

FCC Class B Statement

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

Warning: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause 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 receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Notice: Shielded interface cable must be used in order to comply with emission limits.

Notice: Changes or modification not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

CE Mark Statement

The 10/100/1000BASE-T Gigabit Ethernet Adapter has passed the test performed according to European Standard EN 55022/A1 Class B, and EN 50 082-1:1997(EN 61000-4-2:1995, EN 61 000-4-3:1996, EN 61 000-4-4:1995)

OvisLink Corp

2F, No. 8, Lane 130, Min-Chuan Rd, Hsin-Tien City, Taipei, Taiwan, R.O.C.

Table of Contents

TABLE OF CONTENTS	1
1 INTRODUCTION	4
Peripheral Component Interconnect (PCI) Bus Overview	4
Product Description	4
Auto-Negotiation Support	5
Auto MDI/MDI-X	6
Features.....	6
Package Contents	6
2 HARDWARE INSTALLATION	7
Quick Installation.....	7
Step 1. Insert the network interface card	7
Step 2. Connect the Card to the network	8
Step 3. Configure your Network.....	8
Correct Network Cable (STP/UTP) Requirements	9
10/100 Auto-negotiation (NWay).....	9
3 LED INDICATORS	10
LED indicators of GE-2032R.....	10
LED Table.....	11

4	DRIVER INSTALLATION	12
	Installing Network Drivers.....	12
	Windows XP Driver Installation	12
	Windows 2000 Installation	14
	Windows 98/SE Driver Installation.....	18
	WinME Installation	21
	Windows NT 4.0 Installation	23
	APPENDIX A: SPECIFICATIONS	24

Figures

Figure 1-1 PCI Bus Architecture	4
Figure 1-2: The GE-2032R Gigabit Network Interface Card	5
Fig. 2-1 Insert the Gigabit NIC into the PCI slot.....	7
Fig.2-2 Connecting the Network Cable to the RJ-45 Gigabit Port.....	8
Fig. 2-3 Connecting the Gigabit NIC to the Gigabit Switch.....	9

Tables

Table 3-1 LEDs indicators of GE-2032R.	11
---	----

1 Introduction

This *Installation Guide* contains information about the installation and configuration of GE-2032R Network Interface Card (NIC). GE-2032R is a 32-bit high-performance 10/100/1000BASE-T PCI bus adapter. It can be easily implemented in any PCI equipped PC and is fully compatible with 32-bit PCI bus master slot.

GE-2032R operates automatically at 10/100/1000Mbps transmission speed, depending on the speed of the network device connected. Auto MDI/MDI-X function is provided to allow auto cross-over.

Peripheral Component Interconnect (PCI) Bus Overview

The Peripheral Component Interconnect (PCI) local bus is a high-performance 32-bit bus that dramatically increases the speed of I/O-bound peripherals by directly connecting these devices to the CPU local bus. The PCI bus is intended to be used as an interconnecting mechanism among highly integrated peripheral controller components, peripheral add-on cards, and processor/cache/memory subsystem. It is an industry-standard local bus architecture that provides end-users with high-performance and ease of use without requiring high cost.

PCI is CPU-independent and can optimize I/O function and accommodate multiple high-performance peripherals such as LAN, SCSI, and Graphic devices. It enables concurrent operation of the local bus with the processor/cache/memory subsystem.

The following PCI block diagram shows a typical PCI local bus system architecture:

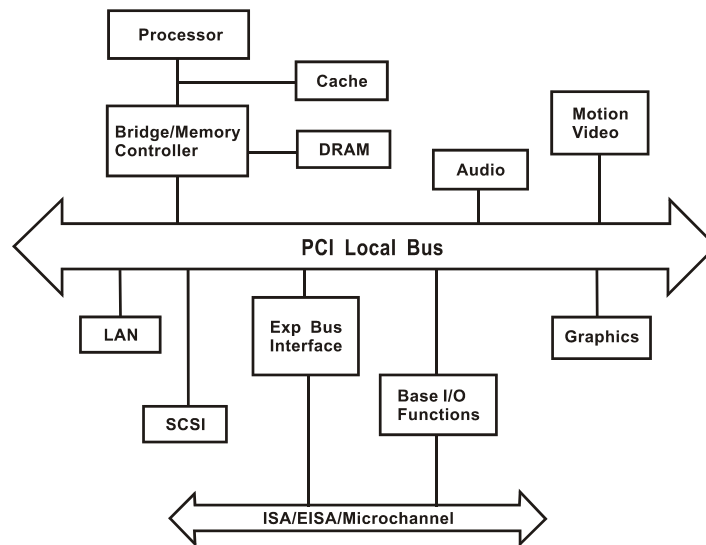


Figure 1-1 PCI Bus Architecture

The processor/cache/memory subsystem connects the PCI local bus through a PCI bridge. This bridge supports a low latency path through the processor, and may directly access PCI devices mapped anywhere in the memory or I/O address spaces. It also provides a high bandwidth path that allows PCI masters to directly access the main memory.

Product Description

GE-2032R is a 32-bit PCI Gigabit Ethernet network interface card. It is designed for use on computers with 32-bit PCI bus slots. GE-2032R runs in bus master mode, directly sending/receiving Ethernet packets to/from memory.

The PCI bus master device is an intelligent device that can conduct processing independent of the bus or other devices. It coordinates the sharing of the bus between the main processor and target devices. Bus mastering allows a peripheral device to take control of the system bus instead of only relying on the central processor.

GE-2032R complies with the IEEE 802.3u, IEEE 802.3, IEEE 802.3ab, IEEE802.3x Full Duplex Flow Control and PCI Local Bus version 2.2, and transmit data to the network at 10/100/1000Mbps. GE-2032R can also operate in full-duplex mode to double the network speed up to 20/200/2000Mbps when working with a Ethernet/Fast Ethernet/Gigabit Ethernet Switch. It is the fastest Ethernet design of its kind. GE-2032R provides one RJ-45 port for connection with 10BASE-T Ethernet/100BASE-TX/1000BASE-TX Gigabit Ethernet network, and automatically senses the connection type.

The following figure shows the board layout of GE-2032R network interface card:

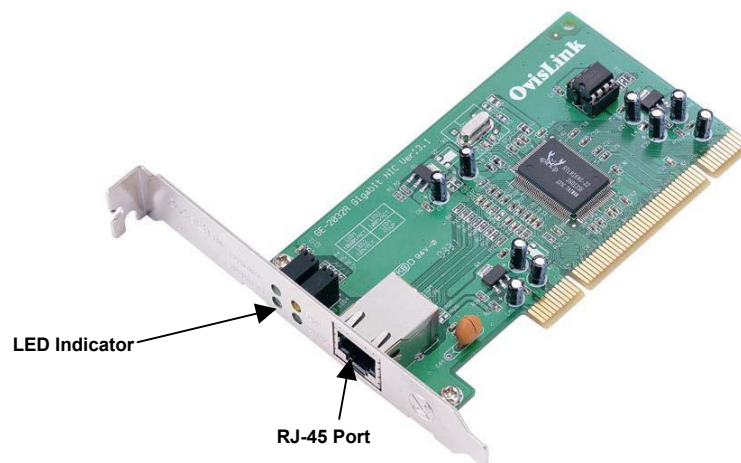


Figure 1-2: The GE-2032R Gigabit Network Interface Card

Auto-Negotiation Support

GE-2032R is compliant with Nway auto-negotiation standard to automatically run at different transmission speeds and modes that the connected hub supports. It detects the modes that are currently running on the device on the other end, and announces its own ability to automatically configure the highest performance mode possible for this connection.

If supported on both ends of the connection, auto-negotiation process is initiated to negotiate for one of the following modes:

- 2000Mbps/FDX
- 1000Mbps/HDX
- 200 Mbps/FDX
- 100 Mbps/HDX
- 20 Mbps/FDX
- 10 Mbps/HDX

Auto MDI/MDI-X

Ethernet UTP/STP cable has 4 pairs of wires inside. Each pair has one wire for transmitting (Tx) and the other for receiving (Rx). When two network devices are connected together by the UTP cable, the Tx of one device must match the Rx of the other. Otherwise, data transmission cannot proceed. This is no problem when a card needs to connect with a switch. However, when a device of the same type ("switch to switch" or "card to card") connects with each other, the collision problem will occur. Normally, a crossover cable is needed to reverse the Tx/Rx of the other device. The GE-2032R is equipped with Auto-MDI/MDI-X function to eliminate all the cabling hassle. Auto MDI/MDI-X will automatically cross-over the signal if data collision is detected. Best of all, it works with devices that don't have this feature.

Features

- Support 32-bit 33/66MHz PCI Local Bus master for high throughput and low processor utilization
- Comply with PCI Rev.2.2 specification
- Comply with the IEEE 802.3/IEEE 802.3u/IEEE 802.3ab/IEEE 802.1Q VLAN Tagging standards
- Support IEEE 802.3x Full Duplex Flow Control
- Support IEEE 802.1Q VLAN tagging
- Plug and Play: Simply insert the card into a PC and it will automatically be configured by the PC BIOS
- Support full-duplex operation to double the network speed up to 20Mbps /200Mbps/2000Mbps
- LED indicators to report network status
- Provide single RJ-45 connector with auto-sensing & auto MDI-X crossover for 10/100/1000Mbps network operation

Package Contents

Before you proceed further, please check and see whether you have all the necessary accessories from the shipping package and make sure nothing is missing. The complete package should include:

- GE-2032R Network Interface Card
- Support CD-ROM
- Quick Setup Guide (the electronic version of the full manual can also be found on the Support CD-ROM)

If any of these items is damaged or missing, please contact your authorized network supplier.

2 Hardware Installation

This chapter will guide you through the installation of GE-2032R on your computer. First, you must install the NIC on your system. Finally, you must correctly connect and configure your network before the NIC can properly function within your network.

Quick Installation

The NIC installation involves the following steps:

- Step 1.** Power off the computer, and then insert the card into 32-bit PCI slot.
- Step 2.** Use a twisted-pair cable to connect the Gigabit port on the NIC to a Gigabit Switch.
- Step 3.** Configure your Network (Cable Connection Examples.)

The details of each step will be described in subsequent sections. Since GE-2032R is a PCI-bus device, you will no longer need to configure this device after installation. The system will automatically allocate its resources such as I/O base address and IRQ at boot time. Simply follow the steps mentioned previously and leave the system to configure for you automatically.

Step 1. Insert the network interface card

Follow the procedure below to install GE-2032R on your 32-bit PCI slot.

1. Turn off the computer and unplug the power cord from the power outlet.
2. Remove the computer cover.
3. Insert the NIC into an available 32-bit PCI expansion slot.

Note: A 32-bit PCI slot should be similar to one shown in Fig. 2-1. If you do not know how to identify a 32-bit PCI slot on your system, please check your PC user manual or ask your system administrator. Make sure the NIC is inserted firmly in the 32-bit PCI bus-mastering slot.

4. Secure the NIC in the slot with a bracket screw.
5. Replace the computer cover.
6. If you want to insert another NIC into your system, repeat steps 1 - 5.
7. Turn on the system power.

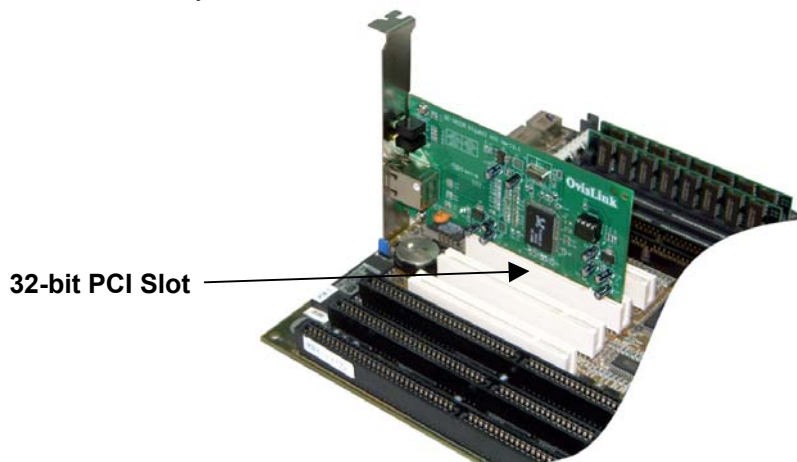


Fig. 2-1 Insert the Gigabit NIC into the PCI slot.

Step 2. Connect the Card to the network

You must connect the NIC to the network before installing the network driver. To connect the GE-2032R NIC to the network cable, follow these steps:

1. Connect the network cable to the RJ-45 Gigabit port on GE-2032R NIC, as shown in Fig. 2-2.
2. Connect the other end of the network cable to a 10BASE-T or a 100BASE-TX network port.
3. Check the LEDs, as shown in Fig. 3-1a, Fig. 3-1b.

After installation of the network card, and you are now ready to install the network driver.

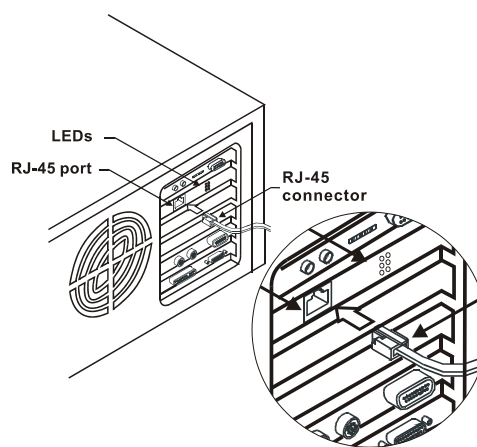


Fig.2-2 Connecting the Network Cable to the RJ-45 Gigabit Port.

Please See Chapter 3 for more LED information.

Step 3. Configure your Network

The NIC provides one RJ-45 Gigabit port for connecting to 10/100/1000BASE-TX Fast Ethernet network. The NIC will automatically sense the transmission mode of the connection. For a detailed description of the connection type, please refer to the followings:

Connecting to 1000BASE-T Gigabit Ethernet Network

To connect the Gigabit NIC to a 10/100/1000BASE-TX Gigabit Ethernet network, you need a twisted-pair Category 5 cable with RJ-45 connectors. The connection distance is up to 100 meters maximum. Follow the steps below to connect to Ethernet/Fast Ethernet/Gigabit Ethernet network:

1. Plug one end of the cable into the RJ-45 Gigabit port of the NIC.
2. Plug the other end of the cable into a Gigabit port of a Gigabit Ethernet Switch (such as Live-GSH8T) or a high-performance server with a gigabit RJ-45 port.

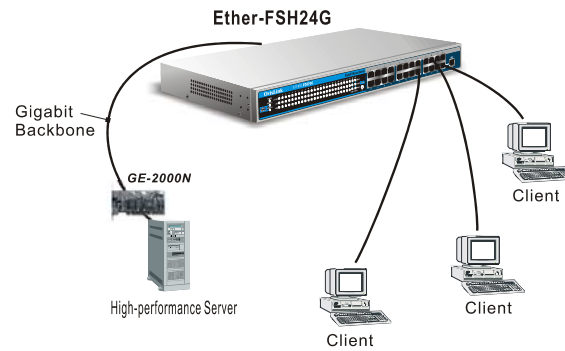


Fig. 2-3 Connecting the Gigabit NIC to the Gigabit Switch.

Correct Network Cable (STP/UTP) Requirements

- ❑ 100/1000 Mbps network must be shielded twisted-pair (STP) or Category 5 unshielded twisted-pair cable. Do not use Category 3,4 cable for 100 Mbps network operation, it could cause data loss. Category 3 or 4 cable is good for 10Mbps network only.
- ❑ Category 5 cable is also good for 10Mbps operation. If all network uses UTP Category 5 cable, you may have the versatility to operate the network at either 100Mbps or 10Mbps speed without recabling your network due to cable category grade concern.
- ❑ Depending on building codes, different insulation materials may be required. Plenum-rated or TEFLON-coated wiring may be required in some areas.
- ❑ The wire gauge should be between 18 and 26 AWG. (Most telephone installations use 24-gauge wiring.)
- ❑ UTP wire should meet the following requirements :
 - ❑ Solid copper
 - ❑ Nominal capacitance : less than 16 pF/ft
 - ❑ Nominal impedance : 100 Ohms
 - ❑ Nominal attenuation : less than 11.5db.

10/100 Auto-negotiation (NWay)

GE-2032R NIC automatically runs at appropriate speed, depending on the network device to which it is connected. It does this using NWay, a feature that complies with the IEEE802.3 standard. It also works with any of other IEEE-compliant products, including 10BASE-T, 100BASE-TX and 1000BASE-TX equipments.

3 LED Indicators

GE-2032R comes with six LED indicators on the backplane of the adapter. LED indicators inform you about the network status as shown in the Fig. 3-1.

If you experience any problem with the adapter, first check the followings:

- ❑ the appropriate driver is loaded
- ❑ the proper cable is connected to the RJ-45 port of the adapter
- ❑ the switch should complies with the 10/100/1000BASE-TX specifications.

You should make sure that all the above requirements are met, then check the LEDs again to make sure the connection is valid and working.

LED indicators of GE-2032R

The NIC supports full duplex at 10/100/1000BASE-TX. If the switch supports NWay feature and full duplex, the GE-2032R NIC automatically runs in full duplex.

If there is a problem with the connection, first check the network cable for possible breach. If that does not resolve the problem, try to replace the cable.

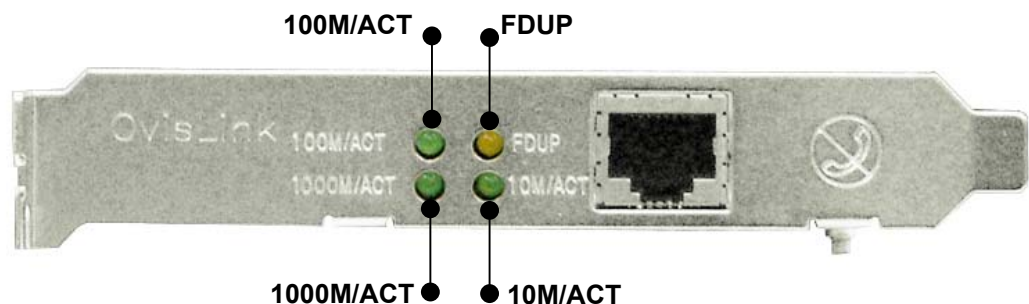


Fig. 3-1 LED indicators of GE-2032R

- **10M/ACT:** Light up to indicate a 10Mbps connection has been established. Flashing indicates transmission activities.
- **100M/ACT:** Light up to indicate a 100Mbps connection has been established. Flashing indicates transmission activities.
- **1000M/ACT:** Light up to indicate a 1000Mbps connection has been established. Flashing indicates transmission activities.
- **FDUP:** Light up to indicate the port is operating in Full Duplex Mode. Off means it is operating in Half Duplex mode. Flashing to indicate collisions.

For details information on LED color and status, please view the LED Table on the next page.

LED Table

LED	Color	Status	Meaning
<i>10M/ACT</i>	● Green	ON	The port is operating at 10M speed
		Flashing	The port is receiving or transmitting data
<i>100M/ACT</i>	● Green	ON	The port is operating at 100M speed
		Flashing	The port is receiving or transmitting data
<i>1000M/ACT</i>	● Green	ON	The port is operating at 1000M speed
		Flashing	The port is receiving or transmitting data
<i>FDUP</i>	● Yellow	ON	The port is operating at full duplex mode
		OFF	The port is operating at half duplex mode
		Flashing	Collision

Table 3-1 LEDs indicators of GE-2032R.

4 Driver Installation

Installing Network Drivers

You must install network driver to allow the NIC to work with your network operating system. GE-2032R adapter card provides various network drivers on the driver CD. GE-2032R supports Windows 98/ME/NT/2000/XP, Linux Kernel 2.2.x(Redhat 6.2), Linux Kernel 2.4.x (Redhat 7.2), Novell, DOSODI, MAC OSX 10.2 or newer.

This user's guide provides you installation instruction for Windows OS. For installation guide on other operation system, please refer to the readme file inside the CD-ROM directory.

Note:

The driver for OS are inside the CD's directories. For installation guide on Linux, DOSODI, Novell, Mac OSX; please refer to the readme file under the driver's directory

<u>Operations system</u>	<u>Directory</u>
Windows 98/SE	\Windows98
WinMe	\WindowsME
WinNT 4.0	\WindowsNT
Win2000	\Windows2000
WinXP	\WindowsXP
MAC OSX 10.2.X	\MacOSX10
Linux Kernel 2.2.x / Red Hat 6.2	\Linux2-2
Linux Kernel 2.4.x / Red Hat 7.2	\Linux2-4
Novell Netware	\Novell
DOSODI	\odi
FreeBSD	\FreeBSD

For the latest driver, please visit OvisLink's website at www.ovislink.com.tw

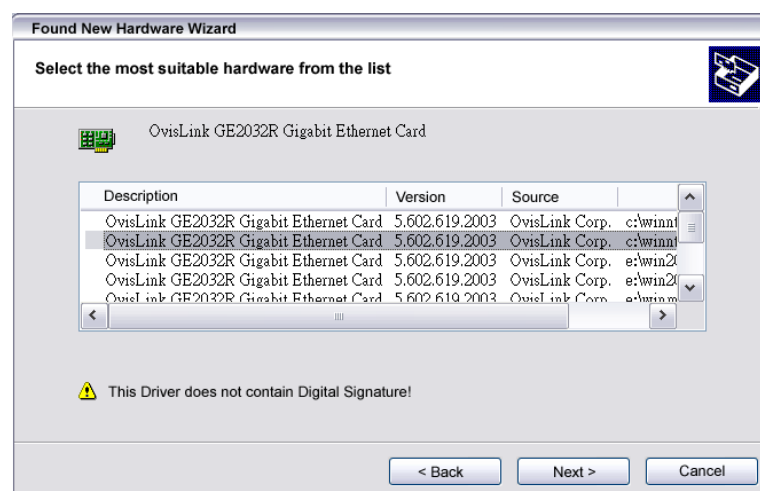
Windows XP Driver Installation

Step 1: Install the card into the computer according to the instruction on Chapter 2. After rebooting, the Windows should automatically detect the Card and start the "Found New Hardware Wizard". Insert the "OvisLink CD" into the computer and press "next".



Note: If the computer doesn't start the installation wizard automatically, please go to "Control Panel" and select "Add New Hardware".

Step2: The computer should automatically search for the driver on the CD and display available drivers. Press "Next" to continue.



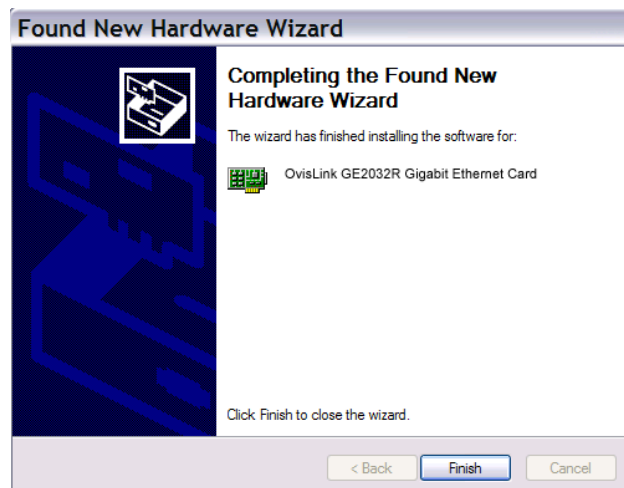
Step3: When the following warning message appears about "Windows Logo testing", please ignore the message and press "Continue Anyway" to proceed.



Step 4: After pressing the button, the Windows will start copying the files.

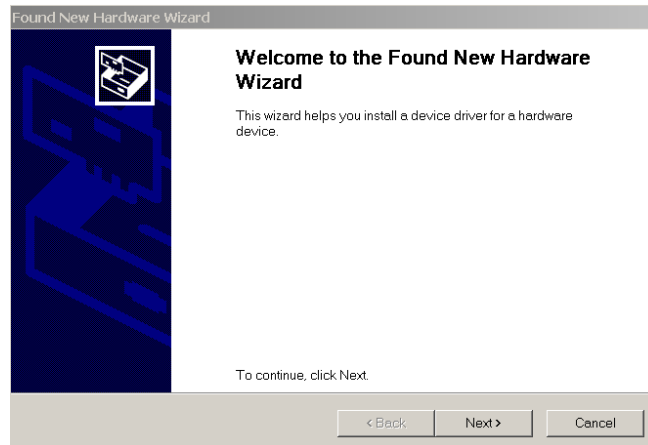


Step 5: Click "Finish" to complete the driver installation.



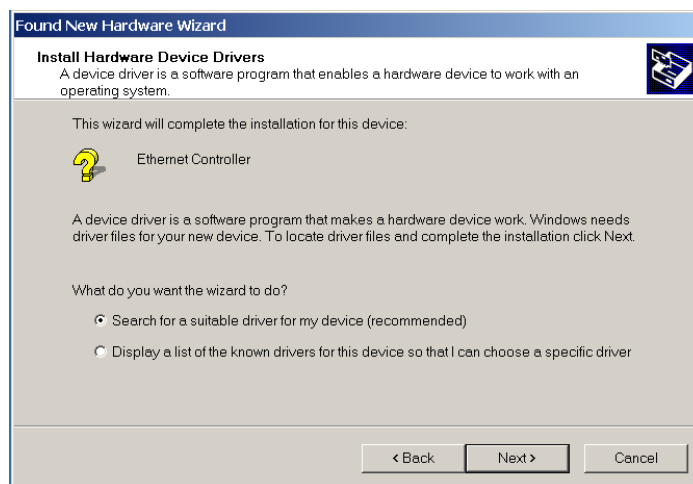
Windows 2000 Installation

Step 1: Install the card into the computer according to the instruction on Chapter 2. After rebooting, the Windows should automatically detect the Card and start the "Found New Hardware Wizard". Insert the "OvisLink CD" into the computer and press "next".

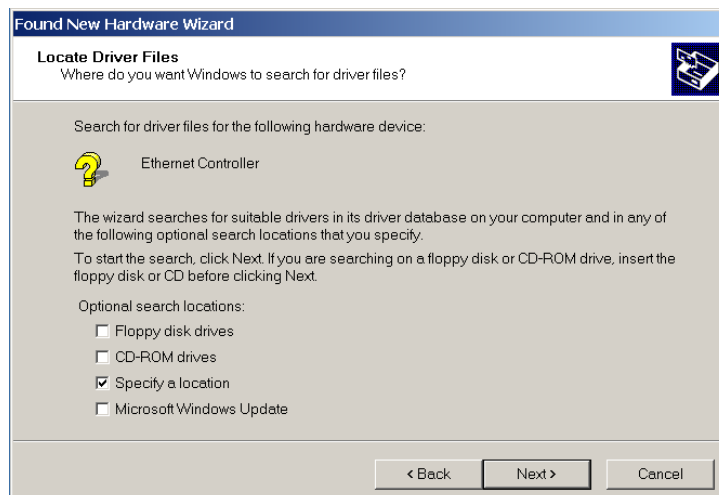


Note: If the computer doesn't start the installation wizard automatically, please go to "Control Panel" and select "Add New Hardware".

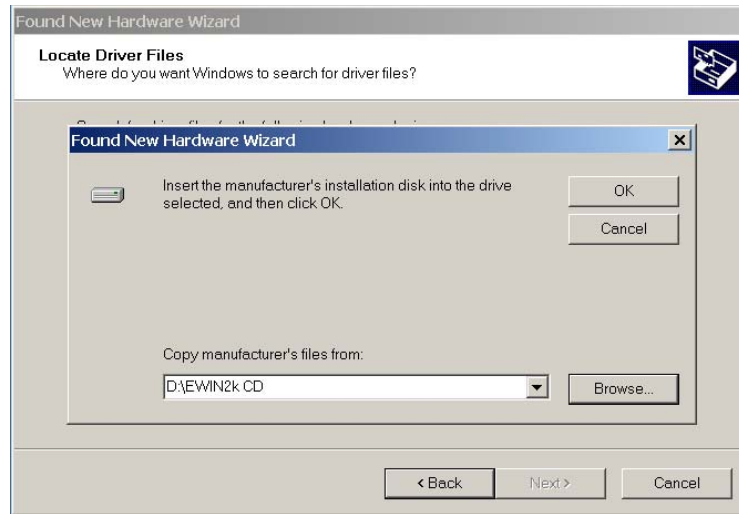
Step 2: Select "Search for a suitable driver for my device." and then press "next" to continue.



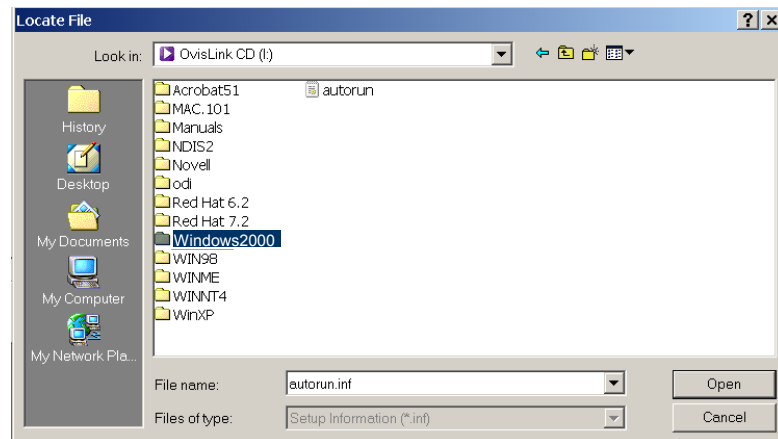
Step 3: Uncheck the "CD-ROM drives" and "Specify a location".



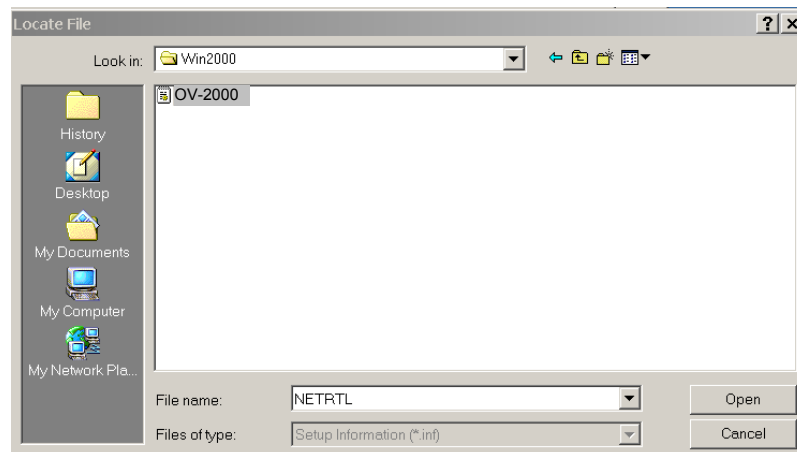
Step 4: Click on “Browse” button to proceed.



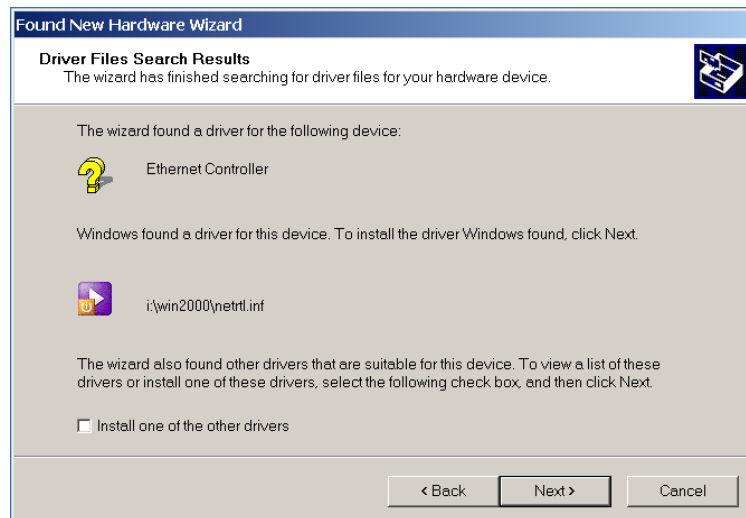
Step 5: Select “OvisLink CD”, then double click on “Windows2000” directory.



Step6: Select “OV-2000” file, then click on “Open”..



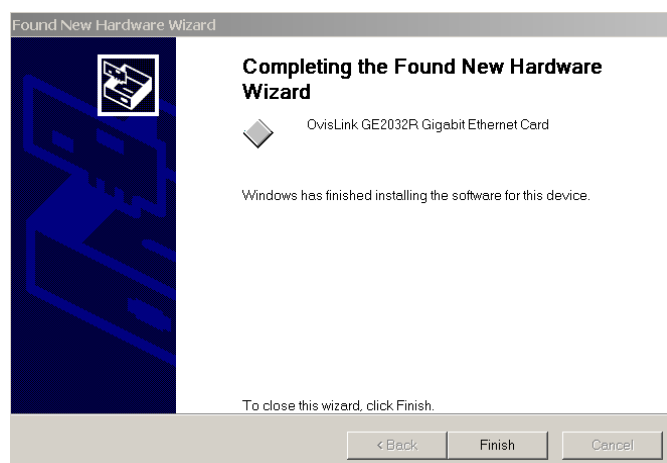
Step 7: Click on “Next” to proceed.



Step 8: If the following warning message about “Microsoft Digital signature” appears, press “Yes” to continue installation.



Step 9: The Windows will start copying files, click on “Finish” to complete the installation.



Windows 98/SE Driver Installation

Note: Please have the Windows 98 CD ready, you might need your Windows CD to complete the installation.

Step 1: Install the card into the computer according to the instruction on Chapter 2. After rebooting, the Windows should automatically detect the Card and start the “Add New Hardware Wizard”. Insert the “OvisLink CD” into the computer and press “next”.



Note: If the computer doesn't start the installation wizard automatically, please go to “Control Panel” and select “Add New Hardware”.

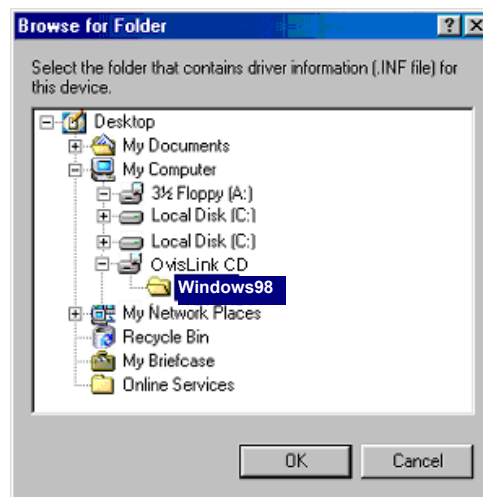
Step 2: Select “Search for the best driver.....” and then press “next” to continue.



Step 3: Uncheck the “CD-ROM drives” and check “Specify a location”. Then Click on “Browse”.



Step 4: Select the “Windows98” directory under the “OvisLink CD”, click “Okay” to continue



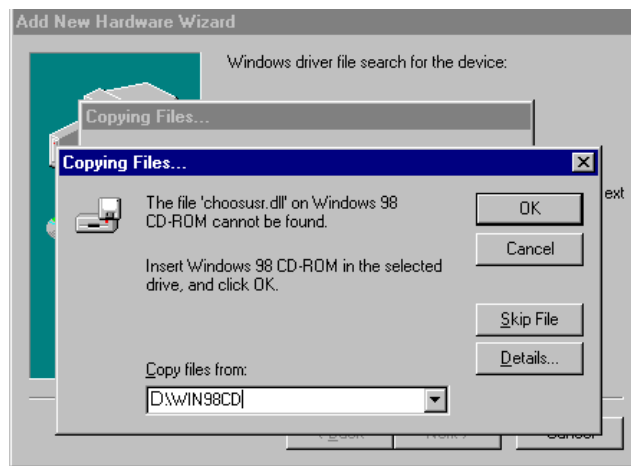
Step 5: The Win98 will find the driver “OV-98ME”, click next to start installation.



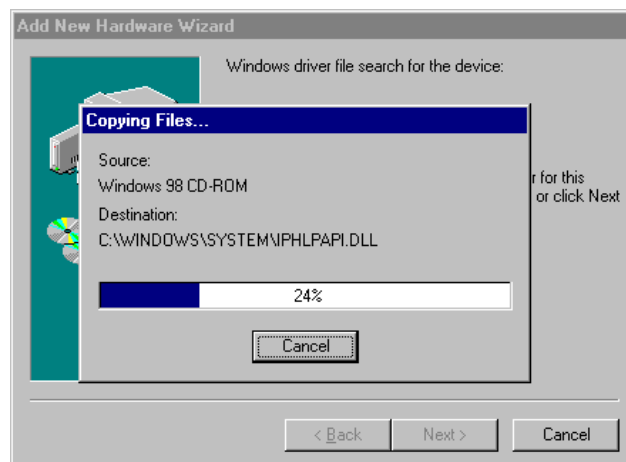
Step6: The Windows will now ask for the Windows 98 CD.



Step 7: Insert the Windows 98 CD or direct Windows to where the Windows 98 installation files are. Then click “ok”



Step 8: The Windows will now start copying installation files.



Step 9: Click “Finish” to complete the driver installation.



WinME Installation

Step 1: Install the card into the computer according to the instruction on Chapter 2. After rebooting, the Windows should automatically detect the Card and start the “Add New Hardware Wizard”. Insert the “OvisLink CD” into the computer and press “next”.

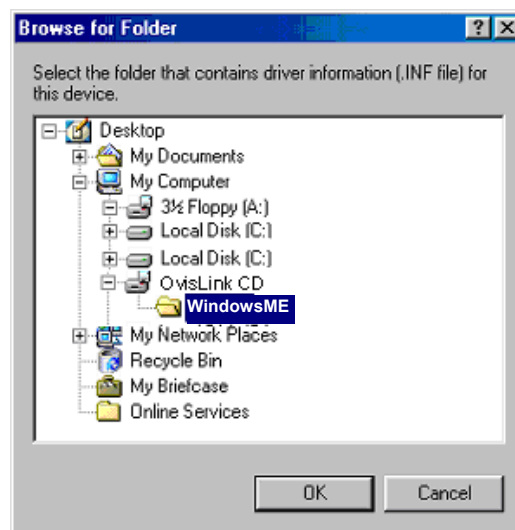


Note: If the computer doesn't start the installation wizard automatically, please go to “Control Panel” and select “Add New Hardware”.

Step 2: Select **Specify a location**, and click the **Browse** button.



Step 3: On the **Browse for Folder** dialog box appears. Select “OvisLink CD”, then select the “WindowsME” directory.



Step 4: The WinME will find the driver “OV-98ME” and click “Next” to start installation.



Step 5: Click “Finish” to complete the driver installation.



Windows NT 4.0 Installation

1. In the Main group of NT, select the "Control Panel" icon.
2. In the Control Panel window, choose the "Network" icon.
3. In the Network Settings dialog box, choose the "Add Adapter" button. The Add Network Adapter dialog box appears.
4. In the list of network cards, select "<other> Requires disk from manufacturer", and then press <Enter> button.
5. Insert the driver disk in CDROM, enter drive and pathname, for example: D:\WindowsNT, and then choose the OK button.
6. The screen will appear "Select Line Speed" dialog box which is provide by OV-NT.SYS driver,the default value is 'auto'.
7. The screen will appear "Input EthernetID" dialog box which is provide by OV-NT.SYS driver, Select "SKIP" if only one adapter is installed on this computer.
8. "Bus Location" display in next screen. Your machine contains more than one hardware bus, please select the Bus Type and Bus number on which your network adapter card is installed.
9. NT will then perform the binding process. If any additional network software options were installed, you may be prompted for specific information for these packages.
10. Restarting your system you will acquire network service.

Appendix A: Specifications

Standards:

IEEE 802.3 10BASE-T
IEEE 802.3u 100BASE-TX
IEEE 802.3ab 1000BASE-TX
IEEE 802.3x Full Duplex Flow Control
IEEE 802.1Q VLAN Tagging
PCI Rev.2.2

Bus Type:

32-bit PCI Bus Master

Transmission Speed:

IEEE 802.3u Auto-Negotiation
10/20 Mbps (Half/Full-duplex Ethernet),
100/200 Mbps (Half/Full-duplex Fast Ethernet)
1000/2000 Mbps (Half/Full-duplex Gigabit Ethernet)

LED Indicator:

10M/ACT
100M/ACT
1000M/ACT
FDX/Col

Operating Temperature:

32 ~ 131 °F
0 ~ 55 °C

Storage Temperature:

-4 ~ 176 °F
-20 ~ 80 °C

Humidity:

10 ~ 90% RH non-condensing

Dimension (L × W):

11.9 × 6.5 cm

Operating Voltage:

+5V± 5% @ 1.0A maximum.