



**S2 KONNECT**

**S2Konnnect N-2020SX**  
**1000Base-SX Dual Port Server Adapter,**  
**PCI-X, 2 Fiber LC**

**User Manual**

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This manual refers to the S2Konnnect N-2020SX 1000Base-SX Dual Port Server Adapter, PCI-X, 2 Fiber LC. Contents are subject to change without notice.

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If you have comments on this documentation, please send to:

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visit our web site: <http://www.s2konnnect.com>

## Conventions

The following conventions apply to this manual.

### Warnings and Notes



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



Used to indicate a potentially hazardous situation which, if not avoided, could result to a damage to your eyes. Example: laser light.



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.

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## 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 first.
- 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 S2Konnnect N-2020SX Dual Port Server Adapter observe the following:

- Switch off the computer.
- Disconnect the power cord from the power outlet.
- Remove the computer cover.
- Before installing the network adapter, put on an antistatic wrist strap (electrically conductive).
- Connect the wrist strap 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.
- When you are ready to install the network adapter, open the antistatic bag.
- 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 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.
- Cautiously insert the adapter into the corresponding slot.  
Do not touch any circuits on the network adapter or any of its port contacts.

**For the N-2020SX adapter, observe the following:****Laser light!**

Laser light from fiber-optic transmission cables and components can damage your eyes.

The laser components on the network adapter are Class 1 laser components. Class 1 lasers are considered incapable of producing radiation levels during normal operation or maintenance and are, therefore, determined to be eye-safe.

To avoid damaging your eyes and to continue safe operation in case of abnormal circumstances:

- Never look directly into the outlets of fiber-optic cables or fiber-optic transmission components with unprotected eyes!
- Never allow fiber-optic transmission paths to operate until all the connections have been made.
- Always fit protective plugs to any unused ports on the switch or the network adapter.

**Radiation!**

The use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

**In general, observe the following:**

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

# 1 Introduction

## Thank you for purchasing a S2Konnnect product.

This document describes the installation of the network adapter card.

The N-2020SX is a PCI-X adapter which must be installed in a PCI-X slot of the computer.

The adapter contains a Network chipset “Marvell 88E8022“

# 2 System requirements

## Computer System:

The N-2020SX adapter is a typical server adapter supporting high throughput of data.

You may utilize this adapter in any system supporting PCI-X.

## Cable:

You must use a fiber LC cable to connect the adapter. Table “Transmission distances” in chapter 4 shows the distances of transmission you can reach.

# 3 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 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 7)
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 apply the correct force to insert the adapter into the PCI-X slot.
4. Consult the section in your computer manual that describes how to install expansion cards.
5. Locate a free PCI-X slot on the motherboard.



S2Konnnect PCI-X adapters can be installed in (short) 32-bit or (long) 64-bit pci-x bus slot at 33 MHz, 66MHz, 100 MHz or 133 MHz. Best performance, however, is reached with a 64-bit/133 MHz bus.

6. Remove the bracket from the expansion slot (if applicable).  
Follow the instruction in your computer manual.
7. Remove the network adapter from the antistatic bag.  
Observe the safety instructions (see page 7).
8. Insert the network adapter into the PCI-X slot as described in your computer manual (also see figure 1 “Insertion of the adapter into the computer“).  
Make sure the network adapter is correctly aligned with the PCI-X 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 7)

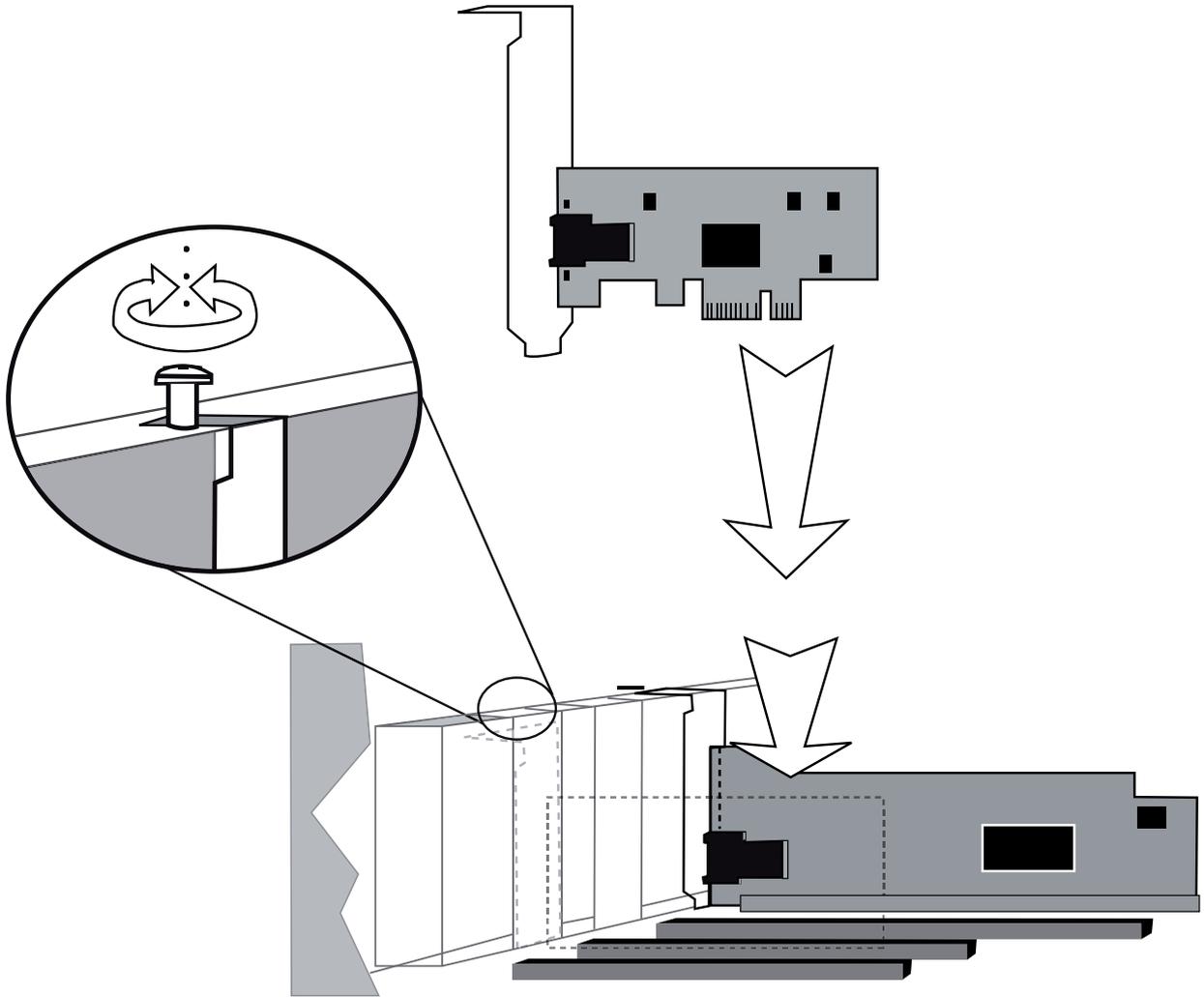


Figure 1. Insertion of the adapter into the computer

## 4 Connection of the Network Adapter

This chapter describes the physical connection of the S2Kconnect N-2020SX Network Adapter to the network.

### Transmission Distances

Depending on the physical media (cable), different distances can be reached for transmission with the Gigabit Ethernet adapter.

Adapter type	Physical Media	Maximum distance
<b>1000Base-SX/LC (850 nm)</b>	1000Base-SX 50.0 $\mu$ m multimode fiber-optic	0.5 to 550 m
	1000Base-SX 62.2 $\mu$ m multimode fiber-optic	0.5 to 275 m

### Connection to the Network

Observe the safety instructions given on page 7.

In order to connect the adapter to the 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. Remove the protective plug (if available) from the switch port which is to be used.
4. At one end of the cable connect the LC duplex or RJ-45 connector to the port on the switch.
5. Remove the protective plug (if available) from the port on the network adapter (fiber-optic types only).
4. At the other end of the cable connect the connector to the port on the network adapter. (see figure 2. "Connection of fiber-optics cables/plugs").  
The port type (e.g. 1000Base-SX) on the network adapter and that on the switch must be identical.

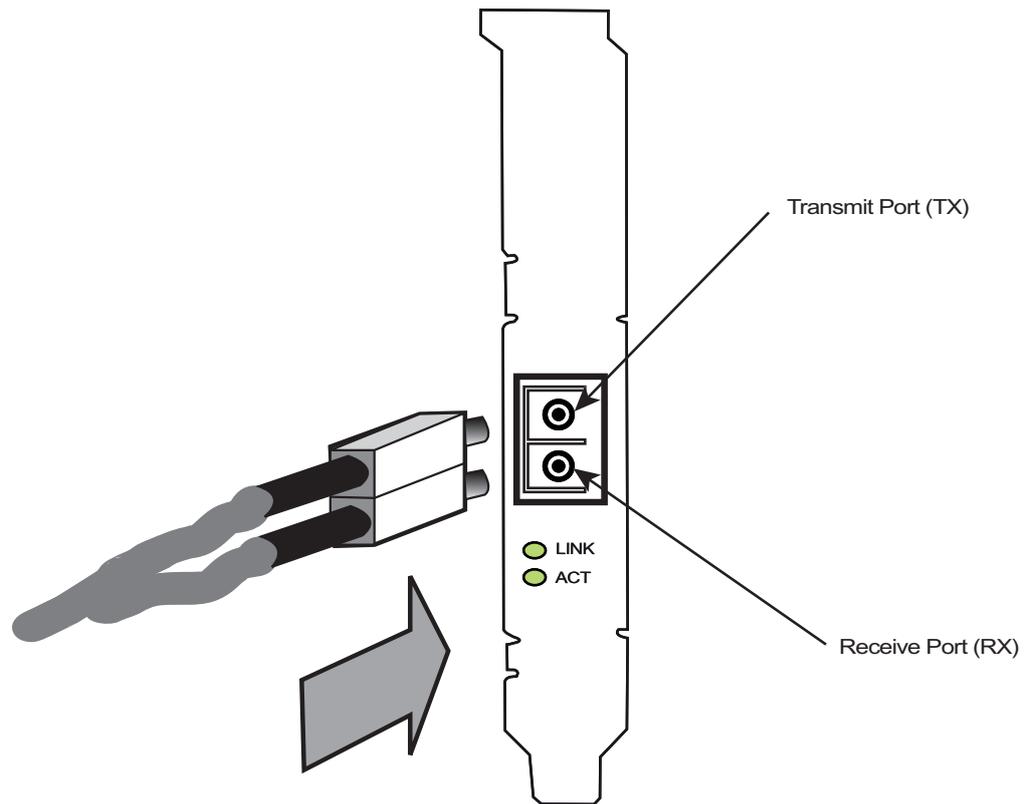


Figure 2. Connection of fiber-optics cables/plugs

5. Turn on the computer and the Switch.
6. Check the link LED(s) to find out if the cable is connected correctly. If the appropriate LED is on, the connection is established and active. Otherwise you have to check the network adapter more closely. (For details, refer to chapter 7 “Testing the network Adapter” and chapter 7 “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 how to install drivers for the operating system of your choice. Refer to drivers “Read me” or manuals for driver installation.

You will find a list of available drivers at: <http://www.marvell.com>

- > SUPPORT >
- > CHOOSE A PLATFORM >
- > SEARCH >
- > ACCEPT AND SUBMIT >
- > DOWNLOAD THE ARCHIVE ON A ZIP FILE

The chipset you have to select is: “88E8022”

## 5 Hardware Features

The S2Konnnect N-2020SX 1000Base-SX Adapter, PCI/PCI-X constitutes a follow-up model of the SK-9S82 Adapter family.

S2Konnnect N-20x0x and N-30x0x and the SysKonnnect SK-9Exx/SK-9Sxx Gigabit Ethernet Adapter Family defines a series of network interfaces that combine server and workstation computers with the high-speed Gigabit Ethernet network (1000 Mbit/s) using fiber-optic and copper cables. They differ in terms of technology (PCI Express and PCI/PCI-X), number of ports and transmission mode. LC duplex connectors (fiber cabling) and RJ-45 connectors (copper cabling) are used to connect to the network. The adapters can be connected to a switch, a buffered repeater, or directly to a second station (see also figure 3 “Possible network configurations / Connections options”).

For information about other S2Konnnect network products, refer to the product overview on our web site: <http://www.s2konnnect.com>.

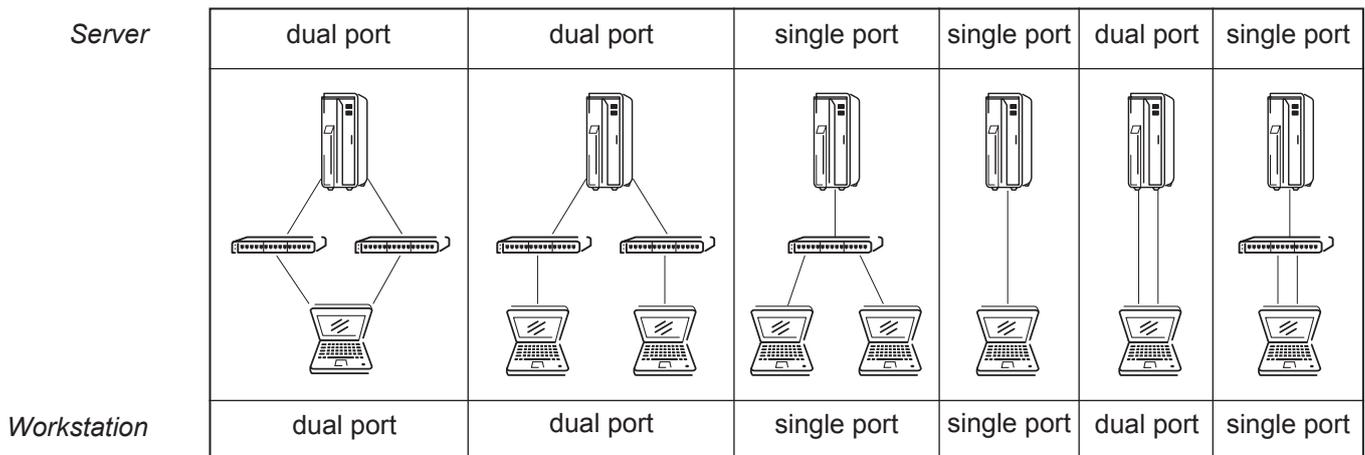


Figure 3. Possible network configurations / connection options

## Adapter Characteristics

The following table lists the characteristics of the S2Konnnect N-2020SX 1000Base-SX Gigabit Ethernet Server Adapter.

	<b>S2Konnnect N-2020SX 1000Base-SX Adapter (PCI/PCI-X)</b>
<b>LAN interface</b>	1000Base-SX
<b>Port</b>	Dual port
<b>Connector</b>	LC duplex
<b>Media</b>	Fiber (850 nm)

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

## LED Displays

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

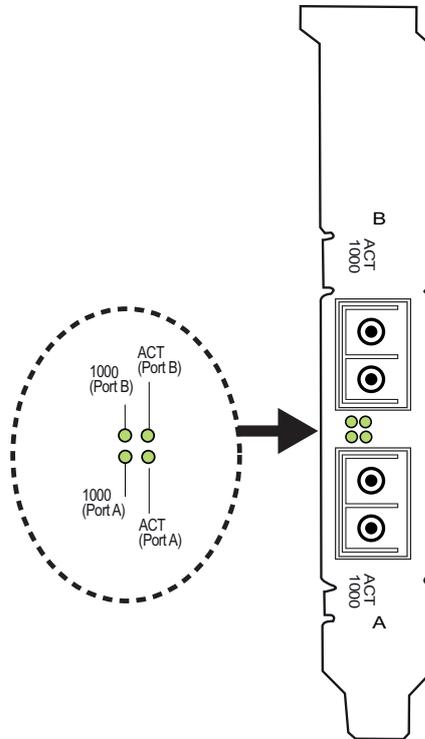


Figure 4. Location of the LEDs

The LEDs of the fiber adapters have the following meaning:

Marking on bracket	Color	Status	Description
1000/LINK	green	ON/OFF	Link up/Link down, Speed 1000 Mbit/s
ACT	green	ON/OFF	Receiving/Transmitting Not Receiving/Not Transmitting

## 6 Testing the Network Adapter



There are two programs available to test the network adapter: a diagnostics program running on DOS and “Yukon Diagnostics” running on Windows.

During testing, observe the safety precautions given in chapter “Safety Precautions”.



If the fiber adapter is not connected immediately to the data network, insert the protective plug for safety reasons (otherwise laser light may be emitted) and as a protection against dust and dirt.

### DOS Diagnostics Program

The network adapter can be tested with the supplied diagnostics program (running on DOS). During testing, the link of the tested port will be down, i.e., no data can be transferred. The following tests are available:

- Simple test without loopback:  
This test covers all components but not the port (socket including components for transmitting/receiving the data signals).
- Comprehensive port test with loopback:  
All components are tested, including the port.



The tests do not run in a Windows DOS box.

#### **Loopback Wrap Plug Test**

To perform the loop back wrap plug test, you will need a wrap plug (see figure 5. “Setup for loopback wrap plug testing”).

Alternatively, the loopback test can be performed from port to port (for dual port adapters only) or via external repeater. Loopback testing via external repeater requires another adapter installed in a second computer running in repeater mode (also see section “Loop back Repeater Test”). The following procedure describes the test via wrap plug.

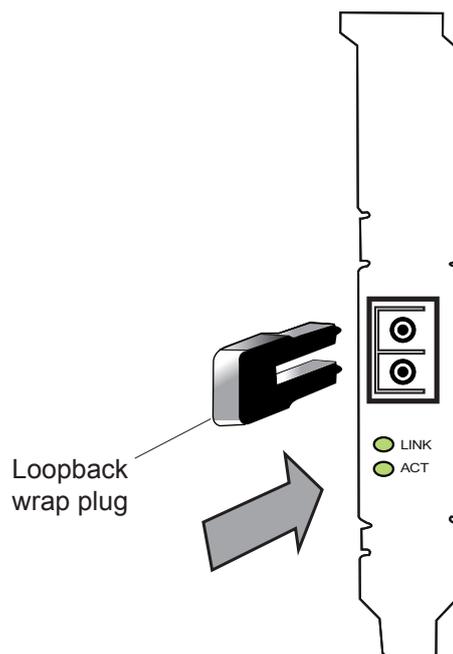


Figure 5. Setup for loopback wrap plug testing

**To test the adapter, proceed as follows:**

1. Switch off the computer
2. If the computer is still connected to the data network, unplug the data cable from the network adapter's port.
3. Connect the network adapter as follows:
  - For the simple test: Insert the protective plugs into the ports.
  - For the loopback test: Insert the wrap plug into the port.
4. Boot to DOS.  
Wait until the operating system is loaded and the DOS prompt is displayed.
5. You must select a driver containing the Diag Tool.
6. Start the diag program by:
7. Type "yukondg".
8. Press <Enter>.
9. From the main menu of the diagnostics program, select one of the following:
  - DIAGNOSTICS for the simple test (no loopback)
  - LOOPB. WRAP PLUG for the loopback test
  - LOOPB. PORT TO PORT for the port-to-port test (only with dual port adapters)
  - LOOPB. EXT. REPEATER for the loop back repeater test

## 7 Troubleshooting

Problem	What to do
Another expansion card fails to work after the network adapter has been installed	<p>Make sure all cables are connected to the correct expansion cards.</p> <p>Make sure the expansion cards are correctly inserted. Check if any internal connections in the computer have been disengaged or have been damaged during the installation of the network adapter.</p> <p>Check for resource conflicts in the computer. Check PCI/PCI-X configuration and resource allocation.</p>
The computer does not detect the network adapter	<p>Make sure the adapter is properly seated in the computer.</p> <p>Try installing the adapter in a different PCI/PCI-X slot.</p>
The computer adapter fails during a normal operation	<p>Load or install the driver again.</p>
Loopback test is successful but link LED does not light (no connection)	<p>Check the connections and try another switch port if necessary.</p> <p>Is switch configuration 1000 Mbit/s set?</p> <p>Is the network driver loaded?</p> <p>Is the maximum transmission distance exceeded (see section "Transmission Distances")?</p>
LED for transmitting/receiving data packets (ACT) is not illuminated	<p>Make sure the network driver is loaded.</p> <p>Is there any network overload?</p> <p>Is switch configuration 1000 Mbit/s set?</p> <p>Is the maximum transmission distance exceeded (see page 11)?</p> <p>If you have any other S2Kconnect adapter installed, compare your setup with this adapter.</p>

If the problem persists, you can analyze the status of the network adapter with the aid of the LEDs and the diagnostics programs.

## 8 Important Information

### Technical Support

If you encounter any problems, read the relevant section of the manual. 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 following the instructions on our website.

Please go to: <http://www.s2kconnect.com>, contact section.

### Returning an Adapter for Repair

If you want to return a faulty product to S2Kconnect, follow these steps:

1. Contact us by phone, fax, or e-mail. (Contact section of our web page)  
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 S2Kconnect clearly visible on the outer packaging.



S2Kconnect 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

S2Kconnect 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 provided on the Marvell web site.

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

1. Visit the web site: <http://www.marvell.com>
2. Click the **DOWNLOAD CENTER** button.
3. In the field "Product", select the desired adapter. You need to know the chipset, see p. 11.
4. In the field "Type", select **DRIVER**.
5. In the field "System", select the desired operating system.
6. Click **SEARCH**.

A list of all available drivers matching your search is displayed.

7. In the outer right column of the line containing the desired driver, click **DOWNLOAD**.



## N-2020SX - 1000Base-SX Dual Port Server Adapter, PCI-X, 2 Fiber LC

### Product Highlights

- PCI Low Profile (Bracket included)
- Sensors for Temperature and Voltage
- TCP Segmentation (large send)
- Compatible to SysKconnect SK-9S82

### Features

- Parity check on all data path
- TCP, UDP, and IP checksum generation and checking on chip
- Jumbo Frame support
- Dynamic Interrupt Moderation
- Advanced Power Management (ACPI)
- Dual Net
- Redundant Link Management Technology RLMT

### Standard Compliances

- IEEE 802.3x with Flow control / Auto-negotiation
- IEEE 802.1p Quality of Service
- IEEE 802.3ad Gigabit Link Aggregation
- IEEE 802.3az 1000Base-X Gigabit Ethernet

### Boot Options

- Standard PXE 2.1 (Pre-Boot eXecution Environment)
- RPL (Remote Program Load)

### Safety Standard

- CSA, CB, CE, UL



## N-2020SX - 1000Base-SX Dual Port Server Adapter, PCI-X, 2 Fiber LC

### Driver

- X86 : Windows Server 2008 R2, Windows Server 2008 SP2, Windows 7, Windows Vista, Windows XP, Windows 2000, Windows 2003 (.Net), Windows Server 2003, NT4, Windows98 SE, ME
- x64 : Windows Server 2008 R2, Windows Server 2008 SP2, Windows 7, Windows Vista, Windows XP, Windows 2000, Windows 2003 (.Net), Windows Server 2003
- Solaris : SPARC 32:7,8,9
- Solaris : Intel X86:8,9,10
- Solaris : X64:10
- Linux : X86:Kernel 2.2, Kernel 2.4, Kernel 2.6
- NetWare : X86:4.2, 5.x, 6.x, DOS ODI
- Mac OS X : 10.2, 10.3, 10.4
- SCO OpenServer 5.0.7
- OS/2: X86:3.0 and higher
- UnixWare : X86:7.1x
- DOS : Intel X86:NDIS2, ODI, PXE
- FreeBSD : X86:5.1, 5.2, 5.3, 5.4, 6.0
- FreeBSD 7 x86 and x64

### EMC

- Europe: EN55022; IEC-CISPR-22 Class B EN 55024; IEC - CISPR - 24
- USA: FCC, CFR 47 Part 15, Declaration of Conformity Class B

### Environment Specifications

- Storage: -20°C to +70°C, Rel. Humidity 10% to 95% non-condensing
- Operating: -0°C to +50°C, Rel. Humidity 30% to 80% non-condensing



## N-2020SX - 1000Base-SX Dual Port Server Adapter, PCI-X, 2 Fiber LC

### ROHs

- Compliant with EN 2002/95/EU

### Power Consumption

- Single port : @ +3.3V / VCC: max. 0.9 A / 3 W @ +3.3V(aux): max. 375 mA
- Dual port : @ +3.3V / VCC: max. 1.8 A / 6 W @ +3.3V(aux): max. 375 mA

### Dimension

- 118.4 mm x 68.94 mm (without Bracket)

### Green Feature

- Advanced Power Management

### Warranty

- 2 Years

### Order Numbers

- 100-000-100-104

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# Appendix A. License and Warranty Information

## The Americas, Asia, Australia, New Zealand, Pacific

Dear Customer,

if you acquired your S2Kconnect 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 S2Kconnect Incorporated in Ettlingen/Federal Republic of Germany.

### S2Kconnect GmbH. 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 S2Kconnect GmbH License Agreement (License) permits you to use one copy of the S2Kconnect GmbH 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

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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 S2Kconnect GmbH 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

S2Kconnect GmbH warrants, that the hardware will be delivered free from defect and in working condition. S2Kconnect GmbH does not assume liability for nor warrant damage to the hardware after delivery. S2Kconnect also does not warrant total applicability for specific applications or customer network environments.

### Limited Warranty for Hardware and Software

#### Limited Warranty

S2Kconnect 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.

S2Kconnect warrants that NETWORK INTERFACE CARDS 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, 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 S2Kconnect 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 be replaced by nor limited through this warranty.

#### Customer Remedies

S2Kconnect's entire liability and your exclusive remedy shall be, at S2Kconnect's option, either return of the price paid, or repair or replacement of the SOFTWARE or HARDWARE that does not meet S2Kconnect's Limited Warranty and which is returned to S2Kconnect GmbH 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 S2Kconnect GmbH 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

S2Kconnect GmbH 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

S2Kconnect GmbH does not warrant the software and hardware for a specific application, nor does S2Kconnect GmbH accept any consequential damages due to the use of the hardware or software. S2Kconnect GmbH 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 S2Kconnect GmbH product, even if S2Kconnect GmbH has been advised of the possibility of such damages. In any case, S2Kconnect'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 S2Kconnect GmbH for any reason, please use the address information enclosed in this product or write to: S2Kconnect GmbH, Siemensstrasse 23, 76275 Ettlingen, Germany.

#### 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 S2Kconnect.

## Europe

Dear Customer,

if you acquired your S2Kconnect product in EUROPE, the following license and purchase agreement applies to you: This is a legal agreement between you, the end user and S2Kconnect GmbH, in Ettlingen/Federal Republic of Germany.

### S2Kconnect 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

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#### 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

S2Kconnect 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.

S2Kconnect 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 S2Kconnect 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 be replaced by nor limited through this warranty.

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S2Kconnect's entire liability and your exclusive remedy shall be, at S2Kconnect's option, either return of the price paid, or repair or replacement of the SOFTWARE or HARDWARE that does not meet S2Kconnect's Limited Warranty and which is returned to S2Kconnect 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 S2Kconnect 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

S2Kconnect 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.

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S2Kconnect does not warrant the software and Hardware for a specific application, nor does S2Kconnect accept any consequential damages due to the use of the hardware or software. S2Kconnect 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 S2Kconnect product, even if S2Kconnect has been advised of the possibility of such damages. In any case, S2Kconnect'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 S2Kconnect for any reason, please use the address information enclosed in this product or write to: S2Kconnect GmbH, Siemensstrasse 23, D-76275 Ettlingen, Germany.

# Deutschland, Schweiz, Österreich, Liechtenstein

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