RadioLAN

# Wireless Local Area Network

# DockLINK User Guide

890-010 12/04/98

# Notices

## *FCC*

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 of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

 

**FCCID:** MCIPUNIIT

**FCC Rule Part(s):** 15

**Frequency (MHz):** 5775, 5200, 5300

**Equipment Class** Low Power Communication Device Transmitter

***Remarks:***

Maximum Output Power: 50 mW

***Notes:***

This device has shown compliance with new rules adopted under Docket 87-389 and is not affected by Section 15.37, transition rule.

Each radio is marked with its operating frequency.

 

## *Disclaimer*

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It is always our goal at RadioLAN to supply accurate and reliable documentation. If you discover a discrepancy in this document, please e-mail your comments or suggested corrections to *marketing@radiolan.com*.



RadioLAN
455 De Guigne Drive
Sunnyvale, CA 94086

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The following text formats are used throughout this manual:

References to other locations in the manual or to other manuals provided by RadioLAN are *italicized*.

**Narrow Bold Letters** describe **buttons** and **fields** on the screen.

SMALL CAPITAL LETTERS describe **Screen Names** or **Screen Tab Names.**

***Bold and Italicized Letters*** indicate important information.

 

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# Introduction

Welcome to the next generation of RadioLAN wireless network products. The DockLINK is a module, which connects to a 10BaseT Network device, such as a PC, workstation, or printer, allowing interaction with RadioLAN wireless network resources.

The DockLINK includes a Radio Unit, a RJ-45 jack for connection to an Ethernet Hub, a power jack, and a special RJ11 serial port for connecting the DockLINK to a VT-100 terminal or modem.

There are two versions of the DockLINK:

**Model 408 for US Installations:** This version uses a plug-in power adapter that is compatible with US electrical systems.

**Model 408Z for International Installations:** This version uses a plug-in power adapter that is compatible with European electrical systems.

Each version now supports options that you can download anc configure to enhance the DockLINK's operation and security capabilities, so you can add Data Encryption to the already powerful capabilities included with the DockLINK.


**Figure 1: The DockLINK and Radio Unit**

**Transform a 10BaseT Network Node into a Wireless Network Station**

The primary use of the DockLINK is to transform a typical hard-wired 10BaseT Network Interface Card into a wireless network station. This allows the station to access and share network resources such as printers, modems, and servers.

When you use the DockLINK in the Dock Mode, you can connect the DockLINK to any device containing a 10BaseT Ethernet Network Interface Card to transform your standard Network Interface Card to a wireless network Interface Card. The DockLINK exchanges information between the Ethernet device and the RadioLAN wireless network.

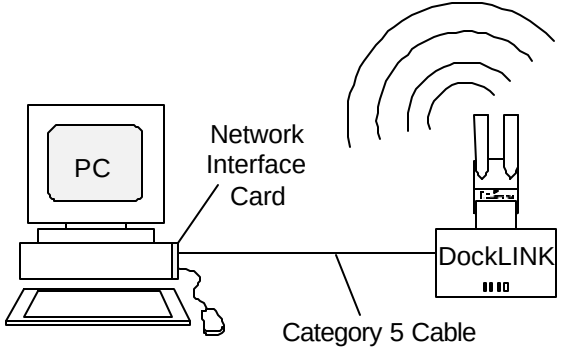



**Figure 2: Dock Mode**

Although the DockLINK and the device each have their own MAC address, the DockLINK hides its address from others on the wireless network. If attempting to Ping the DockLINK from a remote wireless station, the DockLINK will not respond. Instead, you will receive an IP Address response from the network interface card that is directly connected to the DockLINK.

If you set an IP Address in the DockLINK, you will receive an IP Address response only when you Ping the DockLINK from the device to which it is connected.

When using the Dock Mode, the DockLINK's configuration screens are "invisible" to wireless network stations

### Designed for Simplicity

The DockLINK is designed to be installed and set up quickly. If you require no more than basic management of packet flow, you can simply install the DockLINK and begin using its powerful network access capabilities. In circumstances like these, there is no need for custom configuration.

By default, the DockLINK filters all data packets that are not intended for wireless nodes, providing the most efficient wireless network operation.

If your network falls into this category, you need only *Quick Installation Steps* on page 5 in this manual to install the system.

### Adding Security to the Wireless Network Station

As an option, you can contact RadioLAN to enable the Data Encryption feature. This feature secures the wireless network station by setting an encryption key that protects your sensitive data on the wireless network. When you enable Data Encryption, only stations that share the same encryption key can share data. Stations that do not have Data Encryption capabilities, or those who do not share the same encryption key, cannot share data with encrypted stations.

### Local Management

The DockLINK includes a built-in serial port for connecting a VT-100 terminal or a modem. Using a terminal allows you serial access configuration and system performance pages. Connecting a modem to the Serial port allows you to dial into the DockLINK from a remote location to log in and configure or view system performance.

### System Requirements

To successfully place a DockLINK into operation, you must meet the following requirements:

- The DockLINK must connect directly to a 10BaseT Network Interface Card.
- The DockLINK must be located within the data range of other RadioLAN wireless network stations.

### Browser Requirements

You cannot access the DockLINK from any station but the one to which it is connected. To access the DockLINK by way of the local station's 10BaseT Network Interface Card, you must use a browser that is compatible with HTML, frames, and Java™ script language, such as Netscape™ 4.x or Microsoft Internet Explorer™ 4.x provides.

## Quick Installation Steps

The RadioLAN DockLINK easily attaches to your 10BaseT equipment and puts it onto the wireless network. Like other RadioLAN products, the DockLINK is easy to install in just a few steps.

1. Locate the DockLINK near to the 10BaseT device, like the printer in Figure 3.
2. Attach an Ethernet cable between the DockLINK 10BaseT port and the device
3. Attach the radio assembly, and locate it as high as practical, with the two points upward
4. Apply power to the DockLINK, and then power up the Ethernet device and you are done.

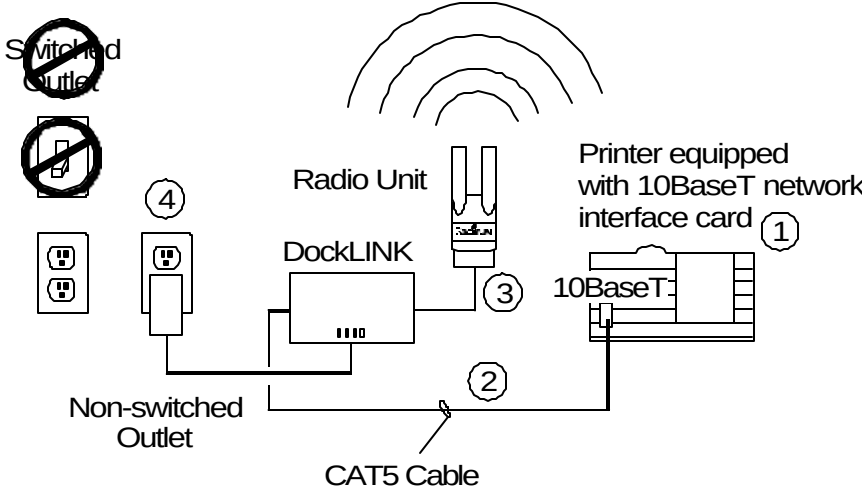



**Figure 3: Quick Installation Steps**

Installation of the DockLINK does not require the use of tools, and no configuration is needed in the DockLINK for operation. If your site uses RadioLAN SubNet ID codes, or encryption, then the DockLINK will need to be configured before operation.

## *To Test the Antenna Placement*

If you sense the DockLINK connected device is not operating properly, you may need to review the location of the antenna. This can be done either using the DockLINK Manager display to show the signal quality, or with a RadioLAN equipped computer in the area running RadioNET Manager software.

If you use the optional serial cable onto the DockLINK, you may also use the Node Discovery Menu (see *NODE DISCOVERY MENU* on page 80) in the DockLINK to study and adjust the antenna location, and show the statistics on either the Ethernet, or RadioNet side. Errors on the Ethernet side of a DockLINK would be very unusual, and indicate a problem with the cable. Errors on the RadioNet side may indicate the antenna location is not correct.

# Designing Your System

This section describes the best ways to locate one or more DockLINKs, and to orient the DockLINK's Radio Unit.

For best performance, orient the DockLINK's Radio Unit perpendicular to the horizon. Because signal strength and quality diminish when the Radio Unit is enclosed, it is best to locate the Radio Unit outside of cabinets. The most suitable locations are above obstacles such as cubical walls or shelves.

For the highest quality wireless network coverage, spacing between DockLINKs and other wireless stations should not exceed 150 feet in semi-enclosed offices. Office conditions vary; actual maximum distances depend on your office environment.

### *Testing the Data Range*

To test for best signal quality, locate a temporary wireless station in the location at which you intend to locate the DockLINK. Use the NODE DISCOVERY page at each wireless station on the network to verify signal quality. Also test locations where fixed wireless stations are not normally located, such as conference rooms.

As you test each location, note the signal strength measured on the NODE DISCOVERY page (see Figure 4). In the event that you discover a location where signal quality is low, there are three basic options for action:

1. If most or all station locations report a low-quality signal, relocate the DockLINK.
2. If one or only a few station locations report a low-quality signal, relocate the antennas at weak locations to improve signal quality.

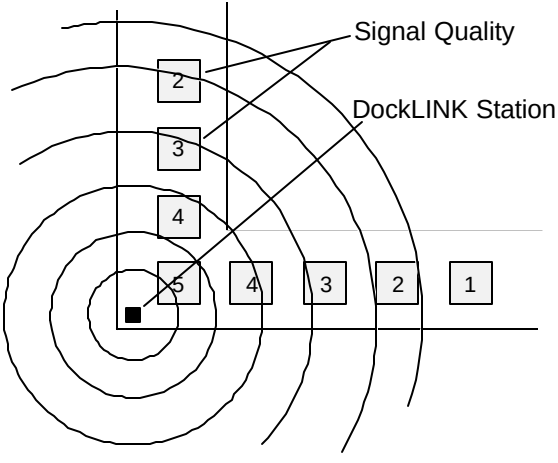



**Figure 4: Testing Data Range**

## Installing the DockLINK

Before installing the DockLINK, note the DockLINK's Media Access Control (MAC) Address. Each DockLINK's MAC Address is noted on the bottom of the DockLINK's housing.

There are three basic inputs required by the DockLINK (see Figure 5):

- Non-switched electrical outlet
- Access to the 10BaseT Network Interface Card
- Acceptable signal quality in the wireless network

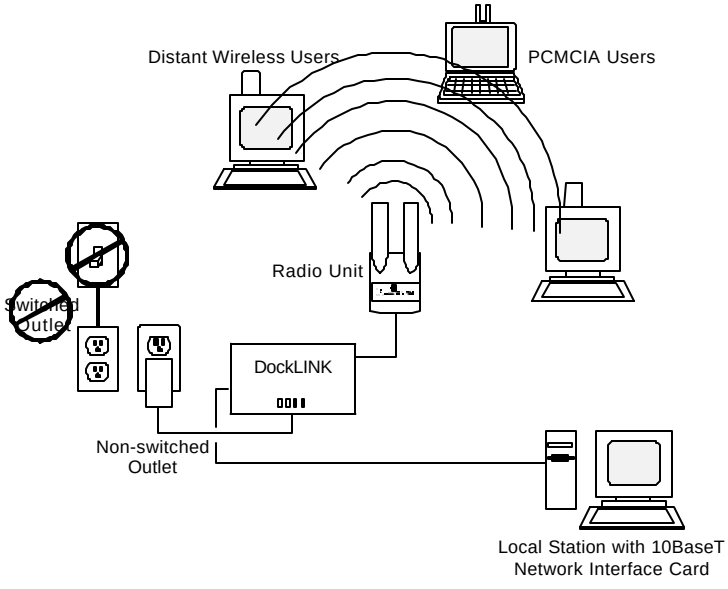



**Figure 5: Network Requirements**

## *Locating the Radio Unit*

RadioLAN Radio Units include a dual antenna assembly. The antenna assembly operates best if oriented perpendicular to the horizon (see Figure 6). Failing to orient the antenna in this vertical orientation will diminish signal quality between the DockLINK and all wireless stations that communicate with it. You can locate the DockLINK assembly on the desk next to your PC, or when using a longer Category 5 cable, you can mount the assembly on a wall, or ceiling.

**Do this:**

- Point the Radio Unit to the ceiling or to the floor.
- Locate the Radio Unit in an open area.
- Locate the Radio Unit within 120 feet from each wireless network user.

**Do not do this:**

- Do not orient the Radio Unit parallel to the horizon.
- Do no locate the Radio Unit inside a cabinet.
- Do not locate the Radio Unit farther than 150 feet from wireless network users.
- Do not power the DockLINK from a switched electrical outlet.
- Do not mount the Radio Unit outside of the building.

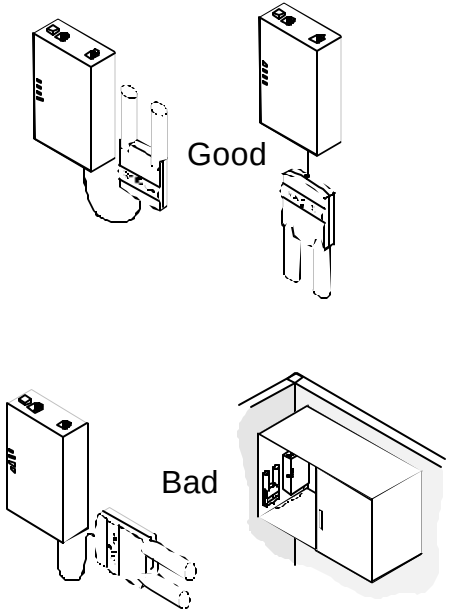



**Figure 6: Radio Unit Orientation**

## *Connecting the DockLINK*

You must connect the DockLINK to the station's 10BaseT Network Interface Card and to the power adapter. Optionally, you can also connect a modem or VT-100 terminal to the DockLINK for local configuration. Follow these steps to connect external cabling to the DockLINK:

1. Connect the radio to the female DB15 jack on the DockLINK. The radio's connector is keyed, and only inserts into the jack one way. Do not force the connector into the jack.
2. Connect the power adapter cable to the DockLINK.
3. Plug the power adapter into an electrical outlet.

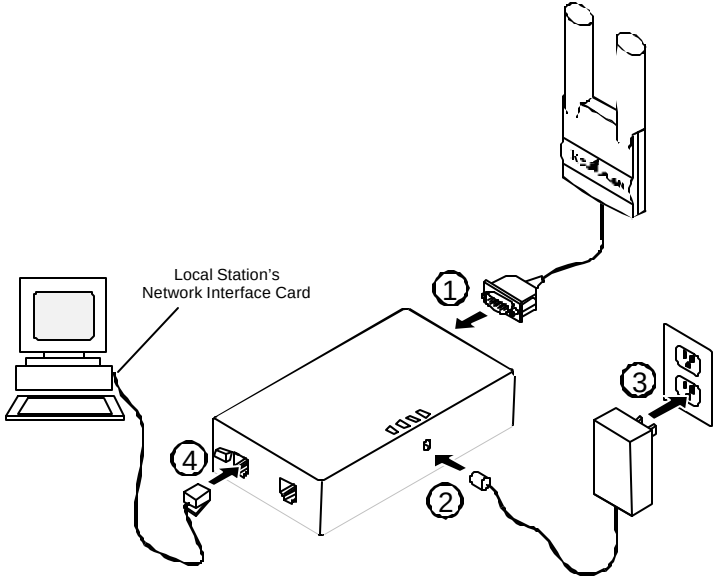



**Figure 7: Connecting the DockLINK**

4. Route a standard RJ-45 cable between the station's10BaseT Network Interface Card and the 10BaseT jack on the DockLINK. Connect the cable to the DockLINK first, and then connect the other end of the cable to the port on the station's Network Interface Card.

5. Set the MDI/MDI-X push-button switch to the correct setting for the RJ-45 Dual-modular cable.

   Push the switch in for use with a crossover cable.

   Push the switch out for use with a standard Category 5 cable.

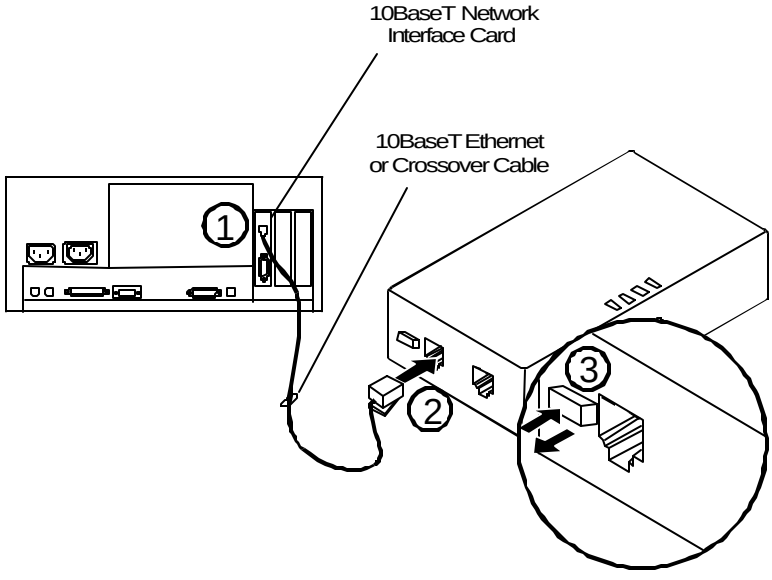



**Figure 8: Setting the MDI/MDI-X Switch**

## *Initial IP Address Setup*

Before you can manage the DockLINK, from the local station, for example, a PC, the DockLINK must contain a valid network IP Address. There are two ways to assign an IP Address to the DockLINK:

- Using the connection between the DockLINK and a station's Network Interface Card.
- A VT-100 terminal connection to the DockLINK Local Port

This section describes in detail each method for assigning the DockLINK an IP Address.

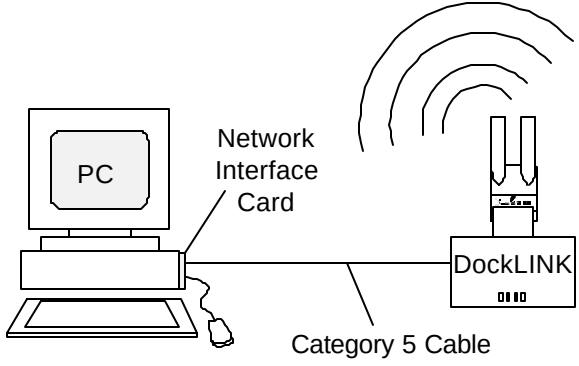



**Figure 9: Quick Configuration**

### Connect the DockLINK

To use the IP ASSIGN Utility, you must first connect DockLINK to the station's 10BaseT Network Interface Card. The station must not be running a DHCP server while performing this procedure.

1. Determine the method that you are using to assign the IP Address:

***Using the Local Station:*** If you installed the IP ASSIGN Utility in the local station, connect an RJ45, 10BaseT cable between the DockLINK and the jack on the station's Network Interface Card.

***Using the DockLINK Local Port:*** If you are using the Local Port, connect the Serial port from a VT-100 terminal to the DockLINK Local Port.

2. Connect the Radio Unit to the DockLINK.
3. Connect the DockLINK's power adapter to the power jack on the DockLINK.
4. Plug the DockLINK's power adapter into a 115VAC electrical outlet.

The DockLINK's Power LED illuminates.

If you are using the local station, see *Using the IP ASSIGN Utility to Optionally assign the DockLINK's IP* Address on page 15. If you are using the DockLINK Local Port, see *Managing the DockLINK Locally* on page 65.

### Using the IP ASSIGN Utility to Optionally assign the DockLINK's IP Address

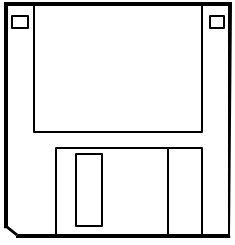


**Figure 10: Optional Configuration Disk**

RadioLAN provides an optional IP ASSIGN Utility diskette with your package. The utility allows you to optionally assign an IP Address to the DockLINK quickly. The station's Network Interface Card must have an IP Address assigned.

To install the IP ASSIGN Utility and assign an IP Address to the DockLINK, follow these steps from a PC connected to the DockLINK:

1. Insert the IP ASSIGN Utility Diskette into drive A.
2. Using the Windows RUN command, type A: IPASSIGN and click **OK**.

   The utility starts and begins searching the local LAN segment for any DockLINKs that are not configured with an IP Address.

   The utility returns a page listing of the MAC Addresses for all non-configured DockLINKs on the LAN segment.
3. Highlight the MAC Address for the DockLINK that you want to configure.
4. Enter the desired temporary IP Address for the DockLINK. Later, you can permanently set it using the IP PARAMETERS screen.

   The utility checks the IP Address to verify its validity. If the newly entered IP Address is valid, the utility assigns it to the DockLINK and prompts you to configure the DockLINK using your network browser.
5. Choose **Yes** to launch your default network browser, and press **Enter**.

   The utility displays the login page for the DockLINK Manager configuration program.

# Using the DockLINK Manager

The DockLINK Manager allows you to interrogate and interact with the DockLINK from the local station using a Web browser. Your browser must support Java script and frames. After launching your browser, enter the IP Address for the DockLINK. If you just setup the DockLINK for the first time, you should have already assigned the DockLINK's IP Address using the IP ASSIGN Utility, or with the VT-100 terminal.

This section discusses how to log onto the DockLINK, and how to use the DockLINK Manager.

## *The DockLINK Manager*

The DockLINK Manager allows you to view pages, which contain configuration information about the DockLINK. Using the manager, you can assign passwords, set up IP Address for the DockLINK, set address filters, and view DockLINK performance statistics.

When using the DockLINK Manager to make changes, edit your choices on the manager's pages, then accept all session changes by accessing the SYSTEM CONFIGURATION - CONFIGURATION CHANGES page. This causes the DockLINK to store configuration changes. Changes take effect after you save the changes and reset the DockLINK.

## *Accessing the DockLINK with the Browser*

To access the DockLINK with your browser, follow these steps:

1. Open your Web browser.
2. In the browser's address field, type the IP Address for the DockLINK, and then press **Enter**.

The DockLINK's LOGON page appears.

## *Logging Onto the DockLINK Manager*

The LOGON page provides security to DockLINK configuration items. There are three fields on the page:

- Product ID
- Enter User Name
- Enter Password

If this is the first time that you log on, use the following entries, and then set up Access Security features immediately:

| | |
|---|---|
| **User Name:** | **Blank** |
| **Password:** | **Blank** |

### Product ID

The **Product ID** field is a read-only field that reports the Product ID for the DockLINK.

### Enter User Name

The **Enter User Name** field is an entry field where you enter your user name to gain access to the configuration and diagnostic pages. Only entries matching those programmed into the SYSTEM CONFIGURATION: ACCESS SECURITY page are allowed access to the program.

### Enter Password

The **Enter Password** field allows you to enter your user password for access to configuration and diagnostic pages. Enter your password here, and then press **Enter** to go to the next page. If the user name and password match those stored in the ACCESS SECURITY MENU page, you will be allowed to view and edit items on the page. If you make entries that do not match those stored in the program, you will remain on the LOGON page.

## *DockLINK Manager Layout*

The DockLINK Manger uses frames that allow you to size and view the pages according to your needs. The menu is made up of seven major topics:

- Node Discovery – Find connected stations here.
- System Features – Enable enhanced DockLINK features here.
- System Configuration – Configure the DockLINK for use with your Network Interface card and wireless network here.
- System Statistics – See DockLINK performance here.
- System Status – See the system's current status here.
- Diagnostics – Perform network diagnostics here.
- Reset – Reset the DockLINK to lock in program changes here.

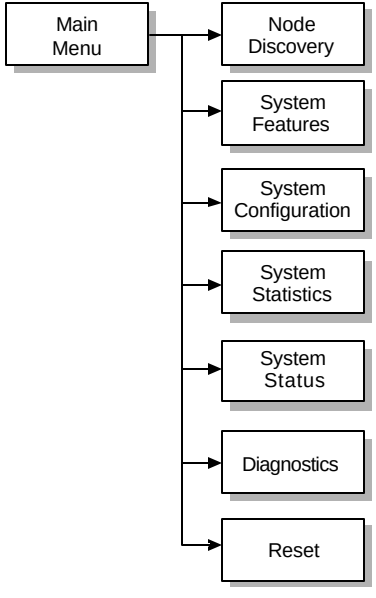



**Figure 11: The Main Menu**

Figure 12 shows a picture of the main screen. The left side of the page contains a menu that allows you to select the screen that you want to view or change. Menu items that have a [+] next to them have submenu items that lead to specific pages.

After selecting a submenu item, the right frame of the page changes to display program items and other information. You can size the frames by clicking on the divider line and dragging the line to the size that meets your needs.

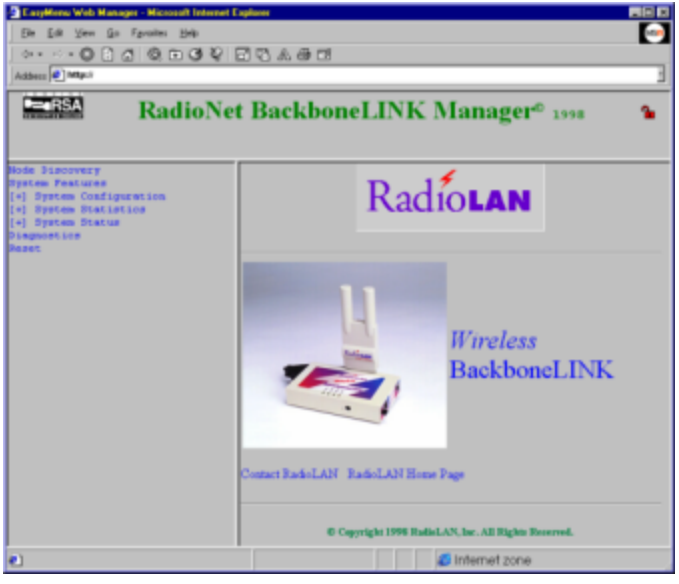



**Figure 12: The Main Page**

## *Discovering Wireless Nodes Within the DockLINK's Data Range*

The DockLINK dynamically discovers wireless nodes as they enter into the DockLINK's data range. Each time the DockLINK discovers a Wireless Node, it places the node's MAC Address into an internal database. Alternatively, the DockLINK removes MAC Addresses for wireless nodes that leave the DockLINK's data range.

The NODE DISCOVERY page displays wireless nodes that are currently within data range of the DockLINK. Nodes found on this screen are connected to the local station using the DockLINK as a bridge. The page displays a table with two main tabs:

- Station List
- Connectivity

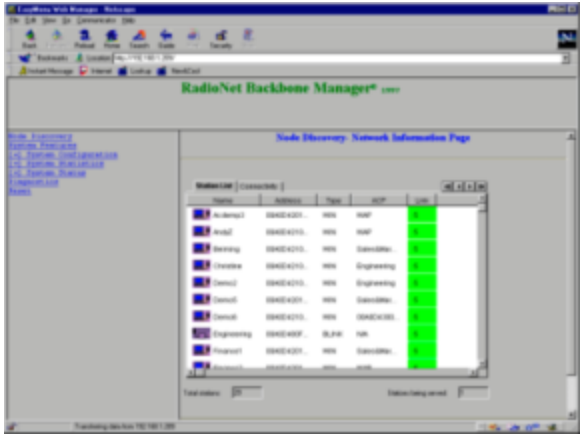



**Figure 13: Node Discovery Network Information Page: Station List Tab**

### Station List

The Station List tab shows a list of stations that are currently connected to the DockLINK. The list is a table with a number of columns. Clicking on column headings sorts the list alphabetically. Clicking the table heading again reverses the sort. The table shows the following columns:

#### *Name*

This column displays the station name of each connected wireless station.

#### *Address*

This column displays the station's MAC Address.

#### *Type*

This column displays the station types. The following types are found here:

- ICL ISA CardLINK Model 101 and P101 PCMCIA Card
- DKL DockLINK Units
- BBL BackboneLINK Units
- CBL CampusLINK Units

***ACP***

This column displays the station's access point to the 10BaseT Network.

***Link***

The Link column shows the connectivity quality for the station. Table 1 below shows the meaning of the quality designation.

| Score | Color | Transceiver Orientation |
|---|---|---|
| 5 | Light Green | Best location |
| 4 | Dark Green | Good location |
| 3 | Yellow | Improve if possible |
| 2 | Yellow | Need to improve |
| 1 | Red | Out of data range |
| 0 | Red | Out of carrier range |

**Table 1 : Link Quality Ratings**

### Connectivity

When you click on the Connectivity tab, the page shows the Connectivity table. This table includes six columns with the following headings:

- Name
- Link

#### *Name*

This column displays the station name of each connected wireless station.

#### *Link*

This column shows the connectivity quality for the station. Table 1 on page 23 shows the meaning of the quality designation.

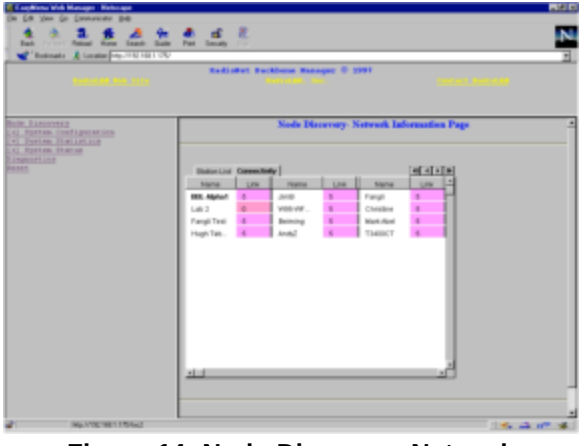



**Figure 14: Node Discovery Network Information Page: Connectivity Tab**

## *Setting Up Security Features*

The ACCESS SECURITY page allows you to specify up to three user names and passwords, which allow entry into the configuration and diagnostic pages. The page contains User 1 – 3 Logon Name fields, and User 1 – 3 Password fields. Since you can only access the DockLINK from the local station, you may wish to use only the User 1 Login Name and Password.

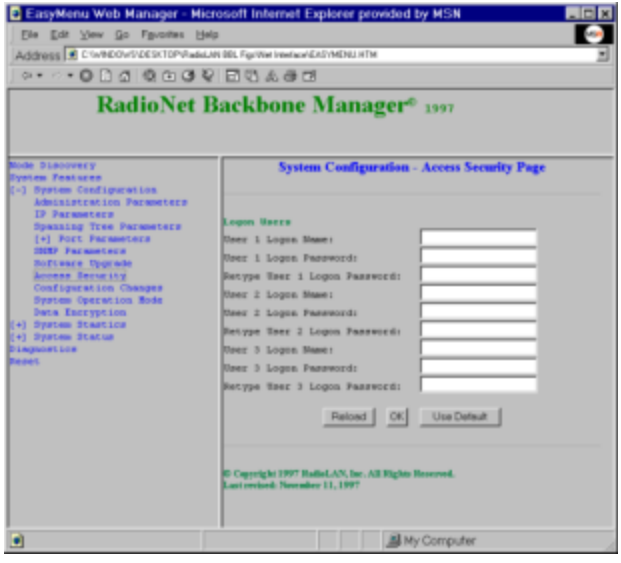



**Figure 15: The Access Security Page**

### User Logon Name Fields

The **User Logon Name** fields allow you to enter from 1 to 12 characters to specify a user name. You can use letters and numbers for this entry. This entry is case sensitive, so be sure to note the user name exactly as you enter it here.

Make your entry, and then press the **Tab** key to move to the **User Password** field.

### The User Password and Retype Password Fields

The **User Password** and **Verification** fields allow you to enter from 1 to 12 characters to specify the user password. You can use letters and numbers for this entry. This entry is case sensitive, so be sure to note the user password exactly as you enter it here.

### IP Parameters

IP Parameters allow you to set up information about the IP Address for the DockLINK. The IP PARAMETERS page contains fields that allow you to set up IP Parameters. The following items are on the IP PARAMETERS page:

- IP Address
- Subnet Mask
- Default Gateway IP Address
- DHCP operation mode radio buttons
- DHCP Server IP Address

In addition to the fields and radio buttons on the field, there are three buttons at the bottom of the page:

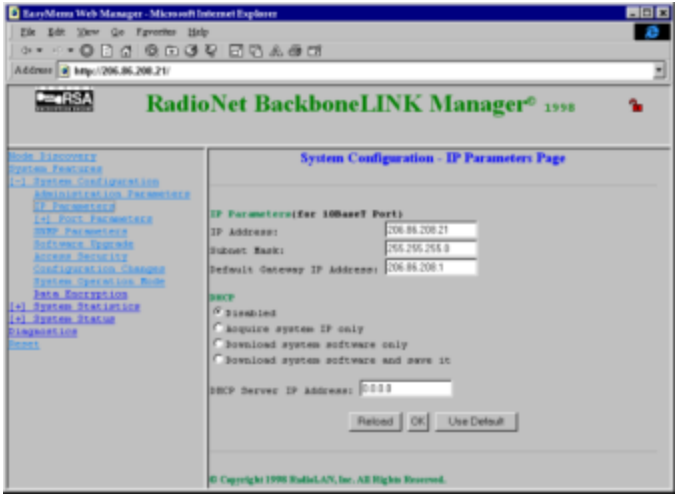



**Figure 16: IP Parameters Page**

**Reload** — Reloads system software from the DHCP Server (Server IP Address required).

**OK** — Accepts entries. Choose this button when you have finished entering desired information.

**Use Default** — Enters default information into each field.

### *IP Address*

The **IP Address** field allows you to designate the IP Address for the DockLINK. The IP Address identifies the DockLINK to the station to which it is connected, but not the wireless Network. The format of an IP Address is a 32-bit numeric address written as four numbers separated by periods.

Each number can be zero to 255. For example, 250.142.15.200 could be an IP Address.

Within an isolated network, you can assign IP Addresses at random as long as each one is unique. If you are connecting the DockLINK directly to the Internet, standards require using a registered IP Address to avoid duplicates.

***Invisible to distant wireless stations:*** You can only see the IP Address from the device wired directly to the DockLINK. You cannot see the IP Address from wireless stations on the network.

### *Subnet Mask*

The **Subnet Mask** determines the subnet and IP Address for the DockLINK. Typically, an IP Address contains the Network address and the Host address.

If the network is divided into subnets, a part of the Host Address will be reserved to identify the particular subnet.

### *Default Gateway IP Address*

The gateway is a combination of hardware and software that links two different types of networks. Gateways between networks, for example, allow users on different e-mail systems to exchange messages.

The gateway IP Address, for example, identifies a router that controls the flow of data packets to the Node (computer, printer, etc.).

Type in the gateway IP Address using four numbers from 0 – 255, each separated by a period. The address looks similar to the following: 250.040.123.243

The DockLINK is set for no DHC by DEFAULT. While operating, the DockLINK does not use a public IP address for use in DHCP functions. If the Ethernet connection is disconnected, then the DockLINK operates on the DHCP by way of the radio interface.

### *DHCP Operation Modes*

Short for **D**ynamic **H**ost **C**onfiguration **P**rotocol, this is a protocol for assigning dynamic IP Addresses to devices on a network. Dynamic addressing allows a device to have a different IP Address each time it connects to the network. In some systems, the device's IP Address can change even while it is still connected.

Dynamic addressing makes network administration easier because the software tracks issued IP Addresses rather than requiring an administrator to perform this task.

#### *Disabled Radio Button*

The **Disabled** radio button disables DHCP support. This is the factory default setting for unit versions starting at version 2.0.

***Acquire system IP Only Radio Button***

Select this button to cause the DockLINK to automatically search for, and acquire the DHCP Server IP Address. If the DockLINK finds the server address, that address appears in the DHCP Server IP Address field. This is the factory default in version 2.00 units.

***Download System Software Only Radio Button***

Select this button to cause the DockLINK to automatically request a new Operating System image each time it restarts and is not connected to a host on the Ethernet. This new image would temporarily override the existing version installed.

***Download System Software and Save It Radio Button***

Select this button to cause the DockLINK to automatically request a new Operating System image each time it restarts and is not connected to a host on the Ethernet. This new image would permanently override the existing version installed.

***DHCP Server IP Address***

If you selected anything other than the **Disabled** radio button, type in the DHCP Server IP Address.

## *Setting the DockLINK's Mode of Operation*

The SYSTEM CONFIGURATION – SYSTEM OPERATIONS MODE page allows you to set up the method that you will use for operating the DockLINK. This screen displays software options that are currently enabled. If you are using DockLINK version 2.0 or higher, the screen allows you to use one choice:

- Dock Mode

### Dock Mode

The Dock Mode allows you to connect the DockLINK directly to your PC's Network Interface Card. This allows your PC to become a wireless station on a RadioLAN wireless network. In this mode, the DockLINK communicates with other wireless users and other DockLINK units.

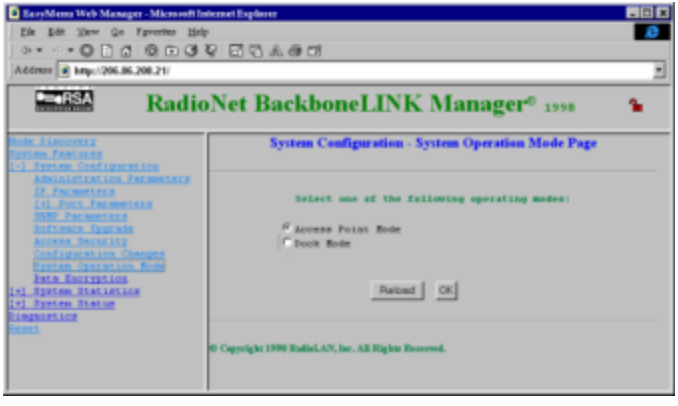



**Figure 17: The System Operation Mode Page**

## *Securing the DockLINK with Data Encryption*

If you have installed the encryption option, the SYSTEM CONFIGURATION – DATA ENCRYPTION page allows you to secure wireless data. If using Data Encryption, the RSA logo appears on the left side of the banner at the top of the screen. The right side of the banner displays a red Lock icon. If encryption is installed but temporarily disabled, the lock appears to be open. When encryption is installed and enabled, the lock appears to be closed. This page offers two selections:

- Data Encryption **Enable** check box
- **Encryption Key** field

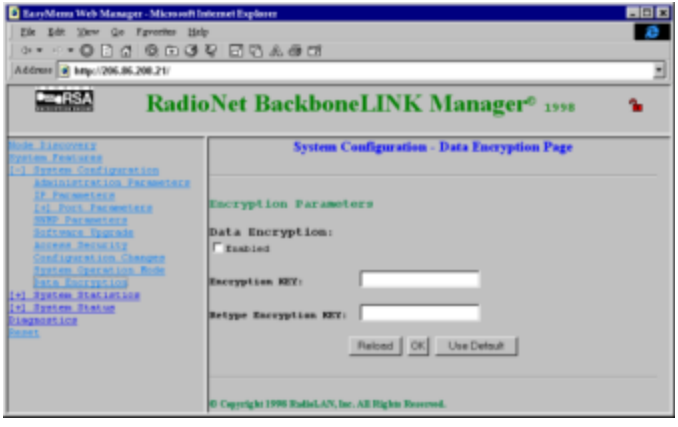



**Figure 18: Data Encryption Page**

### Data Encryption Enabled Check Box

This selection enables or disables Data Encryption on DockLINK data packets.

**Checked** Enables Data Encryption. Only stations that share the same encryption key can exchange data with the DockLINK.

**Clear** Disables Data Encryption. All users with the same Subnet ID can share network resources.

### Encryption Key (and Retype Encryption Key)

These items set the encryption key for the DockLINK.

## *Setting up10BaseT Port Parameters*

The 10BASET PORT PARAMETERS page displays the 10BaseT Network Interface Card port's name, allows you to enable or disable the port and network filters, and allows you to examine the MAC Address filter. It is necessary for an entry in the Port Name field, but you need not change other entries on this page.

***Entries on this page other than the Port Name field can disable communication with the Network Interface Card:*** RadioLAN Recommends that you avoid making changes to items on this page.

Although unnecessary, if you have a particularly special application, you can edit other items on the screen. Filters that you can enable or disable are as follows:

- MAC Address Filter
- Block IP Packets
- Block IPX Packets
- Block NetBEUI Packets
- Block NetBIOS Packets

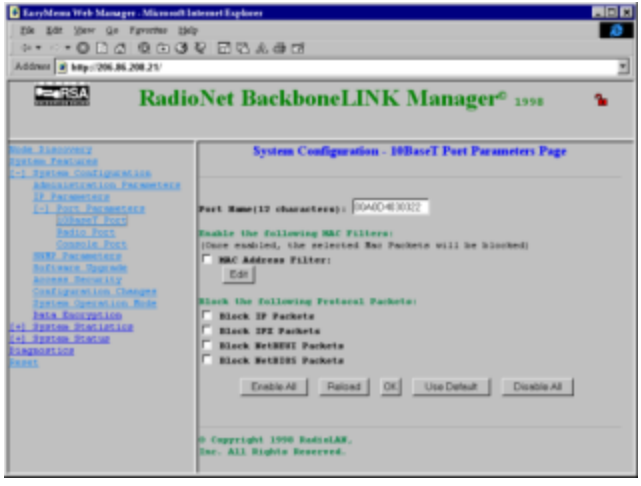



**Figure 19: 10BaseT Port Parameters Page**

### *MAC Address Filter*

The MAC Address Filter check box allows you to enable or disable the DockLINK's internal MAC Address Filter. The MAC Address Filter is a database that stores MAC Addresses received by the DockLINK while communicating with the 10BaseT Network Interface Card and RadioLAN Wireless Network. Once information is stored in the database, you can allow or disallow packet flow to or from remote addresses in the database.

**Unchecked** Clearing a check mark from the check box disables MAC Address filtering. This allows the local station's data to pass through to the wireless network.

**Checked** Placing a check mark in the check box enables MAC Address Filtering. This allows only the values in the MAC filter table to operate.

### *Edit Button*

The **Edit** button displays the MAC Address database, allowing you to enable or disable communication with the 10BaseT Network Interface Card.

### *Block IP Packets*

The **Block IP Packets** check box allows you to enable or disable communication when using Internet Protocol addressing.

**Unchecked** Clearing a check mark from the check box disables IP Address filtering.

**Checked** Placing a check mark in the check box enables IP Address filtering (blocks IP packets).

### *Block IPX Packets*

The **Block IPX Packets** check box allows you to enable or disable communication when using Novell IPX protocol.

**Unchecked** Clearing a check mark from the check box disables IPX Address filtering.

**Checked** Placing a check mark in the check box enables IPX Address filtering (blocks IPX packets).

### *Block NetBEUI Packets*

NetBEUI allows you to connect when using Windows NT, Windows for Workgroups, or LAN Manager protocols.

**Unchecked** Clearing a check mark from the check box disables NetBEUI Address filtering.

**Checked** Placing a check mark in the check box enables NetBEUI Address filtering (blocks NetBEUI packets).

### *Block NetBIOS Packets*

NetBIOS allows you to use the Network Basic Input Output System.

**Unchecked** Clearing a check mark from the check box disables NetBIOS Address filtering.

**Checked** Placing a check mark in the check box enables NetBIOS Address filtering (blocks NetBIOS packets).

## Radio Port Parameters

The RADIO PORT PARAMETERS page displays the Radio port's name, allows you to enable or disable the port and network filters, and allows you to examine the MAC Address filter. Filters that you can enable or disable are as follows:

- MAC Address Filter
- Block IP Packets
- Block IPX Packets
- Block NetBEUI Packets
- Block NetBIOS Packets

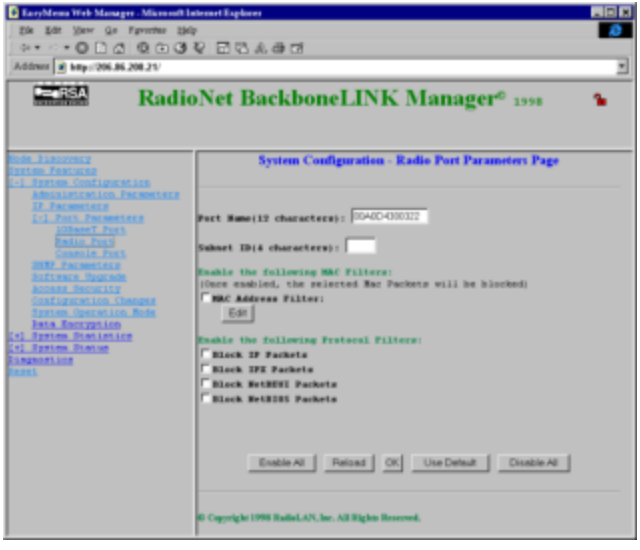



**Figure 20: Radio Port Parameters Page**

### *Port Name*

The **Port Name** field allows you to enter up to 12 characters that identify the name of the DockLINK. This appears as the DockLINK's **Station Name** for users of Radionet Manager or the EZRadio configuration programs. It appears as **Name** on the NODE DISCOVERY STATION LIST tab, or **Node** on the NODE DISCOVERY CONNECTIVITY tab, depending upon the configuration manager that you use.

### *Subnet ID*

The **Subnet ID** is the wireless network name. All wireless users who share resources must have the same **Subnet ID** designation. Set this field to match the **Subnet ID** that is in all stations within the wireless network. You may use up to four characters for this entry.

### *MAC Address Filter*

The MAC Address Filter check box allows you to enable or disable the DockLINK's internal MAC Address Filter. The MAC Address Filter is a database that stores MAC Addresses received by the DockLINK while communicating with the RadioLAN Wireless Network. Once packets are stored in the database, you can allow or disallow packet flow to or from remote addresses in the database.

| | |
|---|---|
| **Unchecked** | Disables MAC Address filtering. |
| **Checked** | Enables MAC Address Filtering. This allows all network traffic to flow from the wireless network into the local station. Allowing all data to flow into the RadioLAN Network uses network resources and decreases transmission speeds between wireless nodes. |

### *Edit*

The **Edit** button displays the MAC Address database, allowing you to enable or disable communication with specific devices on the wireless network.

### *Block IP Packets*

The **Block IP Packets** check box allows you to enable or disable communication with networks using Internet Protocol addressing.

**Unchecked** Clearing a check mark from the check box enables IP Address filtering.

**Checked** Placing a check mark in the check box disables IP Address filtering.

### *Block IPX Packets*

The **Block IPX Packets** check box allows you to enable or disable communication with Novell IPX protocol networks.

**Unchecked** Clearing a check mark from the check box disables IPX Address filtering.

**Checked** Placing a check mark in the check box enables IPX Address filtering.

### *Block NetBEUI Packets*

The **Block NetBEUI Packets** check box allows you to enable or disable communication with Windows NT, Windows for Workgroups, or LAN Manager servers.

**Unchecked** Clearing a check mark from the check box disables NetBEUI Address filtering.

**Checked** Placing a check mark in the check box enables NetBEUI Address filtering.

### *Block NetBIOS Packets*

The **Block NetBIOS Packets** check box allows you to enable or disable communication to networks that use the Network Basic Input Output System.

**Unchecked** Clearing a check mark from the check box disables NetBIOS Address filtering.

**Checked** Placing a check mark in the check box enables NetBIOS Address filtering.

### Setting the Baud Rate for the Local Port

The DockLINK allows you to connect and manage with a local terminal. This screen allows you to set the baud rate for the terminal. Select from the following available baud rates:

- 9600 baud
- 19200 baud
- 38400 baud
- 57600 baud

After making your selection, press the **OK** button to keep your selection.

Set the VT100 terminal software for the following:

- Baud Rate (selected here)
- 8 bit word
- No Parity
- 1 stop bit
- No flow control


**Figure 21: The Console Parameters Page**

## *Managing Packet Flow through the DockLINK*

The DockLINK can selectively allow or disallow traffic to or from the 10BaseT Network Interface Card and the RadioLAN wireless network. Proper packet flow management improves the speed of the RadioLAN wireless network by eliminating unwanted network traffic.

The DockLINK is set for optimum performance by default. Only advanced users with special circumstances should use the entries on MAC Filter screens. Figure 22 shows the 10BASET PORT MAC FILTER – EDIT page. The DockLINK contains and manages two identical filtering databases:

- 10BaseT Port MAC Filter List
- Radio Port MAC Filter List

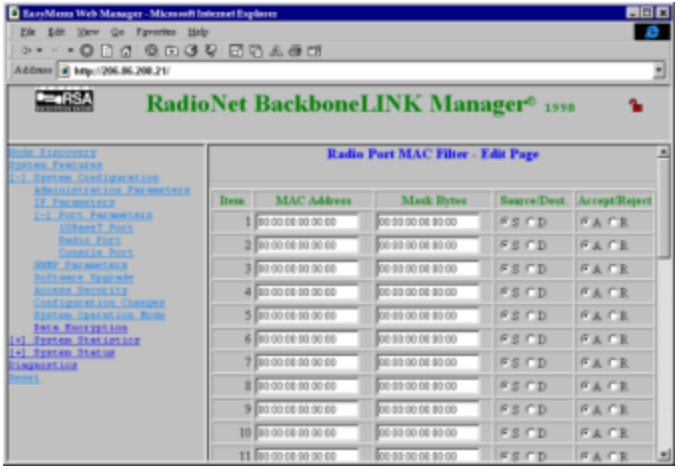



**Figure 22: MAC Address Table**

Each of these databases allows you to add up to 32 MAC Addresses and to allow or disallow the receipt or transmission of data packets to specified MAC Addresses.

The databases contain the following columns:

- Item
- MAC Address
- Mask Bytes
- Source/Dest
- Accept/Reject

***Item***

The **Item** column shows the order in which the DockLINK stored the database entry.

***MAC Address***

The **MAC Address** column displays the MAC Address for the remote network node.

***Mask Bytes***

The **Mask Bytes** column displays the subnet mask address for the network node.

***Source/Dest***

The **Source/Dest** column allows you to specify whether the action upon packets will occur if that node is sending or receiving packets.

### *Accept/Reject*

The **Accept/Reject** column allows you to allow or disallow transmission of the packet, depending upon the entry in the **Source/Dest** column.

For example, if the **Source/Dest** column contains **Source**, and the **Accept/Reject** column contains **Reject**, the DockLINK will not allow a message broadcast from that MAC Address to pass through.

If the **Source/Dest** column contains **Destination**, and the **Accept/Reject** column contains **Reject**, the DockLINK will not allow the message intended for that MAC Address to pass through.

Alternatively, If the **Source/Dest** column contains **Source**, and the **Accept/Reject** column contains **Accept**, the DockLINK allows the message from that MAC Address to broadcast through.

If the **Source/Dest** column contains **Destination**, and the **Accept/Reject** column contains **Accept**, the DockLINK allows the message from that MAC Address to pass through.

## Adding MAC Filters

To add up to 32 MAC filters, select the first available (blank) **Item** on the list:

1. Type in the **MAC Address** and Subnet **Mask Bits**.
2. Select whether the filter will be invoked when the address is sending a packet or when it is receiving a packet:

   Choose **Source** if you want to filter messages that are broadcast from the MAC Address.

Choose **Destination** if you want to filter messages that are broadcast from other nodes and intended for receipt by the MAC Address.

3. Allow or disallow the passage of the packet through the DockLINK, based upon the broadcast type (source or destination) in the **Source/Dest** Column:

   Choose **Accept** to allow the passage of packets to/from the MAC Address. Choose **Reject** to disallow the passage of packets to/from the MAC Address.

   After adding all desired MAC Addresses, click the **OK** button to exit the screen.

### Modifying MAC Filters

To modify a **MAC Filter**, select the desired MAC Address.

Make changes to the address fields and selections in the **Source/Dest** and **Accept** columns.

After making changes, click the **OK** button to leave the screen.

### Deleting MAC Filters

To delete a MAC Filter, select the address of the undesired MAC and mask address and type 0.0.0.0.

After deleting all undesirable MAC Addresses, click the **OK** button to exit the screen.

## *Interrogating DockLINK for Performance Information*

Performance is a combination of speed and accuracy. When the DockLINK transmits at higher rates, and retransmits packets fewer times, it has a higher rate of performance. Most users discover performance issues when sending large files from one node to another.

Although multiple users can send information at the same time, lower shared network resources can cause slower file transfer time. While data packets are being transferred, available network resources shared by all users decrease, so when the DockLINK finishes the job faster, increased shared network resources are made available for other packet transfers, making files transfer faster.

One adjustment might require the relocation of a station antenna to improve signal strength. Another adjustment might be filtering unnecessary packets to disallow passage into the wireless network. This type of fine-tuning is intuitive, and one can determine actions based upon statistics found in the following pages.

## Checking 10BaseT Port Statistics

The 10BASET PORT STATISTICS page reports the DockLINK's ability to communicate with the local station. The information on this page is automatically updated every ten seconds. This section describes the 10BASET PORT STATISTICS page.

The screen also contains a **Clear Counters** button. Pressing the button resets all counters on this page to zero.

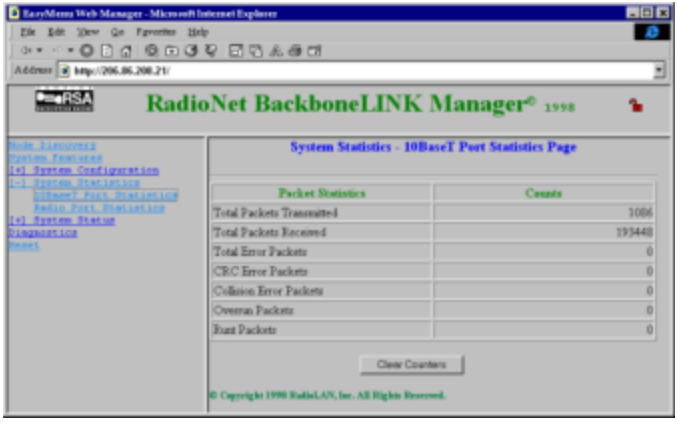



**Figure 23: 10BaseT Port Statistics Page**

### *Total Packets Transmitted*

**Total Packets Transmitted** counts and stores the total number of packets that the DockLINK sends to local station. This number represents all transmitted packets.

***Total Packets Received***

**Total Packets Received** counts and stores the total number of packets that the local station sends to DockLINK. This number represents all received packets.

**Total Error Packets**

This field displays the total number of Ethernet errors accumulated.

**CRC Error Packets**

This field displays the total number of frames that reported a bad cyclical redundancy check.

**Collision Error Packets**

This field displays the number of packets that failed due to a collision – two stations attempting to access a media at the same time.

**Overrun Packets**

This field totals the number of frames that exceeded Ethernet maximum size specifications.

**Runt Packets**

This field totals the number of frames that were smaller than Ethernet minimum size specifications.

## Checking Radio Port Statistics

The RADIO PORT STATISTICS page reports the DockLINK's ability to communicate with wireless stations. The information on this page is automatically updated every ten seconds. This section describes the RADIO PORT STATISTICS Page.

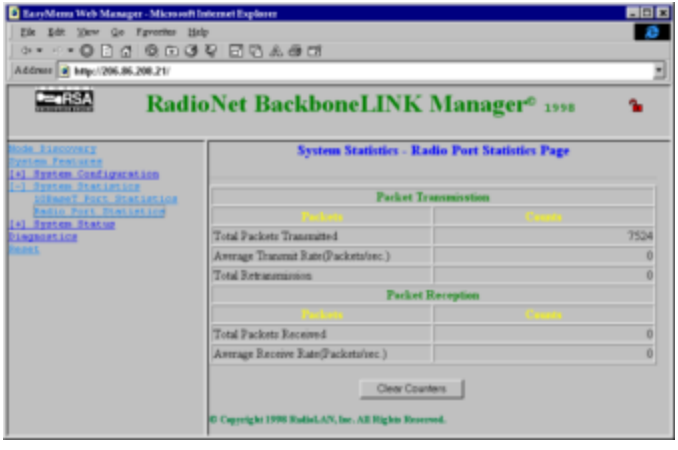



**Figure 24: Radio Port Statistics Page**

The page has two major sections:

- Packet Transmission
- Packet Reception

The screen also contains a **Clear Counters** button. Pressing the button resets all counters on this page to zero.

### *Packet Transmission*

The **Packet Transmission** stores information about packets that are sent from the DockLINK to wireless stations on the network.

#### *Total Packets Transmitted*

**Total Packets Transmitted** counts and stores the total number of packets that the DockLINK sends to wireless stations on the network. The number displayed all transmitted packets.

#### *Average Transmit Rate (Packets/Sec.)*

Sometimes packets are transmitted faster than at other times. **Average Transmit Rate** indicates the average number of packets sent each second. Typical networks range from 100 to 5000 frames transmitted each second, and will vary with time. If you observe the rate staying at 10,000 fps, the local station may be causing a broadcast storm. Broadcast storms can be caused by a defective Network Interface Card.

#### *Total Retransmission*

When the distant wireless station does not acknowledge the receipt of a packet sent by DockLINK, DockLINK resends the packet a number of times until the distant station acknowledges receipt of the packet. **Total Retransmission** counts and stores the number of retransmissions, based upon the total number of packets transmitted.

A higher number in this field may indicate the need to relocate a station's antenna to improve signal quality.

### *Packet Reception*

The **Packet Reception** indicates the DockLINK's ability to receive packets from distant wireless stations.

#### *Total Packets Received*

**Total Packets Received** counts and stores the total number of packets that the remote wireless stations send to the DockLINK. This number represents all received packets.

#### *Average Receive Rate (Packets/Sec.)*

Sometimes packets are received faster than at other times. **Average Receive Rate** indicates the number of average packets received each second. You should see approximately1500 pps under normal conditions. If you observe the rate staying at 10,000 fps, you may have broadcast storms caused by the 10BaseT Network Interface Card.

## *Upgrading System Software*

The DockLINK contains a default operating system, a running operating system, and a file containing configuration items. When you perform a software upgrade, the downloaded file is placed in temporary storage.

You can upgrade system software two ways:

- Using a local file on your PC
- Using Xmodem through the DockLINK Local Port

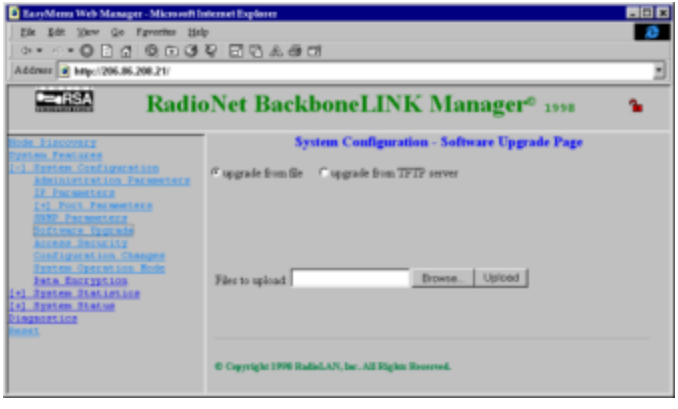



**Figure 25: Software Upgrade Page**

**Upgrade from TFTP Server** is not used with DockLINK.

The SYSTEM CONFIGURATION – SOFTWARE UPGRADE page allows you to download a new configuration to the DockLINK. On this page, type in the name of the file that you want to download, then click the download button to download the file from your station's disk drive.

The page contains the following objects:

- **Upgrade from file** radio button
- **Upgrade TFTP server** radio button **(not used)**
- **File to Upload** field
- **Browse** button
- **Upload** button

### Upgrade from File

Selecting this radio button allows you to select a file on your local hard drive. When you choose this radio button, the **File to Upload** field appears, allowing you to enter the name of the file to upload.

### File to Upload

This field allows you to enter the file name of the operating system file that you want to download. If you do not know where the file is located, click the **Browse** button to display a directory hierarchy.

### Upgrading from a TFTP Server

Selecting this radio button displays the **TFTP Server Address** field. ***Do not use this selection with DockLINK***.

### Set TFTP Server IP Address

This field is not used with DockLINK.

### System Software File Name

The **System Software File Name** field allows you to enter the name of the file to download.

### Download Button

**Download** causes the DockLINK to retrieve the specified software file from the specified location. The downloaded file is written into system memory as the DockLINK receives it. As the DockLINK reboots after downloading, the new operating system runs immediately.

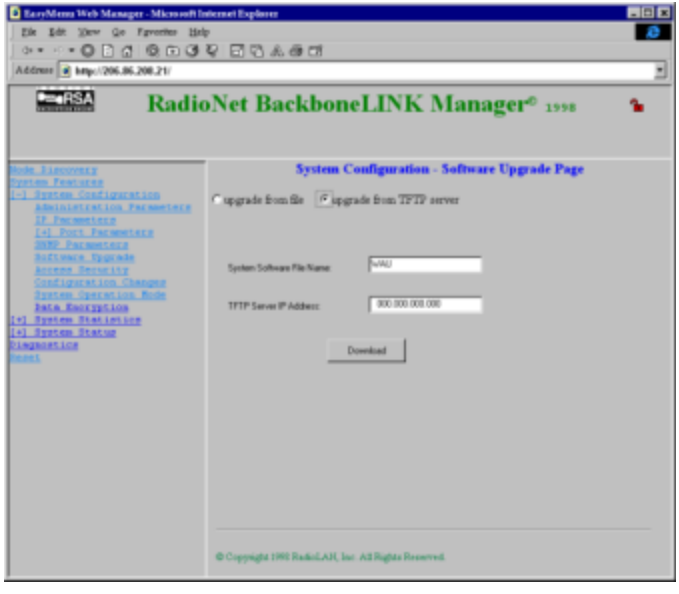



**Figure 26: Software Upgrade Page**

## *Saving or Rejecting Configuration Setting Changes*

The Configuration Changes menu item displays the SYSTEM CONFIGURATION – CONFIGURATION CHANGES page. This page allows you to save you changes, or to reject changes you have made to allow the DockLINK to continue operating as before you accessed the Web Manager. The page contains the following objects:

- **Save All Changes and Reset** radio button
- **Reload Last Saved Configuration** radio button
- **Reset Configuration to Factory Default** radio button

After making your choice, select the **OK** button to cause the DockLINK to act.


**Figure 27: Configuration Change Page**

### Save All Changes and Reset Radio Button

This item causes all changes that you have made during this session to overwrite existing program entries. The DockLINK uses the new configuration after it restarts the system.

**Reload Last Saved Configuration Radio Button**

This item causes all changes that you have made to change back to their original settings.

**Reset Configuration to Factory Default Radio Button**

This item causes the DockLINK to change all configuration items to their factory default settings. The DockLINK uses the new configuration after the next system restart.

## *Resetting the DockLINK*

Any time you make configuration changes or download a new version of the DockLINK's operating system, you must reset the DockLINK. One method of resetting the DockLINK is to remove power from the unit for approximately five seconds. Another method for resetting the DockLINK is found on the RESET page. To access the RESET page, select the **Reset** menu item.

Press the **OK** button to reset the DockLINK.

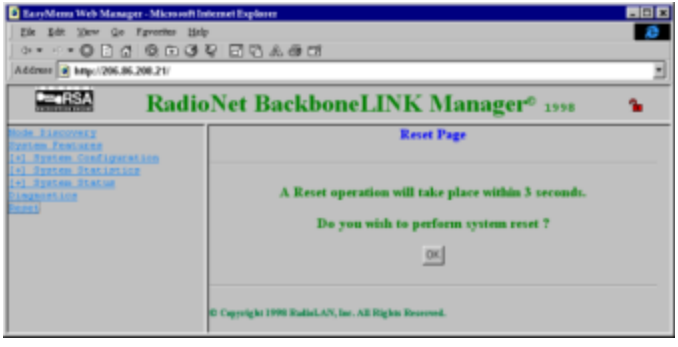



**Figure 28: Reset Page**

## *Testing DockLINK Connectivity to the Wireless Network*

The DIAGNOSTICS – PING (RADIO PORT) page allows a remote manager to interrogate the system for information about its ability to communicate with other stations within the network.

### *Setting the Frames to Send*

The **Frames to Send** field sets the number of packets that will be sent until the Ping session ends. After you start the Ping, the DockLINK sends this number of packets. The test ends when you press the **Stop** button, or when the count ends, whichever is first.

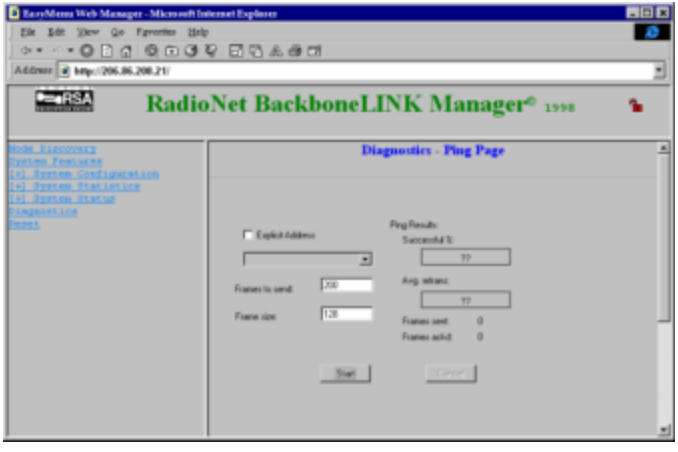



**Figure 29: Ping Radio Port Page**

### *Setting the Frame Size*

The **Frame Size** field sets the size of the Ping packet in bits. Larger entries increase the number of bits in the Ping packet.

### *Setting the Address*

The drop-down list box lists station names on the wireless network. It also includes an **All stations** selection. This entry selects the target station for the Ping test. Selecting the Explicit Address check box causes the drop-down list box to display MAC addresses as opposed to station names.

### *Frames Sent*

This field displays the total number of frames sent during this test.

### *Frames Acked*

This field displays the total number of times that the target station acknowledged the Ping packets. During best conditions, this number should match the number found in **Frames Sent**.

***Success %***

This item states the percentage of the total Ping packets that were acknowledged by the target station. The success rate for Pings should be in the 90-100% range for normal operation. Lower results indicate some problem in connection between the unit sending the Ping and the receiving station.

***Avg Retrans***

This item states the average number of retransmitted packets during the test. Smaller numbers in this field indicate better communication quality. The **Avg Retrans** is expected to stay at **1**, meaning no retransmission was needed. Higher numbers indicate some difficulty in sending traffic to the other station, and should be corrected. Retransmissions means reduced efficiency.

**Start Button**

This button starts the Ping test. After you have entered all selections, press this button to start the Ping test. The test runs until you press **Stop**, or until DockLINK has sent the same number of test packets as selected in **Frames to send**.

**Stop Button**

This button stops the Ping test. All counters in the **PING Results** section store the results from the test.

# Recording Important System Information

Having system information on hand is essential to proper system management. The DockLINK Manager makes it easy to keep information on hand, recording configuration information that was last saved (see *Saving or Rejecting Configuration Setting Changes* on page 53). To retrieve system information, open the SYSTEM STATUS - SYSTEM INFORMATION page, then print it on your local printer. File the resulting printout in a safe place.

The system status page includes the following information:

**Product Name** States the Product Name.

**System Name** States the System Name.

**System Contact** This field is not used with DockLINK.

**System Location** This field is not used with DockLINK.

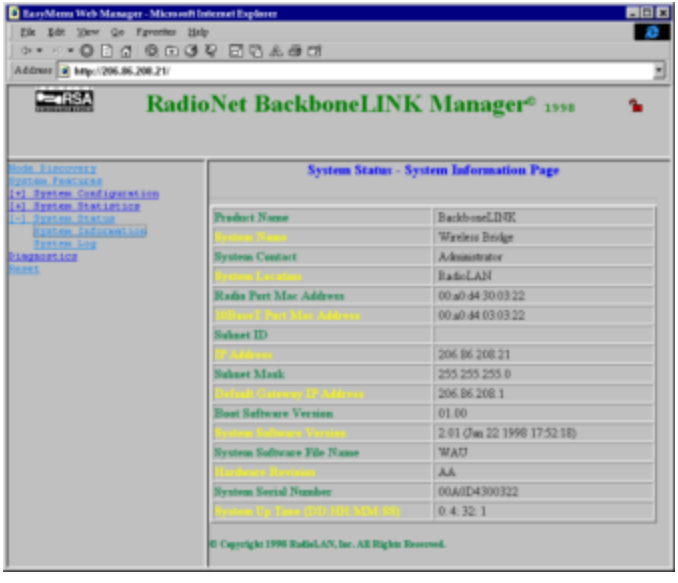



**Figure 30: The System Information Page**

| | |
|---|---|
| **Radio Port MAC Address** | This information is loaded into the DockLINK from the factory. The information in this field should match the MAC Address noted on the bottom of the DockLINK. |
| **10BaseT Port MAC Address** | This information is loaded into the DockLINK from the factory. The information in this field should match the MAC Address noted on the bottom of the DockLINK. |
| **Subnet ID** | This information was entered on the RADIO PORT PARAMETERS page. |
| **IP Address** | States the **IP Address** entered on the SYSTEM CONFIGURATION - IP PARAMETERS page. |
| **Subnet Mask** | States the **Subnet Mask** entered on the SYSTEM CONFIGURATION - IP PARAMETERS page. |
| **Default Gateway** | States the **default gateway** entered on the SYSTEM CONFIGURATION - IP PARAMETERS page. |

| | |
|---|---|
| **Boot Software Version** | States the Boot Software Version stored in the DockLINK. |
| **System Software Version** | States the Software Version that the DockLINK is currently using. |
| **System Software File Name** | States the System Software File Name. |
| **Hardware Revision** | States the Hardware Version of the DockLINK. |
| **Manufacture Date** | States the date when the DockLINK was manufactured. |
| **System Serial Number** | States the DockLINK's serial number. |
| **System Up Time** | States the day, hours, and minutes that the system has been in operation. |

## *Viewing the System Log*

The SYSTEM LOG collects system events such as system starts, restarts, and password authentication messages. The screen displays a list with the following columns:

**Item** This displays the item number on the list. As new events appear, the DockLINK issues new numbers.

**Task** The **Task** column lists the task that initiated the message.

**Error No.** This column lists an error code to the event.

**Error Message** This column lists a verbose error name.

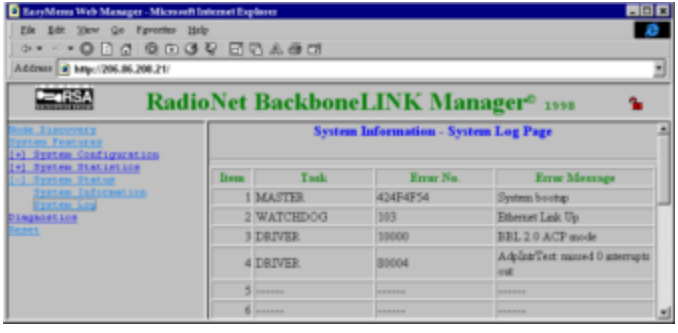



**Figure 31: System Log Page**

## Managing the DockLINK Locally

You can connect a serial device, such as a VT-100 terminal, a PC using terminal software, or dial-up modem to the DockLINK as alternative methods of managing the DockLINK.

Using these methods, you can communicate with the DockLINK to make configuration changes or to interrogate the DockLINK for performance statistics.

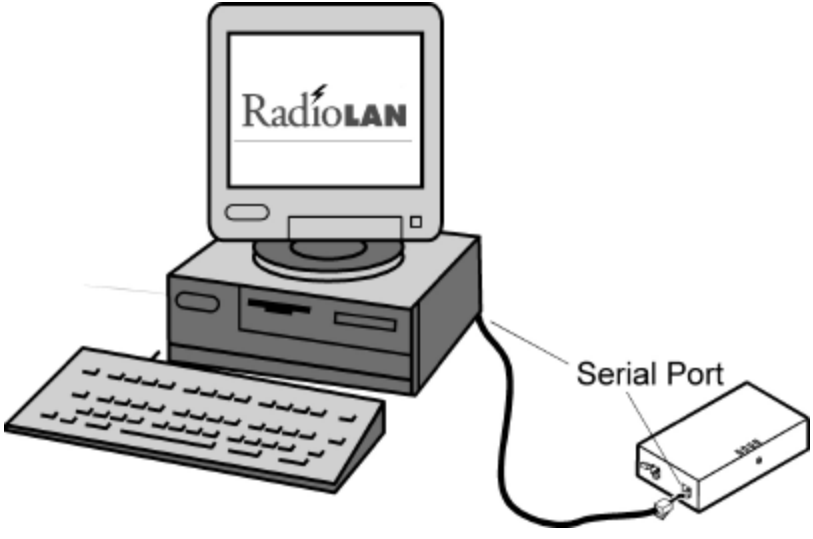



**Figure 33: Connecting the VT-100 Terminal to the DockLINK**

The DockLINK uses an RJ11 jack for connection to the terminal. Use of this port requires a special interface cable that connects between the Serial Port jack and a DB9F serial connector. The pin-outs for this cable are shown in Table 2.

| Signal Description | DB-9F | RJ11 | Signal Description |
|---|---|---|---|
| Ground | 2 | 1 | Ground |
| Serial Out (from computer) | 3 | 2 | Rx In |
| Serial In (to computer) | 5 | 4 | Tx out |

**Table 2: Serial Port Adapter Cable Pin-outs**

## *DockLINK Local Management*

The DockLINK Local Management software program allows you to view screens that contain configuration information about the DockLINK. Using this program, you can assign passwords, set up IP Addresses for the DockLINK, set address filters, test system performance, and view system performance statistics.

When using the DockLINK Local Management software to make changes, edit your choices on the screens, then accept all session changes by accessing the SYSTEM CONFIGURATION - CONFIGURATION CHANGES SCREEN. This causes the DockLINK to store configuration changes.

## *Configuring the DockLINK for use in the Dock Mode*

When using the DockLINK in the Dock Mode to transform a hard-wired network station into a wireless station, the following configuration items apply.

| Prompt | For more information, see . . . | Notes |
|---|---|---|
| **Station Name** | Port Name on page 35 | Enter 12 characters to identify this station. You must not duplicate a station name that currently exists on the network. |
| **Subnet ID** | *Subnet ID* on page 36 | Enter four characters. You must use the same Subnet ID as other wireless stations on the network. |
| **IP Address** | *IP Address* on page 27 | Optional. Enter an IP Address in dot notation. For example: **123.32.124.1**<br>Do not use an IP Address that is already in use on the network. |
| **Encryption** | *Securing the DockLINK with Data Encryption* on page 31 | Choose this item only if other stations on the network use encryption. |
| **Encryption Key** | *Encryption Key* on page 31 | Enter a string that matches your network's encryption key. |
| **Operation Mode** | *Dock Mode* on page 30 | Verify that **Dock mode** is selected. |

## *Logging onto the DockLINK Configuration Screen*

The LOGON SCREEN provides security to DockLINK configuration items. There are three fields on the screen:

- Serial Number
- Enter User Name
- Enter Password

If the password is not set, the following message will appear at the bottom of the screen:

```
(Password is not set, hit any key to proceed)
```

If this message appears, press any key to enter the program, and then set the access security features by going immediately to the SYSTEM CONFIGURATION - ACCESS SECURITY MENU SCREEN.

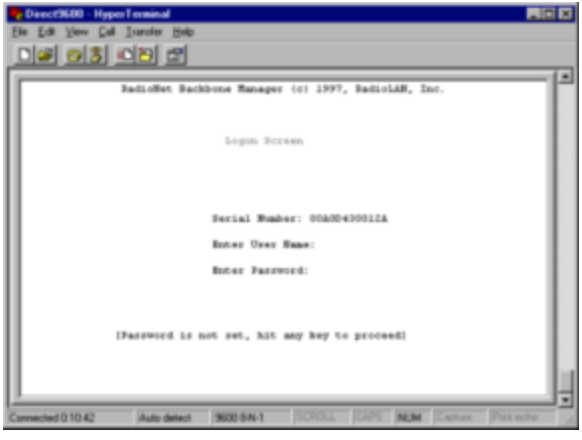



**Figure 34: Logon Menu**

### Serial Number

The **Serial Number** field is a read-only field that reports the DockLINK's Serial Number.

### Enter User Name

The **Enter User Name** field is an entry field where you enter your user name to gain access to the configuration and diagnostic screens. Only entries matching those programmed into the SYSTEM CONFIGURATION: ACCESS SECURITY MENU are allowed access to the program.

### Enter Password

The **Enter Password** field allows you to enter your user password for access to configuration and diagnostic screens. Enter your password here, and then press any key to enter the program. If the **user name** and **password** match those stored in the ACCESS SECURITY MENU SCREEN, you will be allowed to view and edit items on the screen. If you make entries that do not match those stored in the program, you will remain on the LOGON SCREEN.

## *Using the Main Menu*

After gaining access from the Logon Menu, the Main Menu appears. This menu lists all major sections of the program. The following items appear on the screen:

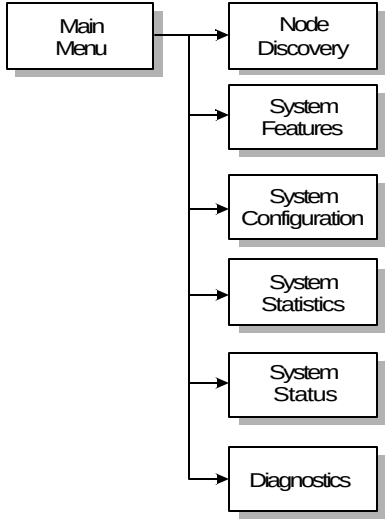



**Figure 35: The Main Menu**

**Node Discovery** — **Node Discovery** takes you to the NODE DISCOVERY menu, where you can see your station's measured signal quality with other wireless network nodes. See *NODE DISCOVERY MENU* on page 80 for more information about this selection.

**System Features** — **System Features** takes you to the SYSTEM FEATURES menu, where you can select the DockLINK unit's mode of operation and Data Encryption. See *SYSTEM FEATURES* on page 76 for more information about this selection.

**System Configuration** — **System Configuration** leads you to configuration items, such as access security, and port parameters. See *Working with the System Configuration Menu* on page 71 for more information about this selection.

**System Statistics** — **System statistics** allows you to see the historical performance of the DockLINK. See *SYSTEM STATISTICS MENU* on page 79 for more information about this selection.

**System Status** — **System Status** allows you to interrogate the DockLINK for current system performance information. See *SYSTEM STATUS MENU* on page 83 for more information about this selection.

**Diagnostics** — **Diagnostics** allows you to Ping other network stations and to retrieve performance information from the interrogated network node. See *DIAGNOSTICS MENU* on page 82 for more information about this selection.

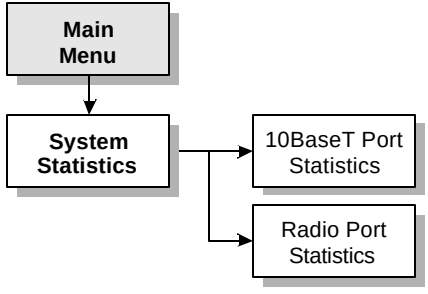



**Figure 36: System Statistics Menus**

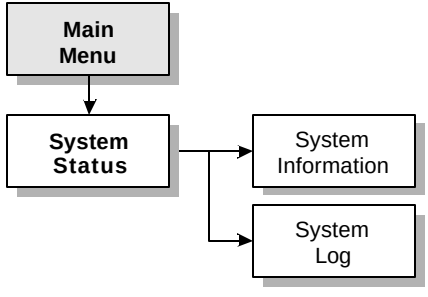



**Figure 37: System Status Menus**

## *Working with the System Configuration Menu*

After selecting System Configuration on the Main Menu, the System Configuration menu appears, allowing you to setup a number of DockLINK network functions. The menu contains the following items:

**Administration Parameters** This selection is not needed for DockLINK.

**IP Parameters** This item displays the IP PARAMETERS menu, where you assign the DockLINK's IP Address for the Local Station. You can also enable DHCP support here. See *IP PARAMETERS* on page 74 for more information about this selection.

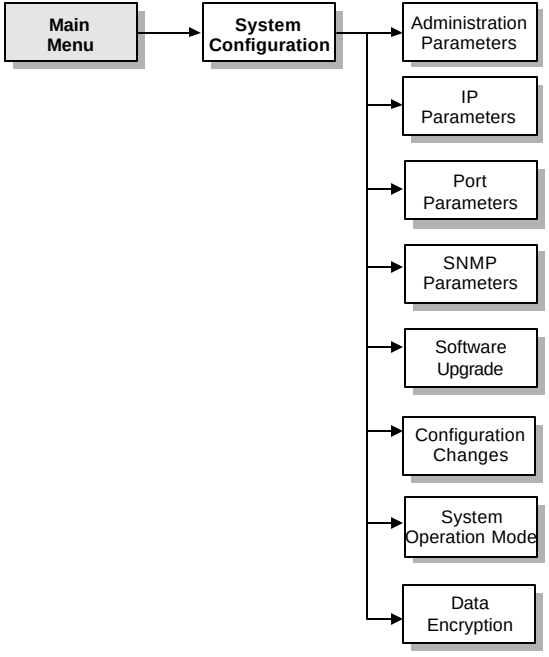



**Figure 38: System Configuration Menu**

**Port Parameters**

Selecting this item displays the PORT PARAMETERS menu, where you can choose to setup local or Radio port options. See *10BASET (AND RADIO) PORT PARAMETERS MENU* on page 77 for more information about this selection.

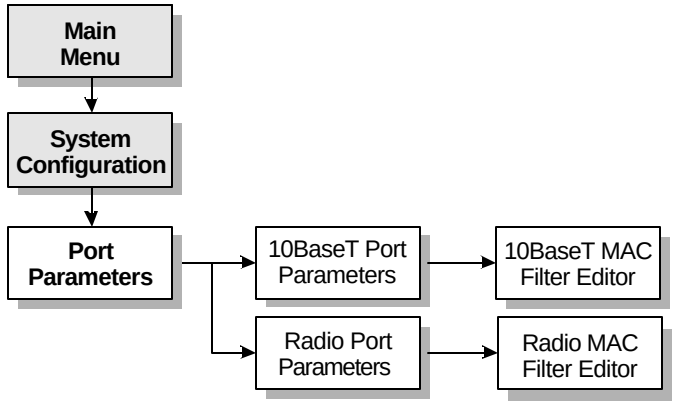



**Figure 39: Port Parameters Menus**

**SNMP Parameters**

This item is not used with the DockLINK

**Software Upgrade Parameters**

Selecting this item displays the SOFTWARE UPGRADE menu, at which you can specify the file name for DockLINK software updates. See *SOFTWARE UPGRADE MENU* on page 80 for more information about this selection.

| | |
|---|---|
| **Access Security** | This selection leads you to the ADMINISTRATION PARAMETERS menu, where you can assign logon names and passwords for up to five users. See *SYSTEM CONFIGURATION – ACCESS SECURITY MENU* on page 74 for more information about this selection. |
| **Configuration Changes** | After making changes to selections on menus, select this option to display the CONFIGURATION CHANGE menu, where you can permanently save your changes or revert selections back to the last saved settings. See *SYSTEM CONFIGURATION – CONFIGURATION CHANGES MENU* on page 81 for more information about this selection. |
| **System Operation Mode** | This selection displays the SYSTEM FEATURES menu, where you can set the operational characteristics of the DockLINK. *SYSTEM FEATURES* on page 76 for more information about this selection. |
| **Data Encryption** | This selection leads you to the BRIDGING PARAMETERS menu, where you can enable Data Encryption and set the encryption key. See *DATA ENCRYPTION MENU* on page 77 for more information about this selection. |

## *Configuration Manager Menu Items*

The following table lists each menu name and menu item, and gives a brief note for items in the Configuration Manager menu. For a further explanation of an item on the list, see the *Refer to* column, which states the section name and page number where you can find the explanation.

| Menu Name | Menu Item | Refer to: | Notes |
|---|---|---|---|
| **SYSTEM CONFIGURATION – ACCESS SECURITY MENU** | | *Setting Up Security Features* on page 25 | Allows you to set menu login names and passwords for access to menus. |
| | **User Logon Name** | *User Logon Name Fields* on page 25 | Enter from 1 to 12 letters or numbers. |
| | **User Password** | *The User Password and Retype Password Fields* on page 25 | Enter from 1 to 12 letters or numbers. |
| **IP PARAMETERS** | | IP Parameters on page 26 | Allows you to set network addresses. |

| Menu Name | Menu Item | Refer to: | Notes |
|---|---|---|---|
| | **IP Address** | *IP Address* on page 27 | Identifies the DockLINK on a TCP/IP network. Each number can range from 0 to 255. For example, 250.142.15.200 |
| | **Subnet Mask** | *Subnet Mask* on page 27 | Determines the subnet and IP Address for the DockLINK. Typically, an IP Address contains the network address and the host address.<br><br>Each number can range from 0 to 255. For example, 250.142.15.200 |
| | **Default Gateway IP Address** | *Default Gateway IP Address* on page 27 | Each number can range from 0 to 255. For example, 250.142.15.200 |

| Menu Name | Menu Item | Refer to: | Notes |
|---|---|---|---|
| | **DHCP Operation Mode** | *DHCP* on page 28 | Enables and disables DHCP Support, and allows you to connect to a DHCP server. By default, this is the option selected. |
| | **DHCP Server IP Address** | *DHCP Server IP Address* on page 29 | Each number can range from 0 to 255. For example, 250.142.15.200 |
| **SYSTEM FEATURES** | **Dock Mode** | *Dock Mode* on page 30 | Allows you to connect the DockLINK directly to your PC's network interface card. This allows your PC to become a wireless station on a RadioLAN wireless network. If using the Dock mode, see *Configuring the DockLINK for use in the Dock Mode* on page 66. |
| | **Data Encryption Mode** | *Securing the DockLINK with Data Encryption* on page 31 | This selection displays the Bridging Parameters Menu. |

| Menu Name | Menu Item | Refer to: | Notes |
|---|---|---|---|
| **DATA ENCRYPTION MENU** | | *Securing the DockLINK with Data Encryption* on page 31 | Allows you to secure wireless data by using Data Encryption. |
| | **Enable Encryption** | *Data Encryption Enabled Check Box* on page 31 | Choose **Yes** or **No**. |
| | **Encryption Key** | *Encryption Key* on page 31 | Enter the Encryption Key. |
| **SYSTEM CONFIGURATION - PORT PARAMETERS MENU** | | on page 31 | This menu leads to port parameters menus for the Radio and 10BaseT ports. |
| | **10BaseT Port Parameters Menu** | *Setting up10BaseT Port* Parameters on page 32 | Displays the 10BASET PORT PARAMETERS Menu. |
| | **Radio Port Parameters Menu** | *Radio Port Parameters* on page 35 | Displays the RADIO PORT PARAMETERS Menu. |
| **10BASET (AND RADIO) PORT PARAMETERS MENU** | | Setting up10BaseT Port Parameters on page 32, or *Radio Port Parameters* on page 35 | Displays the port's name, allows you to enable or disable the port and network filters, and allows you to add, modify and delete MAC Address filters. |

| Menu Name | Menu Item | Refer to: | Notes |
|---|---|---|---|
| | **Port Name** | *Port Name* on page 35 | Enter up to 12 letters or numbers. |
| | **Subnet ID** | *Subnet ID* on page 36 | Available in RADIO PORT PARAMETERS Menu only. Enter four characters. |
| | **Block MAC Packets** | *MAC Address Filter* on page 33 | Choose **Yes** or **No**. |
| | **Edit MAC Filters** | *Edit Button* on page 33 | This item leads to the EDIT MAC FILTERS menu. |
| | **Block IP Packets** | *Block IP* Packets on page 33 | Choose **Yes** or **No**. |
| | **Block IPX Packets** | *Block IPX* on page 34 | |
| | **Block NetBEUI Packets** | *Block NetBEUI* on page 34 | Choose **Yes** or **No**. |
| | **Block NetBIOS Packets** | *Block NetBIOS* on page 34 | Choose **Yes** or **No**. |
| **MAC FILTERS MENU** | | | |
| | **Filter Physical Address** | *MAC Address* on page 41 | Type the IP Address to filter |
| | **Filter Mask Address** | *Mask Bytes* on page 41 | Enter the subnet mask address for the network Node |

| Menu Name | Menu Item | Refer to: | Notes |
|---|---|---|---|
| | **Source or Destination Address Filtering** | *Source/Dest* on page 41 | Allows you to specify whether the action upon packets will be occur if that node is sending or receiving packets |
| | **Accept or Reject The Packet When Satisfied** | *Accept* on page 42 | Allows you to allow or disallow transmission of the packet depending upon the entry in the field |
| | **List all Filters Configured** | *Adding MAC Filters* on page 42 | Selecting this item displays the filter list. |
| **10BASET (AND RADIO) MAC FILTER LIST** | | *Managing Packet Flow through the DockLINK* on page 40 | |
| **SYSTEM STATISTICS MENU** | | *Interrogating DockLINK for Performance Information* on page 44 | This menu leads you to port statistics menus for the 10BaseT and Radio Port |
| | **10BaseT Port Statistics** | *Checking 10BaseT Port Statistics* on page 45 | This item displays the 10BASET PORT STATISTICS Menu. |

| Menu Name | Menu Item | Refer to: | Notes |
|---|---|---|---|
| | **Radio Port Statistics** | *Checking Radio Port Statistics* on page 47 | This item displays the RADIO PORT STATISTICS Menu. |
| **10BASET PORT STATISTICS MENU** | | *Checking 10BaseT Port Statistics* on page 45 | Allows you to interrogate the system remotely about current traffic statistics on the 10BaseT Port. |
| **RADIO PORT STATISTICS MENU** | | *Checking Radio Port Statistics on page 47* | Allows you to interrogate the system remotely about current traffic statistics on the Radio Port. |
| **NODE DISCOVERY MENU** | | *Discovering Wireless Nodes Within the DockLINK's Data Range* on page 21 | Provides information about neighboring nodes connected to the network that your station can communicate with. |
| **SOFTWARE UPGRADE MENU** | | *Upgrading System Software* on page 50 | Allows you to download a new configuration to the DockLINK. |
| | **Download Mode** | Upgrading System Software on page 50 | Allows you to choose the Download mode. |

| Menu Name | Menu Item | Refer to: | Notes |
|---|---|---|---|
| | **TFTP Server IP Address** | *Set TFTP Server IP Address* on page 52 | DockLINK does not use this feature. |
| | **System Software Name** | File to Upload on page 51 | Allows you to enter the file name of the operating system file that you want to download. |
| | **Perform Download** | Download Buttonon page 52 | Causes the DockLINK to retrieve the specified software file from the specified TFTP Server IP Address. |
| **SYSTEM CONFIGURATION – CONFIGURATION CHANGES MENU** | | *Saving or Rejecting Configuration Setting Changes* on page 53 | Allows you to save your changes or to reject changes you have made, which allows the DockLINK to continue operating as before you accessed this screen. |
| | **Save All Configuration Changes** | *Save All Changes and Reset Radio* Button on page 53 | All changes that you have made during this session overwrite previous program entries. |

| Menu Name | Menu Item | Refer to: | Notes |
|---|---|---|---|
| | **Reload All Previous Configurations** | *Reload Last Saved Configuration Radio Button* on page 54 | Abandons all changes that you have made and changes entries back to their original settings. |
| | **Reset All Configuration Changes** | *Reset Configuration to Factory Default Radio* Button on page 54 | Resets all configuration items to their factory default settings. |
| **DIAGNOSTICS MENU** | | *Testing DockLINK Connectivity to the Wireless Network* on page 56 | Allows a remote manager to interrogate the system for information about its ability to communicate with other stations within the network by initiating a Ping test to nodes on the network. |
| | **Ping Frame Count** | *Setting the Frames to Send* on page 56 | Sets the total number of frames being sent in each Ping test |
| | **Ping Frame Size** | *Setting the Frame Size* on page 57 | Sets the size of the frames transferred during the Ping test |
| | **Ping Destination** | *Setting the Address* on page 57 | Allows you to select a specific station for testing using its IP Address. |

| Menu Name | Menu Item | Refer to: | Notes |
|---|---|---|---|
| | **Perform Ping** | *Start Button* on page 58 | Choose **Start** or **Stop** |
| | **Total Packets Transmitted** | *Frames Sent* on page 57 | Indicates the total number of packets transmitted by the DockLINK to the stations during Ping testing |
| | **Average Retransmission** | *Avg Retrans* on page 58 | Counts and stores the average number of retransmissions based upon the total number of packets transmitted |
| | **Total Packets Received** | *Frames Acked* on page 57 | Indicates the total number of packets received by DockLINK from the remote wireless stations |
| **SYSTEM STATUS MENU** | | *Recording Important System Information* on page 59 | Leads you to SYSTEM INFORMATION, SYSTEM LOG, and FORWARDING TABLE menus. |

| Menu Name | Menu Item | Refer to: | Notes |
|---|---|---|---|
| | **System Information** | *Recording Important System Information* on page 59 | Displays the System Information menu, where you can collect version, contact, and other information about the DockLINK |
| | **System Log** | *Viewing the System Log* on page 62 | Displays the SYSTEM LOG. The log stores and displays system events such as system start, warm start, or password authentication. |

# Troubleshooting

This section discusses ways to eliminate trouble on the network. We will provide cross-references to other options in the manual, which support corrective action.

The DockLINK bridges traffic between the local station and the wireless network. The unit provides several indicators of its status and, with either a serial terminal or Web based access, a user may use the tools built into the DockLINK to further examine the network connection and help troubleshoot a problem report.

**Indicators**

In normal operation, verify that the power, 10BaseT, and radio connectors are attached. Verify that the Power LED is illuminated, and that the Status 1, or Status 2 LEDs are not lit. If either of these are lit, it may indicate a problem, and you should contact your distributor for assistance. If you cannot reach your distributor, or purchased the units directly from RadioLAN, contact RadionLAN Support.

**Problem: No traffic passed**

Using either the VT100 or Web management tools, check that the configuration is set correctly. Verify that the filters are not set to block all traffic or stop a specific protocol. Examine the statistic counters and use the node discovery screen to “see” the wireless network. Verify the SUBNET ID is set to the correct value.

**Problem: Radio Range seems less than it should be.**

Check the placement of the radio body. Generally, the higher on the wall it is placed, the better the signal pattern will be. If this Radio Unit has been working for some time, ask if anything has recently changed; perhaps a new wall has been added in the office area or other changes have occurred that could change the normal signal dispersion. If the problem persists and you have access to another radio, try replacing the radio. If this makes a difference, it is possible the radio may have become damaged, reducing its effectiveness. Contact your distributor for assistance.

# Glossary

***Access Point*** A service allowing wireless client stations to exchange data with an existing 10BaseT hard-wired Ethernet network.

***Agent*** Software at the device being controlled. The agent monitors the status of objects in an information base called the MIB. The agent can be programmed to act on status changes and send notification messages, called Traps, to designated IP Addresses, called Trap Communities.

The agent can also take instructions from a remote manager to make changes to objects in the MIB. For example, the manager might instruct the agent to change the system date and time.

***Client Station*** A wireless 10Mbps computer that receives and originates Ethernet data. Client stations may exchange data directly and/or send to other hard-wired network devices by using an access point service.

| | |
|---|---|
| ***DHCP Server*** | A protocol software that manages and tracks the assignment and use of static and dynamic IP Addresses to devices attempting to connect to a network. |
| ***DNS*** | The Domain Name System or Service, a system used by a network to transcribe the name or letter address of a site or location on the Internet entered by a user into the site's corresponding numerical IP Address. |
| ***Domain*** | A grouping of devices that are members of a specific realm or location on a network. Each device is identified on the Internet by a specific extension attach to the location's IP Address which is shared among all devices within the domain. |
| ***Gateway*** | A door in the Internet that allows a member of one domain to access another domain. (The domains have different IP Addresses.) |

| | |
|---|---|
| ***IP Address*** | Internet Protocol, the numerically based address of Internet sites. It is composed of four numbers (0-255) that are linked by a period. For example: 234.8.44.155. The numbers in the address indicate the domain of the site and the user of that site. Such an address can be assigned by a private network administrator for a private network but, for use on a larger scale one should obtain an address from the InterNIC Registration Service which assigns a different address to each user. |
| ***MAC Address*** | Media Access Control address, a basic numerical address used to identify all types of nodes on networks based on the IEEE 802 Standards. Protocols may assign to nodes different addresses that coincide with their system. But, ultimately that address can be traced to the node's MAC Address. This address is also referred to as a Data Link Control address by OSI Reference-based networks. |
| ***Manager*** | Software used to control and manipulate the Management Information Bases through communication with the Agent. |
| ***MIB*** | Management Information Base, a database of information about a particular community within a network, including information about the activities of that community. This information can be reviewed for understanding of activities of the MIBs and troubleshooting. |
| ***Node*** | Any device connected to a network. It is assigned either a MAC Address (IEEE 802 Standard network) or a DLC address (OSI Reference network). |

| | |
|---|---|
| ***Packets*** | A packet is a portion or chunk of a document being sent over the Internet. The chunk contains part of the original document and the destination IP Address for the document. |
| ***Ping*** | The Packet Internet Groper or Ping is a program used for verifying/testing network connectivity between two or more computers by transmitting a special diagnostic packet to those stations on the network. It forces the receiving station to send a reply indicating that the packet reached its destination. It obtains information about the connection by determining the amount of time for packet delivery and station response. |
| ***Routing*** | Routing is the path chosen by the user over which to send a packet of information from one computer or station to another via the network. |
| ***Subnet Mask*** | The Subnet Mask is a network address that numerically represents the IP Address including the network address and the subnetwork of which the IP Address is a member. |
| ***TCP/IP*** | Transport Control Protocol/Internet Protocol or TCP/IP is the combination of protocols that are used on the Internet to transfer data from one address to another. |

# Appendix A: Indicators, Switches, and Connectors

## *Indicators*

### 10Base-T port LEDs

There are two built-in LEDs, located on the 10Base-T connector, which provide Link and Port Activity information.

The Link LED (green) is active when the port is connected to another powered 10BaseT port whose signaling meets the requirements for an IEEE 802.3i 10BaseT device. For example, valid Link test pulses are detected on the receive pair.

The Activity LED (green) is active when receive activity is detected or during a packet transmission.

### Power LED

The Power LED (green) is active when power is provided to the unit.

### Fault LED

The Fault LED (amber) is active when a fault is detected during power up diagnostics.

**Status LEDs**

There are two Status LEDs (green/green) which provide system status.

The green Status 1 LED illuminates when the DockLINK senses at least one wireless station within range.

The green Status 2 LED flickers when data passes between the DockLINK and wireless stations on the network.

## *MDI/MDI-X switch*

Interconnection on a 10BaseT Network Interface Card must always be between MDI to MDI-X. The transmitter of each device must connect to the receiver of the other device. The reversal of the transmit and receive assignments is called a crossover function. Every 10BaseT interconnection requires a crossover function. Generally, 10BaseT ports on an adapter card are configured as MDI, and 10BaseT ports on a repeater/hub are configured as MDI-X.

The DockLink allows you to configure its 10BaseT port as an MDI (switch out position) or MDI-X (switch in position) port. The abbreviation MDI stands for Media Dependent Interface, and is specified by the IEEE 802.3i 10BaseT standard to be the electrical and mechanical interface to the UTP wire. An MDI port transmits out to the UTP wire on pins 1 and 2, and receives from the UTP wire on RJ-45 pins 3 and 6.

The MDI/MDI-X switch swaps the pin assignments of transmit and receive data wire-pairs for the 10BaseT port. MDI-X configuration is used when the remote end of the wire is connected to a network station (for example, a10BaseT adapter card) or to an MDI port on a 10BaseT concentrator. MDI configuration is used when the remote end of the wire is connected to a 10BaseT concentrator.

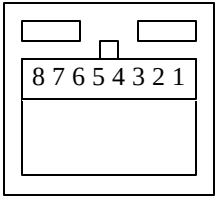
 

## *IO Connectors*

### 10BaseT connector

The 10BaseT interface is provided through a shielded RJ-45 connector, which can be configured via the MDI/MDI-X switch. The pin-out is described in the following table and figure:

| Pin # | Signal (MDI configuration) | Signal (MDI-X configuration) |
|---|---|---|
| 1 | TX+ (Transmit to UTP) | RX+ (Receive from UTP) |
| 2 | TX- (Transmit to UTP) | RX- (Receive from UTP) |
| 3 | RX+ (Receive from UTP) | TX+ (Transmit to UTP) |
| 4 | No connection | No connection |
| 5 | No connection | No connection |
| 6 | RX- (Receive from UTP) | TX- (Transmit to UTP) |
| 7 | No connection | No connection |
| 8 | No connection | No connection |

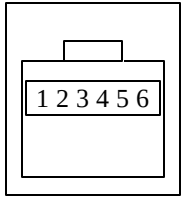


## Serial Port connector

RadioLAN Part Number 910-011 is a Serial port interface is provided through a 4-pin shielded RJ-11 connector. The pin-out is described in the following table and figure:

| Signal Description | DB-9F | RJ11 | Signal Description |
|---|---|---|---|
| Ground | 2 | 1 | Ground |
| Serial Out (from computer) | 3 | 2 | Rx In |
| Serial In (to computer) | 5 | 4 | Tx out |



# Appendix B: Technical Specifications

## *Network Protocol*

10 Mb/s Manchester encoded (IEEE 802.3 CSMA/CD)

RadioLAN /10™ Pulse Modulated (CSMA/CA)

## *Standards Support*

IEEE 802.3i Type 10BaseT

## *Electrical Specifications*

| | Domestic | International |
|---|---|---|
| Input Power: | 25 Watts | 25 Watts |
| AC Line Frequency: | 60 Hz | 50-60 Hz |
| Input Voltage: | 110VAC | 100-240VAC |
| Volt Amperes Rating: | 1A @ 100VAC | 0.5A @ 240VAC |

## *Physical Specifications*

**Dimensions**

6.375” x 4.1875” x 13.125”

**Weight**

22.3 oz. (632g)

## *Environmental Specifications*

Operating Temperature: 5 C to 40 C

Storage Temperature: -25 C to 70C

Operating Humidity: 85% max. relative humidity, non condensing

Storage Humidity: 95% max. relative humidity, non condensing

Operating Attitude: 10,000 ft (3,000m) maximum

## *Electromagnetic Emissions*

Meets requirement of:

FCC Part 15, subparts A and B, Class A

EN55 022 (CISPR 22:1985), Class A

General License VDE 0871, Class A (AmtsblVfg No. *243/1991* and Vfg *46/1992*)

VCCI Class 1 ITE

## *Safety Agency Approvals*

UL-listed, ULC-listed, CSA-certified, TUV-licensed

# Getting Technical Support

If you have technical questions, or have determined that your equipment is damaged, RadioLAN offers a number of ways to get assistance:

1. Contact your local RadioLAN reseller where you purchased the product.
2. See the RadioLAN Web Site for technical assistance:
   http://www.radiolan.com
   When your browser accesses the Web Site, click Technical Support.
3. You can reach RadioLAN Technical Support directly by dialing:
   Toll free: 888-2-RADIOLAN (888-272-3465)
4. Alternatively, you can reach our technical staff at the following e-mail address:
   support@radiolan.com

Please have the following information available and ready:

- Your name, address, and phone number
- The serial number of the RadioLAN part in question
- A description of the problem that you are experiencing

Technical Support may ask you to run tests and give results of those tests. It is therefore best if you are located as close as possible to the DockLINK when you call.

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**RadioLAN**
455 De Guigne Drive
Sunnyvale, CA 94086
Phone (408) 616-6300
Fax (408) 524-0600