ARtem

The Wireless Connection.

Installation

Wireless Communication

Onair ComCard

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Status: September 2000

Table of Contents

ARtem Service

Do you have any questions on our products or do you require specific information on ComCard?

You can contact us, as follows:

- Information: http://www.Artem.de
- E-Mail: info@Artem.de
- Phone: +49-731-1516-0

For technical support please contact your dealer.

Regulatory Information

This device complies with CE and R&TTE 1999/5/EG Para 3.

1. About ComCard

1.1 ComCard Network Scenarios

This ComCard enables you to:

- Connect your computer to an ad-hoc workgroup of wireless computing devices, or
- Connect your computer to a Local Area Network (LAN) Infrastructure that includes AR*tem* ComPoint, or other IEEE 802.11 compliant Local Area Network (LAN) systems.

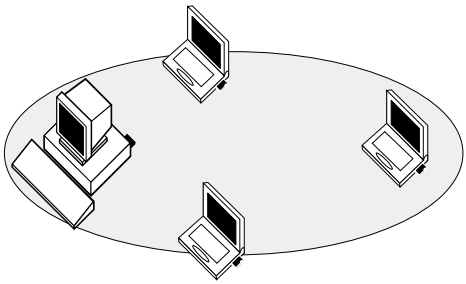

Figure 1-1: Ad-hoc Wireless Workgroup

The ad-hoc workgroup configuration enables you to quickly set up a small wireless workgroup, where the workgroup participants can exchange files using features like “Files and Printer Sharing” as supported by Microsoft Networking.

You can use this type of wireless peer-to-peer networks “on the road”, or in Small Office Home Office (SOHO) environments. As long as the station are within range of one another, this is the easiest and least expensive way to set up a wireless network.

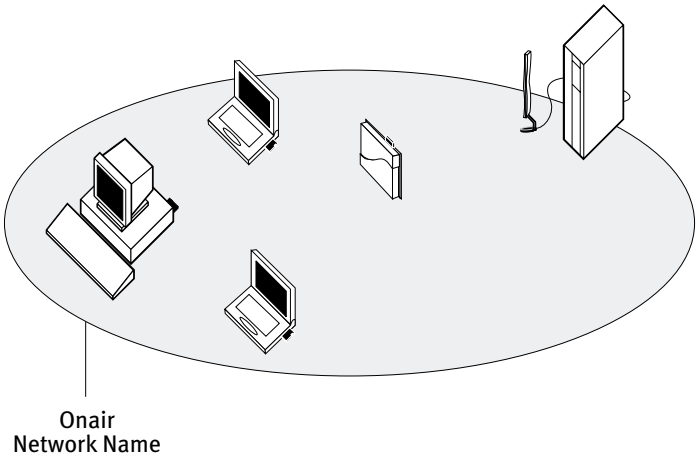

Figure 1-2: Stand Alone Wireless LAN

Local Area Network (LAN) Infrastructures may either be:

- Stand-alone wireless LANs as pictured in Figure 1-2.
- Wireless network infrastructures connected to an existing Ethernet network as pictured in Figure 1-3 on page 1-3.

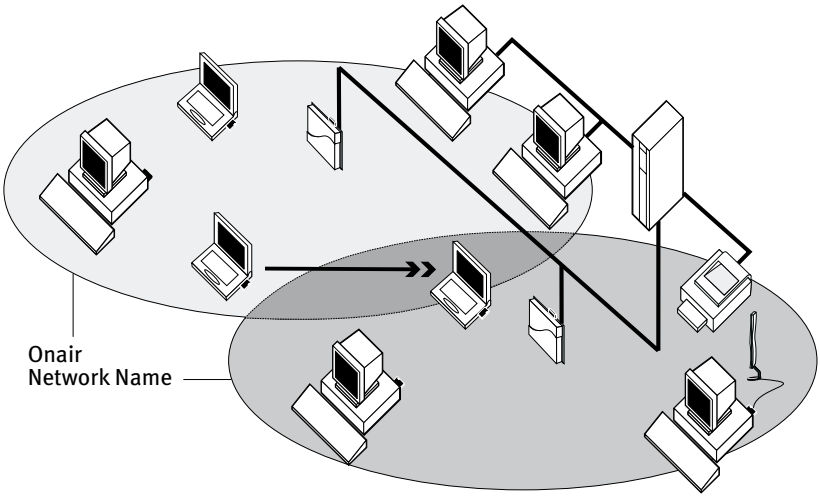

Figure 1-3: LAN Infrastructure

1.1.1 It's Easy

The ComCard functions like any standard wired Ethernet card, but wireless LAN does not need any wires!

Where an Ethernet card requires a cable connection to a hub and/or patch panel, the cable physically ties you down to the location of the wired connection.

Wireless LAN allows you to connect your computer to a Local Area Network (LAN) system from anywhere within the wireless coverage area. Expanding or re-designing your network is easy: Add or relocate ComPoint, power-up your (new) wireless LAN computers, and you're done!

Unlike Ethernet, wireless LAN will enable you to roam throughout the network while remaining connected to the LAN.

1.2 *ComCard Features*

The ComCard is a standard PC Card that fits into any PC Card Type II slot.

The ComCard has two LED indicators and two integrated antennas. Optionally you can use the ComCard in combination with an external antenna (see Seite 1–6).

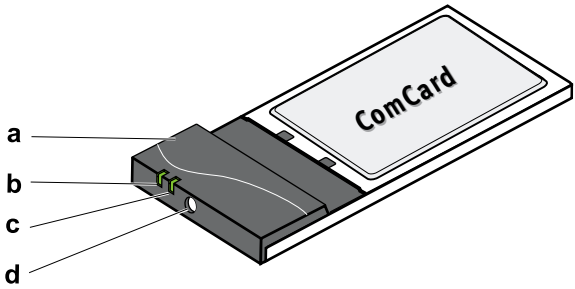

Figure 1-4: The ComCard

a. Integrated Antennas

b. Transmit/ Receive LED
   - Off - No wireless activity
   - Blinking - Sensing/transmitting wireless data

c. Power ON/OFF LED
   - Solid Green - standard operational mode
   - Blinking Green - Power Management mode

d. Connector for optional External Antenna (see Seite 1–6).

For a more detailed overview of the LED activity, please consult Table 1 on page B-3 of Appendix B.

1.2.1 ComCard Types

The ComCard is a wireless network adapter card that complies with the IEEE 802.11 standard on wireless LANs Rev. B. This card that supports data rates up to 11 Mbit/s is available in two variants:

- ComCard WEP 40, and
- ComCard WEP 128

ComCards provide:

- Fully compatible with any other wireless LAN system based on Direct Sequence Spread Spectrum (DSSS) radio technology that complies with the “IEEE 802.11 standard on wireless LANs (Revision B)”.
- Wired Equivalent Privacy (WEP) data encryption, based on the encryption algorithm as defined in the IEEE 802.11 standard on wireless LANs.

About Using Different Card Types

When using ComCards in networks that include different types and/or versions of Onair products carefully read the items listed below.

Different Types of Data Encryption

When using the encryption feature, please note that encrypted messages can only be deciphered by cards that will also have encryption enabled and are using an identical encryption key.

When using the WEP 128 card in combination with WEP 40 cards, your WEP 128 card should be configured with a WEP compatible (64-bit) encryption key.

1.2.2 Can I Upgrade ComCards?

To enhance (wireless) performance of your ComCards, driver updates are made available via the www.ARtem.de at regular intervals.

Updates typically enhance existing features supported by the ComCard, or resolve minor bugs. WEP 40 cards cannot be upgraded to WEP 128.

1.3 Optionally Available

1.3.1 ComCards

The AR*tem* Onair solution has been based upon a single wireless PC Card that can be used in a variety of computing systems.

Optionally available are the following adapters for computer systems that do not have a PC Card slot:

- ComCard/ISA
  an ISA to PC Card-bus adapter card.
- ComCard/PCI
  a PCI to PC Card-bus adapter card.

1.3.2 External Antennas

The ComCard has been provided with two integrated antennas (see Figure 1-4), which perform best in an open environment with as few obstacles as possible.

Optionally available are different types of external antennas.

These antennas have a proprietary connector, that allows you to connect the card directly to the socket on the extended side of the your ComCard (pictured in Figure 1-4 on page 1-4).

1.4 *Connecting to a Network*

You can use your ComCard to connect to Local Area Network (LAN) systems that include AR*tem* ComPoint.

The ComPoint is a transparent bridge between:

- stations that have been equipped with IEEE 802.11 compliant PC Cards.
- stations that have been equipped with previous generation ComCards such as PCMCIA and ISA.
- Ethernet stations that are connected to the ComCard via a 10Base-T or 10Base2 backbone.

To allow communication between your Onair station and the Infrastructure, the access point must be equipped with an IEEE 802.11 compliant ComCard.

Onair networks are identified by a unique Onair Network Name. All ComPoint units that belong to the same Onair Infrastructure will share the same Onair Network Name.

You can configure your ComCard to:

- “Connect to Any IEEE 802.11 LAN”
- “Connect to a Specific IEEE 802.11 LAN”, or
- “Create a ‘Stand-Alone’ IEEE 802.11 LAN” (also referred to as "ad-hoc mode").

1.4.1 Connect to Any IEEE 802.11 LAN

This configuration setting is recommended when you intend to use your computer in various networking environments. When you start up your computer, your Onair IEEE 802.11 station will attempt to establish a radio connection with the first IEEE 802.11 compliant network system that provides a good quality for radio communications.

In situations where multiple IEEE 802.11 compliant systems are operational in the vicinity of the location where you powered-up your computer, the ComCard will connect automatically to the network that provides the best level of communications.

Once your ComCard finds an IEEE 802.11 compliant access point, it will automatically:

- Retrieve the radio channel required to connect to this access point.
- Establish the radio connection to the ComPoint access point that provides the best communications quality.

When moving your computer to another location within the network environment, i.e. out of range of the current access point, the Onair roaming functionality will automatically connect your computer to other access points that belong to the same network. This will allow continuous network connectivity as long as your computer remains within range of one or more access points that belong to the same network infrastructure.

1.4.2 Connect to a Specific IEEE 802.11 LAN

When you would like to connect to a specific IEEE 802.11 network system, you are advised to configure your station to connect only to the IEEE 802.11 network that is identified by the same Onair Network Name.

When your ComCard finds the network with the matching Onair Network Name, it will automatically:

- Retrieve the radio channel required to connect to the specific network.
- Establish the radio connection to the ComPoint access point that provides the best communications quality.

When moving your computer to another location within the network infrastructure, i.e. out of range of the current access point, the Onair roaming functionality will automatically connect your computer to other access points that belong to the same network. This will allow continuous network connectivity as long as your computer remains within range of one or more access points that belong to the same network infrastructure.

2. Hardware Installation

2.1 Installing your ComCard

This chapter describes how to install your ComCard into the PC Card slot of your computer.

2.1.1 Preparation

Unpack your ComCard. If any item appear to be damaged or missing, please contact your supplier.

Insert the ComCard into the PC Card slot of your computer as pictured in Figure 1 on page 2-1.

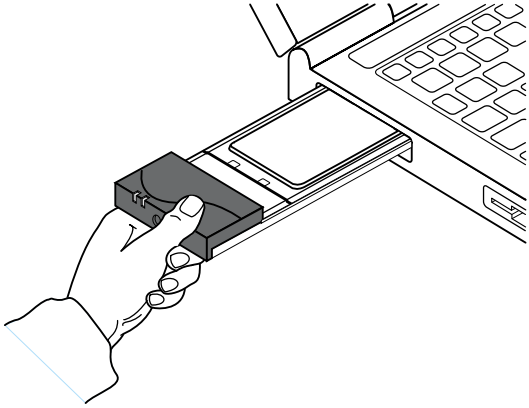

Figure 2-1: Inserting the PC Card into Your Computer

2.1.2 Card Removal and Re-insertion

ComCards can be installed on various operating systems, that may show different behavior when installing your using your ComCard:

- Plug & Play Compatible Systems
- Systems That Do Not Support Plug & Play

Depending on the type of operating system installed on your computer, you can remove and re-insert your ComCard whenever you like. This feature, also referred to as “Hot Swapping” for PC Cards is supported by operating systems as described under “Plug & Play Compatible Systems” below.

For systems that do not support “Plug & Play” you are advised to follow the procedure as described under “Systems That Do Not Support Plug & Play” on page 2-4.

Plug & Play Compatible Systems

Plug & Play for ComCards is supported by the following operating systems:

- MS-Windows 95, Windows 98 and Windows 2000
- Windows CE (version 2.0/2.11 and higher)
- Apple/Macintosh PowerBook systems.

When re-inserting the ComCard into your computer, these operating systems will automatically:

1. Recognize the card
2. (Re-)load the driver and activate card operation
3. Attempt to restore the network connection.

When removing the card, these operating systems will:

1. Disable the ComCard driver and
2. Disconnect power to the PC Card slot.

Caution!

When removing the ComCard you will lose your connection to the network.

Certain network operating systems however may not allow you to restore the network logon automatically. In that case you may need to restart your computer to rerun the network login procedure to restore the network connection.

You are advised to always disable the PC Card *prior* to removing the card from the PC Card slot. This will allow the Windows operating system to log off from the network server, disable the driver properly and disconnect power to the PC Card slot.

For example to stop using the ComCard in Ms-Windows environments, proceed as follows:

1. Click the “Start” button on the Windows Taskbar.
2. Click on “Settings” and then “Control Panel” item.


PC Card
(PCMCIA)

3. On the Control Panel double-click the PC Card icon to open the PC Card (PCMCIA) properties window.
4. Select the PC Card socket that contains your ComCard and click the “Stop” button.
5. Wait for the operating system to acknowledge that the device has been disabled and then remove the PC Card form the PC Card slot.

Note:

A shortcut to disable the PC Card is clicking once on the PC Card icon on the right side of the Windows Task bar, and select the option "Stop ComCard".

Double-clicking the PC Card icon, will open the PC Card properties windows.

Systems That Do Not Support Plug & Play

Although Windows 95/98 and Windows NT version 4.0 are similar in appearance, only Windows 95, Windows 98 and Windows 2000 support true “Plug & Play”.

When your computer runs one of the operating systems listed below, neither “Plug & Play” support nor “”Hot Swapping” are available for your ComCard:

- Windows NT version 3.51
- Windows NT version 4.0
- MS-DOS

To remove your ComCard from these systems, you are advised to:

1. Power off your computer
2. Remove the ComCard from the PC Card slot
3. (optional) Restart the computer to proceed working with your computer without the ComCard.

To (re-)insert the ComCard:

1. Power off your computer
2. (Re-)insert the ComCard into the PC Card slot
3. (optional) Restart the computer to proceed working with your computer and the ComCard.

For more information about the differences between the referenced Microsoft operating systems read the section “What You Need to Know” on page 3-2.

3. Installation for Windows

3.1 Introduction

This chapter describes the installation of the ComCard Miniport Driver for Microsoft Windows 95, 98, NT v.4.0 and 2000.

3.1.1 Before You Start the Installation

To install and begin using your ComCard, you will need to install the following items:

- The ComCard Miniport Driver.
- Network (client) Operating Software and Protocols.
- (optionally) The ComCard Manager Software.

The Network client software is included with the Windows operating system software.

Before you start the installation, you are advised to keep the Windows CD-ROM or software diskettes close at hand. If your computer came with a factory-installed Windows operating system, these files will be stored on your computer's hard disk, in the form of ***.cab** files.

Note:

If you are upgrading from an earlier version of the ComCard Miniport Driver, please read the section "Upgrading the ComCard Miniport Driver" in Appendix B.

3.1.2 What You Need to Know

Installing a ComCard requires the same level of expertise that you would need to install any other type of standard Ethernet network adapter card. It is assumed that you have a working knowledge of standard Windows 95, 98 or NT operations and of installing network adapter cards.

Although similar in appearance, Windows 95, Windows 98 and Windows NT operating systems show different behavior when installing or operating new hardware on your computer.

The major differences between the operating systems are:

- “Plug & Play” support
- “User Profiles”

That’s why, you will find different “Getting Started” instructions for each of the Microsoft operating systems described in this chapter:

- “Getting Started in Windows 95/98” on page 3-3
- “Getting Started in Windows NT” on page 3-5

The actual setting of the ComCard parameters is the same for both type of systems (described on page 3–13).

3.2 Getting Started in Windows 95/98

Windows 95 and Windows 98 operating systems support “Plug & Play” for PC Cards. Once you insert the ComCard into your computer, these operating systems will automatically:

- Detect the card, and enable the ComCard Miniport Driver, or
- Prompt you to install the driver, when the operating system cannot find the required driver. This would typically occur when inserting the ComCard into your computer for the very first time.

Once the ComCard Miniport Driver is installed, you can remove and re-insert the card whenever you like. This is also referred to as “Hot Swapping” (see also “Card Removal and Re-insertion” on page 2-2).

The user profiles in Windows 95 and Windows 98 operating systems are primarily used to customize the visual appearance of your Windows desktop and user-defined preferences. These profiles do not have any impact on the installation of your ComCard.

3.2.1 Starting Installation

To install the ComCard on a computer running either Windows 95 or Windows 98, proceed as follows:

1. Insert the ComCard into your computer.
2. Power up your computer.

Because both Windows 95 and Windows 98 support “Plug & Play”, the operating system functionality will automatically detect your ComCard.

Once the operating system has identified the ComCard, a message will be displayed identifying that the ComCard drivers are being installed.

Turn to “Installing the Miniport Driver” on page 3-9 to continue the installation of your ComCard.

Note:

In some occasions Windows 95/98 operating systems may not detect the new hardware. This may be the case in situations where:

- The laptop computer into which you wish to install the ComCard is a brand-new “out-of-the-box” computer, where the Windows 95/98 operating system was already factory-installed.
- A previous installation of the ComCard was aborted before it was finished.

When any of these situations applies, please consult Appendix B “Troubleshooting” for more information.

3.3 Getting Started in Windows NT

Unlike Windows 95/98, Windows NT operating systems (v3.51 and v4.0) do not support “Plug & Play” and “Hot Swapping” of PC Cards:

- In order to start the driver installation for your ComCard, you will need to “introduce” the card to the operating system.
- To swap PC cards, Windows NT machines typically require you to restart the computer in order to recognize the card and load the drivers.

Like Windows 95/98 systems, the Windows NT operating system also identifies user profiles. On Windows NT systems, however, user profiles (accounts) are associated with dedicated levels of authority (privileges) like the ones listed below:

- Users - are allowed to change the visual appearance of the Windows NT desktop and user-defined preferences.
- Power Users - can create “User Accounts” or “User Groups”.
- Administrators - can manage and control the overall configuration of the workstation.

Note:

To install (or uninstall) the ComCard in a Windows NT environment, you will need to login as the “Administrator”, or ensure that your login profile provides the same level of privileges.

The privilege settings for each user (account) are set in the Microsoft Windows NT “User Manager” program. Please consult the documentation that was shipped with your Microsoft Windows NT operating system or station for more information.

3.3.1 Starting Installation

To install the ComCard on a computer running Windows NT (version 3.51 or 4.0), proceed as follows:

1. Insert the ComCard into your computer.
2. Power up your computer.
3. Enable PCMCIA Services
4. Enabling Network Support for your (client) station.

Note:

To be able to perform the steps as described on the following pages, you will need the privileges of the Windows NT station administrator.
From the Start menu, use the option “Log Off xxxxx” to close all windows and log on as “Administrator”.

Secondly, you will need to verify that the computer system has at least NT Service pack v4.0 installed (check the blue start-up screen of Microsoft Windows NT).
If the computer on which you plan to install the ComCard is running with Service Pack v3.0 or lower, you will need to download Service Pack v4.0 from the Microsoft website (**http://www.microsoft.com**) and install the Service Pack prior to installing the ComCard.

Enabling PCMCIA Services

To allow the Windows NT operating system to detect PC Cards in the computer's PC Card slot , you must enable the PC Card Socket controller, identified as the PCMCIA device.

1. Click the Start button, then select "Settings" and then click "Control Panel".
2. Double-click the "Devices" icon.
3. Scroll down the list of devices and select the item "PCMCIA".

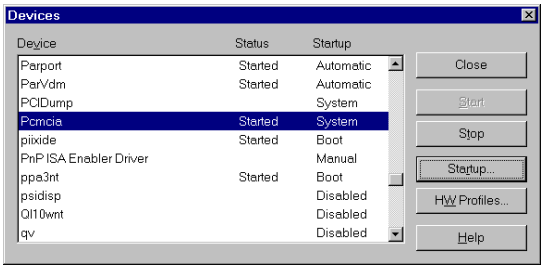

Figure 3-1: Enable the PCMCIA service for Windows NT

1. Click the button "Startup" on the right side of the "Devices" window, and set the Startup type for the item PCMCIA to "Boot".
2. Click "OK" to confirm and return to the "Devices" window.
3. Click "Close" to return to the Control Panel.

Enabling Network Support

To introduce your ComCard to the Windows NT operating system, you will need to enable Network support for your Onair station.

1. From the Windows NT Taskbar, click the Start button.
2. Click on Settings, then Control Panel.

3. In the Control Panel window, double-click the “Network” icon to open the “Network Settings” window.
   - If no network has been installed yet, you will be prompted to install it now.

     Click “Yes” to install Windows NT Networking, and follow the instructions as they appear on your screen.
   - If networking support was already installed, you will see a window with multiple tabs.

     Select the tab “Adapters”, and click the “Add” button.

   Windows NT Networking Setup will determine the type of network adapter card that you will use to connect to the network.
4. When prompted to select a driver, proceed with “Installing the Miniport Driver” on page 3-9.

3.4 *Installing the Miniport Driver*

If your Windows operating system automatically detected your hardware, it will prompt you to select a driver from a list, or install the driver from a “Disk provided by Hardware Manufacturer”.

Some Windows operating systems may prompt you to select the type of network adapter first, to select the appropriate driver (see Figure 3-2).

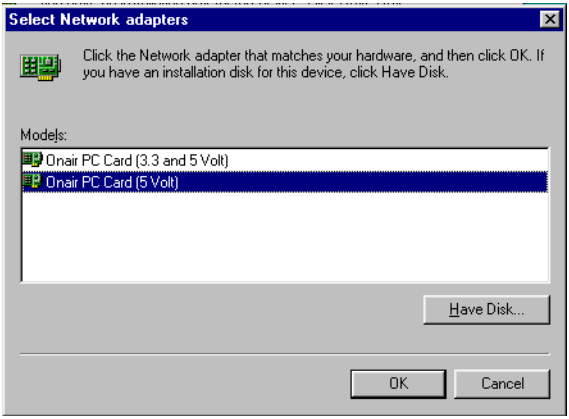

Figure 3-2: Select ComCard Adapter Type

This is usually the case when:

- Your computer came with a factory-installed version of Windows 95 (usually referred to as Windows 95 OSR2).
- Your computer runs the Windows NT operating system (version 3.51 or 4.0), and you performed the steps as described in “Getting Started in Windows NT” on page 3-5.

Note:

To make sure you install the latest available driver, always select the “Disk provided by Hardware Manufacturer” or the “Have Disk” option, to install the driver from the AR*tem* Onair CD-ROM or the driver diskette that came with your ComCard.

Alternatively, you can use the “Browse” option to navigate to the directory where you stored the set of files that you downloaded from the www.ARtem.de.

As Windows operating systems differ slightly (see “What You Need to Know” on page 3-2), some of the screens pictured in this chapter may look different from the actual display on your screen. However, the parameter settings for your ComCard will be similar for all Windows operating systems.

1. In the “Select Network Adapter” window, click the “Have Disk” button.
2. Ensure that the AR*tem* Onair CD-ROM or the driver diskette has been inserted into your computer, and click the OK button to proceed.

   When you downloaded the latest driver files from the www.ARtem.de:

   - Use the “Browse” option on Windows 95/98 systems, to navigate to the harddisk drive and folder where you saved the driver files.
   - Windows NT systems will not allow you to “browse” for a harddisk folder as an alternative to a floppy disk. For such systems you will need to extract the downloaded files first, and copy the extracted files to a diskette.

   Windows will start copying files from your Windows installation diskettes or CD-ROM.
3. If the system prompts you to identify the location of files (see Figure 3-3 on page 3-11), enter the correct drive and directory, and click the OK button to proceed.

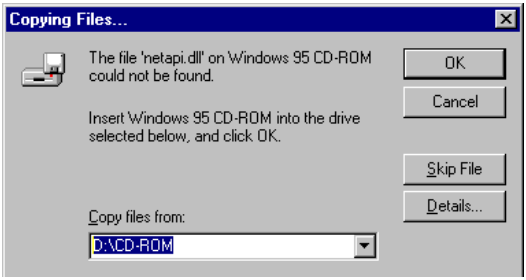

Figure 3-3: Identify the Location of Files

- For Windows system files (typically *.dll) this is usually the Windows CD-ROM. e.g. d:\cd-rom.
- When your computer came with the Windows operating system factory-installed, point to the directory that contains the Windows setup files (*.cab): e.g. c:\windows\options\cabs
- When the system prompts you to identify the ComCard Driver files, specify the drive and directory that contains your ComCard software.

  When you had a network adapter installed on your computer before, most of these files are already available on your hard disk drive. If you do not have the Windows CD-ROM available, you may try replacing the proposed path in the “Copy files from” dialog box with:

  c:\windows\system or **c:\windows**

3.4.1 Network Installation

If this is the very first time that Networking support is installed onto your computer, the Windows operating system will prompt you to enter a computer and workgroup name. These names will be used to identify your computer on the Microsoft Network Neighborhood.

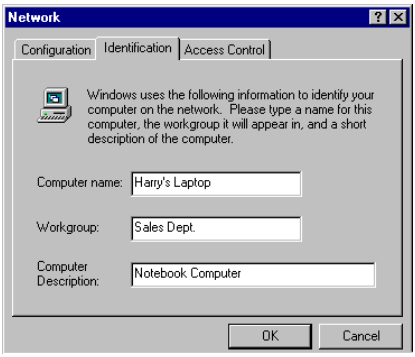

Figure 3-4: Windows Network Identification Properties

1. Click the OK button to display the window as pictured in Figure 3-4.
2. In the “Computer Name” field, enter a unique name for your computer.
3. In the “Workgroup” field, enter the name of your workgroup.
4. (Optional) Provide a description of the computer in the “Computer Description” field.

For more information about setting your Windows Network Properties, consult your Windows documentation or the Windows on-line help information.

3.5 Setting the ComCard Parameters

On computers running the Windows NT operating system, you will see additional tab labeled “Adapter”, that enables you to verify and/or modify the factory-set values for the I/O Port address of your ComCard, and its IRQ value[1].

1. Enter the values that you wrote down when running the Windows NT Diagnostics as described on page B–7.
2. Click the “Continue” button, to display the parameter window for your ComCard.

The “ComCard Properties” window enables you to specify the ComCard specific parameters, required to connect your computer to the Onair network system.

3.5.1 Which Parameters Do You Need?

When connecting your station to an IEEE 802.11 wireless network infrastructure, you will only need to set the following parameters:

- Onair Network Name
- Station Name

In this Quick Installation Guide these parameters are described as the “Basic ComCard Parameters”.

Looking at the ComCard Parameter window, you will also see a set of Advanced ComCard Parameters, and “Power Management”, which are described in the on-line help file of the driver.

You are advised to leave these to their default settings, unless there are special situations, for example, upon advice of an expert.

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1 For computers running the Windows 95 or Windows 98 operating system, you do not need to set these parameters. On these systems, the allocation of these device settings is controlled via the “Plug & Play” mechanism.

Note:

Always consult your LAN Administrator for the parameter settings that apply to your network environment.

3.5.2 Basic ComCard Parameters

The Basic ComCard Parameters are the minimum set of parameters that should be set to get your Onair network up and running. These parameters include:

- Onair Network Name
- Station Name

Onair Network Name

When you wish to connect your computer to an IEEE 802.11 Infrastructure as pictured in Fig. 1-2 on page 1-2 and Fig. 1-3 on page 1-3, you have two options:

- “Connecting to Any Network” as described on page 3–15, or
- “Connecting to a Specific Network” as described on page 3–16.

The Onair Network Name will determine to how your Onair station will behave when powered up in an IEEE 802.11 Infrastructure.

If you are unfamiliar with the two types mentioned above, please consult the section “Connecting to a Network” in Chapter 1, on page 1–7.

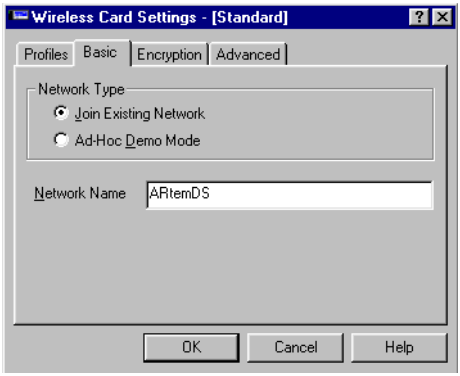

Figure 3-5: Wireless Card Basic Parameters

Connecting to Any Network

To connect to any IEEE 802.11 network in the vicinity of your ComCard computer, you can leave Onair Network Name field blank, or enter the name **"ANY"** (all characters in upper-case).

When your Onair Network Name is set to **"ANY"**, your computer will attempt to establish a radio connection with any IEEE 802.11 network that provides good communications quality.

You may wish to use the **"ANY"** option when:

- You operate your computer in multiple network environments, that are identified by different Onair Network Names.
- You do not know the Onair Network Name of the network to which you would like to connect your computer.

Connecting to a Specific Network

If you would like to connect to one specific Onair Network only, enter the “Onair Network Name” that applies to your network, for example: “MY_ONAIR_NETWORK”.

This is the Onair Network Name that the LAN Administrator programmed into the ComPoint access points. Consult your LAN Administrator for the value that applies to your network.

Setting up a New IEEE 802.11 Infrastructure?

When setting up a new IEEE 802.11 network, you may enter a “Onair Network Name” of your choice. This name should also be programmed into other Onair stations, and (if applicable) the ComPoint access points.

The Onair Network Name can be any alphanumeric string in the range of “a” to “z”, “A” to “Z” and “0” to “9”. This string which can contain from 1 to 32 characters is case-sensitive.

Example: “MY_ONAIR_NETWORK”

Station Name

The Station Name is a name that will be used to identify your Onair station in the ComCard diagnostic tools.

- When your computer runs the Windows 95 or Windows 98 operating system, enter a string of alphanumeric characters in the range of “a-z”, “A-Z” and “0-9” with a maximum of 32 characters.

  You are advised to use the same name as the one you entered in the “Computer Name” field in your Windows Network Neighborhood Properties (see Fig. 3-4 on page 3-12).

- When your computer runs the Windows NT operating system, the Station Name field is not available. On these systems, the diagnostic tools will use the “Computer Name” value from the “Identification” tab.

Connecting to an Ad-hoc Network

In case you do not wish to connect to a network infrastructure, but prefer to setup a small wireless workgroup as pictured in Fig. 1-1 on page 1-1, you can enable the “Ad-hoc Demo Mode” tick box.

In Ad-hoc Demo Mode, your computer will:

- Ignore the Onair Network Name
- Ignore ComPoint access points
- Fix the radio to operate at its factory-set default channel.

This means that your Onair station can communicate with any other Onair station within its range, provided that these stations have been equipped with cards that have a matching default radio frequency (see Table A.5 on page A-6).

3.5.3 ComCard Encryption Parameters

The encryption tab enables you to define the encryption keys that your ComCard should use to:

- Decrypt wireless messages received via its wireless interface.
- Encrypt data that will be transmitted via the wireless interface.

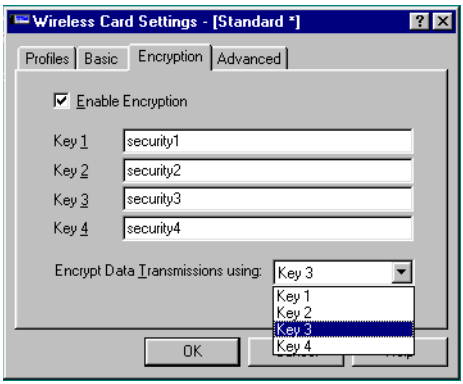

Figure 3-6: Wireless Card Encryption Parameters

You can identify up to 4 different key values to decrypt wireless data, and select one of these keys to encrypt wireless data transmissions.

Subject to the type of ComCard, the key value of your choice may either be:

- 5 alphanumeric characters in the range of “a-z”, “A-Z” and “0-9” for WEP 40 encryption.
- 16 alphanumeric characters in the range of “a-z”, “A-Z” and “0-9” for WEP 128 encryption.

  The alphabetical characters you select are “case-sensitive”.

Alternatively, you may select to enter a hexadecimal string, preceded by the characters “**ox**”values, being either:

- 10 digit hexadecimal values in the range of “A-F” and “0-9”.
- 32 digit hexadecimal values in the range of “A-F” and “0-9”.

Caution!

To allow encrypted data communications, you must set the same encryption key values on all stations and/or ComPoints.

Carefully write down the values you enter here, and keep this note in a secure place.
The values you enter on the encryption tab, will only be visible the first-time you enter the keys. After closing this tab, all key values will be displayed as “*xxxxxxxxxx*” every time the tab is displayed again.

3.6 Finishing the ComCard Installation

When you have finished “Setting the ComCard Parameters”, click the OK button to proceed with the installation process. Windows will finish building the driver configuration database and copy some files from your CD-ROM or diskette to your computer’s hard disk.

If the Windows operating system prompts you to identify the location of the Windows files, specify the drive and directory of the Windows Installation CD-ROM or diskettes (see also page 3–11).

When Windows has finished the copying of files, it will prompt you to restart your computer.

1. Remove the ComCard software diskette from drive A:\
2. Click the OK button to restart your computer.

Figure 3-7: Finished Setting up the Hardware

3.6.1 After Restarting Your Computer

After you have restarted your computer, the Windows operating system should detect the ComCard (you can hear the two-tone sound of the PC Card Socket Controller).

Windows will load the ComCard Miniport driver and will open with a dialog box that enables you to enter a user name and password. The password you enter here will be the one used to log into the Windows Network Neighborhood.

3.7 Working with ComCard & Windows

3.7.1 View Other Onair Stations

When multiple Onair stations are up-and-running in your wireless network, you can use the procedure described below to display the other computers:

1. Start Windows Explorer.
2. Scroll down the list of files and folders to look for the item “Network Neighborhood”.
3. Double-click the “Network Neighborhood” item to display all stations in your Microsoft Networking Group.
4. To display other workgroups in the network environment, double-click the “Entire Network” icon.
5. If there is a second network operating system running in your network environment (for example a Novell NetWare network), the “Entire Network” window will also display available servers running under the second network operating system.

   If you click on these servers, you may be asked to enter your user name and password that apply to the other network operating system.

   If you cannot find other (Onair) networked computers, verify whether or not the other ComCard computers are:

   - Powered up and logged on to the network.
   - Configured to operate with an identical:
     - Networking Protocol
     - Onair Network Name

To verify the radio connection with other stations, you can also run the Monitoring Options.

3.7.2 Selecting the Networking Protocol

Upon initial installation, your Windows operating system will typically install a basic set of networking protocols.

You may need to check whether the network installation process:

- Truly added the protocols required to communicate with other computers in your network environment.
- Configured the appropriate protocol settings to allow communication within your networking environment.

Infrastructure Networks

When connecting your station to a network infrastructure, you will usually need additional networking protocols, according to the network operating system used within your LAN environment. The most common protocols are:

- IPX/SPX compatible protocols when your networking is using the Novell NetWare network operating system.
- NetBEUI when you would like to use file and printer sharing, as supported by Microsoft Networking for Windows Workgroups.
- TCP/IP when you would like to connect your computer to a network that uses IP addressing, and/or you would like to connect to the internet.

These networking protocols can operate simultaneously with any other networking protocol.

Ad-hoc Workgroup Networks

When connecting your station to an ad-hoc wireless workgroup, you will also need a networking protocol that will allow your station to participate in peer-to-peer networking.

The most common protocols are:

- NetBEUI when you would like to use file and printer sharing, as supported by Microsoft Networking for Windows Workgroups.
- TCP/IP when you would like to use “local webserver” capabilities that allow participants to surf (designated areas of) one-another’s disk-drives using an Internet Browser.

  When using the TCP/IP protocol, each workgroup participant must be identified by a unique IP Address value.

Consult your Microsoft documentation for more information about protocols and peer-to-peer networking.

3.7.3 Verifying the Current Protocol Setting

To verify whether your station has been configured for the correct type of network and networking protocols:

1. Click the Start button from the Windows Taskbar.
2. Click on Settings, then Control Panel.
3. In the Control Panel, double-click the “Network” icon.
4. Verify that the list of network components includes the following items:
   - Client for Microsoft Networks.
   - (optional) Client for NetWare Networks.

   If the item of your choice is already available, click the Cancel button to exit this configuration screen and skip to the next step.

If the items you require are missing, click the “Add” button and select “Add Client” to add the client software of the networking software that you would like to install.

5. When the proper Client software is installed, but you do not see the required protocols, click the “Add” button, and follow the instructions of the Windows operating system as they appear on your screen.

Consult your LAN Administrator for more help or information about configuring the IPX/SPX and/or TCP/IP properties.

3.7.4 Display or Modify ComCard Parameters

If you would like to view or modify ComCard parameters, for example because you would like to connect to another network or type of network, proceed as follows:

1. Click the Start button from the Windows Taskbar.
2. Click on Settings, and then on Control Panel.
3. Double-click the “Onair” icon.
4. Change the parameters you would like to modify, and click
   - the OK button to confirm your changes, or
   - the Cancel button to ignore your modifications.

A. Card Specifications

A.1 Physical Specifications

Form Factor	PC Card Type-II Extended	
Dimensions	(LxWxH)	117.8 x 53.95 x 8.7 mm
Weight	45 gram (PC Card)	
Temperature & Humidity		
Operation	0° to 55° C[1]	maximum humidity 95%
Transit	-20° to 70° C	15 to 95% (no condensation allowed)
Storage	-10° to 60° C	10 to 90% (no condensation allowed)

1 Although the card may still operate in the range of -20° to 70° C, operation outside the range of 0° to 55° C may no longer be according to specifications.

Table A.1: Physical Specifications

Doze Mode	15 mA
Receive Mode	240 mA
Transmit Mode	280 mA
Power Supply	5 V

Table A.2: Power Characteristics

A.2 Networking Characteristics

Compatibility	IEEE 802.11 Standard for Wireless LANS (DSSS)	
Network Operating System	• Novell® Client 3.x & 4.x • Microsoft Windows® Networking	
Host Operating System	Microsoft Windows® 95/98 and Windows® NT: • NDIS Miniport Driver	
	MS-DOS & Microsoft Windows 3.x: • DOS ODI Driver • Packet Driver	
	Windows CE • Windows CE v.2.0 & 2.11	
	Apple Macintosh Operating Systems: • Apple PowerBook G3	
Media Access Protocol	CSMA/CA (Collision Avoidance) with Acknowledgment (ACK)	
Data Rate	• High	11 Mb/s
	• Medium	5.5 Mb/s
	• Standard	2 Mb/s
	• Low	1 Mb/s
	The cards use an automatic Transmit Rate Select mechanism. Optionally the user can choose the fix the transmit rate at a specific speed.	

Table A.3: Networking Characteristics

A.3 Radio Characteristics

Radio Characteristics of ComCards may vary according to:

- The country where the product was purchased.
- The type of product that was purchased.

Wireless communication is often subject to local radio regulations. Although Onair wireless networking products have been designed for operation in the license-free 2.4 GHz band, local radio regulations may impose a number of limitations to the use of wireless communication equipment.

To comply with such regulations, ComCards are marketed with dedicated channel-sets with a number of factory-programmed channels identified by the following acronyms:

- ETS for countries that adhere to the regulations as defined by the European Telecommunications Standards Institute (ETSI).
- FCC for countries that adhere to the regulations as defined by the US Federal Communications Commission (FCC).
- FR for France, and
- JP for Japan.

The acronym of the channel-set supported by your card is printed on a label on the back-side of your ComCard (see Table A.5 on page A-6 for a detailed list of channels).

If you plan to install and use ComCards to connect a ComPoint or other computing device to an outdoor antenna installation, additional regulations may apply.

R-F Frequency Band	**2.4 GHz (2400-2500 MHz)**			
Number of selectable sub-channels	North America (FCC)		11	
	Europe (ETS)		13	
	France (FR)		4	
	Japan (JP)		1	
	Other Countries:		• FCC 11 • ETS 13	
Modulation Technique	Direct Sequence Spread Spectrum • CCK for High & Medium Transmit Rate • DQPSK for Standard Transmit Rate • DBPSK for Low Transmit Rate			
Spreading	11-chip Barker Sequence			
Bit Error Rate (BER)	Better than 10^{-5}			
Nominal Output Power	15 dBm			
Range (100 bytes User Data) / Transmit Rate	**High Speed 11 Mb/s**	**Medium Speed 5.5 Mb/s**	**Standard Speed 2 Mb/s**	**Low Speed 1 Mb/s**
Open Office Environment	160 m (525 ft.)	270 m (885 ft.)	400 m (1300 ft.)	550 m (1750 ft.)
Semi-Open Office Environment	50 m (165 ft.)	70 m (230 ft.)	90 m (300 ft.)	115 m (375 ft.)
Closed Office	25 m (80 ft.)	35 m (115 ft.)	40 m (130 ft.)	50 m (165 ft.)
Receiver Sensitivity	-83 dBm	-87 dBm	-91 dBm	-94 dBm
Delay Spread (at FER of <1%)	65 ns	225 ns	400 ns	500 ns

Table A.4: Radio Characteristics

The range of the wireless signal is related to the Transmit Rate of the wireless communication. Communications at lower Transmit range may travel larger distances.

Note:

The range values listed in Table A.4 on page A-4 are typical distances as measured at AR*tem*. These values may provide a rule of thumb and may vary according to the actual radio conditions at the location where the Onair product will be installed.

- The range of your wireless devices can be affected when the antennas are placed near metal surfaces and solid high-density materials.
- Range is also impacted due to “obstacles” in the signal path of the radio that may either absorb or reflect the radio signal.

Table A.4 lists the typical ranges when used indoors in “office environments” that can be described as follows:

- In **Open Office environments**, antennas can “see” each other, i.e. there are no physical obstructions between them.
- In **Semi-open Office environments**, work space is divided by shoulder-height, hollow wall elements; antennas are at desktop level.
- In **Closed Office environments**, work space is separated by floor-to-ceiling brick walls.

A.3.1 Supported Frequency Sub-bands

Subject to the radio regulations that apply in your country, your ComCard may support a different set of 2.4 GHz channels (see Table A.5). Consult your Authorized ComCard Reseller or AR*tem* Sales office for information about the radio regulations that apply in your country.

Frequency Range	**2400-2500 MHz**			
Channel ID	**FCC**	**ETSI**	**France**	**Japan**
1	2412	2412	-	-
2	2417	2417	-	-
3	**2422**	**2422**	-	-
4	2427	2427	-	-
5	2432	2432	-	-
6	2437	2437	-	-
7	2442	2442	-	-
8	2447	2447	-	-
9	2452	2452	-	-
10	2457	2457	2457	-
11	2462	2462	**2462**	-
12	-	2467	2467	-
13	-	2472	2472	-
14	-	-	-	**2484**

Table A.5: ComCard IEEE 802.11 Channels Sets

When installing ComCards the channel configuration is managed as follows:

- For wireless clients that operate in a IEEE 802.11 Infrastructure, the ComCard will automatically start operation at the channel identified the ComPoint access points. When roaming between different access points the station can dynamically switch to another channel if required.
- For ComCards installed into wireless clients that operate in a “Ad-hoc Demo Mode”, the ComCard will use the factory-set default channel (printed in bold).
- When inserted into a ComPoint access point, the ComCard will use the factory-set default channel (printed in bold), unless the LAN Administrator selected a different channel when configuring the ComCard.

A.4 ComCard Types

Subject to the type of Onair product you purchased, this kit will include either one of the following cards:

- WEP 40 ComCard
- WEP 128 ComCard

B. Troubleshooting

B.1 LED Activity

If you encounter difficulty using and/or installing your Onair product, the error may be related to various causes:

- Out-of range situation, which prevents the ComCard from establishing a wireless connection with the network.
- Configuration mismatch, which prevents the ComCard from establishing a wireless connection with the (correct) network.
- Absence of, or conflict of the ComCard Driver.
- A problem or conflict with the PC Card slot which prevents the PC Card from powering on.
- A conflict of the ComCard hardware with another device.

The starting point to troubleshoot problems with your ComCard is looking at the LED activity of the ComCard.

Table 1 on page B-3 provides an overview of the various modes of operation and the associated LED activity. Table B.1 also includes a number of troubleshooting hints, if required, that may help you solve the problem.

Power LED	Transmit Receive LED	Description/Action
Continuous Green	Blinking	Standard operational mode. • Card is powered on. • Sensing/transmitting wireless data.
	Off	• Card is powered on. • No wireless activity. No action is required.
Flicker	Flicker	Power Management mode: • Card is powered on, but set to power saving mode, to conserve battery life. • Flashes indicates that the card wakes up at regular intervals to verify if there is wireless data addressed to your computer.
Both LEDs blink once every 10 seconds		ComCard works fine, but did not yet succeed establishing a wireless connection with the wireless Infrastructure. Actions: • Contact the LAN Administrator to verify the Onair Network Name assigned to the wireless infrastructure. • Contact the LAN Administrator to verify the correct value(s) of the encryption keys. • Contact the LAN Administrator to verify whether the network infrastructure has been closed. • Change the configuration of your ComCard to enter the correct Onair Network Name • If there are no ComPoint available, change the configuration of your ComCard to run in Ad-hoc Demo mode.

Power LED	Transmit Receive LED	Description/Action
Off	Off	Card is not powered on, so it can not transmit/receive data. The cause may either be: • No Driver loaded/installed • Card - Driver mismatch which prevented the driver from loading • Device conflict which prevented the driver from loading Actions: • Verify whether a driver has been installed, if not install the driver. • Verify the device settings of the PC Card to determine the occurrence of a conflict with another device. If so, change the settings of either your wireless LAN or the conflicting device to resolve the problem. • Verify the versions of the driver, and the embedded software in the ComCard (also referred to as Station firmware). • Consult the www.ARtem.de to see if newer versions are available and if so, upgrade both the embedded software and driver to the latest available version.

Table B.1: LED Activity Table

B.2 Windows Operating Systems

B.2.1 Generic Problems

Windows does not detect my new card

- Windows NT operating systems v3.51 and v4.0 do not support “Plug & Play”. On such systems, you will need to manually introduce the card to your operating system as described in Chapter 3 under “Getting Started in Windows NT” on page 3-5 .
- In some occasions, Windows 95 and/or Windows 98 do not detect a new card either. This may be the case in one of the following situations:
  - The laptop computer into which you wish to install the ComCard is a brand-new “out-of-the-box” computer, where the Windows 95/98 operating system was already factory-installed (see “Enabling the PC Card Controller” on page B-4).
  - A previous installation of the ComCard was aborted before it was finished.

Enabling the PC Card Controller

Today, most brand-new “out-of-the-box” laptop computers come with the Windows 95/98 operating system factory-installed. On some of these computers, a number of options like PC Card & Socket Services have been disabled by default to save on disk and memory space. In order to use such options you must first finalize the Windows 95/98 installation to enable such options.

If a Windows 95/98 computer does not detect your ComCard, proceed as described below to enable the PC Card socket interface. To verify that it has been enabled, proceed as follows:

1. Click the Start button on the Windows Taskbar.
2. Click on Settings, then Control Panel.
3. In the Control Panel window, double-click the “PC Card icon” to open the PC Card Properties window (see Figure B-1).


PC Card (PCMCIA)

Figure B-1: Enabling the PC Card Controller

4. In the PC Card Properties window, double-click one of the PC Card Sockets.

   If the PC Card socket interface was not yet enabled, the Windows operating system will display a message that it is finalizing the PC Card Socket installation.

5. Click the OK button to confirm and close the PC Card Properties window.

Station Cannot Connect to the Network

This situation may occur in any of the following situations:

- Incorrect Onair Network Name
- No driver loaded
- “Closed” System
- Station not authorized to access network
- Card defect
- “Hardware Conflict” on page B-6

B.2.2 Hardware Conflict

When installing adapter cards or peripheral devices on a computer you may occasionally run into hardware conflict that may:

- prevent your ComCard from working properly, or
- disturb operation of other devices after the installation of the ComCard drivers.

Such problems are most of the times caused when multiple devices installed onto your computer are using identical values for I/O Base Address and/or Interrupt Request (IRQ).

The factory-set values of your ComCard have been set to use the following defaults:

Device	Resource	Default Value
ComCard[1]	I/O Port	0400-0437
	IRQ	10

1 For older driver versions the default I/O Base Address value is 0300

Table B.2: Default Strappings of the ComCard Hardware

Unlike the Windows 95 or Windows 98 operating systems, Windows NT is not able to check automatically whether the proposed values are already used by another device.

To avoid or troubleshoot hardware conflicts with another device, you are advised to use the Windows NT Diagnostic program, to determine whether the default I/O port and IRQ for your ComCard are available, and if not to select an alternative value.

Note:

Sometimes it may be pretty difficult to determine where a device conflict is located. As a rule of thumb, you can use the following troubleshooting hint:

- When the conflict is related to an conflcitng I/O Base setting, in most cases the ComCard will not work at all: i.e. you will not see any LED activity.
- If the problem is related to a conflicting IRQ value, LEDs may flicker, but you can notconnect to the network.

  In a number of cases you may be able to verify that the card succeeded in establishing a radio connection with a ComPoint, but fails to really connecting to the network operating system.

Running Windows NT Diagnostics

When installing the ComCard, the Windows NT operating system will prompt you to confirm or modify the factory-set device values for your ComCard:

Starting Windows NT Diagnostics

1. Click the Start button on the Windows NT Taskbar.
2. Click on Programs, and then “Administrative Tools”.
3. From the list of “Administrative Tools”, click the item “Windows NT Diagnostics”.

Verifying IRQ Settings

To display the IRQ values that are already in use by other devices installed on your computer:

1. Click the “Resources” tab on the Windows NT Diagnostics screen. This will display the screen pictured in Figure 2.

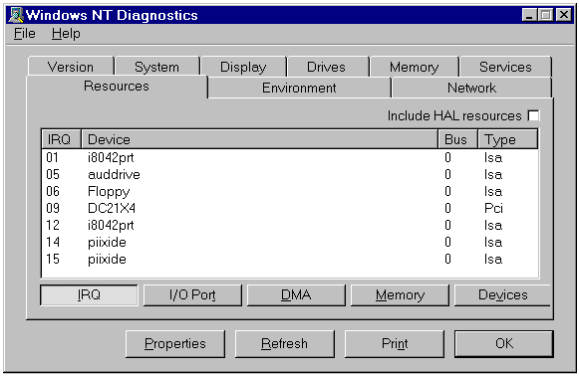

Figure B-2: Verifying IRQ Availability

2. Click the “IRQ” button to display the Interrupt Request (IRQ) vectors currently in use by other devices in your computer. The default IRQ value for ComCards is 10. Is the value 10 already listed?
   - If No, you can use the ComCard default. Write down IRQ 10 and proceed with the next step.
   - If Yes, this means that another device is already using the IRQ, i.e. you will need to select another value for your ComCard.
3. See whether one of the following values is available (i.e. not listed in the Windows NT Diagnostics window): 03, 04, 05, 07, 09, **10**, 11, 12, 15.
4. Select one non-listed value and write it down before you proceed with “Verifying I/O Port Settings”.

Verifying I/O Port Settings

To display the values of I/O Ports that are already in use by other devices installed on your computer, proceed as follows:

1. On the “Resources” screen of the Windows NT Diagnostics program, click the button “I/O Port”. This will display the window pictured in Figure B-3.

   The default I/O Port value for ComCards is 0400[1].

   Is this appropriate value already listed for your version of the Miniport driver?

   - If No, you can use the ComCard default. Write down I/O Port 0400 and proceed with the next step.
   - If Yes, this means that another device is already using this port address, i.e. you will need to select another value for your ComCard.

1 This applies to ComCard Miniport driver version 1.33 and higher. For earlier versions of this driver, the default I/O Base Address is 0300.
If you are unsure about the version of the Miniport driver that is currently installed, use the ComCard Manager tool. Use the option “Diagnose Card” to display the “Version Info” tab which will list the version numbers of the card’s hardware, embedded software and driver.
For the latest ComCard Miniport driver, consult the www.ARtem.de.

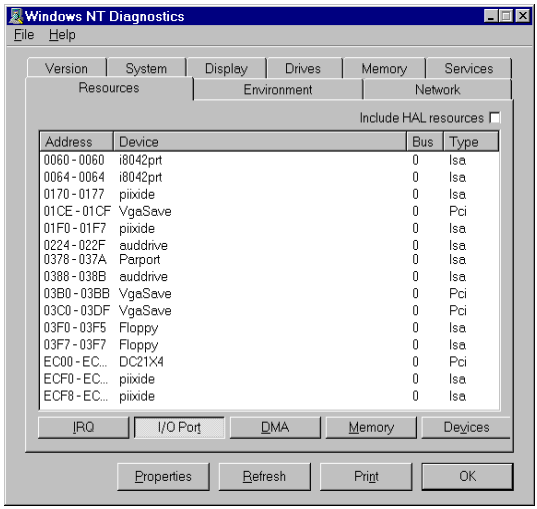

Figure B-3: Verifying I/O Port Availability

If the default ComCard I/O Port has already been assigned to another device, select an alternative I/O Port value from the range listed below:

0200	**0300***	**0400****	0500	0600	0700
-	-	0440	0540	0640	0740
0280	0380	0480	0580	0680	0780
-	-	04C0	05C0	06C0	07C0

* For driver versions 1.32 or earlier, the default was 0300.

** For version 1.33 or higher, the default setting is 0400.

2. Verify that the alternative value is available (i.e. not listed in the Windows NT Diagnostics window).
3. Write down the alternative I/O Port value and close the Windows NT Diagnostics Program.

Having finished these steps, you should now have a note that identifies the following (alternative) values:

- IRQ value
- I/O Port Address

You can use these values to install the ComCard Miniport Driver as described later in this chapter.

Despite NT Diagnostics, still facing problems

The Windows NT Diagnostics program is not “bullet-proof”. Occasionally you may run into a hardware conflicts despite the fact that the Windows NT Diagnostics program displayed resources as being available to your ComCard.

This may be the case when your computer has one or more devices and/or peripherals installed which claimed an I/O Base Address and/or IRQ value without notifying the Windows NT operating system: Your Windows NT Diagnostics program will not be able to display these values, simply because it “doesn’t know”.

If this is the case, a value you perceived as being available to your ComCard, had already claimed by a conflicting device resulting in:

- A ComCard that does not work, and/or
- A conflicting device that does not work properly.

It will depend on your preferences and the configuration options supported by each of the conflicting devices to determine which device settings should be changed to allow flawless operation.

In most situations the ComCard Miniport Driver will prove most flexible to select alternative settings for I/O Base Address or IRQ values. However since the conflicting device apparently did not communicate its System Resource claims to Windows NT, you may need to try multiple values before the problem will be resolved.

- Consult the documentation that came with your computer and/or the conflicting device to find out which values are used by the conflicting device that have not been listed in the Windows NT Diagnostics.

Warning!

To isolate the problem, you are advised to change only one parameter at a time. For example: first try to resolve a possible conflict with the I/O Base Address. If that does not work, try to resolve a possible IRQ conflict.

PC Card Conflict

When your ComCard installation has completed successfully, but it does not become operational, it is possible that there is an I/O Port conflict.

The Windows Resource Manager may not have been able to detect the conflict, allowing the installation to complete successfully, but not allowing the PC Card to operate properly because another device has been assigned the specified port.

The default I/O Base address used by your ComCard is 0400 (when using Miniport driver version 1.33 or higher) and 0300 (when using Miniport version 1.32 or earlier).

You are advised to try different I/O Port values, as described in “Verifying I/O Port Settings” on page B-9.

Description	Default Value
Station Name	(none)
Connect to Network Type	IEEE 802.11 Infrastructure • Connect via access points • Ad-hoc Demo disabled
Onair Network Name	(none)
MAC Address	(none: use Universal MAC Address)[1]
AP Density	Low Density
Transmit Rate	High - Auto Rate Select
Medium Reservation	OFF
Card Power Management	OFF
Receive All Multicasts	Enabled
Maximum Sleep Duration	100
Encryption	OFF

1 The Universal MAC Address of your ComCard is printed on a label on the backside of the card.

Table B.3: Default Configuration Settings

B.3 Upgrading the ComCard Miniport Driver

Upgrading the ComCard Miniport Driver installed may be required in one of the following situations:

- You would like to use new features that have become available for your ComCard.
- You installed a newer version of the ComCard Manager tool.
- Your ComCard Manager Software reported a Driver/ Firmware mismatch.

Warning!

Upgrading the ComCard Miniport Driver should only be done by a skilled LAN Administrator or support engineer that has a working knowledge of the Microsoft Windows 95, 98 and/or the Windows NT operating system.

The procedure to upgrade device drivers differs between the various Windows operating systems:

- Windows 98 and Windows NT systems feature an “update driver” function that allows you to easily replace the current driver with a more recent version.
- Windows 95 systems usually require you to completely remove the driver from your computer first, prior to installing the latest driver. This is described on page B–18.

Upgrading the driver for Windows 98

1. On the Windows Taskbar, click the Start button.
2. Click on Settings, and then click Control Panel.

3. In the Control Panel window, double-click the System icon.
4. In the System Properties window, select “Device Manager” tab.

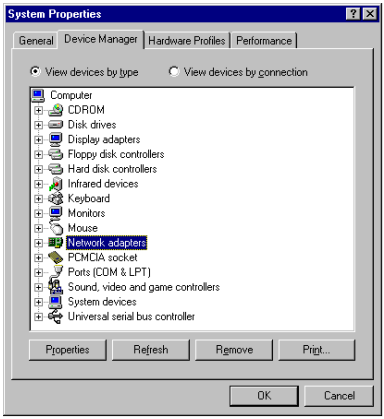

Figure B-4: The Windows 98 Device Manager

5. In the top section of the Device Manager tab, select the option “View devices by type” as pictured in Figure 4 on page B-15.
6. In the list of computer devices, double-click ”Network Adapters”.
7. Select the item “ComCard” and click the “Properties” button.
8. In the ComCard Properties window, select the “Driver” tab to display the window pictured in Figure 5.

Figure B-5: Windows 98 Update Driver Window

- To display information about the currently installed driver, click the “Driver File Details” button.
- To upgrade your current driver to a newer version click the “Update Driver” button and follow the instructions as displayed on your screen.

9. Restart your computer to finish the driver upgrade procedure and to have the new driver loaded by the operating system.

10. (Optional) Upgrade the ComCard Manager Software.

Note:

The procedure described above may look familiar to users of computers that run Windows 95 operating systems which are identified as OSR2 versions. Although such systems may also show an “Update Driver” button, thorough testing in the ARtem have proven that this procedure does not work for the Windows 95 systems (the operating system will NOT replace the current driver). For Windows 95 systems, proceed as described on page B–18.

Upgrading the driver for Windows NT

1. On the Windows Taskbar, click the Start button.
2. Click on Settings, then click Control Panel.
3. In the Control Panel, double-click “Network Neighborhood”.
4. Select the “Adapters” tab to display the window as pictured in Figure 6 on page B-17.
5. Select the “ComCard” and click “Update”.
6. Follow the instructions as they appear on your screen.

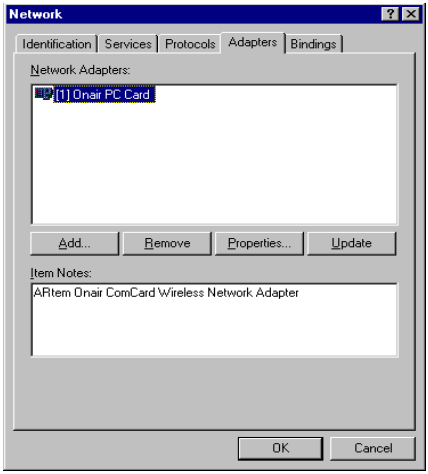

Figure B-6: Update Driver in Windows NT

Upgrading the driver for Windows 95

To upgrade the ComCard Miniport Driver on a Windows 95 system, you will typically need to perform the following three steps:

1. Remove the current ComCard Miniport Driver.
2. (Optional) Physically delete the driver file from your hard disk.
3. (Re-)install the latest ComCard Miniport Driver.

Why delete the old driver? The “Plug & Play” support of Windows 95 operating systems associates a specific driver with specific hardware. When you select the option “Remove Driver” from the Network (Neighborhood) Control Panel, the operating system will only disable the driver, but will not delete the driver from your harddisk (see also “What You Need to Know” on page 3-2).

When trying to upgrade a driver, the Windows operating system will recognize your ComCard as a piece of hardware that had been installed before and will attempt to re-install the old driver: i.e. when the operating system finds the appropriate driver files on your hard disk, it will not bother copying the files from the diskette with the new drivers.

B.3.1 Removing the ComCard Miniport Driver

1. Close all applications that are currently open.
2. On the Windows Taskbar, click the Start button.
3. Click on Settings, then click Control Panel.
4. In the Control Panel window, double-click the “Network” icon.
5. Select the ComCard and click the “Remove” button.

   The Windows operating system will disable the Miniport driver and update the driver configuration files. It will not delete the driver from your computer’s harddisk.

   This means that when you would re-insert the ComCard, your Windows operating system will attempt to activate the same driver files again (see also “What You Need to Know” on page 3-2).
6. When prompted to “Restart your computer” select:
   - Yes, if you don’t mind that the driver and configuration files reside on your hard disk (the restart will finish your procedure to disable the driver).
   - No, if you would like to physically remove the drivers from your hard disk (typically required to upgrade the driver on a Windows 95, 98 operating system).

B.4 MS-DOS Systems

B.4.1 Error Messages

No PACKET.INI found

The ComCard Packet Driver will display this error message in one of the following two situations:

- The driver could not find the file **PACKET.INI**
- The file **PACKET.INI** contained invalid parameter values that prevented the driver from loading.

Subject to the type of error, the driver may either load using the factory-set defaults or not load at all.

You are advised to verify the path statement in the **"AUTOEXEC.BAT"** file. You may need to add a statement to your **"AUTOEXEC.BAT"** file that will make the directory that contains the ComCard Packet driver the active directory. When the **PACKET.INI** file is stored in the same directory as the ComCard Packet Driver, the driver should be able to automatically find the **PACKET.INI** file.

B.4.2 Can Not Connect To The Network

The Onair Network Name is case-sensitive. When you entered this name, the value should have been placed between quotation marks e.g. "My Onair Network".

If you omitted the quotation marks, the driver will interpret the value as all upper-case e.g. MY ONAIR NETWORK.

If your access points have been configured with both lower- and upper-case characters, the driver will not be able to establish a radio connection.