          Network Domain: 0                │
│                                           │
│          Node Address:                    │
│          0020a640ba99                     │
│                                           │
│                                           │
│                                           │
│                                           │
│                                           │
│  ┌──────────────┐ ┌──────────────────┐   │
│  │    Status    │ │  Configuration   │   │
│  ├──────────────┤ ├──────────────────┤   │
│  │   Advanced   │ │      About       │   │
│  └──────────────┘ └──────────────────┘   │
└─────────────────────────────────────────┘
```
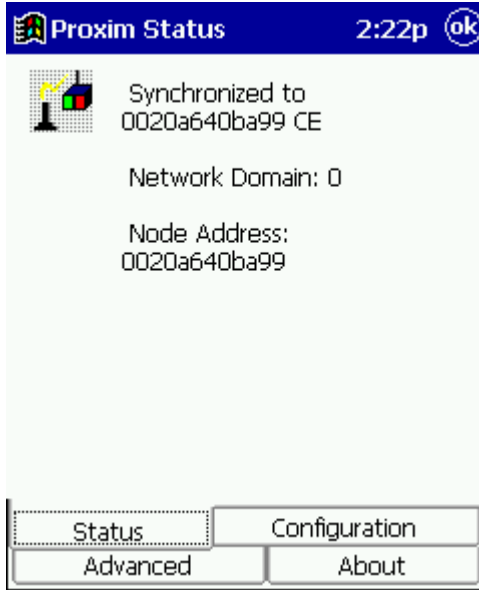
21. Tap the **Advanced** tab.

22. Select an Operating Mode for the device: OpenAir,
     HomeRF, or Dual. This parameter determines which
     wireless standard the card will use. See Chapter 4 for
     details.

23. Configure the other Advanced settings, if applicable. See
     Chapters 4 and 5 for details.

24. Tap the **Configuration** tab.

25. Click <**Set Security ID**> if you want to change the card's
     Security ID. See Chapter 4 for details.

26. Enter the network's Security ID in the field provided and click <**OK**>.

27. If you set the Operating Mode to Dual or OpenAir, select the OpenAir network's Domain number from the drop-down list.

28. Tap <OK> to close the Proxim Status screen.

The Proxim Status utility will now reset the card's parameters. Be patient while the driver reloads; this can take up to 20 seconds.

29. Tap <**OK**> when prompted that the new settings will take effect the next time the adapter is used.

30. Remove and reinsert the iPAQ into the Compact Flash Expansion pack or reset the iPAQ for these changes to take effect.

31. Double-tap the Status Monitor icon to launch the Proxim Status screen and confirm that the card is synchronized to the appropriate OpenAir or HomeRF device.

In the following example, the OpenAir CompactFlash Card is synchronized to a Harmony OpenAir Access Point.
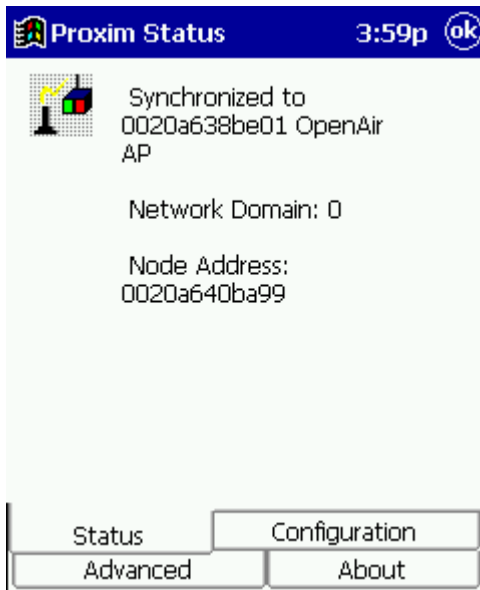
Note:

If the card is configured for OpenAir mode and cannot find an OpenAir device to synchronize to, the Proxim Status Monitor will have a red "X" through it and the Proxim Status screen will that the card could not find a Master to synchronize with. Refer to Chapter 7 for troubleshooting suggestions.

The Harmony OpenAir CompactFlash Card is now ready for use. If your network provides shared Internet access, open Pocket Internet Explorer on the iPAQ to confirm that the device can access the Internet.

Removing the CompactFlash Card

In general, Proxim recommends that you leave the Harmony OpenAir CompactFlash Card in the iPAQ's CompactFlash Expansion Pack.

If the iPAQ prompts you to remove the CompactFlash Card so that new settings can take effect, do not remove the card from the CompactFlash slot. Instead, remove and reinsert the iPAQ into the CompactFlash Expansion Pack. Alternatively, reset the device by pressing the reset button on the bottom of the unit.

The iPAQ's CompactFlash Expansion Pack does not have an eject button so you may have difficulty removing the card from the slot.

If you need to remove the Harmony OpenAir CompactFlash Adapter from the slot, hold onto the card's antenna and gently pull the CompactFlash Card out of the slot.

3. Wirefree Topologies

OpenAir and HomeRF products look and operate similar to Ethernet products. The only difference is that a radio replaces the wire between various nodes. This means that your existing Windows CE applications that operate over Ethernet will work with the OpenAir CompactFlash Card without any special wireless networking software.

Listed below are some of the most common configurations of a wirefree network that include the OpenAir CompactFlash Card.

Mobile Connectivity to a Desktop Computer

With an OpenAir CompactFlash Card installed in an iPAQ and a compatible product, such as a Harmony OpenAir USB Adapter or a Symphony-HRF USB Adapter, installed in a desktop computer, you can exchange files between your desktop PC and handheld wirelessly without any cables. Multiple Pocket PCs can access the same desktop PC.

This type of network is also known as an Ad Hoc network. It consists of only wirefree devices, as shown in Figure 2.

Figure 2
Ad Hoc Network

Mobile Connectivity to a SOHO Network

The Harmony OpenAir CompactFlash Card supports both the OpenAir and HomeRF wireless standards. This means that the CompactFlash Card is compatible with Proxim's Symphony and Symphony-HRF products for the home and small office.

Figure 3 illustrates how a Harmony OpenAir CompactFlash Card can communicate with a Symphony-HRF Cordless Gateway to access the Internet and communicate with other members of the Symphony network.

Figure 3
Symphony-HRF Network

However, when using a CompactFlash Card with Symphony products, keep in mind the following limitations:

❑ The Harmony OpenAir CompactFlash Card does not include any of the Symphony software tools, such as the Maestro Configuration Tool or Composer Installation Wizard. Therefore, in order to configure and monitor a Symphony Cordless Modem, Symphony Ethernet Bridge, or Symphony-HRF Cordless Gateway, you will need at least one Symphony computer on the network that has these tools installed.

❑ A Compaq iPAQ with a Harmony OpenAir CompactFlash Card installed will not show up in the Symphony Network Map of other Symphony computers even though the card may be operational and communicating successfully with the rest of the network.

Refer to the manuals that came with your Symphony products for additional information about these features.

Mobile Connectivity to a Corporate Network

Many companies have an existing Ethernet or wired LAN infrastructure and want to be able to extend that capability to wirefree nodes. This is accomplished by installing a Harmony Access Point Controller and one or more Harmony Access Points on the Ethernet network. The Harmony Access Point Controller and Access Points work together to provide wirefree clients with access to network resources.

Figure 4 depicts a Harmony network that uses a single OpenAir Access Point (AP) to communicate with OpenAir clients.

A Compaq iPAQ equipped with a Harmony OpenAir CompactFlash Card can access network resources so you can send and receive e-mail and browse the Internet from any location that is within range of the Harmony OpenAir Access Point.
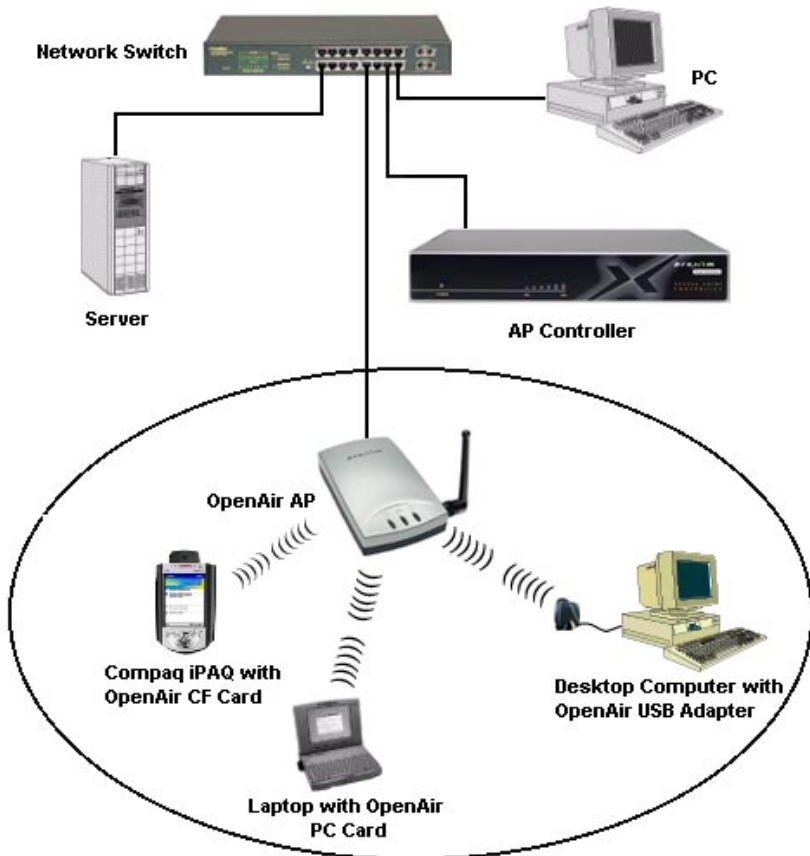
Figure 4
Single AP

For larger environments, an OpenAir client may roam from one OpenAir Access Point to another while maintaining the same network connection. The OpenAir Access Points establish coverage areas or cells similar in concept to those of a cellular phone network. The mobile client will connect to any OpenAir Access Point that is within range.

Figure 5 depicts a Harmony network where an OpenAir CompactFlash Card can roam between three Access Points.
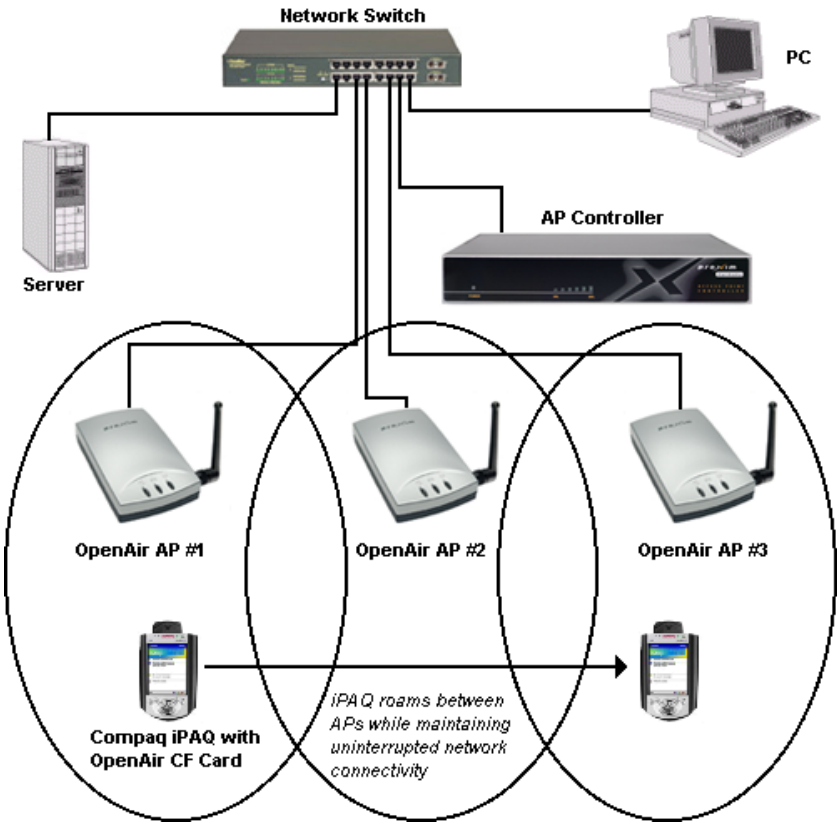
Figure 5
Roaming

With OpenAir's multi-channel architecture, Access Points can be placed within the same cell area to increase the aggregate

throughput supported by the network. In addition, the overlapping cells offer redundancy of coverage required in networks where downtime is not tolerable.

Each Harmony OpenAir Access Point within a roaming network must have a unique Channel/Subchannel pair, but all must have the same Domain number and Security ID. Mobile clients are equipped with OpenAir client adapters that are also set to the same Domain and Security ID.

As the mobile client *seamlessly* switches from cell to cell, its network connectivity is preserved.

The user can move freely between the OpenAir Access Points in the network. When the roaming client leaves the transmission range of one OpenAir Access Point, the software automatically polls the other OpenAir Access Point(s) in the same Domain to continue the network connection.

See Figure 5 for an example of a network set up with a roaming Domain. In addition, Harmony OpenAir Access Point can be installed on different IP subnets from the AP Controller so that mobile users can roam across routers. For more information on the Harmony AP Controller and Access Points, refer to the *Harmony Access Point Controller Model 7560 User's Guide*.

The cells must overlap to ensure that there are no gaps in coverage so that the mobile client will always have a connection available.

Note:
Mobile devices will only roam among OpenAir Access Points with the same Domain and Security ID.

Guidelines for Roaming

❏ Roaming occurs between OpenAir Access Points.

❏ All OpenAir Access Points must have the same Domain and Security ID.

❏ All OpenAir Access Points should have a unique Channel/Subchannel pair. Preferably, they should have unique Channels. Use the Subchannel only when you have used all 15 Channels in the same coverage area.

❏ All workstations with an OpenAir client adapter installed are configured as Stations with a Domain and Security ID that match the values used by the OpenAir Access Points between which they will roam.

❏ For contiguous coverage, the cells created by OpenAir Access Points must overlap.

4. Configuration Parameters

This chapter lays the background for understanding how wireless radios communicate and describes the Harmony OpenAir CompactFlash Card's configuration parameters.

Note that several of the OpenAir parameters described in this chapter do not apply directly to the OpenAir CompactFlash Card. However, it is important to have an understanding of these parameters in order to properly install an OpenAir network. For more information about OpenAir parameters such as Station Type, Channel, and Subchannel, refer to the user's guide included with your other OpenAir products.

Operating Mode

The Harmony OpenAir CompactFlash Card supports both the OpenAir and the HomeRF wireless standards. However, the card can only use one wireless standard at any point in time.

The Operating Mode determines which wireless standard the Harmony OpenAir CompactFlash Card supports. There are three options: OpenAir, HomeRF, and Dual.

When Operating Mode is set to **OpenAir**, the card uses the OpenAir standard and operates as an OpenAir Station. (The term *Station* is described later in this chapter.) You should configure the OpenAir CompactFlash Card to operate in OpenAir mode if the card will communicate only with only a Harmony OpenAir or RangeLAN2 network.

When Operating Mode is set to **HomeRF**, the card uses the HomeRF standard. You should configure the OpenAir CompactFlash Card to operate in HomeRF mode if the card will communicate with only a HomeRF or Symphony-HRF (i.e., a network that consists of Symphony-HRF products only) network.

When Operating Mode is set to **Dual**, the card will dynamically switch between the OpenAir and HomeRF standards. The card will operate in OpenAir mode when it receives a radio signal from a nearby OpenAir network. Otherwise, the card operates in HomeRF mode.

Note:
A Harmony OpenAir CompactFlash Card will only switch to OpenAir mode if the card and the nearby OpenAir network share the same Security ID.

You should configure the Harmony OpenAir CompactFlash Card to operate in Dual mode if the card will communicate with multiple networks (for example, you want to use the same card at the office on an OpenAir network and at home on a HomeRF network).

Also, configure the card to operate in Dual mode if you have a Symphony network that contains a mixture of Symphony and Symphony-HRF products. Refer to the user's guide that came with the Symphony-HRF products for more information.

Note:
When in doubt, configure the Operating Mode to Dual.

Operating Mode is set to HomeRF by default.

OpenAir Radio Communication

OpenAir radios use a radio technology called frequency hopping spread spectrum. This means that the radio signal is constantly moving from one frequency to another while sending packets of data. This hopping technique allows for multiple hopping patterns to be used in the same area while minimizing interference.

OpenAir Masters and Stations

OpenAir networks require that one device coordinates the frequency hops for all devices within a particular wireless cell. This device is called the Master. It might help you to think of the Master as the conductor of a frequency hopping orchestra. The Master keeps time so all units know when to hop and to what frequency. There must be at least one OpenAir product on a network designated as the Master.

In Windows CE environments, the Master will frequently be an Access Point or a desktop computer with an OpenAir USB Adapter or PC Card installed. In a roaming environment with OpenAir Access Points, all Access Points are Masters.

OpenAir units that synchronize to the Master and follow its signal to learn what frequency in the pattern the Master is currently using are known as Stations.

A Windows CE device with the OpenAir CompactFlash Card installed is always a Station and cannot be configured to act as a Master.

OpenAir Channel and Subchannel

Each OpenAir Master can select one of 15 Channels (designated 1 through 15) to establish communications with Stations. Each Channel number refers to a unique frequency hopping pattern that allows multiple subnetworks to coexist in the same air space providing a greater data rate transmission capability. Each Channel is at a different frequency at a different time. For networks with multiple Masters (like in a roaming environment), each Master should use a different channel for optimal performance.

In the event that a network has more than 15 Access Points in the same area (and have therefore run out of independent Channels), an OpenAir Master uses a Subchannel number so that Stations can easily distinguish between Access Points configured for the same Channel. The Subchannel is a software code that is appended to each radio packet. There are 15 Subchannels, designated 1 through 15. Unlike the Channel, the Subchannel has no effect on the frequency hopping pattern; it merely allows the Stations to stay synchronized to the correct Access Point.

A Station receives its Channel and Subchannel assignment from the Master to which it is synchronized. Therefore, you cannot set the Channel number on an OpenAir CompactFlash Card because the card is always configured as a Station.

Refer to the user's guides that came with your other OpenAir products for information on how to configure Channels and Subchannels.

OpenAir Software Parameters

In order for a Station to synchronize to a Master, the Station's Domain and Security ID must match those of the Master. These parameters, as well as Roam Config and Inactivity Timeout, are discussed below.

Domain

In order to establish communication between the OpenAir radios, all devices, both Masters and Stations, require the same Domain number. Radios on different Domains cannot communicate with each other. The Domain is a software filter which does not affect the actual radio frequency or the frequency hop sequence used by the radios.

In general, you will want to configure all units on your OpenAir network to the same Domain. For larger OpenAir networks, use the Domain to establish roaming subnetworks throughout your building. For example, the Engineering Department may use Domain 2 and the Sales Department may use Domain 5. Then engineers can only roam within the geographical area mapped out by Access Points with a Domain setting of 2.

The Domain is a number between 0 and 15, and 0 is the default setting for all OpenAir products. The Domain may be changed within the Configuration tab of the Proxim Status utility, which is described in Chapter 5.

Security ID

To further improve the security of an OpenAir network, each OpenAir product requires the same Security ID to establish radio communication.   The Security ID is used on all OpenAir products, both Masters and Stations. This ID is encrypted and stored on the OpenAir CompactFlash Card itself, not in software. It cannot be accessed, but you may change it. However, if you do change it, then you will also need to change the Security ID on all of the other OpenAir devices in order to reestablish communication.

The Security ID is a string of up to 20 alphanumeric characters. There are 1,048,576 unique choices for the Security ID. The default Security ID for all OpenAir products is blank (an empty string).

You may change the Security ID from within the Configuration tab of the Proxim Status utility. Refer to Chapter 5 for more information on how to set the Security ID.

Roam Config

The Roam Config parameter allows you to determine how tolerant a Station is to radio phenomena that can cause the unit to roam from one OpenAir Access Point to another in order to maintain a strong radio connection.

In areas with many OpenAir Access Points that provide heavy overlapping coverage, set this parameter to **Fast** to maintain high throughput for each mobile client.

In most networks, set the Roam Config parameter to **Normal**. Throughput will not change noticeably, and an overabundance of Access Points is not required.

If the coverage area provided by OpenAir Access Points is sparse, set the Roam Config parameter to **Slow**. Mobile clients will not roam until they are nearly out of range of the Access Point.

You can configure the Roam Config parameter within the Advanced tab of the Proxim Status utility, which is described in Chapter 5.

Inactivity Timeout

To conserve battery life, the OpenAir CompactFlash Card has an inactivity doze mode when using the OpenAir standard.

The doze mode is automatically engaged when a certain period of time has elapsed since the Windows CE device has sent or received data over the network. Once the card has entered the doze mode, it draws less power from the Windows CE device. The card can be awakened from doze mode by a Master unit attempting to send data to it. The time before dozing is calculated by adding the Inactivity Minutes and Inactivity Seconds parameters.

By default, the Inactivity Timeout is set to 30 seconds. Setting both Inactivity Seconds and Inactivity Minutes to 0 will prohibit the OpenAir CE PC Card from entering the doze mode. Note that disabling the doze mode may dramatically decrease the battery life of a CE device. If you intend to disable the doze mode, you may want to use the CE device with AC power.

The Inactivity Timeout parameters may be set within the Advanced tab of the Proxim Status utility, which is described in Chapter 5. Also, see Chapter 6 for an important performance note regarding the Inactivity Timeout parameter.

HomeRF Radio Communication

Like OpenAir, HomeRF devices also use frequency hopping spread spectrum technology. This means that the radio signal is constantly moving from one frequency to another while sending packets of data.

Although a single radio can support either HomeRF or OpenAir, these two standards are not the same. While OpenAir lets a user designate a Master device and configure a cell's hopping pattern, the HomeRF standard does not support these features.

A HomeRF network automatically determines what hopping pattern to use and each device within the cell takes turns coordinating the frequency hops. These are not parameters that can be configured by the user. The only parameter that needs to be configured to establish a HomeRF network is Security ID, which is discussed below.

Also, since the standard does not support roaming, parameters such as Domain and Roam Config are not valid for HomeRF devices. Finally, an OpenAir CompactFlash Card operating in HomeRF mode does not have an inactivity doze mode.

Security ID

To establish a HomeRF network, all devices must share the same Security ID, which is also referred to as a Security Code or Network ID. If two HomeRF devices do not share the same Security ID, then they will not communicate.

The Harmony OpenAir CompactFlash Card's Security ID cannot be retrieved from the Proxim Status utility. In other words, you can change the Security ID but once configured, there is no way to retrieve the setting.

The Security ID is a string of up to 20 alphanumeric characters. There are 1,048,576 unique choices for the Security ID.

You may change the Security ID from within the Configuration tab of the Proxim Status utility. Refer to Chapter 5 for more information on how to set the Security ID.

5. Proxim Status Utility

The Proxim Status utility is a configuration and management tool that is automatically loaded each time the Harmony OpenAir CompactFlash Card is inserted in a Compaq iPAQ Pocket PC.

There is no separate installation procedure for the Proxim Status Utility; it is installed with Proxim's driver (see Chapter 2 for driver installation instructions).

This chapter describes the features of the Proxim Status utility.

Status Monitor

Each time the OpenAir CompactFlash Card is inserted in a Compaq iPAQ Pocket PC that has the Proxim driver installed, the Status Monitor will appear in the Windows CE System Tray.

Note:
The System Tray is only visible at the bottom of the Today screen. To view the Today screen, tap the *Start icon in the top right-hand corner of the screen and choose* **Today** *from the drop-down menu.*

At any time, double-tap the Status Monitor icon to launch the Proxim Status utility.

For additional information about the Status Monitor icon, refer to the section below that corresponds to the card's operating mode.

OpenAir Mode

When operating in OpenAir mode, the Status Monitor icon will change in appearance to indicate whether or not the card is within range of and synchronized to an OpenAir Master.

When the card is not in range or not synchronized to a Master, the icon will have a red "X" through it:

New
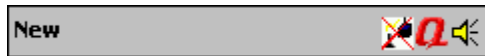
When within range, the icon will look like this:

New

Note:

When the OpenAir CE PC Card roams from one Harmony OpenAir Access Point to another, there will be no corresponding change to the Status Monitor icon.

HomeRF or Dual Mode

When operating in HomeRF or Dual mode, the Status Monitor icon will always look like this:

New

A HomeRF device will never appear to be out of synchronization, even if it cannot communicate with the other HomeRF devices on your network. If a HomeRF device cannot find an existing HomeRF network, it creates its own.

Therefore, use the Proxim Status utility to confirm that the Harmony OpenAir CompactFlash Card is successfully synchronized to another OpenAir or HomeRF product on your network.

Status

Double-tapping the Status Monitor icon opens the Proxim Status screen, shown below.
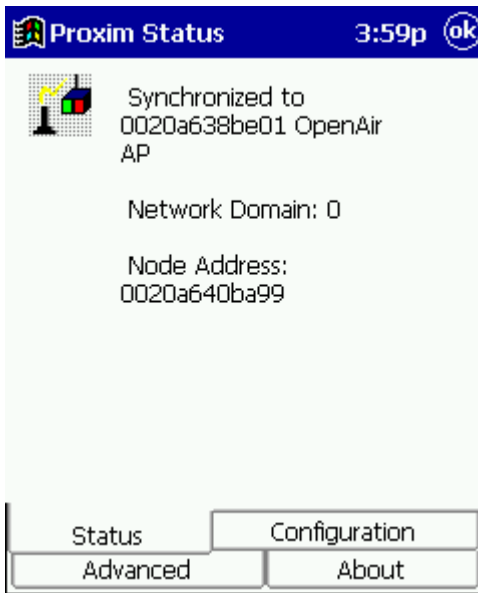
The first line of the Proxim Status screen displays the name and the node (or MAC) address of the OpenAir or HomeRF device to which the card is synchronized. The node address is a unique 48-bit identifier that is assigned to each networking product by the hardware manufacturer. The node address for all Proxim products begins with the prefix *0020a6*.

The second line displays the current Domain setting for the card. This parameter is only applicable to OpenAir networks.

The third line displays the node address of the Harmony OpenAir CompactFlash Card installed in the device.

If the card operating in OpenAir mode is not currently synchronized to an OpenAir Master, the following message will appear on the Proxim Status screen:
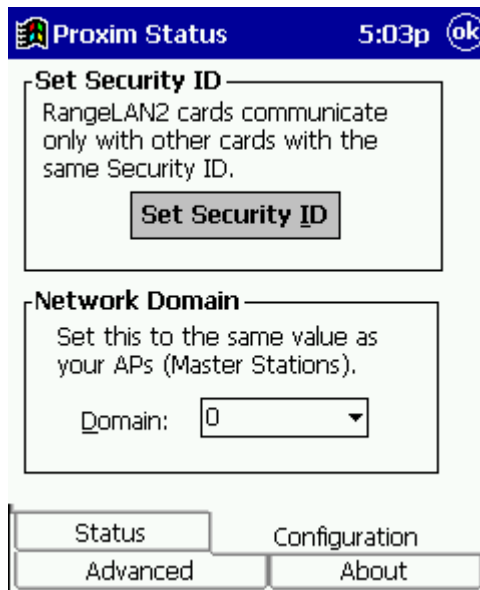
"Could not find a Master to synchronize with. Verify that your Domain and Security ID match those of a Master."

Configuration

Select the Configuration tab to change the card's Domain and Security ID.

The Domain parameter is visible only when the card is configured for either OpenAir or Dual mode.
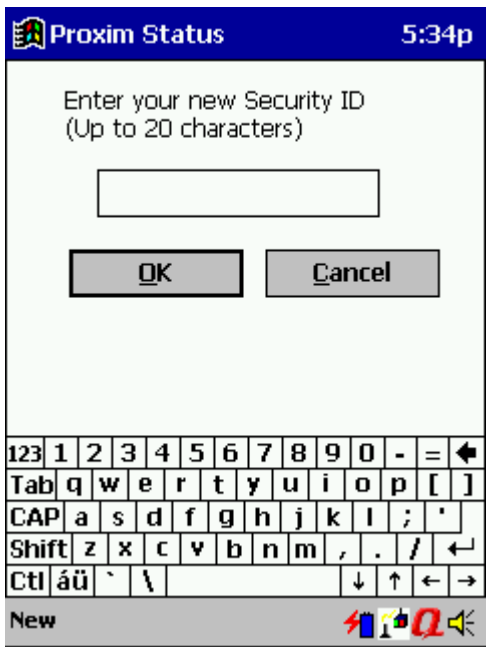
Refer to Chapter 4 for more information on these parameters.

Note that changes to the Domain setting will not take effect until after you have tapped the <**OK**> button in the upper-right hand corner of the Proxim Status utility.

To change the Security ID, follow these steps:

1.   Tap the <**Set Security ID**> button to display the following screen:

2.   Enter a new Security ID in the field provided.

3.   Tap the <**OK**> button (located below the Security ID field).

4.   Make any additional changes to the card's setting and tap <OK> to exit the Proxim Status Utility.

Advanced

Select the Advanced tab to change the card's Inactivity Seconds, Inactivity Minutes, and Roam Config settings, as shown in the following example.

Refer to Chapter 4 for more information on these parameters.

About

Select the Advanced tab to view information about the OpenAir CompactFlash Card and driver, including the driver version and radio ROM version. If you contact Proxim Technical Support, a representative may ask you for this information.

6. Performance Hints

This section provides information on how to improve the performance of a wirefree network and describes certain communication restrictions of which the user should be aware.

Microwave Ovens

Microwave ovens operate in the same frequency band as OpenAir and HomeRF products. Therefore, if you use a microwave within range of OpenAir or HomeRF products, you may notice network performance degradation. However, both your microwave and your Proxim network will continue to function.

Range

Every environment is unique with different obstacles, barriers, materials, etc., and therefore, it is difficult to determine the exact range that will be achieved without testing. Additionally, Proxim has developed some guidelines to estimate the range that users will see when the product is installed in their facility, but there are no hard and fast specifications.

Radio signals may reflect off obstacles or be absorbed by others depending on their construction. For example, with two OpenAir radios you may achieve up to 1000' in open space outdoors where the two antennas are line of sight, meaning they see each other with no obstacles between them. However, the same two units will only achieve up to 500' of range when they have to travel through the cubicles usually used in modern offices. If there are office walls to penetrate, the signal range may decrease even further to up to 300'.

Proper antenna placement can help improve OpenAir performance. Keep the Access Point's antenna high above of the floor and avoid metal obstructions, like a file cabinet.

A Note Concerning Inactivity Timeout

In order for the OpenAir doze mode to effectively conserve battery life, the OpenAir CompactFlash Card will not emerge from doze mode in response to a broadcast packet.

Therefore, users who are connecting an iPAQ Pocket PC and a desktop or laptop computer should always initiate communications from the iPAQ.

A second solution for advanced users is to configure a static ARP entry for the OpenAir CompactFlash in the desktop's ARP (Address Resolution Protocol) table.

7. Troubleshooting

The Harmony OpenAir CompactFlash Card is designed to be very easy to install and operate. However, if you experience any difficulties, use the information in this chapter to help diagnose and solve the problem. If you still cannot resolve the problem, contact Proxim Technical Support as described in Appendix C, "How to Reach Technical Support."

How to Obtain Help with Your LAN Installation

If you require assistance to install your LAN, Proxim can put you in touch with an OpenAir reseller in your area. The reseller is an expert in the design, installation, and maintenance of LANs and will be able to examine your needs and recommend the most cost-effective solution for your LAN whether you are installing a new LAN or adding on to an existing one. For the location of the OpenAir reseller nearest you, contact Proxim at 800-229-1630 and ask for the Sales Department.

Application Tips

Here are some valuable tips for using the CompactFlash Card with the most popular Windows CE applications.

ActiveSync

If you having a problem using ActiveSync over an OpenAir network, review the following steps to ensure that your Windows CE device is configured correctly.

1. Before a wireless ActiveSync session can be established between a computer and a Windows CE handheld, the two devices must already have an ActiveSync partnership created using a USB or serial cable connection.

2. Within the ActiveSync dialog box on the Windows CE device, the connection method must read "Network Connection" and the remote computer's name should appear in the "Connect to:" box.

3. If the network does not have a WINS (Windows Internet Naming Service) server, then you must configure the WINS server on the Windows CE device with the IP address of the computer with which you want to establish an ActiveSync session.

    In the example below, the CE device will successfully ActiveSync with the desktop computer whose IP address is 192.168.0.2.

Follow these steps to configure the Windows CE device's WINS address:

1. Tap the ▩ **Start** icon, located in the upper left-hand side of the iPAQ's screen.

2. Select **Settings** from the drop-down menu.

3. Tap the **Connections** tab.

4. Tap the **Network** icon.

5. Select the **PROXIM RangeLAN2 Driver** from the list of installed adapters.

6. Tap the **Name Servers** tab.

7. Enter the IP address of the computer with which you want to establish an ActiveSync session in the **WINS** field.

8. Tap <**OK**>.

9. Remove the iPAQ from the Compact Flash Expansion Packet and reinsert it to reset the Proxim driver. Alternatively, press the reset button to reset the iPAQ.

Pocket Internet Explorer

If the Windows CE device is unable to browse the Internet using Pocket Internet Explorer, contact your network administrator to ensure that you have the correct settings configured on the Windows CE device.

In general, you need a Primary DNS (Domain Name System) server to help resolve Internet addresses (e.g., 10.0.0.1) with Internet domain names (e.g., www.proxim.com).

Follow these steps to configure the Windows CE device's DNS address:

1.   Tap the **Start** icon, located in the upper left-hand side of the iPAQ's screen.

2.   Select **Settings** from the drop-down menu.

3.   Tap the **Connections** tab.

4.   Tap the **Network** icon.

5.   Select the **PROXIM RangeLAN2 Driver** from the list of installed adapters.

6.   Tap the **Name Servers** tab.

7.   Enter the IP address of the network's DNS server in the **DNS** field.

8.   Tap <**OK**>.

9.   Remove the iPAQ from the Compact Flash Expansion Packet and reinsert it to reset the Proxim driver. Alternatively, press the reset button to reset the iPAQ.

In this following example, the Windows CE device is configured to contact the DNS server whose IP address is 192.168.0.1.

Note:

Contact your network administrator to determine how your organization accesses the Internet. For example, if the network uses a proxy server, then you will need to perform some additional configurations within the Pocket Internet Explorer's Options menu before the Windows CE device will have access to the Internet.

Common Technical Support Questions

This section discusses some of the most common problems using the Harmony OpenAir CompactFlash Card and offers possible solutions.

Problem/Symptom	Possible Solution/Answer	Chapter in User's Guide
The Proxim driver loads successfully, but I can't communicate with the network.	Confirm that you are synchronized to an Access Point or another OpenAir device configured as a Master; you may not be in range. Run the Proxim Status Utility to determine if you are in range. Also, confirm that you have the same Domain and Security ID as the other OpenAir devices on your network.	3, 4, 5
My iPAQ Pocket PC cannot successfully ActiveSync with my PC wirelessly.	Confirm that you have entered the PC's IP address as the iPAQ's WINS address if your network does not contain a WINS server. If you still cannot ActiveSync, try resetting the Proxim driver by removing and reinserting the iPAQ from the CompactFlash expansion packet, or resetting the iPAQ (by pressing the reset button).	7
I cannot browse the Internet from the Windows CE device.	Confirm that the Windows CE device is successfully synchronized to an OpenAir Access Point on the network. Also confirm that your network settings, including DNS address and Proxy server settings (if applicable) are configured correctly. Contact your network administrator for assistance with the configuration of TCP/IP parameters.	7

Problem/Symptom	Possible Solution/Answer	Chapter in User's Guide
How long will my battery last when using the Harmony OpenAir CompactFlash Card?	Battery life will vary from unit to unit and depends on many factors including battery type, length of battery life without the CompactFlash Card inserted, and how frequently the CompactFlash Card is utilized. Frequent network activity will drain the battery life faster than if the card were left idle in doze mode. You need to test the battery life of your device while using it under normal operating conditions.	
I have installed a Harmony OpenAir CompactFlash Card in a Compaq iPAQ. Everything appears to be working fine, but if left idle, the iPAQ does not respond to pings from my desktop computers.	In order to conserve battery life, the CompactFlash Card does not respond to broadcast messages when in doze mode. Therefore, when pinging from the desktop to the iPAQ, the iPAQ will not respond to the initial ARP broadcast packet. To work around this issue, initiate all communication from the iPAQ. Alternatively, you can create a static ARP entry for the CompactFlash Card in the desktop's ARP table.	6

A. Specifications

The following technical specification is for reference purposes only. Actual product's performance and compliance with local telecommunications regulations may vary from country to country. Proxim, Inc. will only ship products that are type approved in the destination country.

Bus Interface	CompactFlash Type II
Radio Data Rate	1.6 Mbps
Media Access Protocol	OpenAir CSMA/CA
Ethernet compatibility	Ethernet packet types and Ethernet Addressing
Frequency Band	2.4-2.483 GHz (in the U.S.) (frequency hopping spread spectrum)
Independent Channels	15
Output Power	100 mW

Warning!

It is the responsibility of the installer and users of the Harmony CompactFlash 7630/6630 to guarantee that the antenna is operated at least 20 centimeters from any person. This is necessary to insure that the product is operated in accordance with the RF Guidelines for Human Exposure which have been adopted by the Federal Communications Commission.

B. Parameters

Parameter Name	Range	Default
Operating Mode	OpenAir, HomeRF, Dual	OpenAir
Domain*	0-15	0
Security ID	0-20 characters	blank
Roam Config*	Slow, Normal, Fast	Normal
Inactivity Minutes*	0-5	0
Inactivity Seconds*	0-4, and 5-55 in increments of 5	1

*Visible Only When Operating Mode is set to OpenAir or Dual

C. How to Reach Technical Support

If you're having a problem using the Harmony OpenAir CompactFlash Card and can't resolve it with the information in Chapter 7, gather the following information and contact Proxim Technical Support:

❏ What kind of network are you using?

❏ What were you doing when the error occurred?

❏ What error message did you see?

❏ Can you reproduce the problem?

❏ What version of the OpenAir driver are you using?

You can reach Proxim Technical Support by voice, fax, e-mail, or mail:

> Tel: 800-477-6946 or 408-731-2640
> Fax: 408-731-3676
> Web: **http://www.proxim.com**
> Email: support@proxim.com
>
> Proxim, Inc.
> Attn: Technical Support
> 510 DeGuigne Drive
> Sunnyvale, CA 94085