SK-NET FDDI

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Network Interface Cards

(first part: english) Installation Guide

SysKonnect

Fifth edition (July 1997)

This edition applies to the SysKonnect product family of SK-NET FDDI network interface cards. Contents are subject to change.

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Technical Information, Troubleshooting: Contact our support engineers (refer to the paragraph *Product Support* in this manual)

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Warranty and Software License: Contracts are included in a separate documentation (*License and Warranty Information*) delivered with the adapter.

DANGER!

Electrical current from power, telephone, and communications cables is hazardous.

To avoid shock hazard,

➔ do not connect or disconnect any cables or perform any installation, maintenance or reconfiguration during a thunder storm.

➔ the power cord of the computer must be connected to a properly wired and grounded (earthed) receptacle. Any equipment attached to this product must also be properly wired and connected to grounded receptacles.

➔ connect and disconnect cables as described in the following chart.

To connect:	To disconnect:
• Turn everything involved in the connection OFF. • First, attach all power cables to the devices. • Attach signal cables to receptacles. • Note: In the UK, by law, the telephone line cable must be connected after the power cord. • Attach power cord(s) to the outlet(s). • Turn devices ON.	• Turn everything involved in the connection OFF. • First, remove power cord(s) from outlet(s). • Note: In the UK, by law, the power cord must be disconnected after the telephone line cable. • Remove signal cables from receptacles. • Remove all cables from the devices.

NOTE: Electrical installations must conform to the safety regulations of the country in which they are operated.

CONTENTS

> **NOTE: For network driver installation, refer to the corresponding readme files on the Installation Diskettes and to Chapter 3 of this documentation.**

FIGURES

NOTICES

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PRODUCT SUPPORT

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SYSKONNECT AT COMPUSERVE

As a leader in high performance networking, SysKonnect offers current information on-line 24 hours a day within the LAN A Vendor forum at CompuServe. SysKonnect's information pool includes

- current news

- product information

- driver updates

- direct communication with our support engineers

Prerequisites

To access our service, you will require in addition to your computer

- a modem

- the communication software

- a license number (CompuServe membership)

Login Procedure

1. Via modem, dial a CompuServe node

2. Type in **`GO  SYSKONNECT`**

You will directly reach the *LAN A Vendor Forum,* including the *SysKonnect* section.

STANDARDS REFLECTED IN THIS PRODUCT

Safety Standards: IEC950, EN60950, UL1950, CSA950.

This product is intended for use in equipment with *Safety Extra Low Voltage* supplies (Reference 2.10.1 in IEC950).

RELATED MANUALS

Other publications related to this adapter are:

- The reference manual shipped with your computer
- The electronic *UPPS manual* (on diskette, shipped with the adapter)
- The *License and Warranty Information* shipped with the adapter

For assistance in obtaining SK manuals, contact your authorized reseller.

TERMS USED IN THIS MANUAL

In this manual, the following abbreviations for the product names are used:

- *SAS adapter* for SysKonnect FDDI NICs designed for single attachment to the FDDI network

- *DAS adapter* for SysKonnect FDDI NICs designed for dual attachment to the FDDI network

- *EISA Adapter* for SysKonnect FDDI NICs designed for installation in EISA (Extended Industry Standard) bus computers

- *ISA Adapter* for SysKonnect FDDI NICs designed for installation in ISA (Industry Standard) bus computers

- *PCI Adapter* for SysKonnect FDDI NICs designed for installation in PCI (Peripheral Component Interconnect) bus computers

- *MCA Adapter* for SysKonnect FDDI NICs designed for installation in MicroChannel Architecture computers

- *Copper Adapter* for SysKonnect FDDI NICs designed for copper cabling

- *Fiber Adapter* for SysKonnect FDDI NICs designed for fiber-optic cabling (SC or MIC)

- *MIC adapter* for SysKonnect FDDI NICs supporting MIC cabling and connection systems

- *SC adapter* for SysKonnect FDDI NICs supporting SC cabling and connection systems

- *Transceiver* is the receptacle (and its electronic components) on the adapter for the connection to the network. Network interface cards for fiber cabling use "fiber-optic transceivers".

- *SC* is a standardized low cost fiber-optic cable type. Different from MIC cable (supporting two optical connections per cable), it supports single fiber-optic connection.

If applicable, the *Release Notes* delivered with the adapter kit give an updated overview of the current adapter types and the characteristics (bus architecture, cabling ...). Please refer to the

Glossary at the end of this manual for the definition of any unknown terms used in this manual.

CHAPTER 1. GENERAL INFORMATION

The SK-NET FDDI adapters attach computers to 100 Mbps Fiber Distributed Data Interface (FDDI) networks using fiber-optic cable, S/UTP or UTP (category 5) copper cable (STP is supported via a special *Impedance Matching Cable*).

The computer must be equipped with either a RISC/6000, a Power PC or an Intel 80286, 80386, 80486 or PENTIUM (compatible) microprocessor, and at least one available expansion slot. If you are installing a DAS adapter, two adjacent expansion slots are required (PCI DAS is an exception and requires only 1 slot).

At the moment, the range of SysKonnect FDDI adapters includes the following bus architectures:

- EISA (Extended Industry Standard) architecture

- ISA (Industry Standard) architecture

- MCA (MicroChannel) architecture

- PCI (Peripheral Component Interconnection)

This chapter contains information that should be read prior to the installation of the adapter.

Chapter 1: General Information

OVERVIEW FDDI NIC CHARACTERISTICS

Product		Bus Architecture				Transmission Medium		single/ dual port	
SK-NET FDDI-...	Model SK-...	EISA	ISA	MCA	PCI	UTP/ S/UTP	Fiber*	SAS	DAS
FE	5341	•					•	•	
FE DAS	5342	•					•		•
UE	5321	•				•		•	
UE DAS	5322	•				•			•
FI	5141		•				•	•	
UI	5121		•			•		•	
FM	5241			•			•	•	
FM DAS	5242			•			•		•
UM	5221			•		•		•	
UM DAS	5222			•		•			•
FP	5541				•		•	•	
LP	5543				•		SC	•	
LP DAS	5544				•		SC		•
UP	5521				•	•		•	
UP DAS	5522				•	•			•

* Normally, MIC plugs and transceivers. If marked *SC*, SC plugs and transceivers are used.

Please refer to the Release Notes for information on current changes (if applicable).

Installation Instructions   15   FDDI Network Interface Cards

THE ADAPTER KIT

The adapter kit consists of the following items:

- cardboard packaging

- anti-static bag

- the adapter

- a paper envelope containing several diskettes (e.g., Installation Diskettes)

- Release Notes (if applicable)

- this manual

If any item is missing or damaged, contact your authorized reseller.
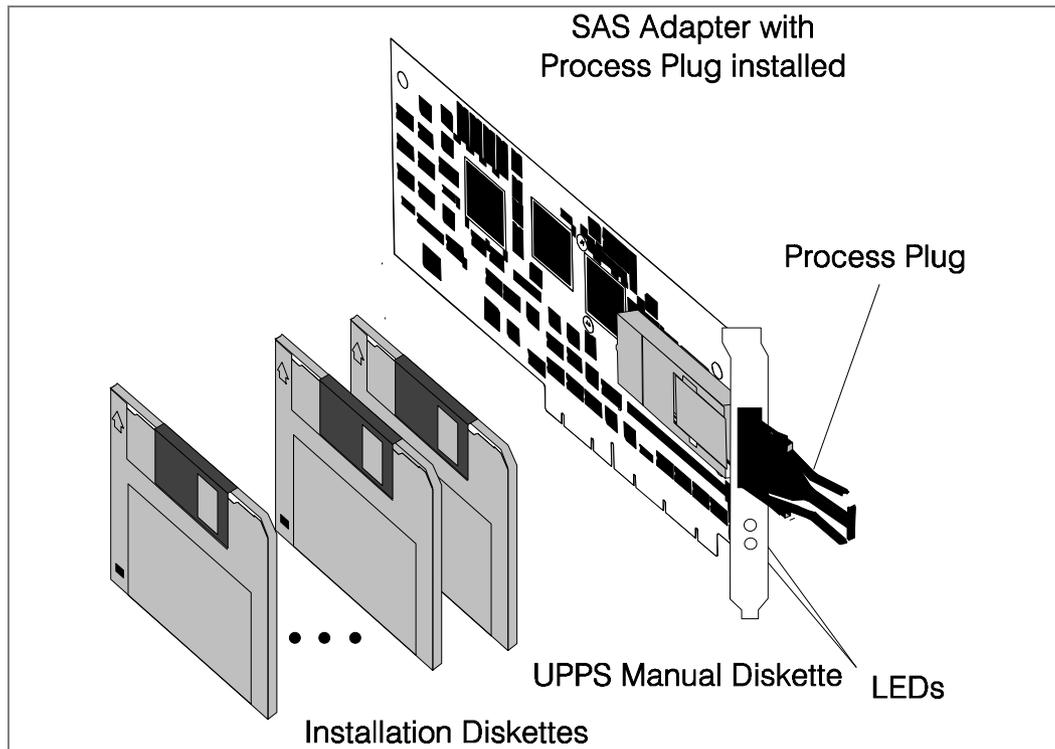
Figure 1. SK-NET FDDI adapter kit (e.g. SK-NET FDDI-FE / SK-5341)

HANDLING INSTRUCTIONS

> ### Caution:
>
> **Static electricity can damage the adapter.**
>
> ➔   Keep the card in the anti-static package until it is ready to be installed.
>
> ➔   follow these handling instructions:

- Hold the anti-static packaging containing the adapter against a metal expansion slot cover for at least 2 seconds. This action reduces any static electricity from the packaging and from your body.

- Do not touch any exposed printed circuitry.

- Do not place the adapter on the computer cover or any other metal surface.

- Prevent other people from touching the adapter.

- Limit your movement to reduce static-electricity buildup.

- Always handle the adapter carefully.

- If you need to put the adapter down, return it to the anti-static packaging.

- We recommend the use of a static-protective wrist strap during installation. Connect it to the computer chassis after you have removed the cover from the computer. **Note: Do not connect the wrist strap to the earth (ground) of your power supply, since this could potentially be live under unfavorable conditions!**

ATTACHING SK-NET FDDI ADAPTERS TO YOUR NETWORK

- A **SAS** adapter supports single attachment to a concentrator.

- A **DAS** adapter supports either dual attachment to the main ring path or dual homing to one or two FDDI concentrators. **Note: Because of better EMI characteristics, fiber-optic components are preferable for dual attachment to the main ring path.**
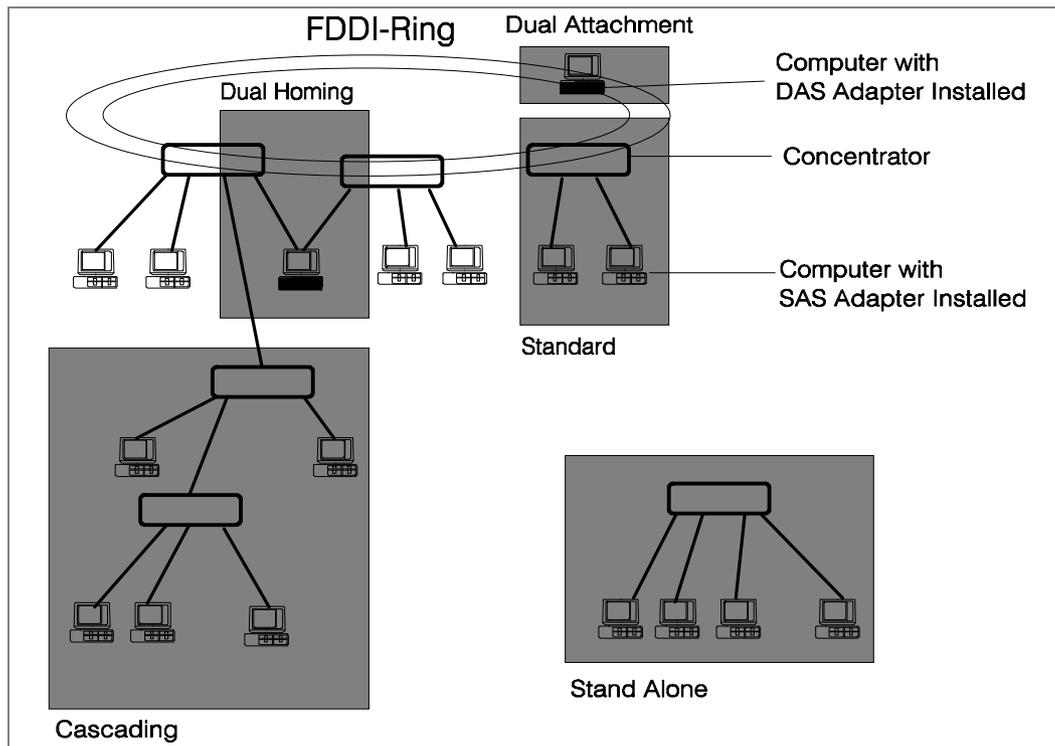
Figure 2. Possibilities for the Organization of an FDDI Network

Note: The transceiver type of the concentrator slot(s) must match the transceiver type of the FDDI adapter(s) that are used (e.g. both fiber optic or CDDI TP-PMD/MLT-3).

Connection Types

There are three basic connection types that can be mixed and matched in the same network.

1. Dual Attachment to the Dual Ring

Class A devices can be connected directly to the FDDI dual ring. A device connected to both rings is said to be *dual attached*. Since each ring has a transmit and a receive line, there are two transmit paths out of and two receive paths into the dual attached device (DAS in the previous figure). Because of the redundant data paths, dual attachment offers fault tolerance.

2. Single Attachment to a Concentrator

Class B devices connect point to point to a concentrator. This connection type is known as *single attached*. For single attached devices, the concentrator acts as the central hub.

When SASs are connected to a single concentrator, the concentrator is said to be *non-attached* or *stand alone*. In this situation, the dual ring is collapsed into the concentrator.

3. Dual Homing

Dual homing is a connection type for a Class A device where it is connected to two M ports (preferably different concentrators). The connection to one concentrator is the primary connection and is active; the connection to the second concentrator is for backup purposes and inactive. Since each connection to the concentrator has a send and a receive path, there are two transmit paths out of and two receive paths into the dual homed device. Because of the redundant data paths, dual attachment offers fault tolerance.

Concentrators which are connected to other concentrators building a tree below the dual ring are referred to as *cascaded*. Cascading applies to both single attached and dual homed concentrators.

Port Types (A, B, M and S)

The ports on the various FDDI devices are given logical names. There are four port types in FDDI: A, B, M (Master) and S (Slave).
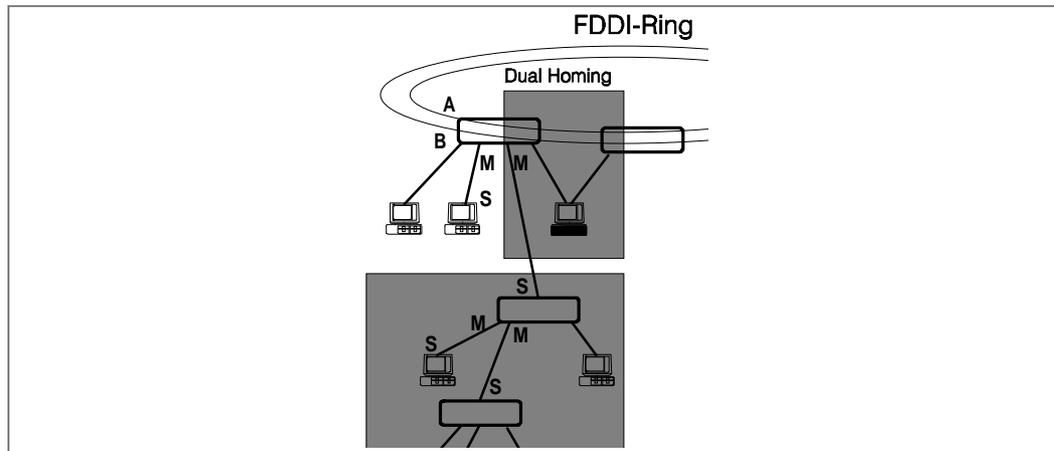
Figure 3. FDDI Port/Transceiver types

Device Type	Ports (Qty)
DAS	A & B (1 each)
DAC	A & B (1 each) M (1 or more)
SAS	S (1)
SAC	S (1) M (1 or more)
Stand Alone Concentrator	M (multiple)

Port Usage in Dual Attached Connections

For a Class A device on the dual ring, the A port connects to the B port of the upstream neighbor and the B port connects to the A port of the downstream neighbor. This *daisy chaining* of devices continues around the ring.

For dual attached devices on the dual ring, the function of the A and B ports is described in the following table.

Dual Attached Device Port	Function
A	Primary Ring In Secondary Ring Out
B	Primary Ring Out Secondary Ring In

Port Usage in Single Attached Connections

On single attached devices, the S (Slave) port connects to an M (Master) port on the concentrator.

Port Usage in Dual Homed Connections

For dual homed Class A devices, the A port connects to an M port on one concentrator and the B port connects to an M port on a second (or the same) concentrator.

For dual homed devices, the function of the A and B ports is described in the table below.

Dual Homed Device Port	Function
A	Secondary Connection
B	Primary Connection

WHAT YOU NEED TO INSTALL THE ADAPTER

- Cables:

Adapter type		cables	Connectors	Correct Keying
SAS	Copper	One UTP (Cat. 5) or S/UTP cable	RJ-45	-
	MIC*	One fiber-optic cable	MIC	x
	SC**	Two fiber-optic cables	SC	-
DAS	Copper	Two UTP (Cat. 5) or S/UTP cables	RJ-45	-
	MIC*	Two fiber-optic cables	MIC	x
	SC**	Four fiber-optic cables	SC	-

* MIC cabling systems generally use cables with two fiber-optic cores (SC cables: 1 core per cable)

** For two fiber-optic SC cables, one duplex cable can be used instead.

Note: These cables are not provided with the adapter. Contact your network administrator for assistance in selecting the correct cable. If you are in doubt about your adapter card type (DAS, SAS, fiber-optic, copper, ...), refer to the overview in the paragraph *Overview FDDI NIC Characteristics***.**
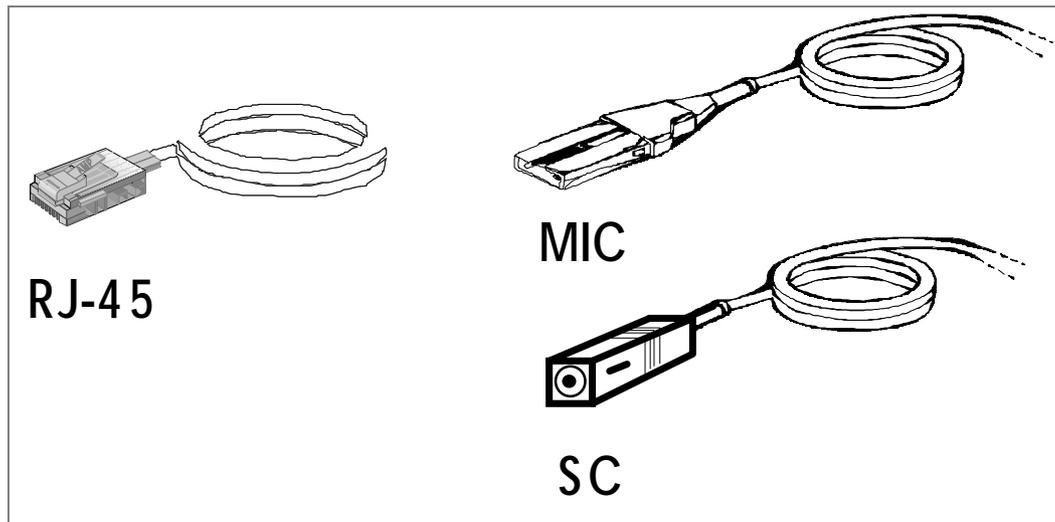
Figure 4. Plug Types

- Empty expansion slots in which to install the adapters.

- A computer equipped with

    - an RS/6000, Power PC, Intel 80286, 80386, 80486 or PENTIUM (compatible) microprocessor,

    - MCA, ISA; EISA or PCI bus,

    - and at least one expansion slot (DAS adapter except PCI: two adjacent expansion slots).

ISA: The computer should be correctly configured before you proceed with the adapter installation.

- The reference manual shipped with your computer.

- The cover-lock key, if the cover is locked.

- A screwdriver that fits the screws of your computer's cover.

- The Driver Installation Diskette which was delivered with the FDDI adapter.

- The Configuration Program Diskette which was delivered with your computer.

- Something to write with.

- This manual.

You will find a current list of all supported operating systems in the general *README.TXT* file on Diskette 1 (root directory) delivered with the adapter.

CHAPTER 2. INSTALLATION
OF THE ADAPTER

Note: For network driver installation, refer to the corresponding readme files on the Installation Diskettes and to Chapter 3 of this documentation.

INSTALLATION OVERVIEW

If you are testing a previously installed adapter, skip to Step 5 on page 40.
The installation of the adapter requires completion of the following steps:

EISA	ISA	MCA	PCI	
	○	●		DIP Switch Setting
		●		Update Configuration Diskette
○	○	●	○	Remove Computer Cover
○	○	●	○	Insert the Adapter Card
○	○	●	○	Replace Computer Cover
○		●	○	Configuration via Utility Program
○	○	●	○	Test
○	○	●	○	Attach FDDI Cables
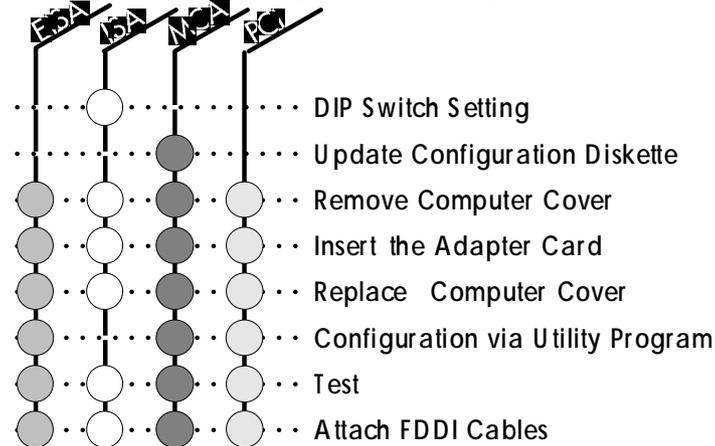
Each of these steps is described in detail in the following sections.

QUICK INSTALLATION

If you are in a hurry, follow these simple instructions to install your network adapter:

Note: The Quick Installation is only recommended for experienced users!

1. Remove the network adapter from the anti-static bag. Be sure to discharge the static electricity from your body by touching a protective grounding device or the metal chassis of your computer. Always handle the adapter carefully by its edges and avoid touching any of the components or connectors.

ISA
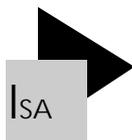
(ISA only:) Set the dip switches; referring to the tables on page 32.

2. Turn off your computer, unplug the power cord and remove the computer cover. You will probably need a flat blade or Phillips type screwdriver to remove the screws securing the computer case.

3. Select a free expansion slot and insert the adapter until it is properly seated in the slot. Secure the adapter.

4. Replace the computer cover and connect the network cable to the newly installed network adapter. Reconnect the power cord and plug it into the power outlet.

5. If you need to change some of the settings on your network adapter, run your computer's configuration tool and select the required settings (does not apply to most ISA computers). Save the settings and turn off your computer. The new settings will take effect the next time your computer is booted.

STEP 0/ISA. DIP SWITCH SETTINGS

The following section describes the configuration of the adapter, including

- IBM compatibility of bus master transfers (Address lines SA 17...SA 19; default setting: enabled, non IBM compatible)

- I/O base address (default setting 0x100)

- Interrupt (default setting: IRQ 2/IRQ 9)

- DMA channel (default setting: No. 5)

- Boot PROM installation

- Memory base address (default setting: disabled) for Boot ROM

- BootROM enabling

Note: **If problems occur or if** you do not have the required configuration information for your system, please contact your **network administrator.**

If you do not use the default settings, follow these steps:

1.   Select the IBM compatibility of address lines SA 17 ... SA 19. If address lines LA 17...LA 19 are only to be supported (non compatible to IBM), skip to instruction 2 of this list.

   If the computer is IBM compatible in regards to the bus master transfers, remove jumper W1. To locate its position on the card, refer to figure 5.
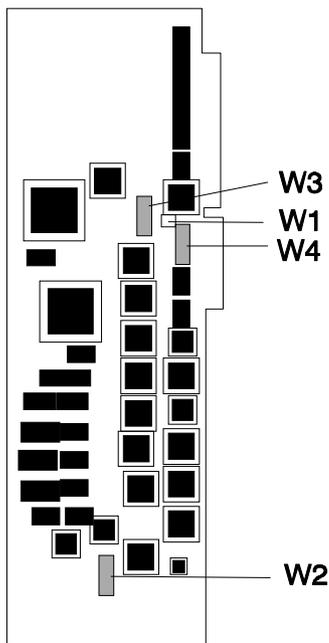
Figure 5. Position of
jumper and dip switches

If the jumper is set (default position), the card may be installed in a non-IBM compatible computer.

2. Select the Input/Output base address of the adapter by setting the dip switches No. 1, 2 and 3 of bank W2 (refer to figure 5). Use the table below to specify the base address.

Check the system and adapter I/O address areas. Select a range that is not already in use. Refer to the computer's reference manual to get information regarding the system I/O area.

3. Select the interrupt by setting the dip switches on bank W4, using the following table. **Note: Only one switch should be set to position ON. Setting more than one switch to the ON position may cause damage while operating the computer.**

Check the system and adapter cards interrupt settings. Select an interrupt which is not already in use. Refer to the computer's reference manual for information on the system interrupt settings.

4. Select the DMA channel for the adapter by setting the switches 1 to 8 on the dip switches on bank W3 (refer to figure 5); refer to the table below. Check the system and adapter cards DMA level utilization. Select a DMA level that is not already in use. Refer to the computer's reference manual to get information on the system DMA level utilization.

Note: Only one pair of switches may be set to position ON. Setting more than one pair of switches to ON may cause damage while operating the computer.

I/O Base Address	Switches at W2 "ON"		
	No. 1	No. 2	No. 3
0x100	-	-	-
0x120	-	-	x
0x180	-	x	-
0x1A0	-	x	x
0x220	x	-	-
0x240	x	-	x
0x320	x	x	-
0x340	x	x	x

BootROM Address	Switches at W2 "ON"			
	No. 5	No. 6	No. 7	No. 8
disable	-	-	-	-
DC000	-	-	-	x
DA000	-	-	x	-
D8000	-	-	x	x
D6000	-	x	-	-
D4000	-	x	-	x
D2000	-	x	x	-
D0000	-	x	x	x
CE000	x	-	-	-
CC000	x	-	-	x
CA000	x	-	x	-
C8000	x	-	x	x
C6000	x	x	-	-
C4000	x	x	-	x
C2000	x	x	x	-
C0000	x	x	x	x

DMA	Switches at W3 "ON"
DMA7	No. 1 & No. 2
DMA6	No. 3 & No. 4
DMA5	No. 5 & No. 6
DMA3	No. 7 & No. 8

Interrupt	Switch at W4 " ON"
IRQ 15	No. 1
IRQ 12	No. 2
IRQ 11	No. 3
IRQ 10	No. 4
IRQ 3	No. 5
IRQ 4	No. 6
IRQ 5	No. 7
IRQ 9/2	No. 8

5. If remote booting is desired, install the optional remote boot software. This software
enables the computer to load the operating system via the network. In this case, the
computer operates as a *diskless workstation*.

To install the boot software, follow the instructions given in the boot software
documentation or in the readme files contained in the diskettes. By specifying a base
address for the boot PROM, a free area of main memory is allocated from this address on.
The setting is applied via the switches No. 5...8 on bank W2 (refer to the appropriate
table).

Note: If remote boot software is not available or not required, do not change the settings of
switches 5...8 on bank W2. They must be in position OFF. (This is the default position,
boot PROM disabled.)

6. Make a note of the selected configuration here. (After changing the settings or after
installing the remote boot software, correct the corresponding entries which were
previously made.)

IBM-compatible	_____
DMA	_____
Interrupt	_____
I/O Address	_____
Remote Booting	_____

Continue with Step 1.

STEP 0/MCA. UPDATE THE BACKUP COPY OF THE COMPUTER'S REFERENCE DISKETTE

Note: The following instructions apply to IBM computers; with other systems, the procedure is similar. If you have a non-IBM system, refer to your computer's reference manual to ensure proper configuration

Before you install the adapter in the computer, you need to update the backup copy of the computer's Reference Diskette with the information that is on the diskette which came with the adapter. (The diskette which came with the adapter is referred to as the Driver Installation Diskette.) The computer does this for you automatically.

To update the backup copy of the Reference Diskette, follow these steps:

1. Insert the backup copy of the Reference Diskette into diskette drive A.

2. Boot your computer. When the (IBM) logo screen is displayed, press Enter.

3. When the *Reference Diskette Main Menu* is displayed, use the arrow keys to move the selection bar to the "Copy a Driver Installation Diskette" option. Press Enter.

4. Follow the instructions in the program screens.

Note: You may have to swap the Option and Reference Diskettes during the update process.

Continue with Step 1.

STEP 1. REMOVE THE COVER FROM THE COMPUTER

1. Turn off the computer (power switch in OFF position).

2. Unplug the computer from the power outlet.

3. Refer to the Safety Information chapter in the beginning of this manual for instructions on disconnecting the cables that are connected to the computer. Follow these instructions carefully.

4. Follow the instructions in the section of the computer's reference manual that describes the removal of the computer cover.

Continue with Step 2.

STEP 2. INSTALL THE ADAPTER IN AN EXPANSION SLOT

Notes:

- **If you are installing the adapter in a floor-standing machine, place the computer on its side so that you can press firmly** when inserting it into an expansion slot.

- **The DAS adapter (except PCI) requires two free adjacent expansion slots.**

To install the adapter in an expansion slot, follow these steps:

SAS

1. Find an empty expansion slot on the system board.

DAS

1. Find two adjacent empty expansion slots on the system board (except PCI DAS: only 1).

2. Go to the section of the computer's reference manual that describes adapter installation.

3. To remove the expansion slot cover(s), follow the corresponding steps in the computer's reference manual.

4. Remove the adapter from its static-protective package. Refer to the Handling Instructions on page 18 for additional information.

5. Follow the instructions in the computer's reference manual for placing the adapter in an expansion slot.
   Note: Make sure that the adapter fits properly into its expansion slot connector at the base of the computer's chassis. Then press down the adapter vertically until it snaps into place. Refer to figure 6.
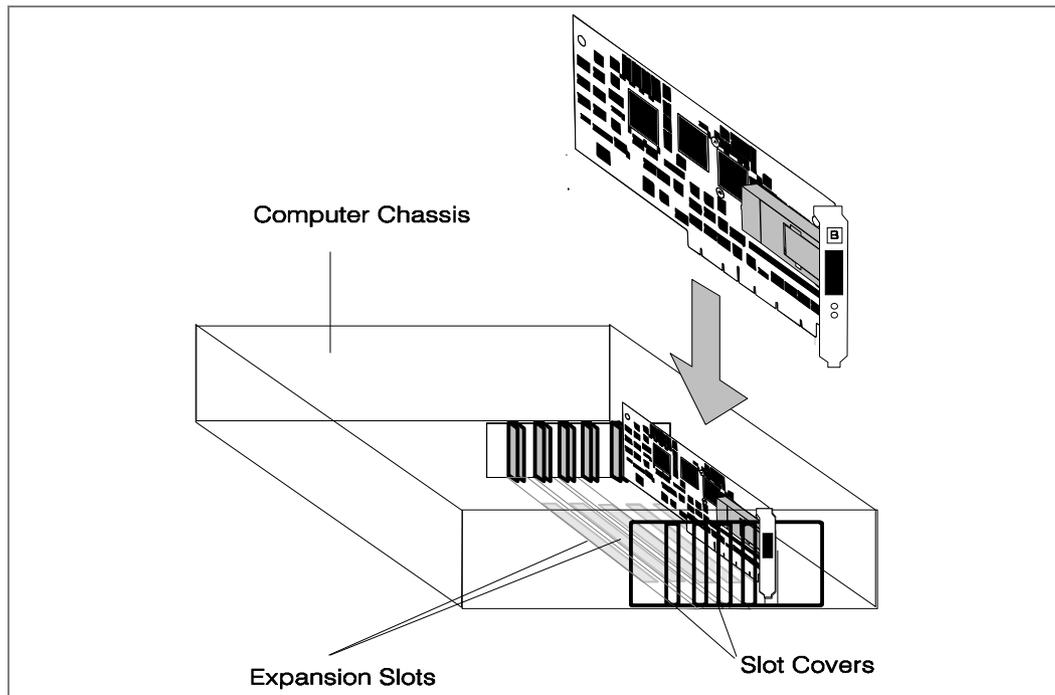
Figure 6. Installation of an
adapter in an expansion
slot

Because models vary, your computer and the adapter card may look different to the one shown above.

Continue with Step 3.

STEP 3. REPLACE THE COMPUTER COVER AND RECONNECT THE CABLES

Follow the instructions in the section of your computer's reference manual that describes the computer installation.

To reconnect the cables disconnected in Step 1, follow the instructions given in *the Safety Information* chapter in the beginning of this manual. Do not connect the FDDI cables at this time. Leave the computer powered OFF, and continue with Step 5 for ISA installation, otherwise continue with Step 4.

STEP 4/EISA. START AND CONFIGURE THE COMPUTER

EISA

Note: The Configuration Program of your EISA computer may be installed on the hard disk. If so, start the Configuration Program and skip to instruction 3.

Available Interrupt settings	5	9	10	11

To restart and configure the computer, follow these steps:

1. Make sure that the Configuration Diskette is inserted in diskette drive A.

2. Turn on the computer. Start the Configuration Program of your EISA computer by following the instructions given in the computer's reference manual. When the Main Menu of the Configuration Program is displayed, select the appropriate option to install an EISA adapter (if the adapter is not detected automatically).

3. Go to the corresponding part of the computer's reference manual and/or follow the instructions given in the configuration program.

4. When you are asked to add the configuration file, insert the Option Diskette 1 in diskette drive A. Add the configuration file !SKD0100.CFG, following the instructions given in the computer's reference manual or in the Configuration Program until the installation is complete.

5. Save and quit the Configuration Program.

Continue with Step 5.

M_CA

STEP 4/MCA. RESTART AND CONFIGURE THE COMPUTER

Note: The following instructions apply to IBM computers; with other systems, the procedure is similar. If you have a non-IBM system, refer to your computer's reference manual to ensure proper configuration.

Available Interrupt settings	3	9	10	11

To complete this step, you need the working copy of your computer's Reference Diskette. To start and configure the computer, follow these steps:

1. Make sure that the working copy of the computer's Reference Diskette is inserted in diskette drive A.

2. Turn on the computer. When the logo screen is displayed, press Enter. The computer displays a screen similar to the following:

```
Adapter Configuration Error - 00165    Page 1 of 1
If you have installed or removed an adapter, run
automatic configuration.
If you have not installed or removed an adapter, do
not run automatic configuration. Continue until the
Main Menu appears. Select "Test the computer" to
determine the cause of this error and what action to
take

Automatically configure the system?    (Y/N)
```

Figure 7. Typical Adapter Configuration Error Screen
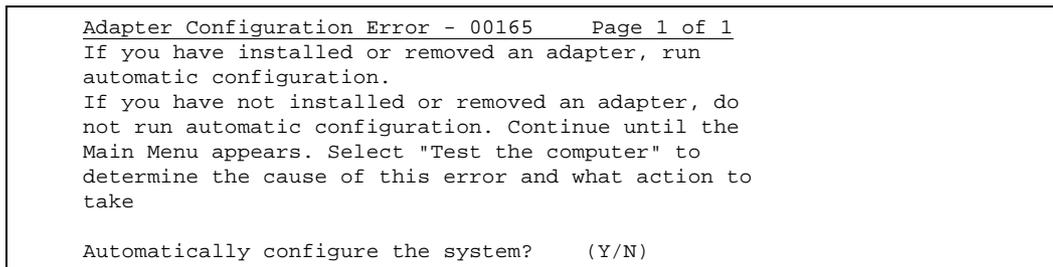
3. At the bottom of this panel, type Y to automatically configure the computer to recognize the new adapter(s).

Note: If the Adapter Configuration Error screen does not display, the adapter is not correctly installed. Go back to Step 2 and repeat the installation procedure.

4. If an error occurs during automatic configuration, contact your service representative or an authorized reseller.

5. When automatic configuration is complete, a message is displayed. Press the <Enter> key to return to the Main Menu, and continue with Step 5.

P_{CI}
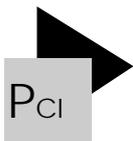
STEP 4/PCI. START AND CONFIGURE THE COMPUTER

Basically, there are two methods for configuration:

- **Plug & play: automatic configuration or (if not successful):**

- **Configuration via the computer's BIOS Setup or installation utility. Refer to the reference manual delivered with your computer.**

STEP 5. TEST THE ADAPTER

There are two ways to test the adapter:

• A test with loopback covering all devices including the transceiver.

• A test without loopback covering all devices except the transceiver.

Note: For the transceiver tests, the following prerequisites apply:

Adapter type		Cables / Plugs	Connectors
SAS	Copper	One wrap plug	RJ-45
	MIC	One wrap plug	MIC
	SC	One wrap plug	SC
DAS	Copper	Two wrap plugs	RJ-45
	MIC	Two wrap plugs	MIC
	SC	Two wrap plugs	SC

Refer to the following figures.
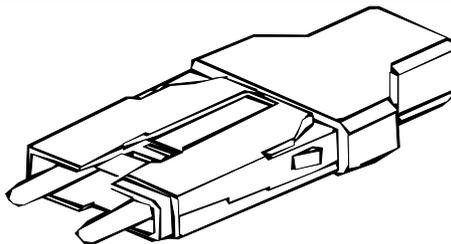
Figure 8. Wrap Plug for the Loopback Test (e.g. MIC)
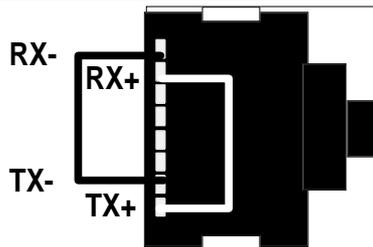
Figure 9. RJ-45 Wrap Plug, Pin Assignment
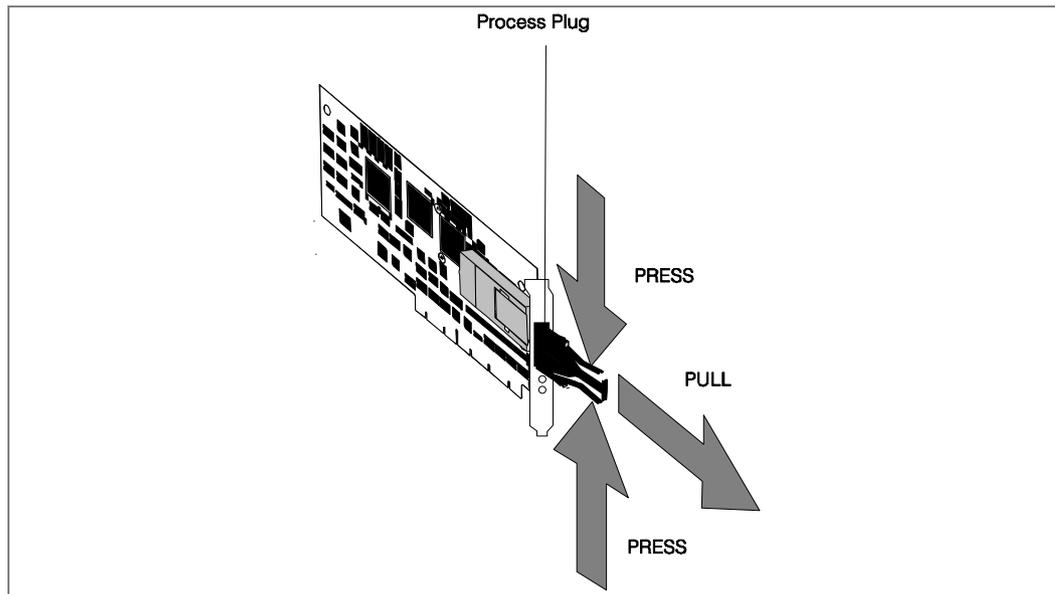
Figure 10. Removal of
the Process Plug

To test the adapter, follow these steps:

1. Turn off the computer. If the adapter is connected to the network, remove the FDDI
    cable (plug) from the transceiver. If applicable, remove the process plug(s) from the
    transceiver(s). Refer to the figure. If you want to perform the test without loopback, skip
    to the next step.

2. Insert the wrap plug(s) into the transceiver(s).

Fiber

3. Boot with DOS and wait until the operating system is loaded and the DOS prompt is displayed on the screen.

If you are not able to initiate DOS or if the DOS prompt does not appear, check your configuration.

4. Insert the Driver Installation Diskette 2 (which was delivered with the adapter) in diskette drive A.
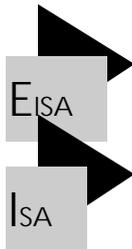
E_{ISA}

5. For EISA adapters, type

```
SKFEDIAG
```

I_{SA}

For ISA adapters, type

```
SKDIAGFI -g[I/O] -i[INT] -d[DMA] -h
```

replacing

[I/O] by the current I/O port number and

[INT] by the current interrupt number

[DMA] by the current DMA channel number

Use **-h** for high memory

M_{CA}

For MCA adapters, type

```
SKDIAGFM
```

and press the Enter key.

P<small>CI</small>

For PCI adapters, type

```
SKFPDIAG
```

and press the Enter key.

6. When the Main Menu of the diagnostic program is displayed, select

- **Diagnostics** if you want to perform the test without loopback or

- **Diagnostics with Loopback** if you want to perform the test with loopback

Several tests are performed. This will take 1 to 4 minutes. After all the tests are passed, a message is displayed.

```
SK-NET FDDI-FE DIAGNOSTICS v4.04 (961210)
VDS not installed                              Single attachment station.
Output none
Media Original PMD   Connector MIC
Slot 4 IRQ 11  DMA 7 FPROM inactive
MAC-Address 00-00-54-41-35-75
```

```
Exit
Diagnostics
Diagnostics with Loopback

FPROM
```

```
Board register check...........passed
Onboard time check ............passed
Onboard memory check...........passed
DMA engine check...............passed
LAN interface check............passed
Throughput Test................passed
*** All tests passed successfully ***

Measuring DMA speed
DMA speed: 5.498 MB/s

*** DMA speed measured successfully ***
```

Figure 11. Typical
Message Screen of the
Diagnostic Program

The adapter is now ready for use (if the protocol drivers have been previously installed).
Note: The adapter is only operational if a protocol driver is loaded. To install protocol drivers,
refer to chapter 3.

If an error occurs, follow the instructions given in the message displayed on the screen.
Please check configuration and run the test again.

Press any key to continue.

If a Test Fails

```
SK-NET FDDI-FE DIAGNOSTICS
VDS not installed                          Single attachment station
Output none                                Streaming Data disabled
IO Port 0x2000  Slot 2 IRQ 9  DMA5 Fairness on    FPROM inactive


    Exit                              Board register check...........passed
    Diagnosics                        Onboard time check ............passed
    Diagnostics with Loopback         Onboard memory check...........passed
                                      DMA engine check...............failed
    FPROM


              Please check configuration and run the test again

                        Press any key to continue
```

Figure 12. Typical Error
Message Screen of the
Diagnostic Program

If an error message instructs you to reseat the adapter, follow the procedure listed below:

1. Turn off the computer.

2. Repeat *Step 1. Remove the Computer Cover* on page 35.

3. Make sure that the adapter is correctly seated. You do not have to remove the adapter.
Just lift the adapter so that the adapter connector and the connector on the system board
are clear of each other. Press firmly on the adapter until it is seated correctly. Verify that
you have followed the instructions for *Step 3* and *Step 4*.
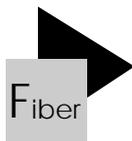
4. Return to instruction 4 and the following instructions of the preceding procedure list to repeat the test.

If the problem persists, contact your authorized reseller or the SysKonnect Product Support. For information regarding the repair procedure for Syskonnect products or the return of defective products,please refer to the next paragraph (RMA procedure).

5. To quit the Diagnostics Program, select the Exit bar in the Main Menu.

6. If applicable, remove the wrap plug. Reconnect the adapter to the network.

Fiber

7. (Fiber only:) If you do not intend to connect the system to the FDDI network right now, reinsert the process plug into the optical transceiver. The process plug will protect the optical transceiver from dust accumulation.

Continue with Step 6.

RMA (Return Material Authorization) Procedure

1. If you want to return material directly to SysKonnect, contact us via the following communication numbers:

	America, Pacific	European & other countries
Tel.	+1 408 437 3857	+49 7243 502 476
Fax	+1 408 437 3866	+49 7243 502 364

2. Normally via fax, you will receive an individual repair number and a fax back form.

3. Fill in the required information.

4. Return the defective product, including

- the original box (or a similar one). Note the repair number allocated by SysKonnect in clear letters on the outside packaging

- anti-static bag

- the completed form

Note: Warranty is void if the material is damaged due to electrostatic discharge problems or bad packaging.

STEP 6. ATTACH THE FDDI CABLE TO THE ADAPTER

To complete this step, you need the following items:

Adapter type		Cables	Connectors	Correct Keying
SAS	Copper	One UTP (Cat. 5) or S/UTP cable	RJ-45	-
	MIC*	One fiber-optic cable	MIC	x
	SC**	Two fiber-optic cables	SC	-
DAS	Copper	Two UTP (Cat. 5) or S/UTP cables	RJ-45	-
	MIC*	Two fiber-optic cables	MIC	x
	SC**	Four fiber-optic cables	SC	-

* MIC cabling systems generally use cables with two fiber-optic cores (SC cables: 1 core per cable)

** For two fiber-optic SC cables, one duplex cable can be used instead.

- An optical bypass switch, if appropriate.

To connect the computer to the network, attach an FDDI cable to each installed adapter.

D_{AS}
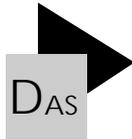
Note (Fiber-optic MIC only): In a dual attachment configuration, the FDDI cable keyed A is always connected to the transceiver labeled A, and the cable keyed B is always connected to the transceiver labeled B. In SAS installations, the cable and the transceiver have to be keyed S. (The MIC adapters are delivered with correct default keying .)
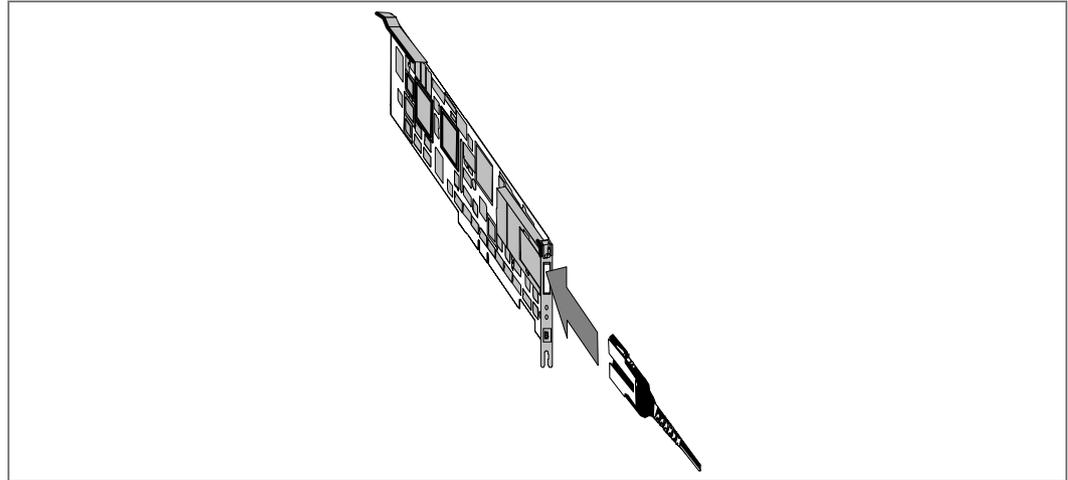
Figure 13. Attachment
of the FDDI Cable

Installation of the adapter is now complete. For future reference, store these instructions with your computer's reference manual.

The adapter is now ready to be connected to your FDDI network.

Note: The adapter is only operational if a protocol driver is loaded. Refer to chapter 3 to load the appropriate driver(s).

CHAPTER 3. INSTALLATION OF THE PROTOCOL DRIVERS

Once the driver is installed and loaded, the adapter is ready for use. The operational state is indicated via LEDs (except ISA adapters). Refer also to Figure 1.

LEDs

SAS Adapter

Green	Yellow	Explanation
off	off	driver not loaded, card not operational.
off	on	station management code is running, adapter is not connected to the network (for example, cable is disconnected).
on	off	adapter is ready for use (connected to network and operational)

DAS

DAS adapters except ISA adapters have one additional LED (refer to the third column).

Green	Yellow	Green	Explanation
off	off	off	driver not loaded, card not operational.
off	on	off	station management code is running, adapter is not connected to the network (for example, cable is disconnected).
on	off	off	PCI DAS: adapter active at port B other DAS: adapter active at port A
off	off	on	PCI DAS: adapter active at port A other DAS: adapter active at port B
on	off	on	adapter is ready for use (connected to network and operational), station connected to the FDDI double ring.

NETWORK DRIVERS (PROTOCOL DRIVERS)

A current overview of the supported operating systems is given in the general readme file on *Diskette 1* (root directory).

Complete protocol driver installation instructions are given in readme files on the Installation Diskettes. We recommend the use of the Readme Viewer interface for safe and comfortable information handling.

READING DRIVER INSTALLATION INSTRUCTIONS UNDER DOS

There are two methods to reach the information files under DOS:

- Direct access to the readme files

To reach the information files, look for the .TXT files stored in the subdirectory of the corresponding driver on the Installation Diskettes.

- Navigation via Readme Viewer user interface. The installation of the various protocol drivers is described in files that can be easily accessed via the *Readme Viewer* display tool. Installation and use of this tool is described in the following paragraphs.

INSTALLATION OF THE README VIEWER TOOL

To improve access time, it is recommended to copy the Installation Diskettes to your computer's hard drive.

1. Insert the Installation Diskette 1 into the computer's diskette drive.

2. Copy the contents of this diskette to the computer's hard disk, retaining the directory structure.

3. Repeat this procedure with Installation Diskette 2 (and further Installation Diskettes, if applicable).

USE OF THE README VIEWER TOOL

1. From the *Installation Diskette 1*, start the program README.EXE by entering

   README

2. The following screen is displayed:

```
                    README Viewer v1.00
                  (C)Copyright 1995 SysKonnect,
     a business unit of Schneider & Koch & Co. Datensysteme GmbH.
                      All rights reserved

                    Press ENTER to continue
```

3. Press the <Enter> key. The following list is displayed, representing the supported operating systems and platforms.

```
================= Select Item ================
INTRODUCTION
   Latest News
NOVELL NETWARE
   DOS ODI Client Driver
   Netware 3.1X Server Driver
   Netware SFTIII Server Driver
   Installation for Netware 3.11
   Netware 4.X Server Driver
WINDOWS
   Windows for Workgroups
   Windows 95
   Windows NT 3.5
IBM LANSERVER
   LanServer for DOS
   Lan Server for OS/2
MICROSOFT LANMANAGER
   LanManager for DOS



              Press ESC to abort
```
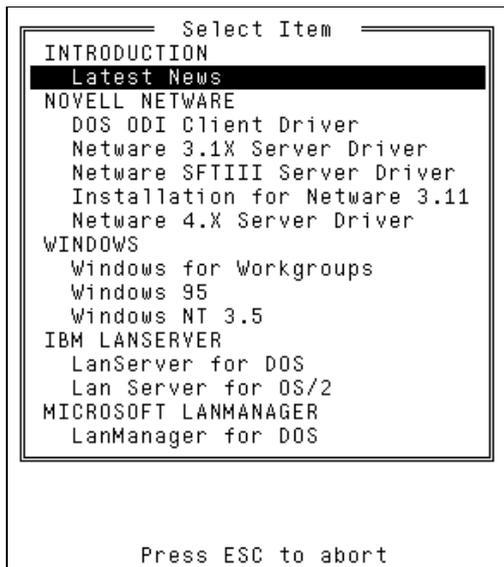
4. Select an operating system or platform via the highlighted bar. To move the bar, use the <up> and <down> cursor control keys.

5. Press <Enter>. The corresponding information (for example, installation instruction) is displayed.

```
╔══════════════════════════ Latest News ══════════════════════════╗
║▐  ++++++++++++++++++++++++++++++++++++++++              ++++       ║
║▐    ++++++++++++++++++++++++++++++++++++++++++          +++++++++   ║
║▐     +++++++++++++++++++++++++++++++++++++++++++++      +++++++++++  ║
║▐      +++++++++++++++++++++++++++++++++++++++++++     +++++++++++++  ║
║▐                                                   +++++++++++++++ ║
║▐                                                 +++++++++++++     ║
║▐                                                 +++++++++++++     ║
║▐      ++++++++++++++++++++++++++++++           +++++++++++++        ║
║▐        ++++++++++++++++++++++++++++++         +++++++++++          ║
║▐         ++++++++++++++++++++++++++++++       +++++++++++           ║
║▐           +++++++++++++++++++++++++++++      ++++++++++            ║
║▐                                             ++++++++++            ║
║▐                                             ++++++++++            ║
║▐    ++++++++++++++++++++++++++++++++++++++++++      ++++++++++      ║
║▐ ++++++++++++++++++++++++++++++++++++++++++++++     ++++++++++      ║
║▐ +++++++++++++++++++++++++++++++++++++++++++++      +++++++++       ║
║▐   +++++++++++++++++++++++++++++++++++++           +++++           ║
║▐                                                                 ║
║▐(C)Copyright 1995 SysKonnect,                                    ║
║▼a business unit of Schneider & Koch & Co. Datensysteme GmbH.    ║
╠═════════════════════════════════════════════════════════════════╣
╚═══════════════════════════Press ESC to abort════════════════════╝
```

6. The information generally includes several pages. To move within the text, use the <up> and <down> cursor control key for one line up/down or the <PageUp> or <PageDown> key to move to the preceding/next page.

7. To quit the information page, press <ESC>.

8. Select another item (refer to step 3 and 4 of this list) or quit the Readme Viewer tool by pressing <ESC>.

GLOSSARY

REFERENCES

1. The IBM Dictionary of Computing, IBM form number SC20-1699; identified by the symbol **(D)** preceding the definition.

2. The American National Dictionary for Information Processing Systems, copyright 1982 by the Computer and Business Equipment Manufacturers Association, copies of which may be purchased from the American National Standards Institute at 1430 Broadway, New York, New York 10018. These definitions are identified by the symbol **(A)** preceding the definition.

3. The ISO Vocabulary - lnformation Processing, and the ISO Vocabulary - Office Machines, developed by the International Standards Organization, Technical Committee 97, Subcommittee 1.

Definitions from published sections of these vocabularies are identified by the symbol **(I)** preceding the definition.

Definitions from draft proposals and working papers under development by the ISO/TC97 vocabulary subcommittee are identified by the symbol **(T),** indicating that final agreement has not yet been reached among its participating members.

4. The CCITT Sixth Plenary Assembly Orange Book, Terms and Definitions, published by the International Telecommunication Union, Geneva, 1978, and subsequent extensions.(identified by the symbol **(C)** preceding the definition).

5. Published and draft FDDI standards. These definitions may be subject to change as the standards evolve. The source of each definition is included in parentheses.

FDDI Media Access Control **(MAC)**

FDDI Physical Layer Protocol **(PHY)**

FDDI Physical Layer Medium Dependent **(PMD)**

FDDI Station Management, draft **(SMT)**

Single Mode Fiber Physical Layer Medium Dependant **(SMFPMD)**

For abbreviations, the definition usually consists only of the words that represent the letters; for complete definitions, see the entries for the words. If you do not find the term you are looking for, refer to the table of contents or to the IBM Dictionary of Computing.

EXPRESSIONS AND DEFINITIONS

adapter. (D) (1) A part that electrically or physically connects a device to a computer or to another device. (2) A printed circuit board that modifies the system unit to allow it to operate in a particular way. See also card.

attachment. (D) A port or a pair of ports, optionally including an associated optical bypass, that are managed as a functional unit. A dual attachment includes two ports: a port A, and a port B. A single attachment includes a Port S.

application. (D) (1) The use to which an information processing system is put; for example, a payroll application, a network application. (2) A collection of software components used to perform specific types of user-oriented work on a computer. (3) In the AS/400 system, the collection of CSP/AE objects that together can be run on the system. An application consists of a program object, up to five map group objects (depending on how many different devices are supported), and any number of table objects.

bits per second (bps). (D) In serial transmission, the instantaneous bit speed with which a device transmits a character.

bps. Bits per second

bypass. (D) (1) The ability of a station to be optically isolated from the network while maintaining the integrity of the ring. (SMFPMD) (PMD) (2) The ability of a node to optically isolate itself from the FDDI network while maintaining the continuity of the cable plant.

card. (D) (1) An electronic circuit board that is plugged into a slot in a system unit. See also adapter. (2) A plug-in circuit assembly.

circuit. (D) (1) One or more conductors through which an electric current can flow. (2) A logic device.

concentrator. (D) (1) An FDDI node that provides additional attachment points for stations that are not part of the dual ring. (SMFPMD) (PMD) (2) An FDDI node that has additional points beyond those required for its own attachment to an FDDI network. These additional ports are for attaching other FDDI nodes (including other concentrators) in a tree topology. (SMT) (3) A node on the FDDI ring, which in turn provides connections for additional conforming FDDI stations so that they may communicate with other attachments to the FDDI ring. A concentrator has physical layer entities and may or may not have one or more data link layer entities.

configuration. (T) The arrangement of a computer system or network as defined by the nature, number, and the chief characteristics of its functional units. The term may refer to a hardware or a software configuration.

connectivity. (D) (1) The capability of a system or device to be attached to other systems or devices without modification. (2) The capability to attach a variety of functional units without modifying them. (3) In ACF/TCAM, the state of two subareas that have an operative explicit route between them.

customization. (D) (1) The process of designing a data processing installation or network to meet the requirements of particular users. (2) The process of defining and activating a configuration and changing system parameters to meet user requirements.

DAC. Dual attachment concentrator.

DAS. Dual attachment station.

data link. (D) A telecommunication line is only the physical medium of transmission; for example, a telephone line or microwave beam. A data link includes the physical medium of transmission, the protocol, and associated devices and programs - it is both logical and physical.

data packet. (C) A packet used to transmit user data over a virtual circuit at the DTE/DCE interface.

default. (D) Pertaining to an attribute, value, or option that is assumed when none is explicitly specified.

DLI. Data Link Interface.

DOS. Disk Operating System.

driver. (D) (1) A program, system or device that allows a functional unit (or network) to operate. (2) A circuit that increases the signal current for sending data over long cables or to many other circuits. (3) A circuit that sends small electronic signals to a device.

dual attachment station (DAS). (D) A station that offers a dual attachment to the FDDI network and is capable of accommodating a dual (counter-rotating) ring.

dual attachment concentrator (DAC). (D) A concentrator that offers a dual attachment to the FDDI network and is capable of accommodating a dual (counter-rotating) ring.

dual ring (FDDI dual ring). (D) A pair of counter-rotating logical rings.

dual station (or dual attachment station, DAS). A station that offers two attachments to the FDDI network which are capable of accommodating a dual (counter-rotating) ring. It may offer additional attachments (see concentrator).

EISA. Extended Industry Standard Architecture.

FCC. Federal Communications Commissions.

FDDI. Fiber Distributed Data Interface.

fiber. (D) (1) Dielectric material that guides light; waveguide (see multimode and single-mode fiber). (SMFPMD) (2) Dielectric material that guides light; waveguide.

fiber optic cable. (D) (1) A jacketed fiber(s). (SMFPMD) (PMD) (2) A cable containing one or more optical fibers.

fiber optics. The technology whereby optical signals from light-generating transmitters are propagated through optical fiber waveguides to light-detecting receivers.

hard disk. (D) A rigid magnetic disk such as the internal disks used in the system units of IBM personal (or compatible) computers and in external hard disk drivers. Synonymous with fixed disk, nonremovable disk.

ISA. Industry Standard Architecture.

KB. 1024 Bytes.

kbps. 1000 bits per second.

keyboard. (D) A group of numeric keys, alphabetic keys, or function keys used for entering information into a terminal and into the system.

LAPS. LAN Adapter and Protocol Support Program.

link. (1) (I) The physical means of connecting one location to another for the purpose of transmitting and receiving data. (2) (D) In SNA, the combination of the link connection and the link stations joining network nodes; for example, (a) a System/370 channel and its associated protocols, (b) a serial-by-bit connection under the control of Synchronous Data Link Control (SDLC). A link connection is a physical medium of transmission. A link, however, is both logical and physical. Synonymous with data link.

Local area network (LAN). (D) (1) A data network located on the user's premises in which serial transmission is used for direct data communication among data station. (2) See also wide area network.

Notes:
1. Communication within a local area network is not subject to external regulation; however, communication across the LAN boundary may be subject to some sort of regulation.
2. A LAN does not use store and forward techniques.

LSP. Local Area Network Support Program.

µm. Micrometer (1 / 1 000 000 meter).

MB. 1 048 576 bytes.

Mbps. 1 000 000 bits per second.

Media Interface Connector (MIC). An optical fiber connector which connects the fiber media to the FDDI attachment. The MIC consists of two halves, a plug and a receptacle.

mouse. (D) (1) In computer graphics, a hand-held locator operated by moving it on a flat surface. A mouse generally contains a control ball or a pair of wheels. (I), (A) (2) In SAA usage, a device that a user moves on a flat surface to position a pointer on the screen. It allows a user to select a choice or function to be performed or to perform operations on the screen, such as dragging or drawing lines from one position to another.

NDIS. Network Device Driver Interface Specification

network. (D) (1) An arrangement of nodes and connecting branches. Connections are made between data stations. (2) A configuration of data processing devices and software connected for information interchange.

network (FDDI network). (D) A collection of FDDI nodes interconnected to form a trunk, or a tree, or a trunk ring with multiple trees. This topology is sometimes called a dual ring of trees.

ODI. Open Data-Link Interface.

Open systems interconnection (OSI). (D) (1) The interconnection of open systems in accordance with specific ISO standards.
Note: OSI architecture establishes a framework for coordinating the development of current and future standards for the interconnection of computer systems. Network functions are divided into seven layers. Each layer represents a group of related data processing and

communication functions that can be carried out in a standard way to support different applications.

(2) The use of standardized procedures to enable the interconnection of data processing systems.

Operating System/2. (D) A family of operating systems that control IBM Personal System/2 computing systems.

option. (D) A selectable characteristic of a product.

OSI. Open systems interconnection.

OS/2. Operating System/2.

Packet. (I) A sequence of binary digits including data and call controls signals that is switched as a composite whole. The data, call control signals, and possibly error control information, are in a specific format.

plug. (D) The removable half of an electrical connector.

port. (D) (1) An access point for data entry or exit.

(2) A connector on a device to which cables for other devices such as displays and printers can be attached.

(3) A specific communications end point within a host. A port is identified by a porter number.

problem determination. (D) The process of identifying the source of a problem; for example, a program component, a machine failure, telecommunication facilities, user or contractor-installed programs or equipment, an environment failure such as a power loss, or a user error.

process plug. The plastic plug that protects an optical transceiver mechanically. Usually, a fiber base adapter or extender card is delivered with an inserted process plug.

PS/2. Personal System/2.

RAM. Random access memory.

random access memory (RAM). (D) A storage device into which data are entered and from which data are retrieved in a nonsequential manner.

receiver. (D) An optoelectronic circuit that converts an optical signal to an electrical logic signal.

receiver (optical). (D) An optoelectronic circuit that converts an optical signal to an electrical logic signal. (SMT)

ring. (D) (1) Two or more stations wherein information is passed sequentially between active stations, each station in turn examining or copying the information, finally returning it to the originating station.

(SMFPMD) (PMD) (2) A set of stations wherein information is passed sequentially between stations, each station in turn examining or copying the information, finally returning it to the originating station. In FDDI usage, the term "ring." of "FDDI ring" refers to a dual (counter-rotating) ring.

(SMT) (3) Two or more stations in which information is passed sequentially between active stations, each station in turn examining or copying the information, finally returning it to the originating station.

SAC Single Attachment Concentrator

Glossary

select. (D) (1) In SAA Common User Access architecture, to mark or choose an item.

(2) To place the cursor on an object (name or command) and press the select (left) button on the mouse, or the Select key on the keyboard.

server. (D) A functional unit that provides shared services to workstations over a network; for example, a file server, a print server, a mail server.

(2) In a network, a data station that provides facilities to other stations; for example, a file server, a print server, a mail server.

setup. (D) In a computer that consists of an assembly of individual computing units, the arrangement of connections between the units, and the adjustments needed for the computer to operate on a problem.

single attachment concentrator. (D) A concentrator that offers a single attachment to the FDDI network.

single attachment station. (D) A station that offers a single attachment to the FDDI network.

single station (or single attachment station). (D) A station that offers one attachment to the FDDI network.

station. (D) An addressable node on an FDDI network capable of transmitting, repeating and receiving information. A station has exactly one SMT, at least one MAC, at least one PHY, and at least one PMD.

transmit. (D) (1) The action of a station in generating a token, frame, or other symbol sequence and placing it on the outgoing medium.

(MAC) (2) The action of a station that consists of generating a frame, token, or control sequence, and placing it on the medium to the next station.

transmitter. (D) (1) An optoelectronic circuit that converts an electrical logic signal to an optical signal.

transmitter (optical). (D) An optoelectronic circuit that converts an electrical logic signal to an optical signal.

transceiver. (D) Physical Media Dependant Receiver/Transmitter Module.

wrap plug. A test plug that connects the output of a controller or cable to the input of the controller or cable. A wrap test then verifies that the controller or cable output and input circuits are working correctly.

APPENDIX A. DATA SHEET

Network Interface Standard or Draft	Fiber cabling: ANSI X3.T9.5 UTP5 or S/UTP cabling: TP-PMD
Bus Interface	available for ISA, EISA, MCA, PCI
LAN Controller	AMD Supernet Chipset
RAM	128 KB static CMOS
Power Consumption	@ 5 V max SAS approx. 2 A.; DAS 2,65 A @ 12 V max 50 mA.
FLASH Memory	128 KB (16 Pages à 8 KB)
Dimensions	EISA: 275 mm x 127 mm (11 " x 5.08 " approx.) ISA: 339 mm x 107 mm (13.8" x 4.28") MCA: 292 mm x 88,3 mm (11.5" x 3.48") PCI: 126 mm x 186 mm (4.98" x 7.4")
Temperature Range	Storage: -20°C...+60°C Operation: +10°C...+40°C
Rel. Humidity (non-condensing)	Storage: 10%...90% Operation: 30%...80%

APPENDIX B. INTERFACE PINOUTS

RJ-45 RECEPTACLE

Unshielded Twisted Pair Port Pinouts (Port Type A, B, M and S)

RX-
RX+

TX-
TX+

Figure 14. RJ-45 Pinout

The TP-PMD UTP standard uses RJ-45 connectors and receptacles. The table below summarizes the port pinouts.

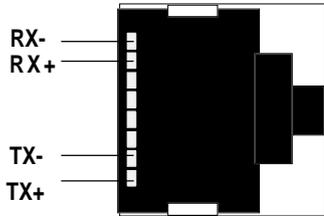| RJ-45 Contact	Signal
1	Transmit (Tx+)
2	Transmit (Tx-)
7	Receive (Rx+)
8	Receive (Rx-)

Note: Category 5 UTP cables for FDDI require 1 $\leftrightarrow$ 7 and 2 $\leftrightarrow$ 8 crossovers.

OPTICAL BYPASS SWITCH RECEPTACLE
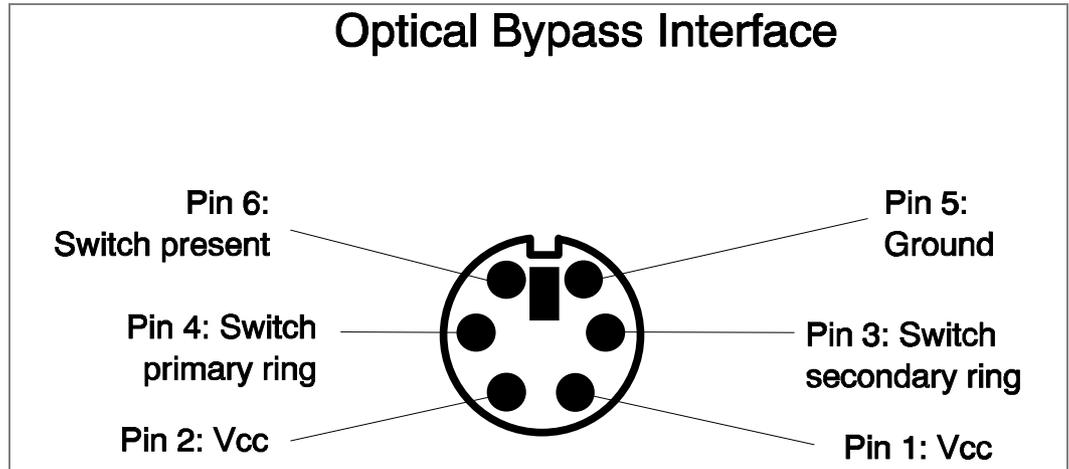

Figure 15. Optical Bypass Interface

APPENDIX C. ELECTRONIC EMISSION NOTICES

FEDERAL COMMUNICATIONS COMMISSION (FCC) STATEMENT

The following statement applies to: SK-NET FDDI-FE, SK-NET FDDI-FE DAS, SK-NET FDDI-UE, SK-NET FDDI-UE DAS, SK-NET FDDI-FI, SK-NET FDDI-UI, SK-NET FDDI-FM, SK-NET FDDI-FM DAS, SK-NET FDDI-UM, SK-NET FDDI-UM DAS

(Models SK-5342, SK-5322, SK-5121, SK-5221, SK-5222, SK-5341, SK-5321, SK-5141, SK-5241, SK-5242)

Note: This equipment has been tested and found to comply within the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. SysKonnect is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

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

(1) this device may not cause harmful interference, and

(2) this device must accept any interference received, including interference that may cause undesired operation.

The following statement applies to: SK-NET FDDI-FP, SK-NET FDDI-LP; SK-NET FDDI-LP DAS; SK-NET FDDI-UP, SK-NET FDDI-UP DAS

(Models SK-5541, SK-5543, SK-5544, SK-5521, SK-5522)

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

- Reorient or relocate the receiving antenna.

- Increase the separation between equipment and the receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

- Consult the dealer or an experienced radio/TV technician for help.

The user may find the following booklet, prepared by the Federal Communications Commission, helpful:

"How to Identify and Resolve Radio-TV Interference Problems".

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402 Stock Number 004-000-00345-4.

SysKonnect is not responsible for any radio or television interference caused by unauthorized modifications of this equipment or the substitution or attachment of connecting cables and equipment other than those specified by SysKonnect. The correction of interferences caused by such unauthorized modification, substitution or attachment will be responsibility of the user.