SysKonnect SK-9E21D

10/100/1000Base-T Adapter PCI-Express

installation

SysKonnect
The Server Connectivity Company

SysKonnect SK-9E21D
10/100/1000Base-T Adapter
PCI Express

User Manual

This manual refers to the SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express. It describes the hardware and software installation and the functionality of the adapter.

Contents are subject to change. Product and brand names are (registered) trademarks of their appropriate owners.

Please send your comments on this documentation to:

SysKonnect GmbH
A Marvell®Company
Information Development
Siemensstraße 23
76275 Ettlingen / Germany
Fax: +49 7243 502 989
E-Mail: manual@syskonnect.de

German and French versions of this manual are available on our web site.

Conventions

The following conventions apply in this manual.

Warnings and Notes

Warning! Used to indicate a potentially hazardous situation which, if not avoided, could result in death or serious injury. Example: dangerous voltage.

Caution Used to indicate a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. Example: electrostatic discharge.

Used for additional information and advice.

Font Styles applied

Courier:	Used to identify terminal input to be entered by the user and output to be issued by the system.
	Examples: Enter sk98diag.
	If the test was succesful, the message passed is issued.
Italics:	Used when new technical terms are introduced.
	Example: The station is operated in *Repeater Mode*.
SMALL CAPS:	Used to identify menu options to be selected by the user and buttons to be clicked by the user.
	Examples: In the main menu, select EXIT.
	Click NEXT.
Underline:	Used to identify hyperlinks, which, if clicked by the user, jump to the designated link.
	Example: Visit our web site: http://www.syskonnect.com.

SysKonnect SK-9E21D 10/100/1000Base-T Adapter PCI Express

SysKonnect

Table of Contents

Table of Figures

Safety Precautions

To protect yourself from injuries and avoid damage of the device, always observe the following safety instructions when installing the network adapter.

Avoiding injuries

Electrical current!

Electrical current from power, phone, and communications cables can be hazardous.

Never touch any electrical elements with bare hands.

To avoid potential shock hazards:

- Do not carry out any installation, maintenance, or (re)configuration work during a thunderstorm.
- Do not connect or disconnect any power cables during a thunderstorm.
- For installation in a Hot-Plug system, observe the safety instructions specific to this system. Read the relevant documentation.
- Do not connect the network adapter to a telephone line.

Electrical installations must comply with the safety regulations of the country in which they are operated.

Avoiding damage

Electrostatic discharge!

Electrostatic discharge may damage or destroy the network adapter.

To avoid damaging the network adapter:

1. Switch off the computer.
2. Disconnect the power cord from the power outlet.
3. Remove the computer cover.
4. Connect the wrist straps (electrically conductive) to the computer chassis.
   Do not connect the wrist straps to the ground terminal of the power supply!
   Faulty wiring could make this terminal live and potentially lethal.
5. When you are ready to install the network adapter, open the antistatic bag.
   We recommend to wear an antistatic wrist strap when installing the network adapter.
6. Hold the antistatic packaging of the network adapter against the bracket of an expansion slot on your computer for at least two seconds.
   This reduces the static charge in the packaging and in your body.
   If you need to place the network adapter somewhere after removing it from the antistatic bag, make sure that you place it on the antistatic bag and on a level surface.
   Do not place the network adapter on the computer cover or on any other metal surface.
7. Cautiously insert the adapter into the corresponding slot.
   Do not touch any circuits on the network adapter or any of its port contacts.

In general, observe the following:

- Never use force when working with the network adapter or the PCI Express bus.
- Do not allow anyone else to touch the network adapter.
- Avoid unnecessary movement since this can increase electrostatic charge.

SysKonnect SK-9E21D 10/100/1000Base-T Adapter PCI Express

1 Installation of the Network Adapter

The installation procedure in Hot-Plug systems may differ from the following. For Hot-Plug systems read the corresponding documentation. Have the computer manual ready and if necessary, a key and/or screwdriver to open the cover and remove the bracket.

To install the adapter in the computer, proceed as follows:

1. Switch off the computer in which the network adapter is to be installed.
2. Disconnect the power cord from the power outlet.
   Observe the safety instructions (see page 13).
3. Open the computer cover as described in your computer manual.
   You may need a screwdriver or similar tool to remove the screws from the cover.
   If you are installing a network adapter in a tower computer, we recommend to put the computer on its side in order to be able to apply the correct force to insert the adapter into the PCI Express slot.
4. Locate a free PCI Express slot on the motherboard.
5. Consult the section in your computer manual that describes how to install expansion cards.
6. Remove the bracket from the expansion slot (if applicable).
   Follow the instructions in your computer manual.
7. Remove the network adapter from the antistatic bag.
   Observe the safety instructions (see page 13).
8. Insert the network adapter into the PCI Express slot as described in your computer manual (also see figure 1 "Insertion of the adapter into the computer").
   Make sure that the network adapter is correctly aligned with the PCI Express slot on the motherboard.
9. Push the network adapter down vertically into the slot until it is firmly seated.
10. If available, tighten the locking screw on the fixing bracket until the adapter is firmly connected to the computer cover (or to the attachment provided for expansion cards).
11. Replace the computer cover.
12. Replace and tighten all screws.
13. Reconnect the power supply.
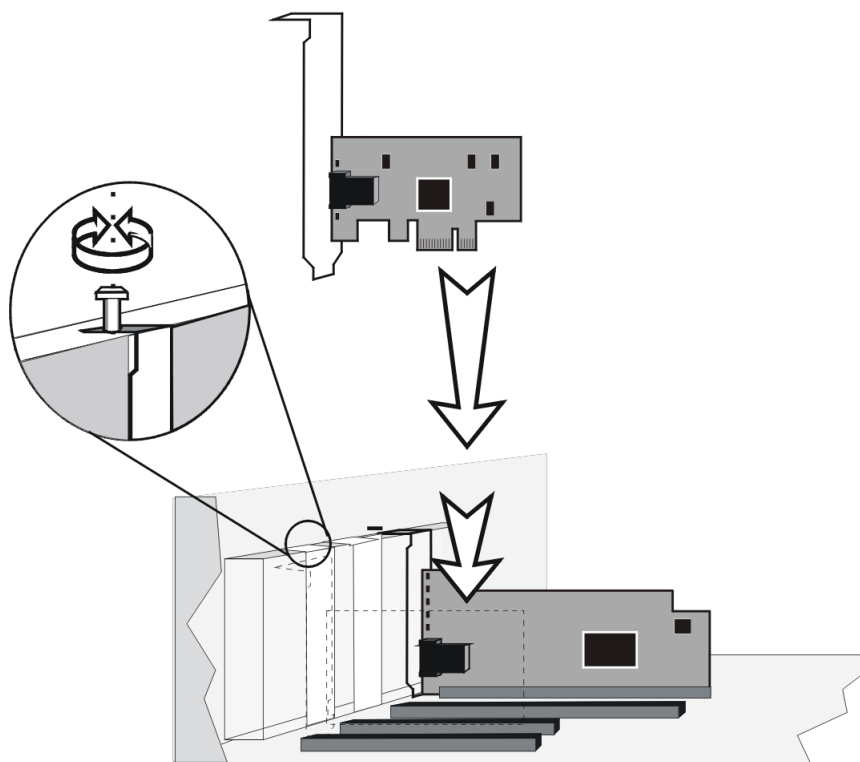   Observe the safety instructions (see page 13).

SysKonnect

Figure 1. Insertion of the adapter into the computer

2 Connection of the Network Adapter

This chapter describes the physical connection of the network adapter to the network. General instructions for driver installation are given in chapter 3 "Installation of the Driver Software".

Transmission Distances

The maximum transmission distance for the SysKonnect SK-9E21D Adapter using a category 5 unshielded twisted pair cable is 100 m.

Connection to the Network

Observe the safety instructions given on page 13.

In order to connect the adapter to the data network, proceed as follows:

1. If necessary, configure the port on the switch to which the network adapter is to be connected (also see the switch manual).
2. If possible, disconnect the switch and the computer from the power supply.
3. At one end of the cable connect the RJ-45 connector to the port on the switch.
4. At the other end of the cable connect the connector to the port on the network adapter (see figure 2).

   The port type (e.g. 1000Base-T) on the network adapter and that on the switch must be identical.
5. Turn on the computer and the switch.

   If no protocol driver has been loaded, go to chapter 3 "Installation of the Driver Software". After driver installation, return to step 6 of this list.

   If a protocol driver has been loaded, continue with step 6.
6. Check the green link LED to find out if the cable is connected correctly.

   If the link LED is on or blinking, the connection is established and active. Otherwise you have to check the network adapter more closely (for details, refer to chapter 5 "Troubleshooting").

As soon as the connection to the network is established, the installation of the network adapter is complete. Keep this manual with your computer manual for future reference.

The network adapter will not be fully operational until suitable drivers are loaded. See chapter 3 "Installation of the Driver Software" for details.
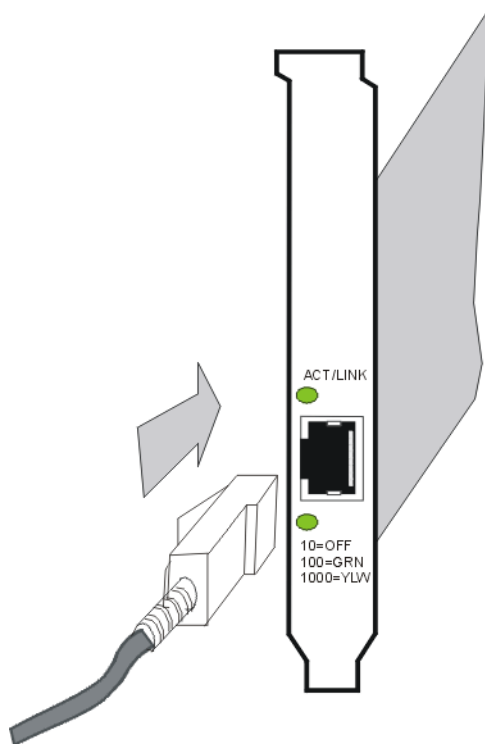
Figure 2. Connection of the RJ-45 cable / plug

3 Installation of the Driver Software

The network drivers are located in the appropriate product directory on the enclosed installation CD-ROM. This directory is organized into a number of subdirectories for the various operating systems. The subdirectories contain the driver files and the corresponding readme files. The readme files are available as ASCII text and in HTML format. Any last-minute changes are documented in the "Release Notes" (if applicable) and on the driver site of the SysKonnect web site.

To install a driver, follow the instructions given below and in the corresponding readme files.

The installation procedures described below are only valid for the SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express. For details on the installation of other SysKonnect adapters, refer to the corresponding readme files.

There are two possibilities to view the readme files:
- with an internet browser
- with a text editor

Use an internet browser

If you have an internet browser (or any other HTML viewer) installed on your computer, we recommend to use it for viewing the readme files.

To view the readme files with an internet browser, proceed as follows:

1. Insert the installation CD-ROM into your CD-ROM drive.
2. If the browser is not automatically launched, click START.HTM on the installation CD-ROM. The start page of the installation CD-ROM is displayed.
3. Click DRIVERS. A list showing all available network technologies is displayed.
4. Select your preferred network technology, e.g. GIGABIT ETHERNET. A list showing all available network adapters belonging to this technology is displayed.
5. Select your network adapter, e.g. SK-9E21D. A list showing all available drivers for this adapter is displayed.
6. Click the operating system for which you want to install the driver, e.g. WINDOWS XP. The readme file is opened. Here, you will find detailed instructions on how to install the driver.

Use a text editor

To view a text file, proceed as follows:

1. Insert the installation CD-ROM into your CD-ROM drive.
2. Go to the appropriate product directory, e.g. SK-9E21D. A list of all available operating systems this network adapter supports is displayed.
3. Select the operating system for which you want to install the driver, e.g. SOLARIS > X86.
4. Open the corresponding text file, e.g. skge.txt.

Windows

SysKonnect offers drivers for Windows NT 4.0, Windows 98 SE, Windows Me, Windows 2000, Windows XP and Windows Server 2003. Additionally, a value added package is available for Windows 2000, Windows XP and Windows Server 2003 enabling Virtual LAN (VLAN) and Link Aggregation support. This package also includes a utility program for easy installation and configuration. For details, refer to chapter "SysKonnect Network Driver Installation Packages for Windows 2000, Windows XP and Windows Server 2003".

Drivers downloaded from our web site are available in a packed format (.zip files). The downloaded file has to be unpacked before installation.

Windows NT 4.0

The NDIS 4.0 32-bit Miniport driver for the SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express, supports Windows NT 4.0. This driver does not support Windows NT 3.51 or below. It is recommended to install the latest Windows NT 4.0 Service Pack after successful installation of the driver.

To install the driver, proceed as follows:

1. After you have installed the adapter in your computer (for details, see chapter 1 "Installation of the Network Adapter"), boot Windows NT 4.0.
2. Select START > SETTINGS > CONTROL PANEL.
   The window "Control Panel" is displayed.
3. Select NETWORK.
   The window "Network" is displayed.
4. Select the tab ADAPTERS.
5. Click ADD....
6. Click HAVE DISK....
7. Depending on the type of installation medium used (CD-ROM, floppy disk, network drive), type the path to the driver, e.g. `e:\SK-9E21D\Windows\Nt4`, where "e" is the designation of the CD-ROM drive on your system.
8. Click OK.
   The window "Select Network Adapter" is displayed.
9. Select the adapter for which the driver is to be installed.
10. Click OK.
    The window "Card Setup" is displayed.
11. Configure the adapter (for details, refer to the corresponding readme file).
12. When you have finished the configuration, click OK.
13. After successful installation of the driver, install the latest Windows NT 4.0 Service Pack.
14. Restart your system.

For more information, refer to the corresponding readme file.

Windows 98 Second Edition

SysKonnect offers an NDIS 5.0 32-bit Miniport driver for the SysKonnect SK-9E21D 10/100/ 1000Base-T Adapter, PCI Express, supporting Windows 98 Second Edition (Windows 98 SE). This driver only supports Windows 98 SE and Windows Me.

With PCI Express adapters, due to the plug & play facility of PCI, Windows 98 SE is able to find, identify, and configure an adapter automatically.

To install the driver, proceed as follows:

1. After you have installed the adapter in your computer (for details see chapter 1 "Installation of the Network Adapter"), boot Windows 98 SE.
    Windows 98 SE detects the SysKonnect SK-9E21D Adapter as "PCI Ethernet Controller" during the boot operation.
    The window "Add New Hardware Wizard" is displayed.
2. Click NEXT.
    The menu "What do you want Windows to do?" is displayed.
3. Select the check box SEARCH FOR THE BEST DRIVER FOR YOUR DEVICE (RECOMMENDED).
4. Click NEXT.
5. Select the source from which the driver is to be installed (e.g. CD-ROM, floppy disk, hard disk).
6. Select the checkbox SPECIFY A LOCATION.
7. Type the path to the driver, e.g. `e:\SK-9E21D\Windows\Win98SE`, where "e" is the designation of the CD-ROM drive on your system.
8. Click NEXT.
    The window "Location of driver" is displayed.
9. Click NEXT.
    The menu "Windows has finished installing the software that your new hardware device requires" is displayed.
10. Click FINISH.
11. Restart your system.

For more information, refer to the corresponding readme file.

Windows Millennium Edition

SysKonnect offers an NDIS 5.0 32-bit Miniport driver for the SysKonnect SK-9E21D 10/100/ 1000Base-T Adapter, PCI Express, supporting Windows Millennium Edition (Windows Me). This driver only supports Windows Me and Windows 98 SE.

With PCI Express adapters, due to the plug & play facility of PCI, Windows Me is able to find, identify, and configure an adapter automatically.

To install the driver, proceed as follows:

1. After you have installed the adapter in your computer (for details, see chapter 1 "Installation of the Network Adapter"), boot Windows Me.
    Windows Me detects the SysKonnect SK-9E21D Adapter as "PCI Ethernet Controller" during the boot operation.
2. Select the check box SPECIFY THE LOCATION OF THE DRIVER (ADVANCED).
3. Click NEXT.
4. Select the check box SEARCH FOR THE BEST DRIVER FOR YOUR DEVICE (RECOMMENDED).
5. Select the source from which the driver is to be installed (e.g. CD-ROM, floppy disk, hard disk).
6. Select the check box SPECIFY A LOCATION.

7. Type the path to the driver, e.g. `e:\SK-9E21D\Windows\WinME`, where "e" is the designation of the CD-ROM drive on your system.
8. Click NEXT.
    The window "Location of driver" is displayed.
9. Click NEXT to continue the installation.
    The menu "Windows has finished installing the new hardware device" is displayed.
10. Click FINISH.
11. Restart your computer.

For more information, refer to the corresponding readme file.

Windows 2000

SysKonnect offers an NDIS 5.0 32-bit Miniport driver for the SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express, supporting Windows 2000. SysKonnect also offers the "Network Driver Installation Package for Windows 2000, Windows XP and Windows Server 2003". For details on this package, refer to chapter "SysKonnect Network Driver Installation Packages for Windows 2000, Windows XP and Windows Server 2003".

To install the driver, proceed as follows:

1. After you have installed the adapter in your computer (for details, see chapter 1 "Installation of the Network Adapter"), boot Windows 2000.
    Windows 2000 detects the SysKonnect SK-9E21D Adapter as "Ethernet Controller" during the boot operation.
    The window „Found New Hardware Wizard" is displayed.
2. Click NEXT.
    In the same window the menu „Install Hardware Device Drivers" is displayed.
3. Select the check box SEARCH FOR A SUITABLE DRIVER FOR MY DEVICE (RECOMMENDED).
4. Click NEXT.
    The menu "Locate Driver Files" is displayed.
5. Select the source from which the driver is to be installed (e.g. CD-ROM, floppy disk, hard disk).
6. Type the path to the driver, e.g. `e:\SK-9E21D\Windows\Win2000`, where "e" is the designation of the CD-ROM drive on your system.
7. Click OK.
8. Click NEXT.
    The menu "Driver Files Search Results" is displayed, listing the found driver and its location.
9. To install the driver, click NEXT.
    In case the driver does not have a Microsoft Digital Signature yet, the window "Digital Signature Not Found" is displayed.
10. To continue the installation, click YES.
    The window "Completing the Found New Hardware Wizard" is displayed.
11. Click FINISH to complete the installation.

For more information, refer to the corresponding readme files.

Windows XP and Windows Server 2003

SysKonnect offers an NDIS 5.1 32-bit Miniport driver for the SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express, supporting Windows XP and Windows Server 2003. SysKonnect also offers the "Network Driver Installation Package for Windows 2000, Windows XP and Windows Server 2003". For details on this package, refer to chapter

"SysKonnect Network Driver Installation Packages for Windows 2000, Windows XP and Windows Server 2003".

The installation procedure for Windows XP and Windows Server 2003 is identical. It is described for Windows XP.

To install the driver, proceed as follows:

1. After you have installed the adapter in your computer (for details, see chapter 1 "Installation of the Network Adapter"), boot Windows XP.
   Windows XP detects the SysKonnect SK-9E21D Adapter as "Ethernet Controller" during the boot operation.
   The window "Found New Hardware Wizard" is displayed.
2. Select the check box INSTALL FROM A LIST OR SPECIFIC LOCATION (ADVANCED).
3. Click NEXT.
   The menu "Please choose your search and installation options" is displayed.
4. Select the check box SEARCH FOR THE BEST DRIVER IN THESE LOCATIONS.
5. Select the check box INCLUDE THIS LOCATION IN THE SEARCH.
6. Type the path to the driver, e.g. `e:\SK-9E21D\Windows\WinXP`, where "e" is the designation of the CD-ROM drive on your system.
7. Click OK.
8. Click NEXT.
   In case the adapter has not passed Windows Logo testing to verify its compatibility with Windows XP, the window "Hardware Installation" is displayed.
9. To continue the installation, click CONTINUE ANYWAY.
   In the window "Found New Hardware Wizard", the menu "Completing the Found New Hardware Wizard" is displayed.
10. Click FINISH to complete the installation.

For more information, refer to the corresponding readme file.

SysKonnect Network Driver Installation Packages for Windows 2000, Windows XP and Windows Server 2003

There are two SysKonnect Network Driver Installation Packages for the SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express, containing the NDIS 5.0 and 5.1 32-bit Miniport drivers, the Virtual LAN (VLAN) intermediate driver, and the Link Aggregation (LAGG) intermediate driver. These packages support Windows 2000, Windows XP and Windows Server 2003. The installation process for these Windows versions is identical.

To install the package on Windows 2000, proceed as follows:

1. After you have installed the adapter in your computer (for details, see chapter 1 "Installation of the Network Adapter"), boot Windows 2000.
   Windows 2000 detects the SysKonnect SK-9E21D Adapter as "Ethernet Controller" during the boot operation.
   The window "Found New Hardware Wizard" is displayed.
2. Click CANCEL to continue the package installation.
3. Go to the folder where the "SysKonnect Network Driver Installation Package" (setupsknet.exe) is stored.
4. Double-click SETUPSKNET.EXE to start the installation of the package.
   The window "Welcome to the SysKonnect Network Installation Package Installation Wizard" is displayed.
5. Click NEXT to continue the installation.
   The window "License Agreement" is displayed.
6. Select the check box I ACCEPT THE LICENSE AGREEMENT.

7. Click NEXT.
    The window "Readme Information" is displayed.
8. Click NEXT.
    The window "Destination Folder" is displayed.
9. Select a folder where the application is to be installed.
    The default destination folder is \Program Files\SysKonnect\, on the partition where the operating system is located.
    To install in a different folder, click BROWSE and select a different folder.
10. Click NEXT.
    The window "Ready to install the application" is displayed.
11. Click NEXT to continue the installation.
    The window "Updating System - Installation of updated drivers" is displayed.
12. Click NEXT to continue the installation.
    In case the driver does not have a Microsoft Digital Signature yet, the window "Digital Signature Not Found" is displayed (in Windows XP, the window "Software Installation" is displayed).
13. To continue the installation, click YES (in Windows XP, click CONTINUE ANYWAY).
    The window "Updating System - Scan for New Hardware" is displayed.
14. If required, click NEXT to continue the installation.
    The menu "SysKonnect Network Installation Package has been successfully installed" is displayed.
15. Click FINISH to exit the installation program.
16. If the system requests a reboot, restart your computer.
    The "SysKonnect Network Control" can now be started from the Control Panel window:
    START > SETTINGS > CONTROL PANEL > SYSKONNECT NETWORK CONTROL.)

For more information, refer to the corresponding readme file.

Linux

The Linux driver for the SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express, supports the Linux kernel 2.4.13 and higher stable versions. The installation procedure for the various Linux distributions differs. The driver will be integrated into the kernel, i.e. using the standard installation procedure of your distribution to install Ethernet adapters should cause no problems. For details on the installation of Ethernet adapters, refer to the distribution's manual. The installation procedure described in this manual is a general description for Intel/x86 computers, which is valid for all distributions.

It is recommended to download the latest version of the driver from the SysKonnect web site http://www.syskonnect.com. If you have downloaded the latest driver, the Linux kernel has to be patched before the driver can be installed.

Patch the Linux kernel   To patch the Linux kernel, proceed as follows:

1. Login as "root".
2. Download the original Linux source code named `linux-a.b.c.tar.gz` or `linux-a.b.c.tar.bz2` (e.g. `linux-2.4.13.tar.bz2`) into the directory `/usr/src`.
    You can download the source code from the FTP site ftp://ftp.kernel.org or from one of its mirror sites.
    The linux kernel version has to match the version of the patch file.
3. Unpack the original Linux source code with one of the following commands:
    ```
    tar xvzf linux-a.b.c.tar.gz
    ```
    or
    ```
    tar xfvj linux-a.b.c.tar.bz2
    ```

After the sources have been installed, they can be found in a directory named either

```
/usr/src/linux-a.b.c
```

or

```
/usr/src/linux.
```

4. Usually, the directory `/usr/src/linux` is a symbolic link to the target kernel source tree but in some cases you may need to create it manually with the following command:

```
cd /usr/src
ln -s linux-a.b.c linux
```

5. To start the kernel build process, go to the topmost directory in the kernel source tree with the following command:

```
cd /usr/src
```

6. Patch the kernel with the following command:

```
zcat /patch-location/sk98lin_a_b_c_patch.gz | patch -p0
```

For initial driver setup, the driver must be installed and then be started manually. After successful installation, the driver can be included into the system start. The driver can either be integrated into the kernel or be compiled as a module. Select the appropriate option during kernel configuration.

The installation procedure is described for installing the driver on x86 systems. In addition to installing the driver, standard development tools, e.g. "make", "gcc", etc. have to be installed.

Install the driver   To use the driver as a module or integrate it into the kernel, proceed as follows:

1. After you have installed the adapter in your computer (for details, see chapter 1 "Installation of the Network Adapter"), boot your Linux system.
2. Login as "root".
3. Go to the directory /usr/src/linux.
4. Execute the command: `make menuconfig` for the console mode, or
    execute the command: `make xconfig` for the graphical mode.
    The kernel configuration menu is displayed.
5. Select the menu NETWORK DEVICE SUPPORT.
6. Select the menu ETHERNET (1000 MBIT).
7. To integrate the driver permanently into the kernel, mark MARVELL YUKON CHIPSET / SYSKONNECT 98XX SUPPORT with (*).
    To compile the driver as a module, mark MARVELL YUKON CHIPSET / SYSKONNECT 98XX SUPPORT with (M).
    The support for SysKonnect SK-9E21D Adapters is included in the SysKonnect 98xx Support.
8. Select EXIT.
    The Main Menu is displayed.
9. Select LOADABLE MODULE SUPPORT.
    The menu "Loadable module support" is displayed.
10. Select ENABLE LOADABLE MODULE SUPPORT.
11. Select KERNEL MODULE LOADER.
12. Select EXIT.
13. Configure other options, e.g. SCSI, file systems, etc.
14. To quit the configuration, select EXIT.
    The message "`Do you wish to save your new kernel configuration`" is displayed.
15. Select YES to save the new kernel configuration.
    Now build a new kernel by executing the following commands:
16. Execute the command: `make dep`.
17. Execute the command: `make clean bzImage`.

18. Execute the command: `make modules`.
19. Execute the command: `make modules_install`.
20. If you use "lilo" as a boot loader, execute the command:
    `make bzlilo`.
    If no errors occurred, the new kernel is installed in the "root" directory.
21. Go to the "root" directory by executing the command: `cd /`.
22. Copy the new kernel into your boot directory by executing the commands:
    `cp vmlinuz /boot/<name of the new kernel>` and
    `cp System.map /boot/`.
23. Edit the boot loader configuration file to boot the new kernel, e.g. "lilo.conf".
24. If you use "lilo" as a boot loader, execute the command: `lilo`.
25. Reboot your system with the new kernel.
26. If you use the driver as a module, continue with "Load the module".
    If you integrated the driver into the kernel, continue with "Assign an IP address".

Load the module   If you use the driver as a module, the module has to be loaded manually.

To load the module manually, proceed as follows:

1. Execute the following command: `modprobe sk98lin`.
2. If the SysKonnect adapter is installed in your computer and you have a /proc file system, execute the command:
   `ls /proc/net/sk98lin`.
   This should produce an output containing a line with the following format:
   `eth0 eth1 ...`
   which indicates that your adapter has been found and initialized.
   If several SysKonnect adapters are installed in your system, the adapters will be listed as "eth0", "eth1", "eth2", etc. The mapping is executed automatically.
   The module installation message (displayed either in a system log file or on the console) outputs a line for each adapter found containing the corresponding "ethX".
3. Assign an IP address.

Assign an   In order for the adapter to work, an IP address has to be assigned. For each adapter, repeat
IP address   steps 1 and 2 below.

To assign an IP address, proceed as follows:

1. Select an IP address by assigning it to the respective adapter:
   `ifconfig ethX <ip-address> <options>`
   (For detailed information about the available options refer to the system command reference.)
   With this command, the adapter is connected to the Ethernet. If your adapter is connected to the data network or another station, the green link LED is active (either on or blinking) after assigning the IP address. In addition, you will receive a status message on the console stating "ethX: network connection up using port Y" and showing the selected connection parameters. Now your adapter should be fully operational.
2. Execute `ping <other station>` to verify the connection to other computers on your network.

If you are in doubt about the IP addresses, ask your network administrator for assistance.

For more information, refer to the corresponding readme file or to the kernel documentation (which usually can be found in the directory `/usr/src/linux/Documentation/` on your system).

Sun Solaris (x86)

The Solaris x86 driver supports the SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express, on Solaris 7 and higher.

There are two tools for installing the driver package:

- "pkgadd", which runs from the command line
- "admintool", which uses a GUI

The following description of the driver installation is based on an installation on Solaris x86. It is valid for all Sun Solaris systems.

In order to perform the installation, you need "root" access.

Driver packages downloaded from our web site are available in a compressed format (.tar.Z files). The package has to be uncompressed before installation.

Uncompress the driver

To uncompress the downloaded driver package, proceed as follows:

1. Go to the directory where the compressed driver package is located, e.g. `/usr/SKGE/ skgesol_x86v7.00.tar.Z` for the x86 version.
   Uncompress the file with the following command:
   `uncompress skgesol_x86v<version number>.tar.Z`
   (e.g. `uncompress skgesol_x86v7.00.tar.Z`).
   The result is the file "skgesol_x86v<version number>.tar".
2. Untar this file with the following command:
   `tar -xvf skgesol_x86v<version number>.tar`
   The result is a subdirectory containing the driver package and the readme files in .html and .txt-format.
   The driver package is now ready to be installed.

Install the driver with "pkgadd"

To install the driver using "pkgadd", proceed as follows:

1. After you have installed the adapter in your computer (for details, see chapter 1 "Installation of the Network Adapter"), boot your Sun Solaris system.
2. Go to the directory where the subdirectory "SKGEsol" is located.
3. Execute "pkgadd":
   `pkgadd -d . SKGEsol`
   A shell window is displayed asking whether you want to configure IP interfaces during installation or not.
4. If yes, type `y`.
   If no, type `n`.
5. Press <Enter>.
   If you have typed `y` in step 4, continue with step 6.
   If you have typed `n` in step 4, only the driver will be loaded and all interfaces have to be configured manually. For details, refer to the corresponding readme file.
6. Enter the following values for every interface you want to configure as the system requests them:
   - the new interface's name ("skge0" for the first interface's name, "skge1" for the second one, etc.),
   - the IP address (e.g. 192.168.0.59), and
   - the netmask (e.g. 255.255.255.0).
   Once you have entered all information, the message "`Are these settings OK (y/ n)?`" is displayed.
7. If all settings are OK, type `y`.
8. Press <Enter>.

The message "`Do you have more SysKonnect Gigabit Ethernet interface adapters installed (y/n)?`" is displayed.

9. If yes, type `y`.

    If no, type `n`.

10. Press <Enter>

    If you have typed `y` in step 9, repeat steps 6 to 8.

    If you have typed `n`, continue with step 11.

11. When the message "`Do you want to continue with the installation of <SKGEsol> [y, n, ?]`" is displayed, type `y`.

    The driver package is installed.

    "pkgadd" will prompt you to reboot after successful installation, but this may be ignored.

Install the driver with "admintool"

To install the driver using "admintool", proceed as follows:

1. After you have installed the adapter in your computer (for details, see chapter 1 "Installation of the Network Adapter"), boot your Sun Solaris system.

2. Start "admintool".

    The window "Admintool: Users" is displayed.

3. Select BROWSE > SOFTWARE.

    The window "Admintool: Software", listing all available software, is displayed.

4. Select EDIT > ADD.

    The dialog box "Admintool: Set Source Media" is displayed.

5. Select the location of the "SKGEsol" subdirectory.

6. Click OK.

    In the displayed window, the left panel shows the available software packages.

7. Select SYSKONNECT SK-9EXX, SK-9SXX, SK-98XX AND SK-95XX..

8. Click ADD.

    The shell window "Admintool: Add Software" is displayed asking whether you want to configure IP interfaces during installation or not.

9. If yes, type `y`.

    If no, type `n`.

10. Press <Enter>.

    If you have typed `y` in step 9, continue with step 11.

    If you have typed `n` in step 9, only the driver will be loaded and you have to configure all interfaces manually. For details, refer to the corresponding readme file.

11. Enter the following values for every interface you want to configure as the system requests them:

    •   the new interface's name ("skge0" for the first interface's name, "skge1" for the second one, etc.),

    •   the IP address (e.g. 192.168.0.59), and

    •   the netmask (e.g. 255.255.255.0).

    Once you have entered all information, the message "`Are these settings OK (y/n)?`" is displayed.

12. If all settings are OK, type `y`.

    If no, type `n`.

13. Press <Enter>.

    If you have typed `n`, correct the settings and return to step 12.

    If you have typed `y`, the message "`Do you have more SysKonnect Gigabit Ethernet interface adapters installed (y/n)?`" is displayed.

14. If yes, type `y`.

    If no, type `n`.

15. Press <Enter>.

    If you have typed `y` in step 14, repeat steps 11 to 13.

If you have typed `n`, continue with step 16.

16. When the message "`Do you want to continue with the installation of <SKGEsol> [y, n,?]`" is displayed, type `y`.

    The driver package is installed.

    "Admintool" will prompt you to reboot after successful installation, but this may be ignored.

For more information, refer to the corresponding readme file.

Novell NetWare

The driver is a 32-bit ODI HSM Novell NetWare server driver for the SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express. The driver supports NetWare 6.x, NetWare 5.x, NetWare 4.20, Netware 3.12/3.20[1] and Novell Netware Client32 for DOS[1].

In addition to the 32-bit server driver a Novell ODI 16-bit DOS client MLID driver is available for the latest Novell NetWare VLM Client[1].

To perform the installation, you must have access to the server console.

Drivers downloaded from our web site are available in a packed format (.zip files). The downloaded file has to be unpacked before installation.

The setting for MINIMUM PACKET RECEIVE BUFFERS in the startup.ncf must be increased to at least 120 per adapter (e.g. for three adapters you should add "`Set Minimum Packet Receive Buffers = 360`" to startup.ncf). On SMP systems, you may have to multiply this number with the number of active processors.

Installation on Novell NetWare 4.20

To install the network driver on Novell NetWare 4.20, proceed as follows:

1. After you have installed the adapter in your computer (for details, see chapter 1 "Installation of the Network Adapter"), boot NetWare 4.20.
2. On the console, execute the following command: `load install`.
3. Select DRIVER OPTIONS (LOAD/UNLOAD DISK AND NETWORK DRIVERS).
    The menu "Driver Options" is displayed.
4. Select CONFIGURE NETWORK DRIVERS.
    The menu "Additional Driver Actions" is displayed.
5. Select DISCOVER AND LOAD ADDITIONAL DRIVERS.
    The system detects the SysKonnect adapter as "PCI Lan Controller 1148.9E00....".
6. To get a list of available drivers, press <Enter>.
    The menu "Select a driver" is displayed.
7. To install an unlisted driver, press <Insert> (the SysKonnect driver is not listed).
8. To specify the path to the driver, press <F3>.
    The window "Specify a directory path" is displayed.
9. Type the path to the driver.
    If you are installing from CD-ROM, the menu "Select an action" is displayed. Here, select CONTINUE AND ACCESS THE CD-ROM.
    The menu "Select a driver to install" is displayed.
10. Select the driver for your network adapter.
    The message "`Do you want to copy driver <driver name>.LAN?`" is displayed.

1.SysKonnect does not provide support for this driver.

11. To copy the driver to the server, select YES.

    If an older version of a SysKonnect driver is installed on the system, the messages "`Save existing file SYS:SYSTEM\<driver name.LAN?`" and "`Save existing file SYS:SYSTEM\<driver name>.LDI?`" are displayed.

12. To continue, select the desired options (YES or NO).

    The menu "Board SK-98NW_1 (Driver <driver name>) Actions" is displayed.

13. Select SELECT MODIFY DRIVER PARAMETERS/PROTOCOLS.

14. Configure the protocols to be used.

15. Configure the parameters, e.g. "slot number".

16. After the parameters have been configured, select SAVE PARAMETERS AND LOAD DRIVER.

    The driver is loaded.

    Once the driver has been installed, the adapter parameters or bindings can be changed in the autoexec.ncf file using the "Install" tool.

For more information, refer to the corresponding readme file.

Installation on Novell NetWare 5 and 6

The installation procedure for NetWare 5 and 6 is identical.

To install the network driver on Novell NetWare 5 or 6, proceed as follows:

1. After you have installed the adapter in your computer (for details, see chapter 1 "Installation of the Network Adapter"), boot NetWare 5 or 6.

    NetWare detects the new adapter and tries to install a driver.

2. To get a list of available drivers, press <Enter>.

    The menu "Select a driver" is displayed.

3. To install an unlisted driver, press <Insert> (the SysKonnect driver is not listed).

4. To specify the path to the driver, press <F3>.

    The window "Specify a directory path" is displayed.

5. Type the path to the driver.

    If you are installing from CD-ROM, the menu "Select an action" is displayed. Here, select CONTINUE AND ACCESS THE CD-ROM.

    The menu "Select a driver to install" is displayed.

6. Select the driver for your network adapter.

    The message "`Do you want to copy driver <driver name>.LAN?`" is displayed.

7. To copy the driver to the server, select YES.

    If an older version of a SysKonnect driver is installed on the system, the messages "`Save existing file SYS:SYSTEM\<driver name.LAN?`" and "`Save existing file SYS:SYSTEM\<driver name>.LDI?`" are displayed.

8. To continue, select the desired options (YES or NO).

    The menu "Board SK-98NW_1 (Driver <driver name>) Actions" is displayed.

9. Select SELECT MODIFY DRIVER PARAMETERS/PROTOCOLS.

10. Configure the protocols to be used.

11. Configure the parameters, e.g. "slot number".

12. After the parameters have been configured, select SAVE PARAMETERS AND LOAD DRIVER.

    The driver is loaded.

    Once the driver has been installed, the adapter parameters or bindings can be changed in the autoexec.ncf file using the "Nwconfig" tool.

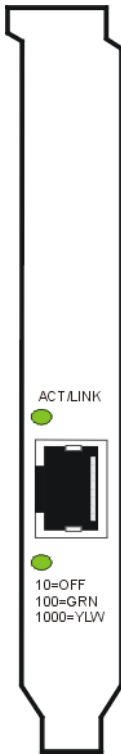For more information, refer to the corresponding readme file.

4 Features

The SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express, constitutes a follow-up model of the SK-9521 V2.0 Adapter Family. It is compliant to the latest PCI Express 1.0a standard and supports a PCI express single lane (x1).

For information about other SysKonnect network products, please refer to the product overview on our web site: http://www.syskonnect.com.

Type of Adapter

The following table lists the characteristics of the SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express.

	SysKonnect SK-9E21D Adapter
LAN interface	10/100/1000Base-T
Ports	Single link
Connector	RJ-45
Media	Copper
Type	Cat5
Bracket	ACT/LINK 10=OFF 100=GRN 1000=YLW

The type of port on the network adapter must be identical with that on the switch.

Operating System Support

The drivers for the SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express, support the following operating systems:

- Windows NT 4.0, Windows 98 Second Edition, Windows Millennium Edition, Windows 2000, Windows XP and Windows Server 2003
- Linux kernel 2.4.13 and higher stable versions
- Novell NetWare 4.20, Novell NetWare 5.x, and Novell NetWare 6.x
- Novell NetWare VLM Client for DOS[1], Novell Netware Client32 for DOS[1], Novell NetWare 3.12/20[1]
- Sun Solaris 7 and higher on x86 systems

High Performance

The SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express, is a high performance and highly reliable adapter. It uses the new PCI Express technology that offers increased bandwidth and extended capabilities over the conventional PCI bus.

TCP, UDP and IP checksum calculation

The adapter supports the calculation of TCP, UDP, and IP checksums. These calculations are integrated in the hardware of the Gigabit Ethernet adapters. The checksums are calculated without time loss by the MAC controller for both receive and transmit path. This improves the overall performance of the system and shifts these CPU-intensive tasks away from the host CPU.

Jumbo Frames

The SysKonnect SK-9E21D Adapter supports 9 KB Jumbo frames. It is tested according to the prevailing standard and switches on the market.

TCP Segmentation (Large Send Off-Load)

TCP Segmentation that is handled by the SysKonnect SK-9E21D Adapter itself reduces CPU load significantly. This provides high throughput for superior network performance and improves application response.

Dynamic Interrupt Moderation

If the network is running at gigabit speed and small packets are being transferred, there may in extreme cases be more than 100,000 interrupts per second. To reduce the load on the CPU, the SysKonnect SK-9E21D Adapter can use *interrupt moderation* to group these interrupts so that several data packets can be handled per interrupt.

For more information, refer to the White Paper "SK-NET GE Gigabit Ethernet Server Adapter", which can be found on the installation CD-ROM and on our web site.

1.SysKonnect does not provide support for this driver.

Promiscuous Mode / Multicast Support

The SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express, supports *promiscuous mode* for analyzers. By default, the promiscuous mode is turned off. In addition, the adapter supports multicast for special applications, which use multicast addresses.

Alert Standard Format (ASF)

The SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express, fully supports integrated ASF 2.0 (Alert Standard Format) functionality that enables monitoring and remote controlling of client systems that are in "Shut down" or "OS absent" states.

Possible usage scenarios for ASF are:

- System's Health Monitoring (e. g. Voltage and Temperature alerts)
- Asset Management (e. g. Chassis intrusion alerts)
- Remote Management and Control (e. g. Power down and System reset)

PXE / RPL Support

The SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express, supports both the standard PXE 2.1 (*Pre-Boot eXecution Environment*) and the protocol RPL (*Remote Program Load*). This allows networked computers that are not yet loaded with an operating system to be configured and booted remotely by an administrator. PXE resp. RPL grants the advantage that client machines do not necessarily need an operating system or a hard disk and that they can be rebooted remotely in the event of hardware or software failures.

Advanced Power Management / Wake on LAN

The SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express, supports power management as defined in the PCI Bus Power Management Interface Specification V1.1 and Network Device Class Power Management Reference Specification V2.0. The power management features are implemented according to the Advanced Configuration and Power Interface Specification V2.0.

The SysKonnect SK-9E21D Adapter utilizes an auxiliary power supply to keep some parts running. This setting enables the PCI Express network device to "Wake on LAN".

The Wake on LAN functionality uses three mechanisms to create a wake up event:

- OnNow Pattern Match Detect
  Incoming packets are compared to up to seven patterns stored in a pattern matching table. A match causes a wake up event.
- Magic Packet[TM] Detect
  The incoming data stream is searched for a so-called *magic packet frame* that consists of 6 bytes of 0xFF followed by 16 iterations of the adapter's MAC address. If this sequence is found, a wake up event is created.
- Link Change Detect
  Any change of the link status will cause a wake up event.

Wake on LAN is supported by Windows 98 SE, Windows Me, Windows 2000, Windows XP and Windows Server 2003.

Reliability

The SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express, comes with a variety of reliability features. They aim at maintaining a connection as long as possible. This is reached by redundant or grouped links (link aggregation). The driver functions help to monitor the health of adapters and their ports enabling pro-active network management. The reliability features are described in the following sections.

Link Aggregation

Link aggregation or *trunking* is a method of combining physical network links into a single logical link for increased bandwidth. With link aggregation, it is possible to increase the capacity and availability of the communications channel between devices (both switches and end stations) using existing Fast Ethernet and Gigabit Ethernet technology. Two or more Gigabit Ethernet connections are combined into a team in order to increase the bandwidth capability and to create resilient and redundant links. A set of multiple parallel physical links between two devices is grouped together to form a single logical link. Link aggregation offers an efficient and low-cost solution to increase bandwidth between server and switch. Another advantage it provides is that if a connection fails completely the remaining links can take over the traffic and thus replace the broken line.

Link aggregation also provides load balancing where the processing and communications activity is distributed across several links so that no single link is overwhelmed.

By taking multiple LAN connections and treating them as a unified, aggregated link, practical benefits can be achieved in many applications.

Link aggregation provides the following important benefits:
• Higher link availability
• Increased link capacity
• Improvements are obtained using existing hardware (no upgrading to higher-capacity link technology is necessary)

Demanding applications running in high-performance environments like servers in enterprises, web servers, and intranet servers gain particularly from the high-bandwidth and duplex capabilities of link aggregation.

All SysKonnect Gigabit Ethernet Adapters support link aggregation according to the IEEE standard 802.3ad. At the moment, SysKonnect provides a link aggregation driver for Windows 2000, Windows XP and Windows Server 2003. The drivers for Linux are able to support link aggregation according to the IEEE standard 802.3ad by installing third party open source modules. For details, refer to the corresponding readme file. In the future, link aggregation support according to IEEE 802.3ad will be implemented in SysKonnect drivers for other operating systems as well. For driver updates, refer to our web site: http://www.syskonnect.com.

For more information on link aggregation, refer to the white paper "Link Aggregation according to IEEE 802.3ad", which can be found on the SysKonnect installation CD-ROM and on our web site.

Redundant Switch Failover

Beyond the features required for link aggregation in the IEEE 802.3ad standard, SysKonnect drivers support an additional failover feature, the so-called *Redundant Switch Failover* (RSF). If a switch fails completely, RSF can move the link to a different switch which then takes over the traffic.

At the moment, this feature is implemented in the driver package for Windows 2000, Windows XP and Windows Server 2003 but will be available for other operating systems in the future. The standard requires that all links of a link aggregation group (team) are connected to the same partner (usually a switch supporting 802.3ad). With SysKonnect's link aggregation driver, one team (group of logical links) can comprise several aggregators (sub-group beneath team level). If a team has several aggregators, which are connected to separate switches, the failover feature is utilized. Data is transferred via one aggregator, and is, if this aggregator fails, automatically switched over to another aggregator in the same team.

For more information on RSF, refer to the white paper "Link Aggregation according to IEEE 802.3ad", which can be found on the SysKonnect installation CD-ROM and on our web site.

PCI Express Hot-Plug

As a member of the PCI Special Interest Group, SysKonnect has a long experience in the standardization of the insertion and removal of PCI computer cards during normal operation. The SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express, provide native Hot-Plug Support according to the PCI Express 1.0a and Advanced Configuration and Power Interface Specification Revision V2.0.

Hot-Plug enables the replacement of failed devices in a running system. The following conditions have to be met in order for Hot-Plug to work on the SysKonnect SK-9E21D Adapter:

• The target system has PCI Express Hot-Plug slots, i.e. the power can be switched on and off under the control of the operating system.
• The adapter is installed in one of the PCI Express Hot-Plug slots.
• The operating system supports PCI Express Hot-Plug on the target system.

The drivers for the following operating systems support PCI Express Hot-Plug:

• Windows 2000, Windows XP and Windows Server 2003
• NetWare 4.20 and higher
• Solaris 7 and higher

Parity

The integrity of data that pass from the network through the system and back to the network is monitored by generating and checking parity information on all available data paths. All data errors are detected immediately and can be reported.

Virtual LAN (VLAN) support

A Virtual LAN is a group of network devices that belong to the same network segment, regardless of the physical network structure. A logical network structure based on business requirements is possible. With virtual networks, physical location no longer specifies the network a user is assigned to: user clients with similar networking requirements can be united in one network group, or VLAN. This VLAN can be established to meet a wide variety of organizational or technical needs. All members of a department can, for example, be gathered into

a network group, even if they are distributed over several buildings. Colleagues working on the same project can be united in a common VLAN, even if they belong to different departments in different buildings or even different locations. Other network groups can be made invisible to these users. Using Virtual LANs can improve network performance, limit broadcast storms, minimize security problems and ease the management task.

By means of frame tagging, the SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express, can support up to 64 IP address assignments in a single network connection. Thus, multiple VLANs can be configured for one port. Stations can be accessed from systems in multiple IP sub nets without traversing routers. Additionally, multiple application VLANs can be defined to isolate traffic for performance and security purposes. For this reason, the server can be physically connected to a single switch port but still belong to several VLANs. The Gigabit Ethernet adapter can receive tagged packets and is able to tag outgoing packets. The switch the adapter is connected to must support VLAN tagging according to IEEE 802.1q.

For several operating systems, SysKonnect offers drivers that support VLAN tagging and thus can be applied for VLAN servers and terminal units.

For more information on Virtual LANs, refer to the White Paper "Virtual Networks", which can be found on the installation CD-ROM under "White Papers" or on our web site under "Technology". Also see the corresponding readme files for the respective drivers.

Virtual Cable Tester™ (VCT)

The VCT technology utilizes Time Domain Reflectometry (TDR) technology to remotely diagnose the quality and characteristics of the attached cables. Using this technology it is possible to detect and report potential cabling issues such as cable opens, cable shorts or any impedance mismatches in the cable and accurately report - within one meter - the distance to the fault. The VCT technology enables the IT manager or the end user to quickly identify the failing mechanism and isolate the source of the problem.

5 Troubleshooting

Searching for errors

Problem	What to do
Another expansion card fails to work after the network adapter has been installed	Make sure all cables are connected to the correct expansion cards. Make sure the expansion cards are correctly inserted. Check if any internal connections in the computer have been disengaged or were damaged during the installation of the network adapter. Check for resource conflicts in the computer. Check PCI Express configuration and resource allocation.
The computer does not detect the network adapter	Make sure the adapter is properly seated in the computer. Try installing the adapter in a different bus master compatible PCI Express slot.
The network adapter fails during normal operation	Load or install the driver again.
LED for receiving / transmitting data packets (ACT) is not illuminated	Make sure the network driver is loaded. Is there any network overload? Is the switch port configured correctly? Is the maximum transmission distance exceeded (see page 17)? If you have any other SysKonnect adapter installed, compare your setup with this adapter.

LED Displays

Once the driver has been installed, the adapter is operational. The current status and speed are indicated by the LEDs.
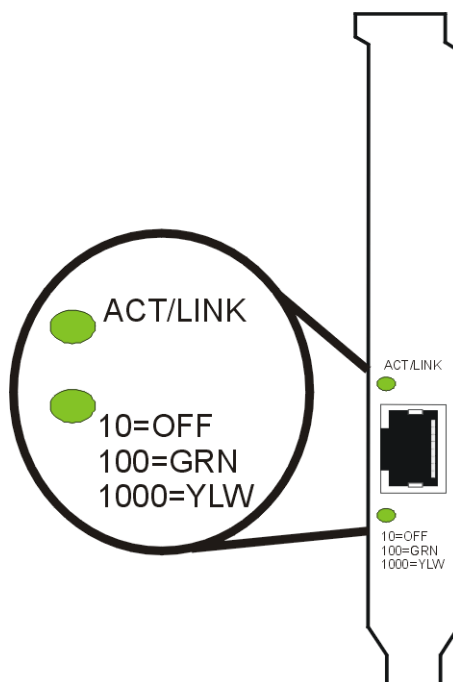
Figure 3. Location of the LEDs

The LEDs of the SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express, have the following meaning:

Marking on bracket	Color	Status	Description
ACT/LINK		OFF	Link down
	green	ON	Link up
	green	Blinking	Link up and Receiving / Transmitting
10/100/1000		OFF	Speed 10 Mbit/s
	green	ON	Speed 100 Mbit/s
	yellow	ON	Speed 1000 MBit/s

6 Important Information

Technical Support

If you encounter any problems, read the relevant sections of the manual and the readme files on the CD-ROM. If you cannot solve your problems, consult our technical support.

If you contact our technical support engineers, have the following information ready:

- adapter type
- driver version
- operating system
- configuration of your computer
- type of cabling

Our support team can be reached as follows:

	North / South America, Pacific Rim	Europe
Office hours	24 hours support via paging service	Mon-Thu 8:00 AM - 5:00 PM Fri 8:00 AM - 03:30 PM (CET)
Phone	+1 866 782 2507 (toll free in the USA) +1 408 222 0666 (toll number for international callers) +1 408 787 5395 (pager)	+49 7243 502 330
Fax	+1 408 752 9029	+49 7243 502 364
WWW	http://www.syskonnect.com	http://www.syskonnect.de
E-mail	support@syskonnect.com	support@syskonnect.de
Address	SysKonnect, Inc. A Marvell®Company 700 First Avenue Sunnyvale, CA 94089 USA	SysKonnect GmbH A Marvell®Company Siemensstr. 23 D-76275 Ettlingen Germany

Calls received outside office hours in Europe are serviced by an answering machine and will be dealt with as soon as possible.

Returning an Adapter for Repair

If you want to return a faulty product to SysKonnect, follow these steps:

1. Contact us by phone, fax, or e-mail.

	North / South America, Pacific Rim	European and other countries
Phone	+1 866 782 2507 (toll free) +1 408 222 0666 (toll number)	+49 7243 502 476
Fax	+1 408 752 9029	+49 7243 502 364
E-mail	support@syskonnect.com	rma@syskonnect.de

We will send you an RMA (Return Material Authorization) form by fax or e-mail.

2. Complete the form.

3. Return the form to us.

   We will send you a unique reference number and inform you if the product is still under warranty.

4. Send us the faulty product packed in an antistatic bag, with a copy of the completed form enclosed in its original packaging (or comparable packaging).

5. Write the reference number issued by SysKonnect clearly visible on the outer packaging.

SysKonnect cannot accept any returned product without an RMA number on the outer packaging. The warranty does not apply to products that have been damaged by electrostatic discharge or inadequate packaging.

Additional Documentation and Updates

On the installation CD-ROM additional information is available, i.e. about other SysKonnect products or other language versions of this manual.

To view a document on the CD-ROM, proceed as follows:

1. Insert the installation CD-ROM into your CD-ROM drive.

2. On the start page of the CD-ROM, click DOCUMENTATION.
   A list with the available manuals is displayed.

3. Click the appropriate document.
   The PDF file is displayed.

SysKonnect maintains a site on the World Wide Web where you can find the latest information on our product range and our customer support services. The latest drivers are also provided on the SysKonnect web site.

To download the latest drivers from our web site, proceed as follows:

1. Visit our web site: http://www.syskonnect.com.

2. Click the button DRIVER LIBRARY.
   The latest drivers, sorted by product groups, can be found here.

3. Click the appropriate network technology, e.g. GIGABIT ETHERNET (10/100/1000BASE-T).

4. Select the product family SK-9Exx 10/100/1000BASE-T ADAPTERS.
   The available drivers for this adapter are displayed.

5. Click the appropriate driver.

6. Click the diskette symbol to download the driver.

Technical Specifications

Network interface standard	IEEE 802.3 and IEEE 802.3u (Ethernet and Fast Ethernet)
	IEEE 802.3ab and IEEE 802.3z (Gigabit Ethernet)
	IEEE 802.3x (Flow-control and Auto-negotiation)
	IEEE 802.1p (Quality of Services)
	IEEE 802.1q and IEEE 802.3ac (VLAN and VLAN tagging)
	IEEE 802.3ad (Link Aggregation)
RAM	48 kByte RAM on-chip buffer
SPI Flash Memory	256 kByte
Serial EEPROM	Maximum size: 1 kByte
	256 bytes can be used for VPD (read-only and writable section)
PCI Express	PCI Express 1.0a compliant
	x1 PCI Express Serial Link (adapter can also be operated in x4, x8 and x16 slots)
Power management	Advanced Power Management according to PCI Bus Power Management Interface Specification, Revision 1.1 or later and Network Device Class Power Management Reference Specification V2.0
PCI Express Native Hot-Plug	Hot-Plug Support according to PCI Express 1.0a and Advanced Configuration and Power Interface Specification Revision V2.0
ASF Functionality	SMBus 2.0 master interface for ASF functionality
	Serial Peripheral Interface for ASF firmware
Safety standards	Europe: EN60950 – IEC 60950 – VDE 0805
	USA / Canada: cULus listed accessory (UL 60950, CSA C22.2)
	International: CB certification
Approved use	The SysKonnect SK-9E21D 10/100/1000Base-T Adapter, PCI Express, is for use in a compatible Listed Personal Computer that has Installation Instructions detailing user installation of card cage accessories.
EMC standards	Europe: EN55022; IEC – CISPR-22 Class B
	EN 55024; IEC – CISPR-24
	USA: FCC, CFR 47 Part 15, Declaration of Conformity Class B
Power consumption	@ +3.3V / VCC: max. 2.3 W @ +3.3V(aux): max. 375 mA
Dimensions (max.)	86.36 mm x 55.32 mm
Temperature range	Operation: 0°C to + 50°C
	Storage: -20°C to + 70°C
Relative humidity	Operation: 30% to 80% non-condensing
	Storage: 10% to 95% non-condensing
Warranty	5 years

Appendix A. License and Warranty Information

The Americas, Asia, Australia, New Zealand, Pacific

Dear Customer,

if you acquired your SysKonnect product in the UNITED STATES, CANADA or any other country in the AMERICAS, ASIA, AUSTRALIA, NEW ZEALAND, PACIFIC, the following license and purchase agreement applies to you.

This is a legal agreement between you, the end user and SysKonnect Incorporation, a California U.S.A. Incorporation (SysKonnect Inc.).

SysKonnect Inc. License and Purchase Agreement

By opening the sealed disk package and taking possession of the hardware, you are agreeing to be bound by the terms of this Agreement. If you do not agree to the terms of this Agreement, promptly return the unopened and unused disk package and hardware with the accompanying items (including all written materials and other accessories) to the place of purchase for a full refund.

Grant of Software License

This SysKonnect Inc. License Agreement (License) permits you to use one copy of the SysKonnect Inc. software product acquired with this License ("SOFTWARE") on any single computer, provided the SOFTWARE is in use on only one computer at any time. If you have multiple Licenses for the SOFTWARE, then at any time, you may have as many copies of the SOFTWARE in use as you have Licenses. The SOFTWARE is "in use" on a computer when it is loaded into the temporary memory (i.e. RAM) or installed into the permanent memory (e.g. hard disk or other storage device) of that computer, except that a copy installed on a network server for the sole purpose of distribution to other computers is not "in use". If the anticipated number of users of the SOFTWARE will exceed the number of applicable Licenses, then you must have a reasonable mechanism or process in place to assure that the number of persons using the SOFTWARE concurrently does not exceed the number of Licenses. If the SOFTWARE is permanently installed on the hard disk or other storage device of a computer (other than a network server) and one person uses that computer more than 80% of the time it is in use, then that person may also use the SOFTWARE on a portable or home computer.

Copyright

The SOFTWARE is owned by SysKonnect Inc. or its suppliers and is protected against copying by copyright laws, international treaty provisions and other national laws.

If the SOFTWARE is not copy protected you may either make one copy of the SOFTWARE solely for backup or archival purposes, or transfer the SOFTWARE to a single hard disk provided you keep the original solely for backup or archival purposes.

You may not copy the Product Manual(s) or written materials accompanying the SOFTWARE or HARDWARE.

Other Restrictions

You may not rent or lease the SOFTWARE or HARDWARE, but you may transfer your rights under this SysKonnect Inc. License and Purchase Agreement on a permanent basis provided you transfer all copies of the SOFTWARE and all written materials, and the recipient agrees to the terms of this Agreement. You may not reverse engineer, decompile or disassemble the SOFTWARE. Any transfer must include the most recent update and all prior versions.

Hardware

SysKonnect Inc. warrants, that the hardware will be delivered free from defect and in working condition. SysKonnect Inc. does not assume liability for nor warrant damage to the hardware after delivery. SysKonnect also does not warrant total applicability for specific applications or customer Network environments.

Limited Warranty for Hardware and Software

Limited Warranty

SysKonnect Inc. warrants that the SOFTWARE will perform substantially in accordance with the accompanying Product Manual(s) for a period of 90 days from the date of receipt.

SysKonnect warrants

that NETWORK INTERFACE CARDS will be free from defects in materials and workmanship under normal use and service for a period of 5 years from the date of receipt, that NETWORK INFRASTRUCTURE COMPONENTS (e.g., hubs, switches, concentrators) will be free from defects in materials and workmanship under normal use and service for a period of 2 years from the date of receipt, and other HARDWARE for a period of 6 months from the date of receipt respectively.

This warranty is given by SysKonnect Inc. as producer of the PRODUCT; possible legal warranty or liability claims against the dealer, whom you have acquired your SOFTWARE or HARDWARE product from, shall neither replaced by nor limited through this warranty.

Customer Remedies

SysKonnect's entire liability and your exclusive remedy shall be, at SysKonnect's option, either return of the price paid, or repair or replacement of the SOFTWARE or HARDWARE that does not meet SysKonnect's Limited Warranty and which is returned to SysKonnect Inc. with a copy of your receipt. This Limited Warranty is void if failure of the SOFTWARE or HARDWARE has resulted from accident, abuse, or misapplication. Any replacement SOFTWARE will be warranted by SysKonnect Inc. only for the remainder of the original warranty period or 30 days, whichever is longer. Any replacement HARDWARE will be warranted for the remainder of the original warranty period or 6 months, whichever is longer.

No other Warranties

SysKonnect Inc. disclaims all other warranties or liabilities with respect to the SOFTWARE, the HARDWARE, the accompanying Product Manual(s) and other written materials and any other accessories.

No Liability for Consequential Damages

SysKonnect Inc. does not warrant the software and hardware for a specific application, nor does SysKonnect Inc. accept any consequential damages due to the use of the hardware or software. SysKonnect Inc. and its suppliers shall not be liable for any other damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information or data, property loss or other financial loss), arising out of the use of or the inability to use this SysKonnect Inc. product, even if SysKonnect Inc. has been advised of the possibility of such damages. In any case, SysKonnect's entire liability shall be limited to the amount actually paid by you for the product.

Other

This agreement is governed by the procedural and substantive laws of the State California, U.S.A. UN Trade Laws shall not be applicable in any case.

Should individual stipulations of this Agreement be or become invalid, this invalid stipulation shall be replaced by a stipulation, which is as close as possible to the invalid stipulation.

Should you have any questions concerning this Agreement, or if you desire to contact SysKonnect Inc. for any reason, please use the address information enclosed in this product or write to: SysKonnect Inc., A Marvell®Company, 700 First Avenue, Sunnyvale, CA 94089.

U.S. Government Use

Use, duplication, or disclosure by the United States Government is subject to restrictions as set forth in FAR § 52.227-14 (June 1987) Alternate III(g)(3) (June 1987), FAR § 52.227-19 (June 1987), or DFARS § 52.227-7013 (c)(1)(!!) (June 1988), as applicable. Contractor / Manufacturer is SysKonnect, Inc., A Marvell®Company, 700 First Avenue, Sunnyvale, CA 94089.

Europe

Dear Customer,

if you acquired your SysKonnect product in EUROPE, the following license and purchase agreement applies to you: This is a legal agreement between you, the end user and SysKonnect GmbH, incorporated in Ettlingen/Federal Republic of Germany.

SysKonnect License and Purchase Agreement

By opening the sealed disk package and taking possession of the hardware, you are agreeing to be bound by the terms of this Agreement. If you do not agree to the terms of this Agreement, promptly return the unopened and unused disk package and hardware with the accompanying items (including all written materials and other accessories) to the place of purchase for a full refund.

Grant of Software License

This SysKonnect License Agreement (License) permits you to use one copy of the SysKonnect software product acquired with this License ("SOFTWARE") on any single computer, provided the SOFTWARE is in use on only one computer at any time. If you have multiple Licenses for the SOFTWARE, then at any time, you may have as many copies of the SOFTWARE in use as you have Licenses. The SOFTWARE is "in use" on a computer when it is loaded into the temporary memory (i.e. RAM) or installed into the permanent memory (e.g. hard disk or other storage device) of that computer, except that a copy installed on a network server for the sole purpose of distribution to other computers is not "in use". If the anticipated number of users of the SOFTWARE will exceed the number of applicable Licenses, then you must have a reasonable mechanism or process in place to assure that the number of persons using the SOFTWARE concurrently does not exceed the number of Licenses. If the SOFTWARE is permanently installed on the hard disk or other storage device of a computer (other than a network server) and one person uses that computer more than 80% of the time it is in use, then that person may also use the SOFTWARE on a portable or home computer.

Copyright

The SOFTWARE is owned by SysKonnect or its suppliers and is protected against copying by copyright laws, international treaty provisions and other national laws.

If the SOFTWARE is not copy protected you may either make one copy of the SOFTWARE solely for backup or archival purposes, or transfer the SOFTWARE to a single hard disk provided you keep the original solely for backup or archival purposes.

You may not copy the Product Manual(s) or written materials accompanying the SOFTWARE or HARDWARE.

Other Restrictions

You may not rent or lease the SOFTWARE or HARDWARE, but you may transfer your rights under this SysKonnect License and Purchase Agreement on a permanent basis provided you transfer all copies of the SOFTWARE and all written materials, and the recipient agrees to the terms of this Agreement. You may not reverse engineer, decompile or disassemble the SOFTWARE. Any transfer must include the most recent update and all prior versions.

Hardware

The risk passes to you, the end user, upon taking possession (hand over) of the HARDWARE. Total qualities were not warranted.

Limited Warranty for Hardware and Software

Limited Warranty

SysKonnect warrants that the SOFTWARE will perform substantially in accordance with the accompanying Product Manual(s) for a period of 90 days from the date of receipt if you have created the required technical preconditions.

SysKonnect warrants that NETWORK INTERFACE CARDS will be free from defects in materials and workmanship under normal use and service for a period of 5 years from the date of receipt, that NETWORK INFRASTRUCTURE COMPONENTS (e.g., hubs, switches, concentrators) will be free from defects in materials and workmanship under normal use and service for a period of 2 years from the date of receipt, and other HARDWARE for a period of 6 months from the date of receipt respectively.

Any implied warranties on the SOFTWARE are limited to 90 days, to 5 years on the NETWORK INTERFACE CARDS, to 2 years on the NETWORK INFRASTRUCTURE COMPONENTS and to 6 months on all other hardware. This warranty is given by SysKonnect as producer of the PRODUCT; possible legal warranty or liability claims against the dealer, whom you have acquired your SOFTWARE or HARDWARE product from, shall neither replaced by nor limited through this warranty.

Customer Remedies

SysKonnect's entire liability and your exclusive remedy shall be, at SysKonnect's option, either

return of the price paid, or repair or replacement of the SOFTWARE or HARDWARE that does not meet SysKonnect's Limited Warranty and which is returned to SysKonnect with a copy of your receipt. This Limited Warranty is void if failure of the SOFTWARE or HARDWARE has resulted from accident, abuse, or misapplication. Any replacement SOFTWARE will be warranted by SysKonnect only for the remainder of the original warranty period or 30 days, whichever is longer. Any replacement HARDWARE will be warranted for the remainder of the original warranty period or 6 months, whichever is longer.

No other Warranties

SysKonnect disclaims all other warranties or liabilities with respect to the SOFTWARE, the HARDWARE, the accompanying Product Manual(s) and other written materials and any other accessories.

No Liability for Consequential Damages

SysKonnect does not warrant the software and Hardware for a specific application, nor does SysKonnect accept any consequential damages due to the use of the hardware or software. SysKonnect and its suppliers shall not be liable for any other damages whatsoever (including, without limitation, damages for loss of business profits, business interruption, loss of business information or data, property loss or other pecuniary loss), arising out of the use of or the inability to use this SysKonnect product, even if SysKonnect has been advised of the possibility of such damages. In any case, SysKonnect's entire liability shall be limited to the amount actually paid by you for the product.

Other

This agreement is governed by the procedural and substantive laws of the Federal Republic of Germany. UN Trade Laws shall not be applicable in any case. Place of litigation is Karlsruhe, FRG, as far as this can be agreed upon operatively in this way.

Should individual stipulations of this Agreement be or become invalid, this invalid stipulation shall be replaced by a stipulation, which is as close as possible to the invalid stipulation.

Should you have any questions concerning this Agreement, or if you desire to contact SysKonnect for any reason, please use the address information enclosed in this product or write to: SysKonnect GmbH, Siemensstrasse 23, D-76275 Ettlingen.

Deutschland, Schweiz, Österreich, Liechtenstein

Verehrte Kundin, verehrter Kunde

wenn Sie Ihr SysKonnect Produkt in DEUTSCHLAND, in der SCHWEIZ, in ÖSTERREICH oder in LIECHTENSTEIN erworben haben, gilt für Sie der folgende Lizenz- und Kaufvertrag. Dies ist ein rechtsgültiger Vertrag zwischen Ihnen, dem Endanwender, und der SysKonnect GmbH mit Sitz in Ettlingen/Bundesrepublik Deutschland.

SysKonnect Lizenz- und Kaufvertrag

Durch Öffnen der versiegelten Diskettenpackung und durch die Inbesitznahme der Hardware erklären Sie sich an die Bestimmungen der nachfolgenden Vereinbarung gebunden. Wenn Sie mit den Bestimmungen dieses Vertrages nicht einverstanden sind, geben Sie bitte die Diskettenpackung und die Hardware ungeöffnet und unbenutzt mit den Begleitgegenständen (einschließlich aller schriftlichen Unterlagen und dem sonstigen Zubehör) unverzüglich gegen volle Rückerstattung des Preises an die Stelle zurück, von der Sie sie bezogen haben.

Einräumung einer Software-Lizenz

Diese SysKonnect Lizenzvereinbarung (Lizenz) gibt Ihnen die Berechtigung, eine Kopie des SysKonnect Software Produktes, das mit dieser Lizenz (Software) erworben wurde, auf einem Einzelcomputer unter der Voraussetzung benutzen, dass die Software zu jeder beliebigen Zeit auf nur einem einzigen Computer verwendet wird. Wenn Sie Mehrfachlizenzen für die Software erworben haben, dürfen Sie immer nur höchstens so viele Kopien in Benutzung haben, wie Sie Lizenzen besitzen. Die Software ist auf einem Computer "in Benutzung", wenn Sie in den Zwischenspeicher (d.h., RAM) geladen oder in einem Permanentspeicher (z.B. einer Festplatte oder einer anderen Speichervorrichtung) dieses Computers gespeichert ist, mit der Ausnahme, dass eine Kopie, die auf einem Netzserver zu dem alleinigen Zweck der Verteilung an andere Computer installiert ist, nicht "in Benutzung" ist. Wenn die voraussichtliche Zahl der Benutzer der Software die Zahl der erworbenen Lizenzen übersteigt, müssen Sie angemessene Mechanismen oder Verfahren bereithalten, um sicherzustellen, dass die Zahl der Personen, die die Software gleichzeitig benutzen, nicht die Zahl der Lizenzen übersteigt. Wenn die Software permanent auf einer Festplatte oder einer anderen Speichervorrichtung eines Computers, der kein Netzserver ist, installiert wird und eine einzige Person diesen Computer zu mehr als 80 % der Zeit benutzt, die er in Benutzung ist, darf diese eine Person die Software auch auf einem tragbaren Computer oder einem Heimcomputer benutzen.

Urheberrecht

Die Software ist Eigentum von SysKonnect oder deren Lieferanten und ist durch Urheberrechtsgesetze, internationale Verträge und andere nationale Rechtsvorschriften gegen Kopieren geschützt.

Wenn die Software nicht mit einem technischen Schutz gegen Kopieren ausgestattet ist, dürfen Sie entweder eine einzige Kopie der Software ausschließlich für Sicherungs- oder Archivierungszwecken machen die Software auf eine einzige Festplatte übertragen, sofern Sie das Original ausschließlich zu Sicherungs- und Archivierungszwecken aufbewahren.

SysKonnect SK-9E21D 10/100/1000Base-T Adapter PCI Express

Sie dürfen weder die Handbücher des Produktes noch anderes schriftliches Begleitmaterial zur Software oder Hardware kopieren.

Weitere Beschränkungen

Sie dürfen die Software oder Hardware weder vermieten noch verleihen, aber Sie dürfen die Rechte aus diesem SysKonnect Lizenz-
und Kaufvertrag auf Dauer auf einen anderen übertragen, vorausgesetzt, dass Sie alle Kopien der Software und das gesamte schrift-
liche Begleitmaterial übertragen und der Empfänger sich mit den Bestimmungen dieses Vertrages einverstanden erklärt. Zurück-
entwickeln (Reverse Engineering), Dekompilieren und Entassemblieren der Software sind nicht gestattet. Eine Übertragung muß die
letzte aktuelle Version (Update) und alle früheren Versionen umfassen.

Hardware

Mit der Inbesitznahme (Übergabe) dieser Hardware geht die Gefahr auf Sie, den Endanwender über. Eigenschaften wurden nicht
zugesichert.

Beschränkte Garantie für Hardware und Software

SysKonnect garantiert für einen Zeitraum von 90 Tagen ab Empfangsdatum, dass die Software, soweit die technischen Voraussetzun-
gen hierfür von Ihnen geschaffen wurden, im wesentlichen gemäß der begleitenden Dokumentation arbeitet. SysKonnect garantiert
für

Netzwerkadapterkarten für einen Zeitraum von 5 Jahren,

Infrastrukturkomponenten (z.B. Konzentratoren, Hubs, Switches) für einen Zeitraum von 2 Jahren und die sonstige Hardware für
einen Zeitraum von 6 Monaten ab Empfangsdatum, dass die gelieferte Hardware bei normaler Benutzung und Wartung frei von Mate-
rial- oder Verarbeitungsfehlern ist. Die Garantie ist bezüglich der Software auf 90 Tage, bezüglich der Netzwerkadapter auf 5 Jahre für
Infrastrukturkomponenten auf 2 Jahre und bezüglich der sonstigen Hardware auf 6 Monate beschränkt. Diese Garantie wird von
SysKonnect als Hersteller des Produktes übernommen; etwaige gesetzliche Gewährleistungs- oder Haftungsansprüche gegen den
Händler, von dem Sie Ihr Exemplar der Software oder Hardware bezogen haben, werden hierdurch weder ersetzt noch beschränkt.

Please visit:

www.syskonnect.com

SysKonnect GmbH

Siemensstrasse 23
D-76275 Ettlingen

Support: +49 7243 502 330
E-mail: support@syskonnect.de

Free Manuals Download Website

http://myh66.com

http://usermanuals.us

http://www.somanuals.com

http://www.4manuals.cc

http://www.manual-lib.com

http://www.404manual.com

http://www.luxmanual.com

http://aubethermostatmanual.com

Golf course search by state

http://golfingnear.com

Email search by domain

http://emailbydomain.com

Auto manuals search

http://auto.somanuals.com

TV manuals search

http://tv.somanuals.com