

# User's ▶▶▶▶▶ Manual

## 32-Bit Gigabit Ethernet PCI Adapter

HGA32T



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**FCC Statement**

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.
- (2) 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 against harmful interference when the equipment is operated in a commercial environment. 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. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

**CE-Mark Warning**

In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

## LIMITED WARRANTY

Hawking Technology guarantees that every HGA32T 32-Bit Gigabit Ethernet PCI Adapter is free from physical defects in material and workmanship under normal use for two (2) years from the date of purchase. If the product proves defective during this two-year warranty period, call Hawking Customer Service in order to obtain a Return Authorization number. The warranty is for repair or replacement only. Hawking Technology does not issue any refunds. BE SURE TO HAVE YOUR PROOF OF PURCHASE. RETURN REQUESTS CANNOT BE PROCESSED WITHOUT PROOF OF PURCHASE. When returning a product, mark the Return Authorization number clearly on the outside of the package and include your original proof of purchase.

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## Introduction

HGA32T 10/100/1000M Gigabit Ethernet PCI Adapter

Thank you for purchasing the Hawking HGA32T 32-Bit Gigabit Ethernet PCI Adapter. This user's manual describes the installation procedures for your new network adapter. The HGA32T supports 10BASE-T, 100BASE-TX and 1000BASE-T Ethernet copper interfaces. Moreover, the PCI interface on the Gigabit Ethernet NIC complies with PCI Local Bus standards and is compatible with 32-bit PCI bus standards as well.

### Features

The HGA32T is a cost effective, high-performance network interface card. It operates in 10BASE-T, 100BASE-TX and 1000BASE-T modes and can easily be integrated with Fast Ethernet and Gigabit Ethernet hubs and switches. The HGA32T includes the following features:

- Complies with IEEE 802.3 10BASE-T standard
- Complies with IEEE 802.3u 100BASE-TX standard
- Complies with IEEE 802.3ab 1000BASE-T standard
- Complies with PCI specifications
- Supports 32-bit bus master for high throughput and low CPU utilization
- Supports both half and full duplex operation
- Supports 10/100/1000Mbps auto-sensing capability



## Introduction

HGA32T 10/100/1000M Gigabit Ethernet PCI Adapter

- Supports Wake-On-LAN (depending on the model and function of the user's motherboard)
- Diagnostic LEDs mounted on bracket for easy status viewing and troubleshooting

LED	Function	LED Status
10M	Link/Activity	Green/Blinking Green
100M	Link/Activity	Green/Blinking Green
1000M	Link/Activity	Green/Blinking Green

- Plug and Play Installation
- Network drivers on the CD (included in package) for Windows 98SE, NT4.0, 2000, XP, ME, Netware 4/5/6.X, Linux driver, & Mac OS driver
- FCC, CE class B certification

### System Requirements

To use the gigabit network adapter, you will need the following components:

- One 32 or 64-bit PCI expansion slot that is compliant with PCI bus specifications



## Introduction

HGA32T 10/100/1000M Gigabit Ethernet PCI Adapter

- CD-ROM drive
- The following cables:

Port Type	Media	Max. Distance
10BASE-T	Cat. 3, 4, or 5 UTP	100 meters
100/1000BASE-T	Cat. 5 or 5e UTP	100 meters

**Note:**

1000BASE-T signaling requires four twisted pairs of Category 5 balanced cabling, as specified in ISO/IEC 11801:1995 and ANSI/EIA/TIA-568-A (1995) and tested for additional performance using testing procedures defined in TIA/EIA TSB95

## **Unpack and Inspect**

### **Caution:**

Under ordinary circumstances, this adapter card will not be affected by static charge, as may be received through your body during handling of the unit. In special circumstances where you may carry an extraordinarily high static charge, it is recommended that you reduce the charge by grounding your body before handling the adapter card.

Open the package and carefully remove all items. The complete HGA32T package consists of:

- One 32-Bit Gigabit Ethernet PCI Adapter
- One CD with user's manual and drivers

Check to make sure that the unit was not damaged during shipping and that no items are missing. If you encounter a problem, please contact your dealer.

Please read this manual thoroughly, and follow the installation and operation procedures contained within.

1. Turn off the computer.
2. Remove the computer's cover, in accordance with the instructions in its manual.
3. Insert the contact edge of the adapter card into the connector of any available PCI Bus expansion slot. Press the card firmly into the connector of the PCI slot. Please make sure that the card's contacts are fully seated in the PCI slot.
4. Install the bracket screw that secures the card to the computer chassis.
5. Replace the computer's cover.
6. Connect your Ethernet cable to the HGA32T's RJ-45 network connector.
7. Insert the CD into the CD-ROM drive.
8. Turn on the computer.
9. If the BIOS section of your computer's boot program is Plug and Play compliant, then at power up the BIOS will configure any newly installed adapter automatically.

**Note:**

Due to problems with some Plug and Play BIOS programs, a newly installed adapter is occasionally assigned an interrupt number that is already used by another device adapter. In such a case, the interrupt number conflict will cause faults in the behavior of both devices. If this occurs, it is necessary to run

the CMOS Setup utility and manually assign a non-conflict Interrupt Number. As another alternative, moving the network adapter to another PCI slot may also solve the problem.

### **CD ROM**

The CD contains drivers for all the popular operating systems:

- Windows 98SE/ME/NT4.0/2000/XP
- Linux
- Netware 4/5/6.X
- Mac

### **Microsoft Windows 98/98SE**

1. Plug the network adapter into the PCI slot.
2. Turn on the computer.
3. Windows 98 will prompt "PCI Ethernet Controller" in the "Add New Hardware Wizard" dialog box. Click **NEXT**.
4. Select "Search for the best driver for your device" from the "Add New Hardware Wizard" dialog box, then click **NEXT**.
5. Insert the CD into the CD-ROM drive.
6. Enter the driver pathname, then click **NEXT** from the "Add New Hardware Wizard" dialog box.
7. Select your installed adapter - "Gigabit Ethernet Network Adapter", and then click the **NEXT** button from the dialog box.
8. To complete the process, please follow the instructions on the screen.
9. Restart your computer.

### **Microsoft Windows ME**

1. Plug the network adapter into the PCI slot.
2. Turn on the computer.
3. Windows ME will prompt "PCI Ethernet Controller" in the "Add New Hardware Wizard" dialog box.

4. Insert the CD into the CD-ROM drive.
5. Select "Install the software automatically" and then click **NEXT**.
6. Windows ME will prompt "Gigabit Ethernet Network Adapter" in the "Add New Hardware Wizard" dialog box. Click **FINISH** to complete the installation.
7. Restart the computer.

#### **Microsoft Windows NT 4.0**

1. Go to "My Computer" and double-click on the "Control Panel" icon.
2. In the "Control Panel" section, double-click on the "Network" icon.
3. In the "Network Settings" dialog box, select the "Adapter" Tab, and then click **Add**. There will be a list of network adapters.
4. Click "Have Disk" to select one network adapter.
5. Insert the CD into the CD-ROM drive, enter the drive and pathname, and then click the **OK**.
6. You will see that the "Gigabit Ethernet Network Adapter" string appears in the "Select OEM Option" dialog box. Click **OK**.
7. Select the connection type in the "Gigabit Ethernet Network Adapter" section, and click **OK**.

8. Follow the screen instructions and finish the remaining installation procedures.
9. Restart your computer.

#### **Microsoft Windows 2000**

1. Plug the network adapter into the PCI slot.
2. Turn on the computer.
3. Windows 2000 will prompt "Welcome to the Found New Hardware Wizard" in the "Found New Hardware Wizard" dialog box. Click **NEXT**.
4. Windows 2000 will prompt "Ethernet Controller" in the "Found New Hardware Wizard" dialog box. Select "Search for a suitable driver for my device" and then click **NEXT**.
5. Select "Specify a location" from "Optional search locations:" in the "Found New Hardware Wizard" dialog box. Click **NEXT**.
6. Insert the CD into the CD-ROM drive.
7. Enter the driver pathname and then click **OK** in the "Found New Hardware Wizard" dialog box.
8. Windows 2000 will display "The wizard found a driver for the following device: Ethernet Controller" in the "Found New Hardware Wizard" dialog box. Click **NEXT**.

9. Windows 2000 will display "Completing the Found New Hardware > Wizard Gigabit Ethernet Network Adapter > Windows has finished installing the software for this device" in the "Found New Hardware Wizard" dialog box. Click **Finish** to complete the installation.

#### **Microsoft Windows XP**

1. Plug the network adapter into the PCI slot.
2. Turn on the computer.
3. Windows XP will prompt "Ethernet Controller" in the "Found New Hardware Wizard" dialog box.
4. Insert the CD into the CD-ROM drive.
5. Select "Install the software automatically" and then click **NEXT**.
6. Windows XP will prompt "Gigabit Ethernet Network Adapter" in the "Hardware Installation" dialog box. Click **Continue Anyway**.
7. Windows XP will display "The wizard has finished installing the software for Gigabit Ethernet Network Adapter/Fiber Gigabit Ethernet Network Adapter" in the "Found New Hardware Wizard" dialog box. Click **Finish** to complete the installation.

### Linux kernel 2.2.x.

1. Compiling rtl8169.c  
"gcc -DMODULE -Wall -Wstrict-prototypes -O6  
-c rtl8169.c".
2. Move the object code rtl8169.o to the directory  
"/lib/modules/2.2.14-5.0/net".  
"cp rtl8169.o /lib/modules/2.2.14-5.0/net"
3. Insert the module to the kernel.  
"insmod rtl8169"
4. Check the driver status  
"dmesg"
5. The media can be forced to one of the five modes as  
follows:

The link speed and duplex mode can be forced in five modes.

Command:"insmod rtl8169 media = SET\_MEDIA"

Ex: "insmod rtl8169 media=0x04" will force link mode to be 100Mbps half-duplex.

SET\_MEDIA can be:

```
_10_Half = 0x01  
_10_Full = 0x02  
_100_Half = 0x04  
_100_Full = 0x08  
_1000_Full = 0x10
```

#### **Linux kernel 2.4.x.**

1. Compiling r8169.c using 'Makefile'.  
"make"

#### **Note:**

**Please remember to ASSIGN "NEW\_INCLUDE\_PATH" in the Makefile according to the linux kernel.**

2. Move r8169.o to the directory  
"/lib/modules/<kernel>/kernel/drivers/net".  
"cp r8169.o  
/lib/modules/<kernel>/kernel/drivers/net"  
where <kernel> represents the kernel version, say  
2.4.18-3 in Red Hat 7.3

3. Insert the module by  
"insmod r8169"
4. Check the driver status  
"dmesg"
5. The media can be forced to one of the five modes as follows:

Cmd: "insmod r8169 media = SET\_MEDIA"

For example:

"insmod r8169 media = 0x04" will force the PHY to operate in 100Mbps Half-duplex.

SET\_MEDIA can be:

\_10\_Half= 0x01  
\_10\_Full = 0x02  
\_100\_Half= 0x04  
\_100\_Full= 0x08  
\_1000\_Full= 0x10

#### **Novell NetWare System (4.X)**

1. Update Netware Server to 4.2 .  
(If you don't update to 4.2, use the CD update file:  
"MSM.NLM, ETHERTSM.NLM")

2. Run the NetWare Server System.
3. When the Server prompt appears, load the NetWare Server Installation Utility: "LOAD INSTALL"
4. Select "Driver options" from the "Installation Options" menu.
5. Select "Configure network drivers" from the "Driver Options" menu.
6. Select "Select a driver" from the "Additional Driver Actions" menu.
7. Press **Ins** to install an unlisted driver, and then press **F3** to specify a different path.
8. Insert the CD into the CD-ROM drive and specify the path.
9. Select "Gigabit Ethernet Network Adapter" from the "Select a driver to install:" menu.
10. If necessary, select the "Select/Modify driver parameters and protocols" menu.
11. Follow instructions to complete the driver installation.

#### **Novell NetWare System (5.X/6.X)**

1. Run the NetWare Server System.
2. When the Server prompt appears, load the NetWare Server Installation Utility: "LOAD NWCONFIG"

3. Select "Driver options" from the "Installation Options" menu.
4. Select "Configure network drivers" from the "Driver Options" menu.
5. Select "Select a driver" from the "Additional Driver Actions" menu.
6. Press **Ins** to install an unlisted driver, and then press **F3** to specify a different path.
7. Insert the CD into the CD-ROM drive and specify a path.
8. Select "Gigabit Ethernet Network Adapter" from the "Select a driver to install:" menu.
9. If necessary, select the "Select/Modify driver parameters and protocols" menu.
10. Follow the instructions to complete the driver installation.