M100
Desktop FDDI Concentrator
Installation Guide

M100 Desktop FDDI Hub

Quick Installation Guide

To install the concentrator for desktop usage:

1. Place the concentrator on a hard, level surface. Do not place the concentrator so that it sits face-down, which allows dust to fall into the ports.
2. Leave at least one-half inch of clearance above the ventilation grills for proper air flow.

To turn on the concentrator:

1. Attach the cable from the external power supply to the back of the concentrator.
2. Attach the AC power cable to the external power supply.
3. Plug the AC power cable into a compatible outlet. The concentrator will power up automatically.

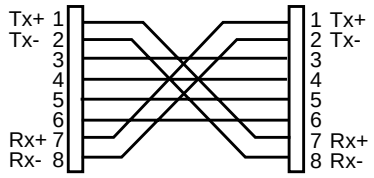
The concentrator executes on-board diagnostics. When diagnostics are complete, unconnected ports will remain dark, indicating that they are available to accept connections. A connect request is issued to SMT automatically after diagnostics are complete.

LED semantics:

LED	Port Status
Off or Dark	Port is waiting for connection, or connection is withheld.
Blinking green	Port is disabled.
Solid green	Port connection is active.

UTP wiring requirements:

The Category 5 UTP wiring defined for TP-PMD by ANSI uses the following pin connections. This pinout is used for **every** type of port-to-port connection.



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Customer Support

United States:	Telephone:	(214) 654-5555
	Fax:	(214) 654-5500
	E-Mail:	intouch@iphase.com
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Safety Precautions

The following general safety precautions must be observed during all phases of operation of this equipment. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the equipment. Interphase Corporation assumes no liability for the user's failure to comply with these requirements. You, as the user of the product, must observe all stated warnings and safety precautions in order to safely operate the equipment in your environment.

Do Not Substitute Parts or Modify Equipment

Because of the danger of introducing additional hazards, do not install substitute parts or perform any unauthorized modification of the equipment. Contact your local Interphase representative for service and repair to ensure that safety features are maintained.

Ground the Instrument

To minimize shock hazard, the equipment chassis and enclosure must be connected to an electrical ground. The power cable must either be plugged into an approved three-contact electrical outlet or used with a three-contact to two-contact adapter, with the grounding wire (green) firmly connected to an electrical ground (safety ground) at the power outlet.

Do Not Operate in an Explosive Atmosphere

Do not operate the equipment in the presence of flammable gases or fumes. Operation of any electrical equipment in such an environment constitutes a definite safety hazard.

Keep away from Live Circuits

Do not install or replace the component with power cable connected. Under certain conditions, dangerous voltages may exist even with the power cable removed. To avoid injuries, always disconnect power and discharge circuits before touching them.

Observe Dangerous Procedure Warnings

Warnings precede potentially dangerous procedures throughout this manual. Instructions contained in the warnings must be followed. You should also employ all other safety precautions which you deem necessary for the operation of the equipment in your operating environment.

Warning

This equipment generates, uses, and can radiate electromagnetic energy. It may cause or be susceptible to electromagnetic interference (EMI) if not installed and used in a cabinet with adequate EMI protection.

FCC Regulatory Compliance

This equipment has been tested and found to comply with 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.

Declaration of Conformity

(according to ISO/IEC Guide 22 and EN 45014)

Manufacturer's Name:	Interphase Corporation
Manufacturer's Address:	13800 Senlac Dallas, Texas 75234 U.S.A.

declares, that the product:

Product Name: Desktop FDDI Concentrator

Model Number: M100

conforms to the following Standards:

Safety:	EN 60950:1988 + A1, A2
EMC:	EN 55022:1988 class A EN 50082-1 Part 1 1992

Supplementary Information:

This product complies with the requirements of the **Low Voltage Directive 73/23/EEC** and the **EMC directive 89/336/EEC**.

Dallas, August 2, 1996

Mike Jobe, Quality Manager

European Contact:

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Conventions

Icon Conventions

Icons draw your attention to especially important information:

Note

The Note icon indicates important points of interest related to the current subject.

Caution

The Caution icon brings to your attention those items or steps that, if not properly followed, could cause problems in your machine's configuration or operating system.

Warning

The Warning icon alerts you to steps or procedures that could be hazardous to your health, cause permanent damage to the equipment, or impose unpredictable results on the surrounding environment.

Text Conventions

The following conventions are used in this manual. Computer-generated text is shown in typewriter font. Examples of computer-generated text are: program output (such as the screen display during the software installation procedure), commands, directory names, file names, variables, prompts, and sections of program code.

```
Computer-generated text example
```

Commands to be entered by the user are printed in **bold Courier** type. For example:

```
cd /usr/tmp
```

Pressing the return key (↵ **Return**) at the end of the command line entry is assumed, when not explicitly shown. For example:

```
/bin/su
```

is the same as:

```
/bin/su ↵ Return
```

Required user input, when mixed with program output, is printed in **bold Courier** type. References to UNIX programs and manual page entries follow the standard UNIX conventions.

When a user command, system prompt, or system response is too long to fit on a single line, it will be shown as

```
Do you want the new kernel moved into
\ vmunix?[y]
```

with a backslash at either the beginning of the continued line or at the end of the previous line.

Introduction 1

Concentrator Overview

The M100 is a single-attached MAC-less FDDI concentrator that provides users with the performance, connectivity, and reliability of FDDI in an inexpensive, compact, easy-to-use desktop hub. It connects to FDDI from a desktop, using low-cost unshielded twisted pair (UTP) cable. It features advanced components in a streamlined case, and brings true *plug and play* capability to FDDI networks. Internal station management software performs error monitoring, network integrity, and reconfiguration tasks. The M100 also automatically handles station failures, cable breaks, and power outages.

Product Features

The M100 concentrator includes the following features:

- Compliant with the following ISO standards:
  - ISO 9314-3:1990, Physical Layer, Medium Dependent (PMD)
  - ISO 9314-1:1989, Physical Layer Protocol (PHY)
  - ISO 9314-6:1994, Station Management (SMT) Revision 7.3
- Contains five ports: one type S port (Port 5) and four type M ports (Ports 1–4)
- Supports MLT-3 transmission over 100 meters of Category 5 UTP cable
- Connects with standard RJ45 connectors for Category 5 UTP cable

- Provides green LEDs to indicate unit power and port status
- Weighs less than 1.88 pounds (0.85 kilograms)
- Performs error monitoring, network integrity checks, and reconfiguration tasks, using internal SMT software
- Automatically performs boot diagnostics at power-up, with progress indicated through front-panel port LEDs (as described in Appendix B)
- Automatically handles station failures, cable breaks, and power outages

M100 Ports

The M100 contains five ports, each of which has three parts: a media connector, a label, and an LED.

The media connector connects the concentrator to another FDDI device. Media connectors on the M100 are RJ45 connectors for Category 5 Unshielded Twisted Pair (UTP), and are located on the rear of the unit.

The label indicates the port type, whether type S or type M. The S port is the first port on the left of the concentrator, when viewed from the rear. A port label is located above each media connector.

The LED indicates port status. The LED for each port is located on the front of the unit. The LEDs numbered 1 through 4 correspond to M ports, and the LED numbered 5 corresponds to the S port. LEDs numbered 1 through 4 match the M port numbering sequence on the rear of the unit.

The M100 forwards all traffic to the devices attached to its ports. In its normal usage as a single-attach concentrator, the single data path enters the S port. Data is then forwarded to M ports 4, 3, 2, and 1, in order, before returning back out the S port.

However, the concentrator does not source or receive frames and cannot be managed because it has no addressable MAC.

Installation Kit Contents

The M100 concentrator installation kit includes:

- M100 desktop FDDI concentrator
- One external power supply
- One AC power cord
- *M100 Desktop FDDI Concentrator Installation Guide*

Make sure that the above items are in your package and that the AC power cord is compatible with your local power source. If you find any discrepancies, contact your dealer or service representative.

Note

Do not apply power to the concentrator if there are any incompatibilities with the supplied power cord.

M100 Installation 2

Overview

This chapter provides instructions for physically installing the M100 FDDI concentrator in desktop environments. It also provides instructions for operating the concentrator for the first time and for making FDDI connections. Please observe all notes, cautions, and warnings in this chapter.

Unpacking the Concentrator

Caution

The concentrator is packed in an antistatic bag to protect it during shipment. Keep the concentrator in the protective antistatic bag until you are ready to install it on the motherboard of the host computer.

1. Open the shipping container and carefully remove its contents. **Do not open the antistatic bag containing the concentrator at this time**.
2. Verify that you have received all items on the packing list, and inspect each item for damage.

   If you find any omissions or damage, contact your supplier and the carrier that delivered the package.

   If the concentrator must be returned, ship it in its original box (or one providing equivalent protection). Failure to do so could nullify your warranty.

3. After confirming that package contents are complete and undamaged, return all packing materials to the shipping container and save.

Installing the M100

Observe the following precautions when storing, installing, and/or operating the M100 FDDI concentrator:

Caution

Do not store the concentrator beyond the following temperature range: -20˚ C/-4˚ F to 85˚ C/185˚ F.

Caution

To prevent electric shock, do not open the enclosure. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.

Caution

Do not allow liquids to penetrate the concentrator enclosure.

Caution

Do not put heavy objects on the power supply cord. A damaged power supply cord might cause fire or electric shock.

Caution

The input power source must be within the following voltage and frequency ranges: 100 to 240 volts and 47 to 63 Hz.Use a grounding-type power outlet with the three-wire power cord and plug that is included with the unit.

Caution

For proper operation, keep the concentrator adequately ventilated. Always ensure that there is at least one-half inch (1.27 cm.) of clearance away from the air flow grills.

Caution

Do not operate the concentrator beyond the following ambient temperature and humidity ranges: 0˚ C/32˚ F to 50˚ C/122˚ F and 0% to 95% non-condensing humidity.

To install the M100 concentrator on a desktop:

1. Place the concentrator on a flat surface. Position the enclosure so that dust cannot fall into the ports.

Caution

Always ensure that the concentrator has at least one-half inch of clearance on all sides of the device for proper air flow through the enclosure. Do not place anything on top of the concentrator that obstructs this air flow.

2. Attach the cable from the external power supply into the power connector on the rear of the concentrator.
3. Plug the AC power cord that was shipped with the concentrator into the socket located on the external power supply.
4. Plug the other end of the power cord into an AC power source. Acceptable values for the AC source are 100 to 240 volts and 47 to 63 Hz.

Warning

If your power source is not compatible, or if the power cord is of the wrong type, do not use the unit; contact your dealer or service representative.

The concentrator powers up automatically at this point, and the power LED on the front of the unit lights up.

Operating the M100 for the First Time

Before using the concentrator for the first time, make sure that all of the ports are empty so that you can observe the results of the diagnostics.

When power is applied, the M100 concentrator automatically executes the following procedures, in order:

- Memory diagnostics
- FDDI diagnostics
- Station management (SMT) software

The port LEDs indicate the progress of the diagnostics and the operation of SMT. The LEDs blink in sequence from left to right to indicate that memory diagnostics and FDDI diagnostics are currently running. If no ports are connected, the LEDs darken when diagnostics are complete.

Continued blinking of any of the port LEDs indicates that a fatal failure has been detected by the diagnostics. This is a failure that prevents the concentrator from functioning. You should contact your dealer or service representative if your concentrator does not function.

After passing the boot diagnostics, the M100 software automatically issues a Connect request to SMT. The port LEDs darken when SMT is active and the ports are ready to accept connections. This is the normal and correct state for unconnected ports.

Making FDDI Connections

Caution

When using building wiring, for safety reasons, always ensure that your building cable plant conforms to the Electronics Industry Association *Commercial Building Telecommunications Wiring Standard* EIA/TIA-568.

To make a connection between the M100 desktop FDDI concentrator and another FDDI device, the connected ports must have both compatible media types and compatible data encoding schemes.

The M100's UTP ports may be connected only to Category 5 UTP ports on other FDDI devices.

You must also ensure that the correct data encoding scheme is used. The M100 FDDI concentrator uses the MLT-3 encoding scheme for its UTP ports.

Note

MLT-3 is the encoding scheme used in the ANSI TP-PMD standard. It allows for the transmission of FDDI data over copper wire at distances of up to 100 meters. When connecting a UTP port on the M100 FDDI concentrator to another FDDI device, you must ensure that the attached port also uses the MLT-3 encoding scheme.

In addition, for UTP ports, you must make sure that the cable you use to connect the ports is a standard FDDI *cross-over* cable. The pin definitions for the UTP connectors are the same for all port types. Therefore, you must ensure that the wires that comprise your connection cable do not go straight through, but cross from the appropriate pin on one side of the cable to the appropriate pin on the other side of the cable.

A cross-over cable is required for every type of connection in FDDI UTP networks, regardless of the types of ports being connected. Check with your cable supplier to ensure that the cable you are using is of the correct type.

The Category 5 UTP wiring defined for TP-PMD by ANSI uses the following pin connections:

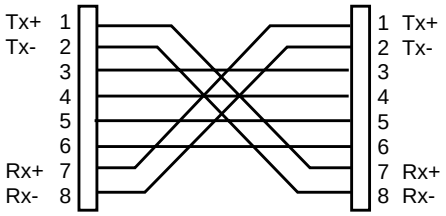

Figure 2-1. M100 UTP Cable Pin Connections

This pinout is used for every type of port-to-port connection.

When a valid connection to a port becomes active, the corresponding LED on the front panel remains lit in a steady green.

Caution

If the concentrator does not operate properly, disconnect the external power supply cable and remove the power plug from the outlet.

Troubleshooting 3

Overview

This chapter describes some of the problems you might see when attempting to connect another FDDI device to the M100 FDDI concentrator.

Each subsection describes the symptoms, discusses possible causes, and provides an algorithm for gathering more information.

Problem: LED not Solid Green

After power-up diagnostics, each port LED on the M100 normally remains dark if a physical connection has not been made to the corresponding port (that is, if nothing is plugged into the port.) If a functioning M100 port is connected to an FDDI port, the M100 port LED should become steady green after approximately 30 seconds, indicating that the connection is active.

If the LED of a connected port is blinking or is dark, a problem exists with either the port hardware or the port connection.

Note

An understanding of SMT connection policies will help you solve problems like this. See Appendix A for a brief tutorial on SMT connection rules if you are not already familiar with them.

If the LED is blinking after power-up diagnostics, a fault exists with the port hardware, as described in Table 3-1:

Table 3-1. Blinking Port LED

If LED is blinking when:	Possible cause	Action
Power-up diagnostics have completed	SMT has disabled the port during power-up diagnostics because a fault was detected in the hardware that renders it unusable.	Contact your Interphase service representative. Do **NOT** attempt to connect a port that is known to be faulty to another FDDI device.
The port was previously active	SMT has disabled the port due to a path test; a fault was detected in the hardware that renders it unusable. A path test is a set of diagnostics that SMT automatically performs on an FDDI device as the result of the SMT Trace algorithm, which recovers from stuck beacon conditions on the network. This cause is especially likely if the time of port failure corresponds to the time of a Trace event on the network, as reported by a network management entity.	

Each port LED normally remains dark as long as a physical connection has not been made to the corresponding port. If the LED remains dark after a connection is made, a problem exists with the connection.

The cause of the problem depends on the state of the LED, the M100 concentrator port type (S or M), and the port type on the other end of the connection (A, B, S, or M). Connection problems include the following:

- The connection is being withheld.
- The connection is not established.
- The connection is being rejected.

Table 3-2 describes these connection problems:

Table 3-2. Unlit Port LED

Possible Reason for Unlit LED	Action
The connection is withheld according to SMT topology rules because of one of the following conditions: • It is an *M to M* connection. M to M connections are prohibited by the SMT specification and are invalid. • It is a *dual-homed* connection. A dual-homed connection exists when a dual-attached device, such as a station or concentrator with A and B ports, is connected through both its A and B ports, and at least one port is connected to an M port on the M100. In such a case, SMT favors the B port. The B port connection becomes active, and the A port is withheld as a backup. If the B port connection fails for any reason, the A port connection will become active automatically.	1. Check whether an invalid M to M connection has been made to another concentrator, and if so, change to a valid type of connection. 2. If the connection type is valid, check whether the neighboring port is the A port side of a dual-homed connection. If so, then the connection is behaving properly and an error does not exist. You also should check the other FDDI device and its internal SMT topology rules to determine whether it is withholding the connection in compliance with SMT topology rules or with a set of proprietary connection rules.

Table 3-2. Unlit Port LED (continued)

Possible Reason for Unlit LED	Action
The connection cannot be established because of one of the following conditions: • The neighboring port is unable to establish a connection. • A problem exists with the connecting cable.	1. Verify that the neighboring port can establish a connection by ensuring that the neighboring device: • Is turned on and properly configured • Uses the same data encoding scheme (MLT-3) as the concentrator port • Has received a connect request to initiate new FDDI connections 2. Verify the integrity of the connecting cable: • Ensure that connectors are securely inserted. • Clean dust or dirt detected on any plugs and/or connectors. • Ensure that you are using a cross-over cable with the proper internal wiring. (If you are using straight-through cable, *Transmit* is wired to *Transmit* and *Receive* is wired to *Receive*.) Check with your cable supplier to verify that you are using the correct cable. • If the problem persists, replace the cable.

Table 3-2. Unlit Port LED (continued)

Possible Reason for Unlit LED	Action
The connection is rejected because of excessive link errors. Link errors are generally introduced by the cable plant, but are occasionally introduced by older or faulty hardware.	If there is no evidence of previous connection problems, check for the following sources of link errors and make necessary corrections. • Dusty or dirty connectors (plugs and receptacles). Copper connectors gather dirt over time, which obstructs the flow of electrical signals. • Loose port connectors. Copper connectors are prone to loose connections. Intermittent contact with the port leads can introduce link errors. • Copper cables that are running through strong electrical or magnetic fields. • Copper cables or cable runs that exceed the maximum recommended port-to-port distance of 100 meters for Category 5 UTP. • Copper cable plants that do not conform to EIA/TIA 568 wiring specifications. Punchdown blocks, patch cable, and patch panels must be rated for Category 5 UTP. Crossovers between transmit and receive must occur within a cable, and not in the patch panel.

Problem: Active Port with a Poor Connection

The M100 concentrator disables faulty ports so that it can continue providing service on the remaining functional ports. While this is a desirable fault-tolerant feature, in rare situations a disabled port might interfere with the concentrator's normal operation. Such interference can occur when the nature of the failure prevents the port hardware from being properly isolated from the internal data path. If the disabled port hardware is not isolated properly, either the FDDI ring is broken or the ring data is corrupted, resulting in loss of data service among stations on the ring.

If disabled ports are on your concentrator and you suspect that you have this problem, you can use the following steps to test for the problem:

1. Disconnect all the ports on the concentrator.
2. Connect an FDDI station or network analyzer to a functioning M port. The concentrator will form an internal ring, with data flowing into the M port, across the internal data path, and out the M port.
3. Determine the state of the MAC on the attached FDDI station or network analyzer. You can do this by checking for:
   - An LED that indicates `Ring_Op`
   - The MIB attribute `fddiMACRMTState` with a value of 2 (`Ring_Op`)
   - A local interface that displays the status of the station or network analyzer

If the MAC is operational and is able to transmit and receive data correctly, then you do not have this problem and your symptoms are caused by a fault somewhere else.

If, however, the MAC is not operational or is unable to remain operational for several seconds, then one or more disabled ports in the M100 concentrator may be interfering with data transmission. In this case, your concentrator cannot be used at all. Contact your dealer or service representative for repair, replacement, and warranty information.

Specifications A

M100 Specifications

Table A-1. M100 Concentrator Specifications

Item	Specification
FDDI Configuration	MAC-less single-attach concentrator with five ports. Port 5 is a type S port. Ports 1, 2, 3, and 4 are type M ports.
Media Configuration	Supports MLT-3 transmission over 100 meters of Category 5 UTP cable.
Physical Dimensions	Desktop design with small footprint: Width: 8.00 in./20.32 cm. Height: 1.50 in./3.81 cm. Depth: 6.00 in./15.24 cm.
Status Indicator LEDs	Green LEDs indicate unit power and port status: 1 power LED 5 LEDs—1 LED for each port
Weight	Less than 1.88 lb./0.85 kg.
Power Supply	External universal power supply. 100–240 VAC; 47–63 Hz. US and International power cables available.
Agency Certification	Class A compliance with FCC, Part 15, Subpart J. CE mark. UL Listed to US and Canadian safety standards

Table A-1. M100 Concentrator Specifications (continued)

Item	Specification
Diagnostics	Boot diagnostics performed automatically at power-up. Progress and results indicated through front-panel port LEDs. Diagnostics include: ROM checksum RAM test PHY internal loopback test
Operating Environment	Operating temperature: 0˚ C/32˚ F to 50˚ C/122˚ F Storage temperature: -25˚ C/-13˚ F to 80˚ C/176˚ F Humidity: 0% to 95% non-condensing MTBF: >75,000 hours
Interoperability	Fully tested for interoperability at the University of New Hampshire's InterOperability Labs.
Standards Compliance	ISO 9314-3:1990, Physical Layer, Medium Dependent (PMD) ISO 9314-1:1989, Physical Layer Protocol (PHY) ISO 9314-6:1994, Station Management (SMT) Revision 7.3, where applicable

Diagnostics, Station Management, and Status

B

Diagnostics

The M100 desktop FDDI concentrator provides a suite of diagnostics that it executes automatically on power-up. These diagnostics are designed to detect, and recover from, if possible, virtually any failure that the concentrator may experience. The M100 performs the following diagnostics, in order, at startup:

- Memory diagnostics
- FDD diagnostics
- Failure codes

Memory Diagnostics

Memory diagnostics include a ROM checksum and RAM tests that are executed several times. The LEDs for the ports illuminate briefly to indicate test progress. A failure during memory diagnostics prevents the concentrator from operating. In other words, the remaining diagnostics will not be performed, SMT will not run, and the LEDs will indicate a fatal failure, as described in *Failure Codes* on page 24.

FDDI Diagnostics

FDDI diagnostics use internal loopback paths in the concentrator to test FDDI operation. FDDI test progress is indicated by a green light that moves from left to right for several seconds. The ports are tested individually and in parallel. If an individual port fails its diagnostic tests, it is disabled and bypassed so that the faulty port is not used during

normal concentrator operation. The LED for the faulty port will continue blinking after diagnostic tests, indicating that the port is unusable.

SMT will run if at least two ports are fully functional. If fewer than two ports are fully functional, a fatal failure exists, which prevents concentrator operation. The fatal failure will be indicated on the LEDs, as described in *Failure Codes*.

Failure Codes

If a fatal failure is detected during the diagnostic sequence, the first 4 port LEDs (numbered 1 through 4) will indicate the failure code. Table B-1 shows the light sequences and corresponding failure codes:

Table B-1. Diagnostic Fatal Failure Codes

Code	Port 1 (S)	Port 2 (M)	Port 3 (M)	Port 4 (M)	Problem Description
1	❍	●	●	❍	ROM checksum failure
2	❍	●	●	●	RAM test failure
3	●	❍	❍	❍	Internal path test failure
4	●	❍	❍	●	Software watchdog time-out
5	●	❍	●	❍	Unexpected interrupt
6	●	❍	●	●	Fewer than two working ports detected

❍ = LED is off; ● = LED is on

The LEDs light up and remain on steadily for codes 1, 2, 4, and 5 because the corresponding failures do not involve a specific port.

Codes 3 and 6 involve specific, nonfunctional ports. Therefore, for codes 3 and 6, the LEDs blink, then light up steadily on all inoperative ports.

Because all of these errors prevent the concentrator from functioning properly, the LEDs will continue to indicate error status until power is removed from the concentrator. In this situation, you will not be able to use the concentrator for any FDDI connections.

Note

There are no user-serviceable parts inside the M100 desktop FDDI concentrator. If you have any kind of failure, do not open the enclosure. Contact your dealer or service representative for repair, replacement, and warranty information.

SMT

If no fatal failures are encountered in the diagnostic procedures, the concentrator executes its resident station management (SMT) software and issues a connect request. All fully functional ports are then available to accept connections. The status LEDs on unconnected ports will darken, indicating that the port is available for connection to another FDDI device.

The M100 FDDI concentrator provides only one internal data path. Ports are switched in and out of this data path according to the SMT path configuration algorithms. Data flows from right to left, when viewing the concentrator from the front. In other words, a station connected to M port 4 will be upstream of a station connected to M port 3.

Port Status

During normal operation, the LED corresponding to each port indicates the state of the port. Table B-2 describes each of the possible port states and the associated LED state. The blink period is 1 second: on for one-half second and then off for one-half second.

Table B-2. Port Status LED Indications

LED	Port State
Off or Dark	Port is waiting for connection, or connection was withheld.
Blinking green	Port is disabled.
Solid green	Port is active. A connection with the neighboring port exists.

SMT Connection Policies

C

This appendix presents a brief overview of SMT connection policies. SMT connection policies are heavily influenced by the presence of a concentrator on the FDDI ring. Knowledge of these connection policies will enable you to construct your FDDI network quickly and efficiently.

Port Types

SMT defines four types of ports: A, B, S, and M.

A and B ports are used in dual-attached devices. The counter-rotating trunk ring is formed by connecting the A port of a dual-attached device to the B port of a different dual-attached device. A and B ports can also be connected to concentrator M ports as well as to S ports, although the latter can form undesirable connections.

S (for slave) ports are used in single-attached devices and generally connect only to concentrator M ports. Since they provide only one duplex connection to the network, single-attached devices lack some of the fault tolerance offered by dual-attached devices.

M (for master) ports exist in concentrators only. They provide a single duplex connection to another FDDI device. The most common type of connection is S to M.

Valid Port Connections

The M100 desktop FDDI concentrator ships with connectivity rules that adhere to SMT connection policies. Table C-1 identifies valid port connections between the M100 and connecting devices:

Table C-1. Valid M100 Port Connections

M100 Port	Valid Connection to Connecting Port			
	A	B	S	M
S	Yes	Yes	Yes	Yes
M	Yes	Yes	Yes	No

Yes = Valid connection; No = Illegal connection.

When you connect two ports together, the ports undertake a rapid negotiation sequence. This sequence involves the exchange of pieces of information such as:

- This port type
- The neighbor's port type
- Permissibility of the connection
- Duration of the link confidence test

SMT is structured so that if either port accepts the connection, the connection is allowed. In other words, both ports must reject the connection for the connection to be prevented.The M100 desktop FDDI concentrator accepts any connection except for an M to M connection, which is expressly prohibited by the SMT standard.

Port-to-Port Connection Types

Table C-2 describes the types of connections that result when you connect one port to another:

Table C-2. Types of Port-to-Port Connections

Connection Type	Description
S to A	Peer connection that creates a wrapped ring; usually undesirable.
S to B	Peer connection that creates a wrapped ring; usually undesirable.
S to S	Connection that creates a single ring of two slave stations.
S to M	Normal tree connection.
M to A	Tree connection that provides possible redundancy.
M to B	Tree connection that provides possible redundancy.
M to S	Normal tree connection.
M to M	Illegal connection that creates a tree of rings topology.

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