

EXHIBIT 7

USER'S MANUAL OF EUT

ETHERNET

1.00.00



RapidFire 2327 Ethernet PCI 10/100 Adapter

Guide to Operations



RapidFire 2327 Ethernet 10/100 PCI Adapter

Guide to Operations

RapidFire, LANscout and the Olicom clasped hands logo are trademarks of Olicom A/S.
Olicom is a registered trademark of Olicom A/S.

All other brands or product names are trademarks or registered trademarks of their respective holders.

Olicom A/S reserves the right to modify the information given in this publication without prior notice.
The warranty terms and conditions applicable for your purchase of this equipment are given at the time
of purchase. Consult your place of purchase for details.

Publication: DOC-7017 v. 1.00.00

© Copyright Olicom A/S, Denmark, June 1998

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or
transmitted, in any form or by any means, electronic, mechanical, photocopying, recording or
otherwise, without the prior written permission of the publisher.

FCC Compliance

This equipment has been tested and found to comply with the limits for a Class B digital device,
pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection
against harmful interference in a residential installation. This equipment generates, uses and can radiate
radio frequency energy and, if not installed and used in accordance with the instructions, may cause
harmful interference to radio communications. However, there is no guarantee that interference will not
occur in a particular installation. If this equipment does cause harmful interference to radio or
television reception, which can be determined by turning the equipment off and on, the user is
encouraged to try to correct the interference by one or more of the following measures:

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

This device complies with part 15 of the FCC Rules. Operation is subject to the following two
conditions: (1) This device may not cause harmful interference, and (2) this device must accept any
interference received, including interference that may cause undesired operation.

Modifications

If the device is changed or modified without the express approval of Olicom A/S the user may void his
or her authority to operate the equipment.

Declaration of Conformity

We Olicom A/S

Nybøvej 114

DK-2800 Lyngby

Denmark

declare under our sole responsibility that the product

RapidFire 2327 Ethernet 10/100 PCI Adapter

to which this declaration relates, is in conformity with the
following standards or other normative documents:

EN 50082-1

EN 55022

EN 60825-1

EN 60950

including amendments following the provisions of the 73/23/EEC and 89/336/EEC directives.

CLASS 1 LASER PRODUCT

Table of Contents

1. Introduction	1
Package Contents	2
Using CD-ROM or Disks.....	2
Online Documentation	4
Troubleshooting and getting Help.....	5
Late-breaking News	5
Notational Conventions	5
2. Installation Overview	7
3. Hardware Installation	9
Overview.....	9
Installation Requirements.....	9
Adapter Installation.....	9
Connecting the Adapter Cable	10
Connecting a Wake-on-LAN Cable (optional)	11
4. Network Driver Installation	13
Why Network Drivers?	13
Supported Environments and Drivers.....	13
Microsoft Windows 95	14
Adapter Parameters	14
NDIS 3 Error Messages	14
Microsoft Windows 98	15
How to check if the correct driver is installed	15
Driver Update	16
Adapter Parameters	17
NDIS 3 Error Messages	17
Microsoft Windows NT	18
Installation Procedure	18
Windows NT 4.0	18
Windows NT 3.5x	20
Adapter Parameters	21
NDIS 3 Error Messages	21
NDIS 4 Miniport	22
NDIS 4 Miniport Driver Installation	22
Reinstalling the NDIS 3 Driver	22
Identifying the Windows 95 Version	23
Microsoft Windows for Workgroups 3.11.....	23
Install NDIS 2.0 Driver.....	23
Adapter Parameters	24
Multiple Adapter Configuration (WfW 3.11).....	25
Microsoft Network Client 3.0 for DOS.....	25
Novell NetWare Workstations.....	26
NetWare DOS ODI Workstations	26
NetWare Client 32 for Windows 95	28

NetWare Client 32 for Windows 3.1x	29
NetWare Client 32 for DOS	29
Novell NetWare Servers	30
NetWare 4.x Servers	30
NetWare 3.12 Server	31
IBM DOS Environment	33
IBM DOS LAN Services - DLS	33
IBM OS/2 Environment	35
IBM LAPS - LAN Server/Requester 3.0	35
IBM MPTS - LAN Server/Requester 4.0/5.0, OS/2 WARP	36
Configuring the NDIS 2.0 MAC Driver	37
NDIS 2.0 MAC Driver Messages	37
5. Power Management	39
6. The Olicom CD-ROM	41
Olicom Adapter Setup Program on CD-ROM	42
Olicom Adapter Setup Program on Setup Disk	43
LANscout and Utilities	44
LANscout	44
Adapter Information for Windows - AIW	46
7. Diagnostics	47
Running the Diagnostics Program	47
Adapter Test	47
Network Connection Test	47
Additional Information	48
8. Troubleshooting	49
Problems and Solutions	49
PCI Specification Problems	50
BIOS Settings	51
EMM386 Memory Manager - DOS and Windows 3.x	51
Everything has been tried! What now?	51
9. Contacting Technical Support	53
Before You Contact Olicom Technical Support	53
Hotline Support	53
Fax Support	53
Bulletin Board Service	54
Standard Modem Requirements	54
ISDN Modem	54
Internet E-Mail	54
Anonymous Internet FTP Server	54
Internet World Wide Web Server (WWW)	55
Olicom Support WEB	55
Problem Report Form	56

Appendix A. Driver Messages	59
B.1 NDIS 2.0 MAC Driver.....	60
Information messages.....	60
Warnings.....	60
Errors	61
B.2 NDIS 3 and NDIS 4 Miniport Driver	62
Windows 95 and Windows 98.....	62
Windows NT	62
NDIS 3 and NDIS 4 Miniport Driver Error Messages	63
B.3 DOS ODI Driver	64
Common DOS ODI Errors.....	64
Errors specific to the OCE5XODI.COM DOS ODI Driver	65
B.4 NetWare Server ODI and Client 32 Driver	66
B.5 Diagnostics Error Messages	68
Appendix B. Abbreviations	69
Appendix C. Technical Information	71
Status LEDs	72

Illustrations

Figure 1. RapidFire 2327 Adapter	1
Figure 2. PC Top View	9
Figure 3. Back Panel	10
Figure 4. Wake-on-LAN Cable	11
Figure 5. CD-ROM Menu (Windows version).....	41
Figure 6. Adapter Setup Program - Windows 95/98 and Windows NT	42
Figure 7. Adapter Setup Program - DOS and Windows 3.x.....	43
Figure 8. Status LEDs	50
Figure 9. RJ-45 Connector Configuration.....	71
Figure 10. Status LEDs	72

Tables

Table 1. Factory Default Settings	7
---	---

About this manual

Welcome to this manual and congratulations on selecting the Olicom RapidFire 2327 Ethernet 10/100 PCI Adapter.

This Guide to Operations is directed towards users without prior knowledge of network adapter installation, and it provides the information required to perform a standard installation of the Olicom RapidFire 2327 Ethernet 10/100 PCI Adapter.

The Olicom RapidFire 2327 Ethernet 10/100 PCI Adapter will also be referred to as "RapidFire 2327 Adapter" in this publication.

This guide contains 9 chapters and four appendices. Reading the sections that deal with the environment in which your adapter will be used will ease installation of the hardware and software described in this guide.

- Chapter 1** is a general introduction to this manual.
- Chapter 2** provides an installation overview.
- Chapter 3** describes the physical installation (hardware).
- Chapter 4** provides guidelines for installation of the adapter driver software in different network environments.
- Chapter 5** describes Power Management facilities.
- Chapter 6** describes the Olicom CD-ROM.
- Chapter 7** introduces the Diagnostics program.
- Chapter 8** provides troubleshooting hints.
- Chapter 9** provides contact information to Olicom Technical Support.
- Appendix A** lists the system requirements.
- Appendix B** contains error messages, return codes and suggested actions to recover from an error condition.
- Appendix C** lists the used abbreviations.
- Appendix D** lists the technical specifications and certifications.

Expert users and end-users who require detailed technical information can obtain this from the Olicom online documentation. See page 4 for details.



1. Introduction

The Olicom RapidFire 2327 Ethernet 10/100 PCI Adapter combines advanced power management facilities with performance optimized and parallel processing drivers to produce industry-leading performance and cost-reducing ease of use.

Supporting the latest power management initiatives, including ACPI, Wake-on-LAN, Magic Packet, and Wake-up events, the RapidFire 2327 Adapter provides unprecedented centralized and local control over workstation power states, allowing IT managers to significantly reduce the costs and complexity of PC management.



Figure 1. RapidFire 2327 Adapter

The RapidFire 2327 Adapter permits easy network expansion while minimizing the complexity and cost. Thanks to support of Nway Auto Negotiation technology, the adapter automatically senses the network speed and full-duplex capabilities and requires no user intervention when changing between 10 Mbps and 100 Mbps speeds and between half and full duplex.

The adapter's automatic adjustment to the varying load on the PCI bus makes it an ideal choice for both server and workstation environments. The adapter chipset includes a powerful DMA engine with software programmable burst size, providing very low CPU utilization in all environments. The adapter complies with all relevant industry standards, including IEEE 802.3u for Fast Ethernet and PCI revision 2.1, assuring trouble-free operation.

With the enclosed LANscout desktop management system you can easily monitor your adapter for network performance and statistics. It features an HTML interface, which allows display of all parameters and statistics on an ordinary web-browser. Direct connection to Olicom's WEB server enables you to download and update the latest drivers with a simple click of a mouse button.

Package Contents

- One Olicom RapidFire 2327 Ethernet 10/100 PCI Adapter
- One Olicom CD-ROM folder containing
 - Olicom CD-ROM
 - Two disks:
 - Olicom Setup and Diagnostics Disk (Disk 1,
also referred to as Olicom Setup Disk)
 - Olicom Driver Disk (Disk 2)
 - User Guide booklet
- One warranty reply card



Using CD-ROM or Disks

Olicom supplies both a CD-ROM and two 3.5" high-density disks.

If you have a CD-ROM drive, you should always use the Olicom CD-ROM when installing network drivers and utilities, or when you want to view the documentation for the adapter.

If you want to use the Diagnostics program, you must always use the Olicom Setup and Diagnostics Disk. The Diagnostics program is described in details in chapter 7, *Diagnostics*.

The contents of the CD-ROM and the disks, how and why they are used is described in the following sections.

Olicom CD-ROM

The Olicom CD-ROM contains:

- LANscout - Olicom desktop management system for Windows 95, Windows 98 and Windows NT
- AIW - Olicom Adapter Information for Windows utility for Windows 3.1x
- DMI 1/DMI 2 - Desktop Management Interface for third-party management applications
- Olicom Adapter Setup Program
- Guide to Operation in PDF format (what you are viewing now) including a free version of Adobe Acrobat Reader
- Online documentation in HTML format (requires a web browser)
- Make-disk utility for the following disks:
 - Olicom NetWare Server and Client 32 Driver Disk
 - Olicom Windows 95/98 Driver Disk
 - Olicom Windows NT Driver Disk
 - Olicom NDIS 4 Miniport Driver Disk
 - Olicom OS/2 Driver Disk
 - Olicom DOS Driver Disk
 - Olicom Setup and Diagnostics Disk (Disk 1)
 - Olicom Driver Disk (Disk 2)

All network drivers are contained on the CD-ROM.

The Olicom Adapter Setup Program on the CD-ROM runs both under DOS, Windows 3.x, Windows 95/98, and Windows NT. The functionality of the program depends on the operating system. See *Olicom Adapter Setup Program on CD-ROM* in chapter 6 for details.

► **Note:** The LANscout desktop management system can only be installed from the CD-ROM.

Olicom Disks

The Olicom disks are:

- **Olicom Setup and Diagnostics Disk (Disk 1)** containing:
Olicom Adapter Setup Program, Diagnostics Program, utilities,
and online documentation in Windows help format.
- **Olicom Driver Disk (Disk 2)** containing most commonly used network
drivers.

The Olicom Adapter Setup Program on the Setup and Diagnostics Disk gives you access to the online documentation and allows you to install some of the utilities that come with the adapter. If you want to install other utilities, such as LANscout and AIW, you must use the CD-ROM.

The Olicom Driver Disk contains the most commonly used network drivers, whereas *all* the network drivers can be found on the Olicom CD-ROM.

Olicom Booklet

The Olicom User Guide booklet contains information about:

- FCC compliance, conformity and modification statements, and such.
- Hardware installation
- Software installation
- Olicom Adapter Setup Program
- Troubleshooting guidelines

Online Documentation

This Guide to Operations in PDF format contains all the information required for a standard adapter installation with default settings.

However, if the installation is more complex or more information is needed, Olicom's online documentation in HTML format on the CD-ROM and in Windows help file format on the Olicom Setup and Diagnostics Disk provide access to extensive information that complements what is given here.

The Windows help file online documentation is available under both DOS and Windows.

To access the online documentation from the Olicom CD-ROM, insert the CD-ROM and choose "View online documentation (HTML)" from the CD-ROM menu.

To access the online documentation from the Olicom Setup disk, insert the Setup Disk in drive "A", run A:\SETUP from DOS or Windows and select "Help" or "Installation Overview".

Troubleshooting and getting Help

If the RapidFire 2327 Adapter should perform unexpectedly, see chapter 8, *Troubleshooting*, chapter 7, *Diagnostics*, or the Olicom online documentation for guidelines. If you cannot solve the problem, see chapter 9, *Contacting Technical Support* for technical assistance.

Late-breaking News

Additional information (of all kinds) is contained in the HTML and Windows help file online documentation under *Late-Breaking News*.

Notational Conventions

“CAPITAL LETTERS” (Helvetica) indicates user input. You may use upper or lower case letters when entering names and commands.

“ESC” (Helvetica narrow) indicates key entries, e.g. CTRL and F1.

Italics refer to another section, chapter or document

“h” following a number indicates hexadecimal notation, for example 02AFh.

“[]” (square brackets) indicate an optional entry.

“< >” (angle brackets) indicate text to be substituted.

“Courier typeface” indicates screen display.

“□” indicates the end of a chapter.



2. Installation Overview

1. Install the adapter in one of the computer's PCI expansion slots. Chapter 3, *Hardware Installation*, explains this in detail.
2. The system BIOS, NWay Auto Negotiation and Parallel Detection automatically assign an interrupt level, an I/O range, a memory range, a speed and a duplex mode to the RapidFire 2327 Adapter.

Function	Default Setting
Interrupt level	Assigned by system
I/O address	Assigned by system
Memory address	Assigned by system
Speed	Auto negotiated by network
Duplex	Auto negotiated by network
Power Management	ACPI

Table 1. Factory Default Settings

3. Install the adapter driver(s).

Most major operating systems or network operating systems provide installation support for Olicom adapters. However, if no procedures are available - or manual driver installation is required - use chapter 4, *Network Driver Installation* and/or the Olicom online documentation as a guideline.

Installation of the RapidFire 2327 Adapter is now completed.



3. Hardware Installation

Overview

This section describes how to install the RapidFire 2327 Adapter in one of the expansion slots in your computer. See the computer documentation for additional information on installing expansion cards. The term "computer" is used as a general term to include PC's, computers and computer systems.

► Important: Static electricity can be destructive to sensitive components on the adapter. Discharge yourself by touching a metal part of a grounded unit before removing the adapter from the plastic container.

Installation Requirements

A screwdriver and the user documentation for your computer.

Adapter Installation

1. Switch all PC components *off* and disconnect all mains power-supply cables.
2. Move the peripheral units (keyboard, monitor, and such) away from the computer, and position the computer for easy access to the back panel.
3. Remove the top cover of the computer.
See figure 2 for computers with PCI slots.
4. Select one of the free PCI busmaster slots.
5. Remove the screw from the top of the panel which holds the metal bracket on the back panel corresponding to the selected slot.
6. Tilt the adapter to let the interface connector slip through the opening in the back panel, then press the edge connector firmly into the selected expansion slot.
7. Secure the adapter with the screw from the previously removed metal bracket.

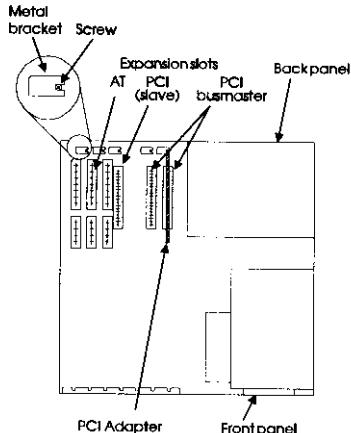


Figure 2. PC Top View

8. If the computer supports Wake-on-LAN (which makes it possible to remotely wake up a PC for management purposes), connect the special Wake-on-Lan cable between the PC motherboard and the RapidFire 2327 Adapter. See page 11 and the computer user guide for further details.
9. Put back the computer top cover.

Connecting the Adapter Cable

1. Insert the modular jack in the RJ-45 connector. The jack is secured and correctly inserted when you hear a click.
For 10 Mbps operation, a category 3, 4 or 5 cable is required.
For 100 Mbps operation, a category 5 cable is required.
- **Note:** Make absolutely sure that you connect the adapter cable to the adapter you have just installed. Connecting the cable to an expansion card other than the RapidFire 2327 Adapter could result in serious damage to the expansion card and/or the Ethernet Network.

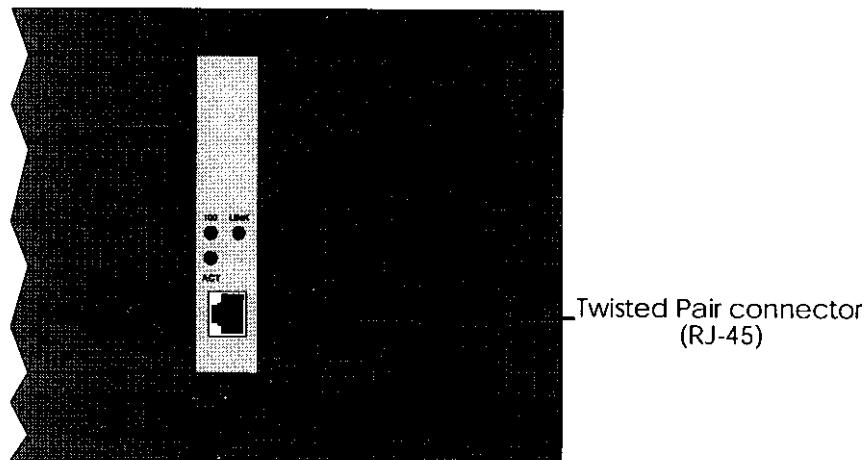


Figure 3. Back Panel

2. Connect the other end of the cable to the Ethernet network.
3. Make sure that the PC is turned *off* then re-connect the main power supply cable and switch power *on*.

Connecting a Wake-on-LAN Cable (optional)

► **Note:** A Wake-on-LAN cable is optional and is *not* included in the RapidFire 2327 Adapter package.

The RapidFire 2327 Adapter supports Wake-on-LAN by using Auxilliary Power Supply and External Wake Signal.

If you want to use this feature, and the PC supports Wake-on-LAN (see the PC user documentation), you must connect a Wake-on-LAN cable between the RapidFire 2327 Adapter and the PC motherboard.

► **IMPORTANT:** Ensure that the PC is unplugged from the electrical outlet before installing or removing the Wake-on-LAN cable. Most PCs with Wake-on-LAN support supply power through this cable even when the system appears to be in powered OFF state.

1. Locate the Wake-on-LAN connectors.

The Wake-on-LAN connector on the RapidFire 2327 Adapter is the white 3-pin connector located just below the expansion PROM socket.

The Wake-on-LAN connector in the PC is identical to the connector on the RapidFire 2327 Adapter (and maybe marked "Wake-on-LAN" or something similar). The connector is usually located on the PC motherboard, but on some systems you will find it on a riser card (a riser card is a board plugged into the motherboard to provide the necessary expansion slots).

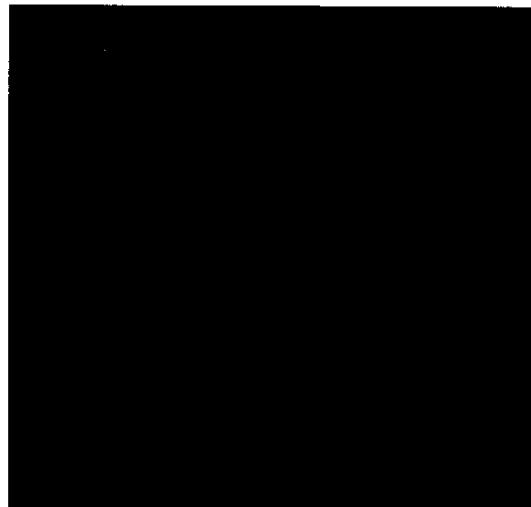


Figure 4. Wake-on-LAN Cable

2. Connect the Wake-on-LAN cable.

The Wake-on-LAN cable connectors are identical, and they are coded to ensure that they are not inserted upside down.

► **Note:** On early IBM PCs with Wake-on-LAN support, the Auxilliary Power Supply and External Wake Signal use different connectors, and you need a special cable to connect the RapidFire 2327 Adapter. This special cable has a 3-pin connector that connects to the adapter and two 2-pin connectors that matches the IBM connector. On your IBM PC, locate the power supply and look for a power cable labelled P9 or P12. The cable fits one of the 2-pin connectors of the special RapidFire 2327 Adapter cable. The second 2-pin connector of the cable must be connected to the 2-pin Wake-on-LAN connector on the PC motherboard.



4. Network Driver Installation

Why Network Drivers?

The adapter driver software is an upward interface to Local Area Network programs required to run applications on an Ethernet Network. Most network operating systems provide facilities for the installation of adapter driver software and, in many cases, Olicom drivers are pre-defined in the relevant configuration utilities.

If a facility to install Olicom drivers is available, use that approach. However, if no procedures are available or manual installation is preferred, use the following sections as guidelines for the adapter driver installation.

The network drivers are available on both CD-ROM and on 3.5 inch high-density disks. It is assumed throughout this installation chapter that the Olicom CD-ROM is the source media, and that the CD-ROM drive is "D". If the CD-ROM drive is different from "D", or you want to install from the Olicom Driver Disk, change the drive letter as required.

If the source media is one of the enclosed Olicom disks, or a disk generated from the Olicom CD-ROM, the installation procedure will emphasize this and provide detailed instructions including drive ("A") and path.

Supported Environments and Drivers

Environment	Driver	Page
MS Windows 95	OCE5XND3.SYS	14
MS Windows 98	OCE5XND3.SYS	15
MS Windows NT	OCE5XND3.SYS	18
NDIS 4.0 Miniport	OCE5XND4.SYS	22
MS Windows for Workgroups 3.11	OCE5XND2.DOS OCE5XODI.COM	23
MS Network Client 3.0	OCE5XND2.DOS	25
NetWare DOS ODI Workstations	OCE5XODI.COM	26
NetWare Client 32 for Windows 95	OCE5XND3.SYS	28
NetWare Client 32 for Windows 3.1x	OCE5XODI.LAN	29
NetWare Client 32 for DOS	OCE5XODI.LAN	29
NetWare 4.x Server	OCE5XODI.LAN	30
NetWare 3.12 Server	OCE5XODI.LAN	31
IBM DOS LAN Services	OCE5XND2.DOS	33
IBM LAPS - LAN Server 3.0	OCE5XND2.OS2	35
IBM MPTS - LAN Server 4.0/5.0, OS/2 WARP	OCE5XND2.OS2	36

Microsoft Windows 95

This section describes the procedure for installation in Windows 95.

Windows 95 will normally install new devices with little or no user intervention. This is also the case with the RapidFire 2327 Adapter.

1. Install the RapidFire 2327 Adapter in a free PCI expansion slot, and connect the cable between the adapter and the network as described in chapter 3, *Hardware Installation*.
2. When starting Windows 95 the next time, a popup window appears notifying that Windows 95 has found new hardware.
3. Insert the Olicom CD-ROM and change the path from “A:\” into “D:\”.
4. Press **Enter** at each dialog box displayed by Windows 95 to complete the installation.
5. Restart Windows 95 for the changes to take effect.

► **Note:** When copying files, Windows might prompt for the Windows installation files. If so, insert the Windows 95 CD-ROM or provide the proper path to the installation files. When you install from a CD-ROM, and Windows requests an installation path for the network driver files, change the path from “A:\” to “D:\”.

► **Note:** If you want to use the NDIS 4 Miniport driver instead of the NDIS 3 Miniport driver, see *NDIS 4 Miniport* on page 22.

Adapter Parameters

To configure the network adapter, open “Network” in the “Control Panel”, select the “Olicom RapidFire 2327 Ethernet 10/100 PCI Adapter” and click the “Properties” button. Click the “Advanced” tab to set the adapter parameters. The default parameters will work correctly for most configurations. Use defaults if you do not know what the parameters do.

Connection Type (Auto negotiate, 100 Mbps Half Duplex, 100 Mbps Full Duplex, 10 Mbps Half Duplex, 10 Mbps Full Duplex)

This parameter can be used to force the RapidFire 2327 Adapter to use a specified Connection Types. If “Auto negotiate” is selected the RapidFire 2327 Adapter will auto negotiate the Connection Type and use the best possible value.

See the Olicom online documentation for additional information about other adapter parameters.

NDIS 3 Error Messages

NDIS 3 error messages and suggested actions are described in appendix B.

Microsoft Windows 98

The drivers for the RapidFire 2327 Adapter are not included in all Windows 98 packages. You must update your Windows 98 installation to include information about the RapidFire 2327 Adapter drivers before installing the adapter.

If you have installed the RapidFire 2327 Adapter without updating your Windows 98 installation, you may get a wrong driver installed for the RapidFire 2327 Adapter.

1. Run the CD-ROM Menu program (see page 6) and select "Update Win'98 driver information" to add information about the adapter to the Windows 98 installation. You can also run the update program (A:\W98FIX.EXE) from the Olicom Driver Disk.
2. Install the RapidFire 2327 Adapter in a free expansion PCI slot, connect the cable between the adapter and the network as described in chapter 3, *Hardware Installation*.
3. When starting the next time, the "Add New Hardware Wizard" pops up saying that it is searching for new drivers for a PCI Ethernet controller.
4. Click "Next" and the Wizard asks what you want Windows to do.
5. Click "Next" once again to accept a search for the best driver for your device. Apart from the Windows driver library, the Wizard now allows searching alternative locations for a driver.
6. Insert the Olicom CD-ROM, ensure that the CD-ROM drive is checked, and click "Next".
Windows then searches the specified locations and eventually states that it has found an updated driver for this device.
7. Follow the instructions given by Windows to install and start the driver.

► **Note:** If you want to change or configure the default protocol and client (TCP/IP and Client for Microsoft Networks), open the Network Control Panel and make the changes before restarting Windows.

How to check if the correct driver is installed

1. In the "Control Panel" open the "System" menu.
2. In the "System Properties" window select "Device Manager".
3. In the "System Properties" window expand the "Network adapters" line by clicking the "+".
4. Check if there is a network adapter named: "Olicom RapidFire 2327 Ethernet 10/100 PCI Adapter".
5. If you found this line, the correct driver is installed. If it is not listed, proceed with the Driver Update procedure described below.

Driver Update

1. In the “Control Panel” open the “System” menu.
2. In the “System Properties” window, select “Device Manager” and expand the line “Network Adapters” by clicking on “+”.
3. Select the wrong driver for the RapidFire 2327 Adapter. It may be named “PCI Fast Ethernet DEC 21143 Based Adapter”, but other names are also possible.
4. In the “System Properties” window click on “Properties”
5. In the window for the driver select “Driver” and click on “Update Driver”.
6. In the “Update Device Driver Wizard” window click on “Next” and select “Display a list of all the drivers in a specific location, so you can select the driver you want”. Click on “Next” again.
7. In the “Select Device” window click on “Have Disk...”.
8. In the “Install From Disk” window, write “D:\” in the “Copy manufacturer’s files from:” box and insert the Olicom CD-ROM. Click “OK”.
9. In the “Select Device” window, click “OK”.
10. In the “Update Device Driver Wizard” click on “Next”
11. If Windows requests you to insert the Driver Disk click “OK” and change the path to “D:\.” Click “OK” to continue.
12. In the “Copy files from:” box write “D:\” and then click “OK”.
13. In the “Update Device Driver Wizard” click on “Finish”
14. Restart your computer.

► **Note:** If you want to use the NDIS 4 Miniport driver instead of the NDIS 3 Miniport driver, see *NDIS 4 Miniport* on page 22.

Adapter Parameters

To configure the network adapter, open "Network" in the "Control Panel", select the "Olicom RapidFire 2327 Ethernet 10/100 PCI Adapter" and click the "Properties" button. Click the "Advanced" tab to set the adapter parameters. The default parameters will work correctly for most configurations. Use defaults if you do not know what the parameters do.

Connection Type (Auto negotiate, 100 Mbps Half Duplex, 100 Mbps Full Duplex, 10 Mbps Half Duplex, 10 Mbps Full Duplex)

This parameter can be used to force the RapidFire 2327 Adapter to use a specified Connection Type. If "Auto negotiate" is selected, the RapidFire 2327 Adapter will auto negotiate the Connection Type and use the best possible value.

See the Olicom online documentation for additional information about other adapter parameters.

NDIS 3 Error Messages

NDIS 3 error messages and suggested actions are described in appendix B.

Microsoft Windows NT

The adapter driver installation procedure for Microsoft Windows NT Workstation is identical to that of Microsoft Windows NT Server. In the following, both will be referred to as Windows NT. The installation procedure is however different for versions 3.5x and 4.0 of Windows NT. Before you begin the installation process, review the "Configuring the Network" section in the Windows NT System Guide.

The installation procedure described below will copy all necessary set-up files to the Windows NT "System32" directory and the driver to the "System32\Drivers" directory. In addition, several changes will be made to the system registry. Do not attempt to edit the registry manually; all driver parameters can be set from the network section of the control panel.

Installation Procedure

The installation procedure allows installation either during the initial Windows NT installation or after Windows NT has been successfully installed on the system. If you are running Windows NT 4.0, proceed to the Windows NT 4.0 section. If you are running Windows NT 3.5x, proceed to the Windows NT 3.5x section.

Windows NT 4.0

Driver Installation during Windows NT Installation

1. Install the RapidFire 2327 Adapter in a free expansion slot as described in chapter 3, *Hardware Installation*.
2. Follow the instructions in the Windows NT System Guide to begin the Windows NT 4.0 installation process.
3. If you have chosen custom setup, do not start the adapter search in the "Network Setup Wizard" dialog box. Choose instead "Select from list".
4. Click the "Have Disk..." button and enter the full path to the Olicom setup files. If you are installing from the Olicom CD-ROM, enter "D:\\".
5. Select the correct adapter type and press the "OK" button.
6. Click the "Next" button when all adapters have been added.
7. Follow the Network Setup Wizard to choosing appropriate Protocols and Services to continue the installation. You will be prompted twice for the path to your NT installation files. First enter the path to the NT installation files (for example the Windows NT CD-ROM) and secondly enter the path to the Olicom setup files (same path as entered under step 4).
8. Follow the Network Setup Wizard to finish the installation.

Driver Installation after Windows NT Installation

If you are installing a network adapter after Windows NT has been successfully installed on your system, you must be logged on with administrative rights. This is required to add, configure and remove network adapters in Windows NT.

1. Install the RapidFire 2327 Adapter in a free expansion slot as described in chapter 3, *Hardware Installation*.
2. From the Start menu, select the “Settings”, “Control Panel” and double-click the Network icon. Choose the “Adapters” tab and click the “Add...” button.
3. Click the “Have Disk...” button, and enter the full path to the Olicom setup files. If you are installing from the Olicom CD-ROM, enter “D:\”.
4. Select the correct adapter type and press the “OK” button.
5. Click the “Close” button in the Network dialog box when all adapters have been added.
6. The settings will not take effect, until the system is restarted. System restart can be initiated by selecting the “Yes” option in the dialog box shown when you exit the Network Setup Panel.

► **Note:** If the system is already using an adapter of the same type, the driver has to be updated manually. See the next steps to accomplish this.

1. Select “Add/Remove Programs” from the Control Panel.
2. Select “Windows NT Setup” tab.
3. Click the “Have Disk ...” button and enter the full path to the Olicom setup files. When installing from the Olicom CD-ROM, enter “D:\”.
4. Select “Update Olicom Ethernet Miniport driver” and restart the system for the changes to be effective.

► **Note:** If you want to use the NDIS 4 Miniport driver instead of the NDIS 3 Miniport driver, see *NDIS 4 Miniport* on page 22.

Windows NT 3.5x

Driver Installation during Windows NT Installation

1. Install the RapidFire 2327 Adapter in a free expansion slot as described in chapter 3, *Hardware Installation*.
2. Follow the instructions in the Windows NT System Guide to begin Windows NT installation.
3. If you have selected custom set-up, select "Do Not Detect" when the "Network Adapter Card Detection" window displays.
4. When the message "Setup did not detect a network card" displays, select "Continue" to go to the adapter card setup phase.
5. Continue with step 5 in the "Driver Installation after Windows NT Installation" section below.

Driver Installation after Windows NT Installation

If you are installing a network adapter after Windows NT has been successfully installed on the system, you must be logged on with administrative. This is required to add, configure and remove adapters.

1. Install the RapidFire 2327 Adapter in a free expansion slot as described in chapter 3, *Hardware Installation*.
2. Select the Control Panel in the Main window.
3. Select the Network icon.
4. In the Network Settings panel, select the "Add adapter" button.
5. In the list of Network Adapter Cards, select "<Other> Requires disk from manufacturer" and press the "Continue" button.
6. Enter the full path to the setup files. If you are installing from the Olicom CD-ROM enter:
D:\
7. Select the correct adapter type and press the "OK" button. The setup program now copies installation files to the hard disk.
8. Review the binding settings by selecting the "Bindings" button. Press "OK" to return from the Network Bindings windows.
9. Select the "OK" button in the Network control panel when all adapters have been added.

10. The settings will not take effect until the system is re-started. System re-start can be initiated by selecting the "Restart now" option in the dialog box shown when you exit the Network Control Panel.

► **Note:** If the system is already using an adapter of the same type, the driver has to be updated manually. See the next steps to accomplish this.

1. Insert the Olicom CD-ROM and copy the file OCE5XND3.SYS from the disc to the Windows NT directory "system32\drivers".
2. Reboot the system for the changes to be effective.

Adapter Parameters

When configuring an adapter, the following parameters can be modified.

Connection Type (Auto negotiate, 100 Mbps Half Duplex, 100 Mbps Full Duplex, 10 Mbps Half Duplex, 10 Mbps Full Duplex)

This parameter can be used to force the RapidFire 2327 Adapter to use a specified Connection Type. If "Auto negotiate" is selected the RapidFire 2327 Adapter will auto negotiate the Connection Type and use the best possible value.

See the Olicom online documentation for additional information about other adapter parameters.

NDIS 3 Error Messages

NDIS 3 error messages and suggested actions are described in appendix B.

NDIS 4 Miniport

The NDIS 4 Miniport driver supports the following Windows environments:

- Windows 95 version 950B and 950C (OSR2)
- Windows 98
- Windows NT 4.0

To determine which version of Windows 95 you are running see *Identifying the Windows 95 Version* below.

► **Note:** If you have more than one RapidFire 2327 Adapter they must all use either the NDIS 3 or the NDIS 4 driver.

NDIS 4 Miniport Driver Installation

If you already have installed an NDIS 3 driver for the adapter and you want to use the NDIS 4 driver you must follow the steps below.

The procedure is the same for Windows 95 OSR2, Windows 98 and Windows NT.

1. From the Start Menu, select the Settings, Control Panel and double-click the Network icon.
2. Select the “Olicom RapidFire 2327 Ethernet 10/100 PCI Adapter” and click “Remove”.
3. Click “OK” when asked if you want to remove it.
4. Click “OK” in Network when done.
5. When asked to reboot, answer “NO”.
6. Insert the Olicom CD-ROM and run the program D:\NDIS4\NDISPREP.EXE. Follow the instructions given by NDISPREP to complete the process.
7. Reboot the system.
8. Follow the installation description in the respective *Microsoft Windows 95* on page 14, *Microsoft Windows 98* on page 15 or, but replace the specified paths with ‘D:\NDIS4’.
9. The installation is now complete.

Reinstalling the NDIS 3 Driver

If you have installed the NDIS 4 driver and want to switch back to the NDIS 3 driver follow steps 1-9 above, but do not changed the path to “D:\NDIS4” in step 8.

Identifying the Windows 95 Version

To determine which Windows 95 version you are using, open the Control Panel, select System and read the System information under the General tab.

If the version number is 4.00.950 (or 4.00.950A), you are using the first version of Windows 95, which does not support NDIS 4 drivers.

If the version number is 4.00.950B or 4.00.950C, you are using the OSR2 (OEM Service Release 2) version of Windows 95, which does support the use of NDIS 4 drivers.

Microsoft Windows for Workgroups 3.11

With Windows for Workgroups 3.11, select one of the following configurations:

- NDIS 2.0 DOS driver
- DOS ODI driver

If access to a Novell server is required, see *Microsoft WfW 3.11 ODI Installation* in the Olicom online documentation.

Install NDIS 2.0 Driver

The installation is done by adding the driver from the Olicom CD-ROM.

1. Select the "Network Setup" icon from the "Network" window.
2. In the "Network Setup" panel click the "Networks..." button.
3. Select "Install Microsoft Windows Network" and make sure the "No additional network" is selected.
4. Click the "OK" button or press **Enter**.
5. Click the "Drivers..." button.
6. If you are replacing a previous LAN adapter, select the "Remove" button to delete that adapter.
7. In the "Network Drivers" panel click the "Add Adapter..." button.
8. Highlight the "Unlisted or Updated Network Adapter" choice and click the "OK" button.
9. The setup program prompts for a vendor-provided network driver disk. Insert the Olicom CD-ROM, change the path specified to "D:\\" and click "OK". If the Olicom CD-ROM is located in another directory or drive, enter the correct path or use the "Browse" function.

10. In the "Unlisted or Updated Network Adapter" panel, select the "Olicom RapidFire 2327 Ethernet 10/100 PCI Adapter" and click "OK".
11. If you need to change any driver parameters, highlight the "Olicom RapidFire 2327 Ethernet 10/100 PCI Adapter" and click the "Setup..." button in the "Network Drivers" panel.
12. If you want to change any of the parameters for the NDIS driver, click the "Advanced..." button.
 - a) Highlight the parameter you wish to change and enter a value in the box below the parameters or select the "Not present" button if the parameter should be omitted from PROTOCOL.INI.
 - b) Click the "Set" button when the parameter is correct.
 - c) Click the "OK" button when all parameters have been set correctly.
13. Add additional network drivers and/or protocols in the "Network Drivers" panel.
14. Click the "Close" button when done.
15. To share files and/or printers, change the settings in the "Sharing" panel by clicking the "Sharing..." button. Click "OK" to return from the "Sharing" panel.
16. Click the "OK" button when done.
17. If the network is being installed for the first time, enter a user name, workgroup name and a computer name. Make sure the computer name is unique throughout the network. Click "OK" when done.
18. Setup may require some additional files from the Windows for Workgroups 3.11 distribution disks. Insert these when prompted.
19. Windows for Workgroups 3.11 automatically changes the CONFIG.SYS, AUTOEXEC.BAT, SYSTEM.INI and PROTOCOL.INI files if necessary. Click "OK" to confirm these changes.
20. Select "Restart Computer" to make the changes take effect. Remember to save any un-saved information before restarting the system.

Adapter Parameters

The Olicom online help provides information on how to view and change the adapter parameter settings.

Multiple Adapter Configuration (WfW 3.11)

You may install up to four RapidFire 2327 Adapters in your computer (up to two in DOS systems). Observe the following guidelines if installing more than one adapter.

If your network operating systems is IBM LAN Server or Microsoft Windows for Workgroups, the network installation utilities provided with the system execute configuration with multiple adapters. The new PROTOCOL.INI will have two or more driver sections. The first section will be identified by "drivername=OCE5X\$". The following sections will be identified by "drivername=OCE5X2\$", OCE5X3\$ and OCE5X4\$ respectively.

The first section (identified "drivername=OCE5X\$") will correspond to the first adapter found when the MAC river scans the PCI bus. The second section (identified by "drivername=OCE5X2\$") will correspond to the second adapter and so forth.

Microsoft Network Client 3.0 for DOS

This section describes how to install the NDIS 2.0 MAC driver with Microsoft Network Client v. 3.0 for MS-DOS.

1. Run the Microsoft Network Client "SETUP" program either from the installation disk or from the \NET directory on your hard disk.
2. When you are prompted to select a network adapter, choose "Network adapter not shown on list below ..." if your Olicom adapter is not contained in the list.
3. Insert the Olicom CD-ROM (and change the path to D:\ if necessary).
4. Press Enter and select the Olicom adapter.
5. Follow the instructions from the Microsoft Network Client SETUP program to complete the installation.

For additional information about adapter configuration parameters, see *Configuring the NDIS 2.0 MAC Driver* in the Olicom online documentation.

Novell NetWare Workstations

If the Novell NetWare version provides installation support for Olicom adapters and drivers, use the native NOS installation utility. Otherwise, proceed with the relevant section in this chapter.

With Novell server operating systems up to version 3.11, Novell shipped the NETX client software. With versions 3.12 and 4.x, Novell ships the VLM client software. While both may be used, the VLM client is required if you want to take advantage of the new functionality in version 3.12 and 4.x servers.

NetWare DOS ODI Workstations

VLM Installation

For installation of the NetWare DOS/Windows 3.x VLM client, run the Novell install program. When the installation requests the driver diskette, insert the Olicom CD-ROM supplied with the adapter and select the OCE5XODI driver. The NET.CFG file is generated by the Novell install program.

The VLM (Virtual Loadable Module) client is loaded using the following sequence of commands:

LSL.COM	(Link support module, Novell supplied)
OCE5XODI.COM	(Ethernet ODI driver)
IPXODI.COM	(IPX/SPX Protocol module, Novell supplied)
VLM.EXE	(NetWare Requester, Novell supplied)

If you let the install program modify your CONFIG.SYS and AUTOEXEC.BAT files, these commands are automatically executed during boot.

NETX installation

This installation procedure requires the following software and documentation:

- Novell NetWare DOS ODI support programs
- Olicom CD-ROM or Driver Disk

1. Copy the Novell NetWare DOS ODI support programs to a disk as explained in the Novell documentation.
2. Copy the OCE5XODI.COM driver to the same disk as the Novell NetWare DOS ODI support programs:

COPY D:\DOS\OCE5XODI.COM C:\<path>

3. Insert the following line in the file AUTOEXEC.BAT:

OCE5XODI

OCE5XODI must be loaded after LSL, but before any protocol stacks (for example, IPXODI).

Sample AUTOEXEC.BAT:

LSL	(Link support module, Novell supplied)
OCE5XODI	(Ethernet ODI driver)
IPXODI	(IPX/SPX Protocol module, Novell supplied)
NETX	(NetWare Requester, Novell supplied)

Other protocol stacks and requesters are possible. See the Novell NetWare documentation.

4. Edit the NET.CFG file and enter the desired configuration of the workstation. Consult the Novell documentation provided with the ODI Shell for general information about the NET.CFG file.

An empty NET.CFG will work in most cases. It provides the default values: One adapter, supporting the 802.2 frame type, and using the default (burned-in) node address.

To force the SPEED to 10Mbits/sec half duplex use the following entry in NET.CFG:

Link driver OCE5XODI

SPEED 10HALF

Possible values for SPEED: AUTO, 10HALF, 10FULL, 100HALF and 100FULL. When "AUTO" (default) is used, the adapter auto-detects the speed.

For the sample of the NET.CFG file and the parameters description refer to the Olicom online help.

NetWare Client 32 for Windows 95

This installation requires:

- Novell NetWare Client 32 for Windows 95 installation disks or CD-ROM
- Microsoft Windows 95 CD-ROM
- Olicom CD-ROM or Driver Disk

The installation consists of two steps:

1. Installing the Windows 95 Miniport driver
2. Installing the Netware Client 32 software

Installing the Windows 95 Miniport Driver

If your Windows 95 driver is already installed and running, proceed to *Installing the NetWare Client 32 Software*. Otherwise install the Windows 95 driver as described under *Microsoft Windows 95* on page 14.

Installing the NetWare Client 32 Software

1. Run the setup program on the NetWare Client 32 installation disks to install the Novell NetWare Client 32 for Windows 95.
See the Novell NetWare installation guide for details.
2. When you have installed Novell NetWare Client 32, choose "Reboot" to restart the system.
3. The installation is now completed.

NetWare Client 32 for Windows 3.1x

This installation requires:

- Novell NetWare Client 32 for DOS/Windows 3.1x installation disks or CD-ROM
- Olicom CD-ROM or Driver Disk

NetWare Client 32 version 2.20

1. Run the install program on the NetWare Client 32 for DOS/Windows 3.1x installation disks, and follow the installation guidelines given by Novell. See the Novell NetWare installation guide for details.
2. When prompted for LAN adapter, select "HAVE DISK".
3. Insert the Olicom CD-ROM, and specify the path to the Olicom NetWare Client 32 drivers

D:\NETWARE\NW4X

and select "Add".
4. Select the manufacturer "Olicom" and the model "32 bit - Olicom RapidFire 2327 Ethernet 10/100 PCI Adapter (Have Disk)", and follow the instructions given by the Novell setup program to complete the installation.

NetWare Client 32 for DOS

This installation requires:

- Novell NetWare Client 32 for DOS/Windows 3.1x installation disks
- Olicom CD-ROM or Driver Disk

1. Run the install program on the NetWare Client 32 for DOS/Windows 3.1x installation disks and follow the installation guidelines given by Novell. See the Novell installation guide for details.
2. When prompted for Network Board drivers, select "USER SPECIFIED 32 BIT DRIVER" or "OTHER DRIVERS".
3. Insert the Olicom CD-ROM and specify the path to the Olicom NetWare Client 32 drivers:

D:\NETWARE\NW4X
4. Select "Olicom RapidFire 2327 Ethernet 10/100 PCI Adapter" and follow the instructions given by the Novell setup program to complete the installation.

Novell NetWare Servers

The RapidFire 2327 Adapter may be installed in NetWare 3.12 and 4.x servers. Error messages and suggested actions for NetWare are described in appendix B.

NetWare 4.x Servers

1. If the NetWare 4.x server operating system has not been installed already, install it now. As part of the installation process, the INSTALL utility prompts for a LAN driver. Proceed to step 4.
2. If the server is up, load the INSTALL.NLM utility at the server console.
3. If you are using NetWare 4.0x, select "Maintenance/Selective Install" and then "LAN driver options".
If you are using NetWare 4.10 or 4.11, select "Driver Options" and then "Configure Network Drivers".
4. Enter "Select additional driver" and press INS to install an unlisted driver.
5. Insert the Olicom CD-ROM, press F3 and set the path to:

D:\NETWARE\NW4X

6. Press Enter and follow the instructions.

► **Note:** The RapidFire 2327 Adapter driver requires a SLOT parameter. If a SLOT parameter is not supplied to the INSTALL utility, you must switch to the console screen where the driver presents a list of available SLOT numbers and awaits user input.

Hints

1. In an IPX internal router configuration (a server with two adapters, each connected to a different network), the data transfer rate across the router can be low. This happens if client workstations have CPU speeds greater than or equal to the server. You may be able to increase the data transfer rate by adding the following to STARTUP.NCF:

SET MAXIMUM INTERRUPT EVENTS = 100000

The default setting is 10.

2. If you have problems loading the driver on multiple adapters and the initialization fails due to "Insufficient RCBs", increase the number of buffers allocated to the server. Add the following to STARTUP.NCF:

```
SET MINIMUM PACKET RECEIVE BUFFERS = 100 (or larger)
SET MAXIMUM PACKET RECEIVE BUFFERS = 500 (or larger)
```

The MINIMUM value specified must be at least 30 times the number of RapidFire 2327 Adapters in the computer. The recommended settings are:

1-3 adapters:	100
4 adapters:	150

The MAXIMUM you can specify depends on the amount of memory in the server, but it must be greater than the MINIMUM.

NetWare 3.12 Server

1. Insert the Olicom CD-ROM and load the following NLMs:

```
LOAD D:\NETWARE\NW312\NBI31X.NLM (see note)
LOAD D:\NETWARE\NW312\MSM31X.NLM
LOAD D:\NETWARE\NW312\ETHERTSM.NLM
```

► **Note:** Disregard the warning message that appears. The driver *will* load. If the modules are already loaded, make sure that NBI31X.NLM is version 1.50 or higher. This is required by the driver. Use the command "MODULES" to make sure that the modules are loaded and which version they have.

2. Load the adapter driver with the following commands (substitute appropriate values for "xxx" and "yyy"):

```
LOAD D:\NETWARE\NW312\OCE5XODI.LAN SLOT=xxx
BIND IPX OCE5XODI NET=yyy
```

3. With the server now accessible, copy the OCE5XODI.LAN server driver and the NLMs from the Olicom CD-ROM or Driver Disk in a NetWare workstation to the SYSTEM directory of the connected server.
4. Ensure automatic loading of the Novell server driver at re-boot by inserting the following commands in the server's AUTOEXEC.NCF file (substitute appropriate values for "xxx" and "yyy"):

```
LOAD NBI31X.NLM
LOAD MSM31X.NLM
LOAD ETHERTSM.NLM
LOAD OCE5XODI SLOT=xxx
BIND IPX OCE5XODI NET=yyy
```

Hints

1. In an IPX internal router configuration (a server with two adapters, each connected to a different network), the data transfer rate across the router can be low. This happens if client workstations have CPU speeds equal to or higher than the server. You may be able to increase the data transfer rate by adding the following to STARTUP.NCF:

SET MAXIMUM INTERRUPT EVENTS = 100000

The default setting is 10.

2. If you have problems loading the driver on multiple adapters and the initialization fails due to "Insufficient RCBs", increase the number of buffers allocated to the server. Add the following to STARTUP.NCF:

SET MINIMUM PACKET RECEIVE BUFFERS = 100 (or larger)
SET MAXIMUM PACKET RECEIVE BUFFERS = 500 (or larger)

The MINIMUM value specified must be at least 30 times the number of RapidFire 2327 Adapters in the computer. The recommended settings are:

1-3 adapters: 100
 4 adapters: 150

The MAXIMUM you can specify depends on the amount of memory in the server, but it must be greater than the MINIMUM.

3. The speed can be configured manually. Override the speed by adding a speed parameter to the load command in AUTOEXEC.NCF:

LOAD OCT3XODI SLOT=XXX SPEED=10HALF

Possible values for SPEED: AUTO, 10HALF, 10FULL, 100HALF and 100FULL. When "AUTO" (default) is used, the adapter auto-detects the speed.

IBM DOS Environment

IBM DOS LAN Services - DLS

The adapter driver can be installed either during DOS LAN Services installation or after DOS LAN Services has been successfully installed. The installation described below covers DOS LAN Services versions 4.0 and 5.0.

Driver Installation during DOS LAN Services Installation

1. Start the installation as described by IBM with the following command:

A:\INSTALL

2. When prompted for the type of network card used, select "Network card not shown in list below" and press **Enter** to continue.
3. Insert the Olicom CD-ROM and specify the location of the OEMSETUP.INF file to be:

D:\IBM\NDIS.DOS

4. Select "Olicom RapidFire 2327 Ethernet 10/100 PCI Adapter" and change if required the default settings by selecting "Edit settings for network card driver".
5. Select "Driver configuration is correct" and press **Enter** to continue.
6. Follow the guidelines given by IBM to proceed with the installation.
7. When the "Installation Complete" screen appears, press F3 for Exit without rebooting.
8. Copy the driver from the Olicom CD-ROM to your default DOS LAN Services directory (for example C:\NET) by inserting the Olicom CD-ROM and entering:

COPY D:\IBM\NDIS.DOS\OCE5XND2.DOS C:\NET

Press **Enter** to continue.

9. Reboot your PC to start DOS LAN Services.

Driver Installation after DOS LAN Services Installation

1. Start the installation as described by IBM with the following command:

C:\NET\INSTALL

2. Select "The listed options are correct" and press **Enter** to continue.
3. Select "Network Card" and press **Enter** to continue.
4. Select "Change driver for network card" and press **Enter** to continue.

5. Select "Network card not shown in list below" and press **Enter** to continue.
6. Insert the Olicom CD-ROM and specify the location of the OEMSETUP.INF file to be

D:\IBM\NDIS.DOS

7. Press **Enter** to continue.
8. Select "Olicom RapidFire 2327 Ethernet 10/100 PCI Adapter" and change - if required - the default settings by selecting "Edit settings for network card driver".
9. Select "Driver configuration is correct" and press **Enter** to continue.
10. Follow the guidelines given by IBM to complete the installation.
11. Copy the driver from the Olicom CD-ROM to your default DOS LAN Services directory (for example C:\NET) by inserting the Olicom CD-ROM and entering:

COPY D:\IBM\NDIS.DOS\OCE5XND2.DOS C:\NET

Press **Enter** to continue.

12. The configuration will become active when the system is rebooted.

IBM OS/2 Environment

IBM LAN Server products use the NDIS interface. The NDIS 2.0 drivers for DOS and OS/2 are also referred to as MAC drivers.

► **Note:** When you install files from the Olicom CD-ROM disc using LAPS or MPTS, the installed files are read-only. If LAPS or MPTS fails to install certain files, it can be because they already exist and are read-only. Recover from this situation by removing the read-only attributes from the files on the hard disk with a file manager or by entering from a command line: “**attrib -r <filename>**” and pressing Enter. Then retry the installation.

IBM LAPS - LAN Server/Requester 3.0

The MAC driver for the RapidFire 2327 Adapter can be installed during LAPS (LAN Adapter and Protocol Support) installation or after LAPS installation.

Install the MAC Driver during Installation of LAPS

1. Insert the “IBM Network Transport Services/2, LAN Adapter and Protocol Support” diskette and run the LAPS program (that is A:LAPS).
2. Select “Install” in the LAN Adapter and Protocol Support program’s main menu. The program installs LAPS on the hard disk.
3. At a certain stage during installation the “Protocol Support programs main menu” reappears, but this time with the “Install”, “Configure”, “Remove”, “Exit” and “Help” options selectable.
Proceed with the installation as described in *Install the MAC Driver after Installation of LAPS*, step 2.

Install the MAC Driver after Installation of LAPS

1. Make \IBMCOM the current directory and run the LAPS program by typing:
CD \IBMCOM
LAPS
2. Select the “Install” option in the LAPS main menu.
3. When prompted for the source path of “Additional Network Drivers”, insert the Olicom CD-ROM, enter:
D:\IBM\NDIS.OS2
4. Select “OK” to continue.
5. When the message “Installation Complete” appears on screen, select “OK”. Configuration of the Ethernet adapter can now take place.
6. Select “Configure”, “Configure LAN Transport” and “Continue”.

7. Select "Olicom RapidFire 2327 Ethernet 10/100 PCI Adapter" as the network adapter by adding it to "Current Configuration".
The parameters of the Olicom adapter may now be edited.
8. Select "Olicom RapidFire 2327 Ethernet 10/100 PCI Adapter" in the current configuration list and then "Edit".
9. Select "OK" when the parameters for the adapter are correct.
10. Add and configure protocols to suit the requirements.
11. Select "OK" when the configuration of the LAN Transports is complete.
12. Select "Exit" in the LAPS main menu and let LAPS update CONFIG.SYS on the boot drive by selecting "Continue".
13. Follow instructions given by LAPS to complete the installation.

IBM MPTS - LAN Server/Requester 4.0/5.0, OS/2 WARP

You may choose between driver installation during MPTS (Multi-Protocol Transport Services) installation or after MPTS installation.

MAC Driver Installation during MPTS Installation

1. Install MPTS as described by IBM.
2. During the installation the MPTS main menu will appear again, but with the "Exit", "Configure", "Install", "Remove", and "Help" options selectable.
3. Proceed with the installation as described in step 2 of the section below.

MAC Driver Installation after MPTS Installation

1. Start MPTS by double-clicking the MPTS icon in the IBM LAN Services folder or by making \IBMCOM your current directory (by typing "CD \IBMCOM"), and type "MPTS".
2. Select the "Configure" option in the MPTS main menu.
3. Select "LAN Adapters and Protocols" and then "Configure".
4. Press the "Other Adapters..." button.
5. Insert the Olicom CD-ROM, enter the path:
D:\IBM\NDIS.OS2
6. Select "OK to continue."
7. Select "Olicom RapidFire 2327 Ethernet 10/100 PCI Adapter" as your network adapter card by adding it to the "Current Configuration".

6. The Olicom CD-ROM

Insert the Olicom CD-ROM to start the CD-ROM Menu. If the operating system does not have an AutoPlay function or the function is disabled, run D:\SETUP.EXE.

- **Note:** If your CD-ROM drive letter is not “D”, substitute it with the correct drive letter.

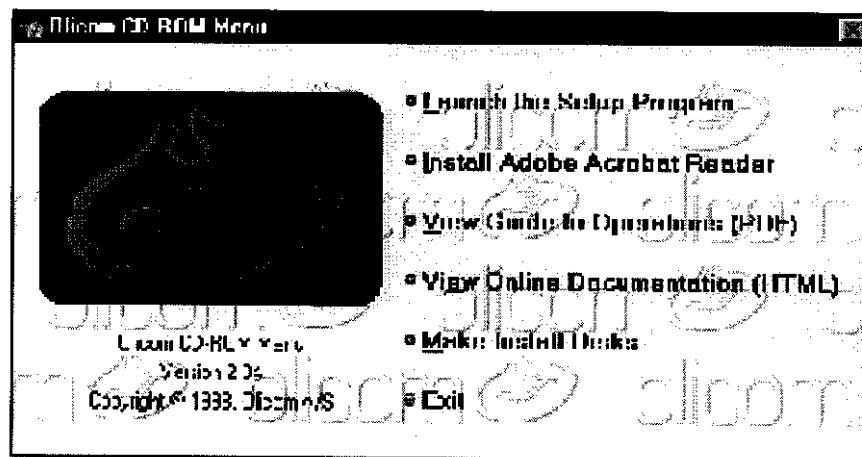


Figure 5. CD-ROM Menu (Windows version)

Launch the Setup Program

This will start the Setup program. For a description on the Setup program see *Olicom Adapter Setup Program on CD-ROM* on page 42.

View Guide to Operations (PDF)

This will display the Guide to Operations. Adobe Acrobat Reader version 3.0 is required to view the PDF file. If you do not have it installed, do so by selecting “Install Adobe Acrobat Reader”.

View Online Documentation (HTML)

This will display the online documentation. A web browser is required for viewing the online documentation, for example Netscape Navigator or Microsoft Internet Explorer.

Make Install Disks.

Install disks for use on systems without a CD-ROM drive can be generated. This includes a copy of the supplied Olicom Setup Disk and the Olicom Driver Disk, and environment specific install disks for Windows 95/98, Windows NT, Novell, DOS and OS/2.

Install Adobe Acrobat Reader.

Installs version 3.0 which is required to view the Guide to Operations manual in PDF format.

Olicom Adapter Setup Program on CD-ROM

The Adapter Setup Program on the CD-ROM can be used to install the programs and utilities that come with the adapter. The functionality depends on the environment.

Windows 95/98 and Windows NT

Under Windows 95/98 and Windows NT the Adapter Setup Program can be used to install LANscout, Documentation and DMI 2 support. Furthermore, an upgrade of the network driver can be done under Windows 95.

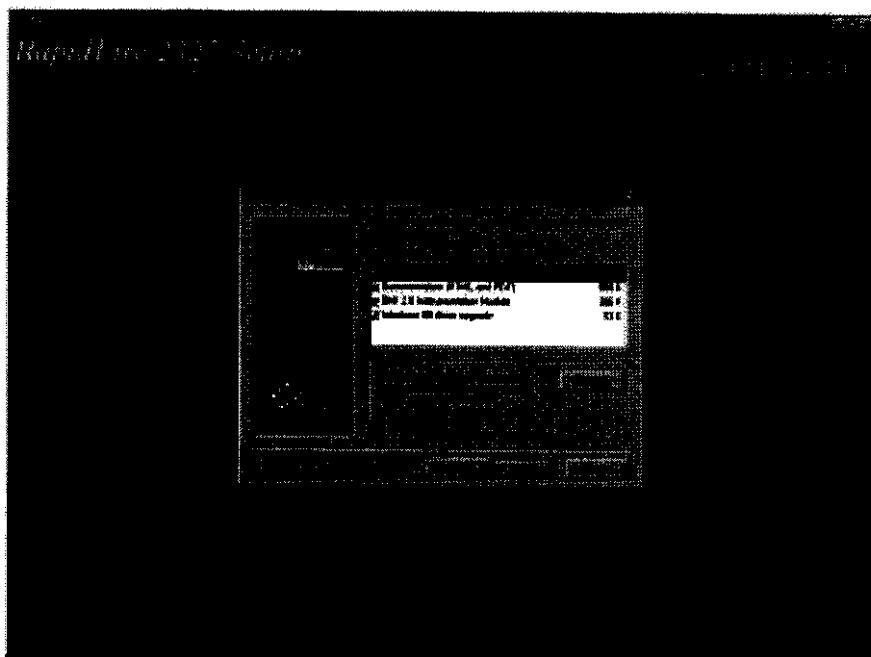


Figure 6. Adapter Setup Program - Windows 95/98 and Windows NT

DOS, Windows 3.x

In DOS and Windows 3.x the Olicom Adapter Setup Program can be used to install the online documentation, Adapter Information for Windows and DMI 1 support.

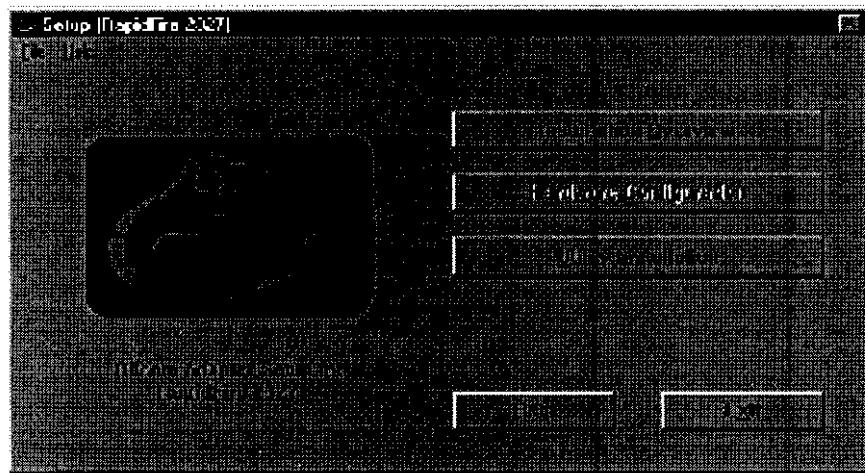


Figure 7. Adapter Setup Program - DOS and Windows 3.x

Select "Installation Overview" or "Help" to access the online documentation, or select "Utility Installation" to install the utilities that come with the adapter.

Olicom Adapter Setup Program on Setup Disk

The Olicom Adapter Setup Program on the Olicom Setup Disk gives you access to the online documentation and allows you to install some of the utilities that come with the adapter.

If you want to install LANscout and other utilities, such as AIW, you must use the CD-ROM.

LANscout and Utilities

LANscout and four utilities are available with the RapidFire 2327 Adapter. Described in this Guide to Operations are:

- LANscout - Olicom desktop management system
- AIW - Adapter Information for Windows

The following utilities are also included and are described in Olicom's online documentation:

- DMI 1/DMI 2 - Desktop Management Interface
- Adapter Detection Programs
- DOS Command Line Adapter Configurator

LANscout

The LANscout desktop management system provides from a single workstation essential information about *all* Olicom adapters in the network.

LANscout has two components: LANscout Agent and LANscout Manager.

LANscout Agent must be installed on all managed workstations. It collects extensive information about the adapter and drivers, and formats them into an HTML page which can be viewed from a web browser anywhere on the network. LANscout Agents also reports back to LANscout Manager.

LANscout Manager can be installed anywhere on the network. It collects and displays statistics from each LANscout Agent.

Furthermore LANscout can compare installed driver versions against the latest drivers downloadable from Olicom's web site. If newer drivers exist, you have the option to download them immediately.

LANscout Manager includes extensive context-sensitive help which is displayed by pressing F1.

If reporting problems to Olicom Technical Support, always include an LANscout report which can be generated by pressing F3.

System Requirements

- Microsoft Windows 95/98 or Windows NT
- WinSock 1 (TCP/IP) installed
- Display resolution: 800x600 or higher is recommended
- Display colors: 65536 (16 bit) or higher is recommended
- An Olicom Windows 95/98 or Windows NT driver:
OCTE5XND3.SYS (NDIS 3 Miniport driver)
or OCTE5XND4.SYS (NDIS 4 Miniport driver)

Installing LANscout

► **Note:** LANscout can *only* be installed from the CD-ROM.

1. Insert the CD-ROM.
If the AutoPlay feature is enabled for your CD-ROM drive, the Olicom CD-ROM Menu will start. Otherwise run SETUP.EXE from the CD-ROM (D:\SETUP.EXE)
2. Select “Launch the Setup program” from the menu and follow the instructions to install LANscout.

The installation process creates a new program group in which the LANscout icons are located.

Running LANscout

By default LANscout Agent is placed in the startup folder. That will start the LANscout Agent each time you start Windows. Furthermore, LANscout Agent is started after the installation is completed.

When LANscout is running, an icon appears in the system tray (the right side of the task bar).



Right-clicking on the LANscout icon will bring up a pop-up menu from which LANscout Manager and the LANscout Web can be started. Configuration of the LANscout Agent can also be started from the menu.

If LANscout Agent is not started, choose the “Olicom Applications” from the “Start/Program Files” menu to start the LANscout applications.

Adapter Information for Windows - AIW

The Adapter Information for Windows (AIW) program displays information about the adapter and the adapter driver. The program can be used in Windows 3.x. If running Windows 95/98 or Windows NT, you must use LANscout. Different information about adapter, driver and network traffic can be shown, but only for the local system.

If needed, configuration data can be saved to a file or printed.

System Requirements

- Microsoft Windows 3.1x or Windows for Workgroups 3.11
- An Olicom DMI 1 enabled driver:
OCE5XND2.DOS (NDIS 2.0 DOS driver)

Installing AIW

► Note: AIW can only be installed from the CD-ROM.

1. Insert the CD-ROM. If the AutoPlay feature is enabled for your CD-ROM drive, the Olicom CD-ROM Menu will start. If not, run SETUP.EXE from the CD-ROM (D:\SETUP.EXE).
2. Select "Launch the Setup program" from the menu.
3. From the Setup program select "Utility Installation" and "Olicom Adapter Information for Windows".
4. Follow the instructions to complete the installation.

The installation process creates a new program group in which the AIW icons are located.

Running AIW

1. Double-click on the AIW icon to activate the AIW program.
2. For more details about the AIW options, select the "Help" menu or press F1.

Uninstalling AIW

If required, the AIW application can be uninstalled by manually deleting the program files from your hard disk. These files are by default placed in the C:\OLICOM directory and are: AIW.EXE, AIW.HLP, AIW.INI, AIW.ATM, ILIB31HT.DLL, OLIAIW.DLL, OLIAIW.VXD and OLIAIW32.DLL. Any files in the HTML subdirectory may also be deleted.



7. Diagnostics

The RapidFire 2327 Adapter is supplied with a diagnostics program that can be used for:

- Testing the adapter and the adapter cable(s) if you suspect a problem.
- Viewing the current adapter configuration

► **Important:** The Diagnostics Program must be run from the Olicom Setup Disk.

Running the Diagnostics Program

1. Make sure that the adapter is connected to the network.
2. Insert the Olicom Setup Disk in the disk drive.
3. Boot the system from the Olicom Setup Disk.

Adapter Test

To test that the adapter itself is working in the current configuration, run the internal tests by selecting “Run Diag” from the main window.

Note that the network connection will not be tested (see below).

Network Connection Test

To test the network connection you must first setup a secondary workstation with an Olicom Ethernet adapter.

1. Start the Diagnostics Program on the secondary workstation and run the internal tests as described above (preferably from a copy of the Olicom Setup Disk).
2. Select “Be Responder” to set up the secondary workstation as a responder (a responder is a station on the LAN which echoes packets transmitted from other workstations running the network diagnostics).
3. When the responder is started on the secondary workstation, select “Network Test” on the primary workstation.

The network diagnostics first attempts to transmit packets onto the network. If a network responder is detected, packets will be transmitted on the physical net between the machine running the test and the responder.

If no network responder is detected, you can do an Internal loopback test.

An Internal loopback test performs a loopback in the cable without transmitting frames to the network.

Additional Information

See also the Diagnostics Program online help for further information about the program.



8. Troubleshooting

Problems and Solutions

Problem	Solutions
You are informed: "No adapter found"	Make sure the adapter is seated firmly in the slot. Make sure the adapter is inserted in a PCI busmaster slot. Try a different PCI busmaster slot.
LINK LED (green) does not light. (The status LEDs are described in figure 8 on page 50).	Make sure you have loaded the network drivers. Check all connections at the adapter and the hub. Try another port on the hub. Make sure that the switch and adapter ports are configured for the correct Connection Type (speed and duplex), 10 or 100 Mbps.
ACTIVITY LED (green) does not light (The status LEDs are described in figure 8 on page 50).	Make sure you have loaded the network drivers. Check the network protocols on the server and the client. Check all connections at the adapter and the hub. Try another port on the hub. Make sure that you are using Category 5 cabling.
Data is corrupted or sporadic at 100 Mbps.	Make sure that you are using Category 5 cabling.
Diagnostics are OK, but the network connection fails.	Make sure that the network cable is securely connected. Make sure that you are using Category 5 cabling for 100 Mbps. Check that the cable media is correct and that the cable is connected to a hub or switch. Check the network protocols on the server and the client. Make sure the correct frame is used (Novell NetWare only).

The adapter stopped working when another adapter was installed in the PC.	Ensure that the adapter is firmly seated. Run the adapter diagnostics. Make sure that the cable is connected to the PCI Adapter and not another device. See "BIOS Settings" on the next page.
The adapter seems to work OK, but it sometimes performs slowly or loses the network connection when using an Ethernet switch.	Make sure that the adapter Connection Type matches the Connection Type for the Port on the switch.

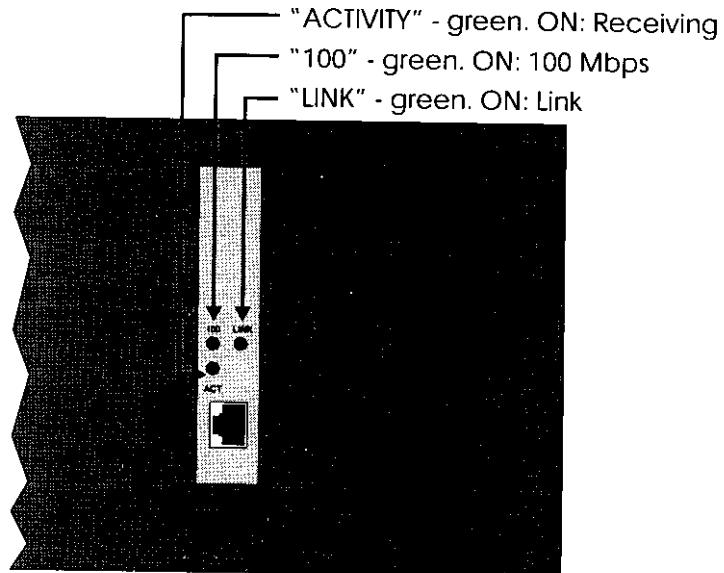


Figure 8. Status LEDs

PCI Specification Problems

Compatibility problems with early PCI implementations call for troubleshooting techniques to isolate and resolve specific problems that may be encountered with the RapidFire 2327 Adapter.

BIOS Settings

The RapidFire 2327 Adapter is self-configuring so for most PCI-bus computers you need only install your adapter in a PCI busmaster slot and power-up your computer. The computer BIOS automatically configures the adapter.

In some PCI computers the PCI interrupt INTA must be assigned to any available ISA interrupt. This is normally done with a jumper on the motherboard or the computer PCI BIOS SETUP. The computer manual describes how to set the motherboard jumpers and modify the BIOS settings.

- **Note:** Make sure that the jumper and BIOS settings match when setting a jumper on the motherboard and modifying the computer's BIOS.

If a PCI computer contains ISA adapters without the Plug and Play feature, these adapters must be reported to the computer's PCI BIOS. This is typically done via your computer PCI BIOS SETUP. If neglected, resource conflicts may arise when other PCI adapters are installed in the computer. The PCI BIOS assigns the next available ISA interrupt - or available I/O base address - to the new PCI adapter.

If the driver recognizes the PCI adapter but an initialisation error occurs, this may be caused by an interrupt conflict. Look through the computer's device configuration to detect if any ISA device uses the same IRQ. Use the computer's PCI BIOS SETUP program to move the interrupt level of the RapidFire 2327 Adapter or the interrupt level of the ISA device.

EMM386 Memory Manager - DOS and Windows 3.x

On some systems, drivers may halt the system while being loaded, if the DOS memory manager EMM386.EXE is installed. This problem does not occur for EMM386.EXE v. 4.49 supplied with MS-DOS v. 6.22 (or later) or IBM-DOS v. 7.0.

In some cases it is possible to load the driver *before* EMM386.EXE to circumvent the problem.

Everything has been tried! What now?

If you cannot resolve the problem and have tried the suggested actions in appendix B, write down the encountered error message(s) and retrieve as much information as possible about your system configuration (drivers, PC brand and model, operating system, network operating system, and such) and fill it in the *Problem Report Form* on page 56.

Contact Oicom Support when you have collected this information.



9. Contacting Technical Support

If support is not provided by your organization or the local vendor, you can at any time relay information to or contact Olicom Technical Support via one of the listed services. In addition, BBS, e-mail, FTP or WWW provide up-to-date software updates, application notes, quick fixes and various utilities which may solve your problem.

Before You Contact Olicom Technical Support

- Run the adapter diagnostics and write down the message(s)
- Simplify the environment by removing memory managers, etc.
- Change the configuration if you suspect a resource conflict
- Remove other devices one by one to detect a possible conflict
- Fill in as much as possible in the included Problem Report Form

Hotline Support

Call the following numbers for help with *any* problem you may encounter when installing Olicom software and hardware products:

Europe: (+45) 4527 0102 (Denmark, Monday to Friday, 8 am to 6 pm GMT +1)
 (+48) 39 125 071 (Poland, Monday to Friday, 8 am to 6 pm GMT +1)
 (+44) 1494 556 611 (UK, Monday to Friday, 9 am to 6 pm GMT)
 0 800 919 508 (inside the UK, Monday to Friday, 9 am to 6 pm GMT)

USA: (+1) 1-800-OLICOM-1 (24 hours a day, 7 days a week)
 (+1) 972 516 4638 (24 hours a day, 7 days a week)

Fax Support

For assistance with any problem you may encounter when installing Olicom software and hardware products, Olicom's Support department will reply either by fax or by telephone within 24 hours, Monday to Friday. Use one of the following fax numbers:

Europe: (+45) 4527 0240 (Denmark)
 (+48) 58 346 1238 (Poland)
 (+44) 1494 556 616 (UK)

USA: (+1) 972 671 7524

Bulletin Board Service

All Olicom's support services are available via our BBS: software updates, application notes, quick fixes, various utilities, etc. The Bulletin Board Service (BBS) can be contacted using either a standard modem or an ISDN modem.

Standard Modem Requirements

Modem speed: 2400, 4800, 7200, 9600, 12000, 14400, 28800 bps
Modem standard: CCITT V21/V22/V22bis/V32/V34/V42bis/HST/MNP5
Parity: N (none)
Databits: 8
Stop bits: 1
Transfer protocols: Xmodem, Ymodem, Zmodem, Kermit and Sealink.

Use one of the following numbers:

Europe: (+45) 45 27 01 00 (and create your own account)

USA: (+1) 972 422 9835

ISDN Modem

Use the following number:

Europe: (+45) 45 96 32 48 (Denmark)

Internet E-Mail

Olicom customer support is available on e-mail through Internet. Use one of the following e-mail addresses:

Europe: support@olicom.dk

USA: support@olicom.com

Anonymous Internet FTP Server

All Olicom's support services can be obtained from our anonymous FTP server: software updates, quick fixes, etc. To connect, open an FTP session to:

Europe: ftp.olicom.dk

USA: ftp.olicom.com

Internet World Wide Web Server (WWW)

The Olicom WWW server contains up-to-date information about Olicom products, newsletters and press releases. It also contains addresses of all Olicom offices and support centers worldwide. Our software library contains the latest driver and software revisions. The WWW server can be accessed using the following web addresses:

Europe: <http://www.olicom.dk>

USA: <http://www.olicom.com>

Olicom Support WEB

The Olicom Support WEB contains technical support hints, a problem report form, drivers and software updates.

Europe: <http://www.olicom.dk>

USA: <http://www.olicom.com>

Select “SERVICES & SUPPORT” from the main menu to access the area with technical support hints and problem report form registration.

Select “SOFTWARE” from the main menu to access the software library.

Problem Report Form

Fill in both sides of this Problem Report Form, print out the relevant system configuration files and FAX or mail to Olicom Technical Support. You can also fill in and send a Problem Report Form from Olicom's web site on the Internet.

Problem Description
Network Information

Adapter Information		
Adapter type/name		
ECO level and serial number (see labels on the back of the adapter)		
I/O address		
Interrupt		
Driver Information		
Driver disk version		
Operating system		
Network OS		
Driver name		
Version (usually the same as file time stamp)		
PC Information		
PC type/vendor/model		
Bus type/processor		
Memory		
Additional boards		
BIOS version		
Motherboard rev.		
Print out and attach these configuration files:		
CONFIG.SYS	for workstations and OS/2 servers	Check here: <input type="checkbox"/>
AUTOEXEC.BAT	for all workstations	Check here: <input type="checkbox"/>
PROTOCOL.INI	for NDIS workstations and servers	Check here: <input type="checkbox"/>
LANMAN.INI	for NDIS workstations and servers	Check here: <input type="checkbox"/>
IBMLAN.INI	for NDIS workstations and servers	Check here: <input type="checkbox"/>
DOSLAN.INI	for NDIS workstations and servers	Check here: <input type="checkbox"/>
NET.CFG	for NetWare workstations	Check here: <input type="checkbox"/>
AUTOEXEC.NCF	for NetWare servers	Check here: <input type="checkbox"/>
STARTUP.NCF	for NetWare servers	Check here: <input type="checkbox"/>
AIW/LANscout report	for all Windows configurations	Check here: <input type="checkbox"/>

Name: _____ Company: _____

Address: _____ Country: _____

Telephone/FAX: _____ E-mail: _____

Appendix A. Driver Messages

This appendix consists of five sections. Each section describes driver messages and return codes that may appear during installation and operation with the RapidFire 2327 Adapter and the network operating system or support program.

The sections cover the following topics:

Section B.1, NDIS 2.0 MAC Driver

Describes error messages generated by the NDIS 2.0 driver.

Section B.2, NDIS 3 and NDIS 4 Driver

Describes error messages generated by the NDIS 3 driver.

Section B.3, DOS ODI Driver

Describes error generated by the DOS ODI driver

Section B.4, NetWare Server ODI and Client 32 Driver

Describes error generated by the server driver

Section B.5, Diagnostics Error Messages

Describes error messages produced by the diagnostics program.

B.1 NDIS 2.0 MAC Driver

The NDIS 2.0 drivers, OCE5XND2.DOS and OCE5XND2.OS2 may generate the following warnings and error messages.

Information messages

During driver load, a sign-on banner like the following is displayed:

```
DOS NDIS 2.02: MAC Driver for RapidFire Ethernet 10/100 Adapter vx.xx (xxxxxx)
Copyright 1998, Olicom A/S. All Rights Reserved.
2327 MAC driver installed. Port FCF0h, IRQ 0Fh, Device 0Ch, Slot 01.
100 Mbps (TP), Half duplex operation detected.
```

The speed and duplex operation displayed in the last line will vary depending on the detected mode and/or settings from PROTOCOL.INI.

Warnings

Warning messages are displayed if an invalid value has been entered for a parameter in PROTOCOL.INI or if non-fatal errors are detected during driver load.

Warning: Invalid keyword in PROTOCOL.INI.

The driver has found an invalid keyword in PROTOCOL.INI. Review the PROTOCOL.INI file.

Warning: PROTOCOL.INI keyword has too many parameters.

The driver has found a keyword with too many parameters in PROTOCOL.INI. Review the PROTOCOL.INI file.

Warning: PROTOCOL.INI keyword has too few parameters.

The driver has found a keyword with too few parameters in PROTOCOL.INI. Review the PROTOCOL.INI file.

Warning: PROTOCOL.INI parameter too low, ignored.

The driver has found a keyword with invalid setting in PROTOCOL.INI. Review the PROTOCOL.INI

Warning: PROTOCOL.INI parameter too high, ignored.

The driver has found a keyword with invalid setting in PROTOCOL.INI. Review the PROTOCOL.INI file.

Warning: PROTOCOL.INI parameter string too long, ignored.

The driver has found a keyword with invalid setting in PROTOCOL.INI. Review the PROTOCOL.INI file.

Warning: Invalid PROTOCOL.INI string parameter, ignored.

The driver has found a invalid keyword with invalid setting in PROTOCOL.INI. Review the PROTOCOL.INI file.

Warning: Illegal Connection Type setting in PROTOCOL.INI (must be 0, 2, 3, 8 or 9)

The Connection Type keyword has an invalid setting in PROTOCOL.INI. Review the PROTOCOL.INI file.

Warning: This machine HOST to PCI bridge has a known bug.

Driver takes the necessary action.

Warning: This PCI HOST bridge has a known bug.

Driver takes the necessary action.

Warning: Error allocating DMI handle, function disabled.

DOS only: The driver could not allocate a handle for DMI interface. The function is disabled.

Errors

Error messages displays fatal errors detected during driver load.

Failure: PROTOCOL.INI does not have an entry for OCE5X.

There are no sections in PROTOCOL.INI for the OCE5X driver. Review the PROTOCOL.INI file.

Failure: PROTOCOL.INI does not have a valid DRIVERNAME.

The drivername is not valid in the OCE5X section in PROTOCOL.INI. Review the PROTOCOL.INI file.

Failure: Failed to allocate memory (x).

The driver was not able to allocate the memory it needs either in high (above 1M bytes) nor in low memory. Check configuration parameters in PROTOCOL.INI.

Failure: Failed to find a supported bus.

The driver was not able to find a PCI bus in the PC.

Failure: No adapters found.

No RapidFire 2327 Adapters were found in the PC. Make sure the adapter is properly inserted in a PCI slot and retry the operation. If it still fails, run the adapter diagnostics.

Failure: Cannot find PCI BIOS.

The BIOS does not support PCI adapters. If possible, update your BIOS to a newer version supporting PCI devices. Contact the PC manufacturer.

Failure: Could not open Protocol Manager.

The driver was not able to open the Protocol Manager. Check that your CONFIG.SYS has not been garbled. The device=...\PROTMAN.SYS statement shall precede the device=...\OCE5XND2.xxx statement.

Failure: This driver works only with 386 or above.

As stated.

Failure: Failed to communicate with PCI BIOS (x).

The driver has problems communicating with the PCI BIOS. If possible, update your BIOS to a newer version supporting PCI devices. Contact the PC manufacturer.

Failure: This machine HOST to PCI bridge has a known bug. Contact Olicom support.

As stated.

Failure: Protocol Manager did not accept LAN Card driver (x).

The Protocol Manager was not able to bind the driver. Review the PROTOCOL.INI file.

Failure: Unable to allocate GDT, Driver not loaded.

OS/2 only: The required number of GDTs (two) is not available for the driver to operate. Free some GDTs by disabling other devices in the system.

Failure: Error reading EEPROM.

The driver was unable to read the contents of the EEPROM. Make sure the adapter is properly inserted in the PCI slot and retry the operation. Run the adapter diagnostics if reading the EEPROM still fails.

Failure: Invalid configuration read from adapter.

The checksum for the configuration stored in the EEPROM was not correct. Run the adapter diagnostics.

B.2 NDIS 3 and NDIS 4 Miniport Driver

The NDIS 3 and NDIS 4 error messages reported under Microsoft Windows 95, Microsoft Windows 98 and Microsoft Windows NT are identical. However, the way in which the errors are reported to the user differs.

Windows 95 and Windows 98

In Windows 95 and Windows 98 error codes reported by the NDIS 3 Miniport driver are written to the NDISLOG.TXT file located in your Windows directory. An example of an error message reported by the NDIS driver could be:

```
Olicom RapidFire 2327 Ethernet 10/100 PCI Adapter (0000).  
Error Code=0XC000138B, 0X00000011, 0X00000000, 0XC0FDA528, 0X00000000
```

The text “0XC000138B” describes the error and refers to a specific error code, listed below. Ignore the leading “0XC000 (resulting in error code 138B for the example above - Adapter not found).

If you experience any problems, you should make a backup copy of the NDISLOG.TXT file before restarting Windows 95/98.

Windows NT

When running Windows NT, errors are reported using the Event Log. This log can be examined using the Event Viewer located in the Administrative Tools window.

If you experience any problems with the network, check if any error messages or warnings are posted by the driver by using the Event Viewer found in the Administrative Tools window. All error messages and/or warnings posted by the Olicom Miniport driver have the Source field set to OCE5XND3 or OCE5XND4. System error messages, related to the Olicom driver, may occur with different source names, for example “Service Control Manager”.

The messages are listed according to Event field and are described below in Event number order. Display the message description by highlighting the message and press Enter.

If you experience any problems, write down the “Event ID”, “Source”, “Description” and “Data” fields in the “Event Detail” window.

NDIS 3 and NDIS 4 Miniport Driver Error Messages

For each error message below the first line contains the error code used by Windows 95/98. The second line contains the "Event ID" and "Data" fields used by Windows NT.

Code Description

1388 Resource Conflict

5000 OCE5XND31: Has encountered a conflict in resources and could not load.
Action: Check the resources used by the network adapter(s) to ensure that no conflicts exists.

1389 Out of Resources

5001 OCE5XND31: Could not allocate the resources necessary for operation
Action: The driver failed to load, because it tried to allocate too many resources. Decrease the number of receive and/or transmit buffers and retry the operation.

138A Hardware Failure

5002 OCE5XND31: Has determined that the adapter is not functioning properly.
Action: The adapter could not be found or is not working properly. Check I/O base settings and retry the operation.

138B Adapter Not Found

5003 OCE5XND31: Could not find an adapter.
Action: The adapter could not be found by the driver. Check I/O base settings and retry the operation.

138C Interrupt Connect

5004 OCE5XND31: Could not connect to the interrupt number supplied.
Action: The interrupt is already used by another device. Change the adapter interrupt number and retry the operation.

138D Driver Failure

5005 OCE5XND31: Has encountered an internal error and has failed.
An internal error has been discovered or you have installed the driver on a non Olicom product.
Action: Restart your system and/or check that the driver has not been installed on an adapter other than RapidFire 2327 Adapter. If the error persists, contact your place of purchase for support.

138E Bad Version

5006 OCE5XND31: The version number is incorrect for this driver.
Action: The driver version is incorrect. Contact Olicom Technical Support.

138F Time out

5007 OCE5XND31: Timed out during an operation.
Action: A time-out error occurred. Contact Olicom Technical Support.

1390 Network Address

5008 OCE5XND31: Has encountered an invalid network address.
Action: An invalid network address was specified. Change the locally administered network address and restart your system. The driver uses the burned-in address when loading.

1393 Missing Configuration Parameter

5011 OCE5XND31: A required parameter is missing from the Registry.
Action: A parameter necessary for operation has been omitted in the registry. Use the Network Setup to set proper parameters.

1396 Adapter Disabled

5014 OCE5XND31: The adapter is disabled. The driver cannot open the adapter.
Action: Make sure the Olicom adapter driver is properly installed. Remove the adapter and install it again using the method described in this help file. See also the troubleshooting section for further information on how to enable the adapter.

1397 I/O Port Conflict

5015 OCE5XND31: There is an I/O port conflict.
Action: The ports used by the driver is already in use by another device. Change the I/O address for the adapter.

1398 Port or DMA Conflict

5016 OCE5XND31: There is an I/O port or DMA channel conflict.
Action: Check the I/O address and DMA usage by the adapter to ensure that there is no resource conflicts.

139A Interrupt Conflict

5018 OCE5XND31: There is a interrupt conflict at interrupt number XX.
Action: Change the interrupt selection on the adapter and re-try the operation.

B.3 DOS ODI Driver

This text describes the possible error messages displayed by the DOS ODI driver, OCE5XODI.COM.

Most of the error messages are listed with no further explanation as the error message itself gives sufficient information on cause and action to take.

The DOS ODI driver can display error messages when the driver loads. The error messages can be displayed in two ways:
"OCE5XODI- DOS-<text> or just "<text>".

Common DOS ODI Errors

OCE5XODI-DOS-1 The LSL is not loaded.
See the Novell NetWare documentation.

OCE5XODI-DOS-2 The LSL has no more room for a board using Frame <frame>.
Locate and fix the error in NET.CFG. See also the NetWare documentation.

OCE5XODI-DOS-3 Could not find OCE5XODI driver to unload.
See the Novell NetWare documentation.

OCE5XODI-DOS-4 A TSR is loaded above the OCE5XODI driver.
IPXODI, NETX or VLM are probably loaded. Unload these program before unloading OCE5XODI. See the Novell NetWare documentation.

OCE5XODI-DOS-5 OCE5XODI MLID could not be unloaded; the operation was aborted
As stated.

OCE5XODI-DOS-6 The adapter did not initialize. OCE5XODI did not load.
Run the Diagnostics program. Contact Oicom Technical Support if the error condition persists.

OCE5XODI-DOS-7 You need another OCE5XODI driver section in the NET.CFG file in order to load the LAN driver again.
Locate and fix the error in NET.CFG. See also the NetWare documentation.

OCE5XODI-DOS-8 A NET.CFG is required to load the driver again.
Locate and fix the error in NET.CFG. See also the NetWare documentation.

OCE5XODI-DOS-9 The following configuration file entry was ignored: <keyword>
Locate and fix the error in NET.CFG. See also the NetWare documentation.

OCE5XODI-DOS-11 The driver does not support frame <frame>. The protocol keyword has been ignored.
Locate and fix the error in NET.CFG. See also the NetWare documentation.

OCE5XODI-DOS-12 The protocol keyword must have a frame type. Entry ignored.
Locate and fix the error in NET.CFG. See also the NetWare documentation.

OCE5XODI-DOS-13 The driver could not register Protocol ID for protocol stack <stack> for frame type <frame>.
Locate and fix the error in NET.CFG. See also the NetWare documentation.

OCE5XODI-DOS-15 The frame type is already activated for frame <frame>.
Locate and fix the error in NET.CFG. See also the NetWare documentation.

OCE5XODI-DOS-16 The node address was incorrectly specified in NET.CFG.
Locate and fix the error in NET.CFG. See also the NetWare documentation.

OCE5XODI-DOS-17 An invalid keyword was specified in NET.CFG on line <line>.
Locate and fix the error in NET.CFG. See also the NetWare documentation.

OCE5XODI-DOS-18 The frame type specified in the NET.CFG is not supported.
Locate and fix the error in NET.CFG. See also the NetWare documentation.

OCE5XODI-DOS-19 An invalid Ethernet node address is specified in NET.CFG. The driver modified the incorrect address bits.
 Locate and fix the error in NET.CFG. See also the NetWare documentation.

OCE5XODI-DOS-21 A program hooked Int after the MLID.
 As stated.

OCE5XODI-DOS-27 This driver requires LSL version 2.11 or higher.
 As stated.

OCE5XODI-DOS-29 The driver did not load.
 As stated.

OCE5XODI-DOS-31 A missing or invalid value was specified on line <line>.
 Locate and fix the error in NET.CFG. See also the NetWare documentation.

OCE5XODI-DOS-32 The driver registered as a NESL Suspend Class producer
 See the Novell NetWare documentation.

OCE5XODI-DOS-33 The driver registered as a NESL Resume Class producer
 See the Novell NetWare documentation.

OCE5XODI-DOS-34 The driver registered as a NESL Service Change Class producer.
 See the Novell NetWare documentation.

OCE5XODI-DOS-35 The driver requires the NetWare Event Service Layer (NESL)
 See the Novell NetWare documentation.

OCE5XODI-DOS-36 NetWare Event Service Layer (NESL) is loaded.
 See the Novell NetWare documentation.

Errors specific to the OCE5XODI.COM DOS ODI Driver

FATAL: Slot value error!

Action: User specified an illegal SLOT value in NET.CFG. Correct the SLOT value in NET.CFG.

OCE5XODI-DOS-50 FATAL: Board not found in system

Action: The slot may not function correct. Put the adapter into another slot and/or run the system setup program and use the Diagnostics program.

OCE5XODI-DOS-200 FATAL: Timeout when initializing Adapter with setup packet!

Action: The adapter cannot interrupt the system. Check that the interrupt used by the adapter is not used by devices that cannot share interrupts (for example ISA adapters). Run the system setup program and use the Diagnostics program.

OCE5XODI-DOS-210 FATAL: The Adapter Does not support this bus type.

Action: No PCI bus found in the system. Switch to a PC with PCI bus.

OCE5XODI-DOS-211 FATAL: Failed to locate Adapter on board

Action: PCI BIOS failed to process a request from the driver. Put the adapter into another slot and/or run the system setup program and use the Diagnostics program.

OCE5XODI-DOS-212 FATAL: The Adapter Does not support this device revision or Operation Mode

Action: Driver does not support this version of the adapter. Contact Oicom Technical Support.

OCE5XODI-DOS-218 FATAL: Bad PCI BIOS status

Action: Fatal error. Note the error and contact Oicom Technical Support.

OCE5XODI-DOS-219 FATAL: Bad PCI BIOS Register err

Action: Fatal error. Note the error and contact Oicom Technical Support.

OCE5XODI-DOS-220 FATAL: PCI BIOS failed to initialize DecChip 21x40 CBIO reg!

Action: BIOS problems. Put the adapter into another slot and/or run the system setup program and use the Diagnostics program. Contact Oicom Technical Support.

OCE5XODI-DOS-223 FATAL: PCI Sub System ID not supported

Action: Adapter found is not an Oicom adapter and is not supported by the driver.

OCE5XODI-DOS-225 FATAL: PCI BIOS allocated an illegal Interrupt to DecChip 21x40!
 Action: The BIOS assigned an interrupt that is not supported by the driver. Run the system setup program and check the interrupt values and/or use the diagnostics program.

OCE5XODI-DOS-226 FATAL: Failed to handle Turbo switch
 Action: Note the error message and contact Olicom Technical Support.

OCE5XODI-DOS-227 FATAL: Internal CRC table corrupted
 Action: Note the error message and contact Olicom Technical Support.

OCE5XODI-DOS-230 FATAL: This machine Host to PCI bridge has a known bug when using cache in WB mode which may cause data corruption or system hang Please change the cache mode to WT (Write Through) as a workaround
 Action: Do as described above.

OCE5XODI-DOS-240 FATAL: Unable to locate Adapter ROM!
 Action: Fatal error. Note the error and contact Olicom Technical Support.

OCE5XODI-DOS-240 FATAL: Failed to read ROM!
 Action: Fatal error. Note the error and contact Olicom Technical Support.

OCE5XODI-DOS-240 FATAL: Unsupported ROM version
 Action: Fatal error. Note the error and contact Olicom Technical Support.

OCE5XODI-DOS-240 FATAL: This DS chip does not support this ROM version
 Action: Fatal error. Note the error and contact Olicom Technical Support.

OCE5XODI-DOS-240 FATAL: Unable to locate Adapter ROM!
 Action: Fatal error. Note the error and contact Olicom Technical Support.

OCE5XODI-DOS-240 FATAL: Failed to read ROM!
 Action: Fatal error. Note the error and contact Olicom Technical Support.

OCE5XODI-DOS-240 FATAL: Unsupported ROM version
 Action: Fatal error. Note the error and contact Olicom Technical Support.

OCE5XODI-DOS-240 FATAL: This DS chip does not support this ROM version
 Action: Fatal error. Note the error and contact Olicom Technical Support.

B.4 NetWare Server ODI and Client 32 Driver

The OCE5XODI.LAN driver may generate the following error messages.

No adapter found.

Action: It can be a PCI BIOS problem or an adapter malfunction. Check your PCI BIOS revision, run the system setup program and use the Diagnostics program.

Error finding matching adapter configuration.

Action: The slot number may be wrong. Put the adapter into another slot and/or run the system setup program and use the Diagnostics program.

Error: IO Port value read from NBI system is invalid.

Action: Use the Diagnostics program on the adapter.

Error reading eeprom in adapter.

Action: Use the Diagnostics program on the adapter.

No interrupt assigned to adapter.

Action: The PCI BIOS or Novell Bus Interface has failed to assign an interrupt to. Check your PCI BIOS revision, run the system setup program and use the Diagnostics program.

Timeout when initializing Adapter.

Action: The adapter cannot interrupt the system. Check that the interrupt used by the adapter is not used by devices that cannot share interrupts (for example ISA adapters). Run the system setup program and use the Diagnostics program.

Cannot initialize the network card.

Action: Can be a PCI BIOS problem or an adapter malfunction. Check your PCI BIOS revision, run the system setup program and use the Diagnostics program.

Adapter Internal failure.

Action: Can be a PCI BIOS problem or an adapter malfunction. Check your PCI BIOS revision, run the system setup program and use the Diagnostics program.

Internal CRC table corrupted.

Action: A fatal error has occurred. Note the error message and contact Oicom Technical Support.

Unable to allocate memory.

Action: Decrease setting for some Buffers. For example "Set Minimum Packet Receive Buffers = xxxx" in STARTUP.NCF

Unexpected OS behavior. Driver supports 3.11 and later.

Action: The driver can be loaded only on NetWare server versions 3.11 and later.

The version of the EtherTSM module must be 2.20 or higher.

Action: Update your EtherTSM.NLM module.

This machine Host to PCI bridge has a known problem when using cache in WB mode which may cause data corruption or system hang. Please change the cache mode to WT (Write Through) as a workaround.

Action: This warning is presented on machines with certain PCI bus chip sets. Run the system setup program and change system setup as indicated.

OCE5XODI Adapter Check on slot x (Tx bubbles), recovery is impossible.

Action: A fatal error has occurred. Note the error message and contact Oicom Technical Support.

OCE5XODI Adapter Check on slot x (error = xx), recovery is impossible.

Action: A fatal error has occurred. Note the error message and contact Oicom Technical Support.

Error: BURSTSIZE keyword is missing "="

Action: The default value is used (64). Unload the OCE5XODI driver and use a valid value for TXBURSTSIZE.

Error: value for BURSTSIZE is invalid, use 4, 8, 16, 32, 64 or 128.

Action: The default value is used (64). Unload the OCE5XODI driver and use a valid value for TXBURSTSIZE.

Error: SPEED keyword is missing "="

Action: Use a legal value for SPEED. Default: AUTO.

Error: value for SPEED (and duplex) is invalid.

Values supported: AUTO (default), 10HALF, 10FULL, 100HALF, 100FULL

Action: Use a legal value for SPEED. Default: AUTO.

B.5 Diagnostics Error Messages

If errors are detected, make sure that:

- The cabling matches the current test mode
- The cabling is properly connected
- The connectors are free of physical damage
- The adapter speed matches the network speed
- No resource conflicts present (I/O address range, interrupt level, and such.)

► **Note:** Running the test on a heavily-loaded network may cause the Transmit/Receive test to report errors.

Whenever an error is detected by the diagnostics program, an error message is displayed on the screen. These messages are self-explanatory, meaning that next to the error message you will find a more detailed description *and* suggestions to solving the error condition. For this reason you will not find diagnostics error messages and suggested actions in this publication.



Appendix B. Abbreviations

ACPI	Advanced Configuration and Power Interface
BIOS	Basic Input Output System
CPU	Central Processing Unit
DMA	Direct Memory Access
DMI	Desktop Management Interface
DOS	Disk Operating System
EEPROM	Electrically Erasable Programable Read-Only Memory
EISA	Extended Industry Standard Architecture
HTML	Hyper Text Markup Language
ISA	Industry-Standard Architecture
LAN	Local Area Network
LAPS	LAN Adapter Protocol Support
LED	Light Emiting Diode
MAC	Media Access Control
MCA	Micro Channel Architecture
MPTS	Multi-Protocol Transport Services
NDIS	Network Driver Interface Specification
NetBIOS	Network Basic Input Output System.
NIC	Network Interface Card (= Adapter)
NOS	Network Operating System
NWay	Speed and duplex detection protocol
ODI	Open Data-Link Interface
OS/2	Operating System /2
PCI	Peripheral Component Interconnect
PDF	Portable Document Format
PnP	Plug and Play
PROM	Programmable Read Only Memory
RAM	Random Access Memory

RPL	Remote Program Load
VLM	Virtual Loadable Module
VOL	Wake-on-LAN



Appendix C. Technical Information

Controller:

DIGITAL 21143-PD

Media connector:

8-pin RJ-45 for UTP with on-board media filter

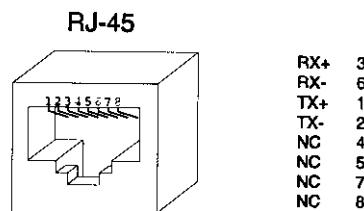


Figure 9. RJ-45 Connector Configuration

Power requirements:	1.75 Watts @ +5 Volt DC
Operating temperature:	0°C to +55°C
Humidity (relative):	10% to 90% non-condensing
Size:	135 x 65 mm
On-board memory:	6 Kbytes
Network Interface:	10Base-T 100Base-TX
Certification:	FCC Part 15, subpart B EN 50082-1 EN 55022 Class B EN 60825-1 EN 60950 including amendments
I/O window:	128 bytes
Memory window:	16 bytes
Data Path Width:	32 bit
Data Transfer:	Bus master DMA
Interrupt Level:	Any level assigned by the system
LED Indicators:	Green "100" LED. ON/OFF = 100/10 Mbps Green "LINK" LED. ON = Link Green "ACTIVITY" LED. ON = Receiving

Status LEDs

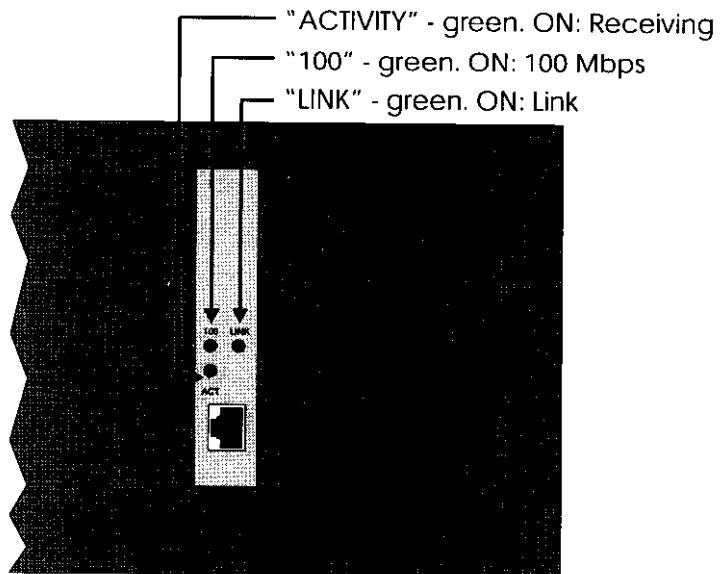


Figure 10. Status LEDs



Index

A

abbreviations 69
ACPI 1, 39

B

back panel 9
bulletin board service (BBS) 54

C

CD-ROM 2, 41
configuration
 connector 71
 MAC driver 37
connectors 71

D

diagnostics 47
disks 4
DOS environments 33
driver installation 13
driver messages 59

E

e-mail 54
expansion slot 9

F

FTP server 54

H

help, online 4
hotline support 53

I

IBM

 DOS LAN Services 33
 LAN Server 3.0 35
 LAN Server 4.0/5.0, OS/2 WARP 36
 LAPS 35
 MPTS 36
installation
 adapter driver 13
 preparing for 7
installation requirements 9
interface connector 9

Internet

 e-mail 54
 FTP server 54
 WWW server 55

L

 LANscout 44
 LED indicators 10, 50

M

 Magic Packet 1, 39
 messages 37
 Microsoft
 error messages 60
 Network Client 3.0 25
 Windows 95 14
 Windows 98 15
 Windows for Workgroups 3.11 23
 Windows NT 18
 modular jack 10

N

 NDIS
 error messages 60
 NDIS 2.0
 driver messages 37
 NDIS 3
 driver 23
 error messages 62
 NDIS4
 error messages 62
 Novell NetWare
 3.12 server 31
 4.x server 30
 client 32 for DOS 29
 client 32 for Windows 3.1x 29
 client 32 for Windows 95 28
 DOS ODI 26
 NETX installation 26

O

 ODI driver 26
 online documentation 4
 OS/2 environments 35

index-2

P

peripheral units 9
power management 39
power-supply cables 9
problem report form 56
protocol stacks 27

S

supplied items 2
support web 55
support, technical 53

T

technical data 71
technical support
 e-mail 54
 fax 53
 hotline 53
 WEB 55
technical support, getting in touch with 53
troubleshooting 49

U

utilities 41

W

Wake-on-LAN 1, 11, 39
web browser 41
WFW311 23
Windows 95 14
Windows 98 15
Windows for Workgroups 3.11 23
Windows NT 18
WWW server 55



