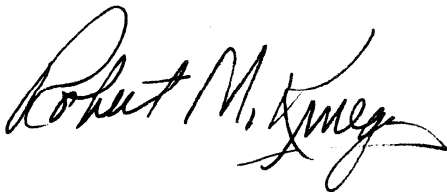AMD, a leader in semiconductors for World Network™ applications, is committed to delivering innovative and cost-effective networking products. We provide complete solutions including semiconductors, evaluation tools, software, and third-party products that build "Networks that Work"© with assured interoperability and fast time-to-market.
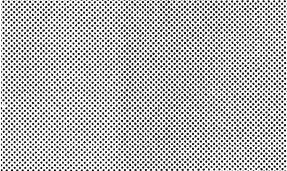
In 1988, AMD became the first company to offer a production solution for Fiber Distributed Data Interface (FDDI) with our SUPERNET-I family of devices. Since then we have continued to introduce new products designed to help our customers proliferate FDDI as a cost-effective volume networking standard.

AMD's Advanced Networking Test Center™ (ANTC) facility is just one example of AMD's commitment to our World Network customers. The ANTC facility is dedicated to assuring that customers' network products will be multivendor interoperable before they are introduced.

FusionFDDI™ program provides the solutions designers need to develop FDDI products based on our SUPERNET Families. We hope you will find this FusionFDDI catalog a useful reference to help you move FDDI design from concept to product in record time with the tools and semiconductors best suited for your application.

Robert M. Krueger
Vice President
Network Products Division

i

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AMD SUPERNET Literature	Publication #

SUPERNET Family for FDDI Brochure   **09493B**
A product overview brochure with an introduction to the FDDI standard, and a description of the SUPERNET chip set, its application solutions and how it supports a variety of system architectures.

SUPERNET Family for FDDI Data Book   **09734C**
Contains a detailed overview and complete set of data sheets for AMD's FDDI system solution—the SUPERNET chip set.

SUPERNET Family of FDDI Technical Manual   **09779A**
Coupled with the data book, this technical manual provides a complete package designed to assist system designers in implementing a station which complies with the ANSI Standard.

Advanced Networking Test Center (ANTC) Brochure   **14766A**
An introduction to the ANTC—a FDDI multivendor interoperability testing facility, outlining the charter of the program and the benefits derived from membership.

World Network™ Solutions Brochure   **10655A**
An overview brochure highlighting AMD's World Network products and support tools—SUPERNET for FDDI, Ethernet solutions, TAXIchip, ISDN, SLIC/SLAC and Modems.

The World Network Catalog   **06889C**
A short form catalog of the World Network product offering and evaluation and development tools.

AmFDDI-PC-AT FASTcard Data Sheet   **14739A**

Upcoming SUPERNET Literature

SUPERNET Article Reprint Booklet   **10062B**

Am79C830 FORMAC Plus Data Sheet   **14977A**

Contact your AMD sales representative for literature on this list. Additional literature is becoming available on a monthly basis. Please ask for the latest information on upcoming data sheets, application notes, and user manuals.

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Section 1 – Advanced Micro Devices

Section 2 – System Products

Section 4 – Software Products

Section 5 – Optical Products

Section 6 – Test Equipment

Section 7 – Miscellaneous

Information about the FusionFDDI Program

If you are an AMD FDDI product customer or/and an FDDI product vendor and wish to be included in the next FusionFDDI Catalog or want information about the benefits the FusionFDDI Program offers, please contact:

FusionFDDI Program Manager
Advanced Micro Devices, Inc.
M/S 17
P.O.Box 3453
Sunnyvale, CA 94088
Tel: (408) 749-4235
FAX: (408) 749-5008

What is FusionFDDI?

FusionFDDI is a partnership of FDDI product vendors. FusionFDDI is open to vendors of network equipment, board products, optical products, software products, and diagnostic tools. It is sponsored by Advanced Micro Devices, Inc. (AMD), and supported by the Advanced Networking Group (ANG) and the Advanced Networking Test Center (ANTC).

FusionFDDI provides vendors who support AMD's SUPERNET™ solution an opportunity to showcase their products in a FusionFDDI catalog published by AMD and distributed by AMD and partners.

The FusionFDDI catalog demonstrates the synergy between the many vendors who are making FDDI a reality today. It is also a handy reference for customers interested in developing or acquiring total FDDI system solutions.

Advanced Micro Devices

FORMAC Plus Am79C830

General Description

The Am79C830 Fiber Optic Media Access Controller (FORMAC) Plus is a CMOS device that provides a single chip interface between the physical layer of a station on an FDDI network, and the station's memory. The FORMAC Plus implements the timed-token protocol and receive/transmit control specified for the Media Access Control (MAC) sublayer of the ISO Standard 9314-2 describing the Fiber Distributed Data Interface (FDDI). Also provided on the Am79C830 is a host system interface and a complete interface to a buffer memory for transmitted and received data.

The FORMAC Plus operates in either of two modes. In one mode (called the non-tag mode), it replaces and is fully downward compatible with the previous-generation three-chip FDDI combination made up of the Am79C81A (RBC), Am79C82A (DPC), and the Am79C83 (FORMAC). In its second mode (called the tag mode), the FORMAC Plus transforms the associated buffer memory into multiple FIFOs, thus reducing data movement within the buffer memory and substantially improving throughput. Other FORMAC Plus features include on-chip receive and transmit FIFOs; separate receive and transmit CRC generation and checking logic; SMT capabilities; and three separately prioritized asynchronous queues.
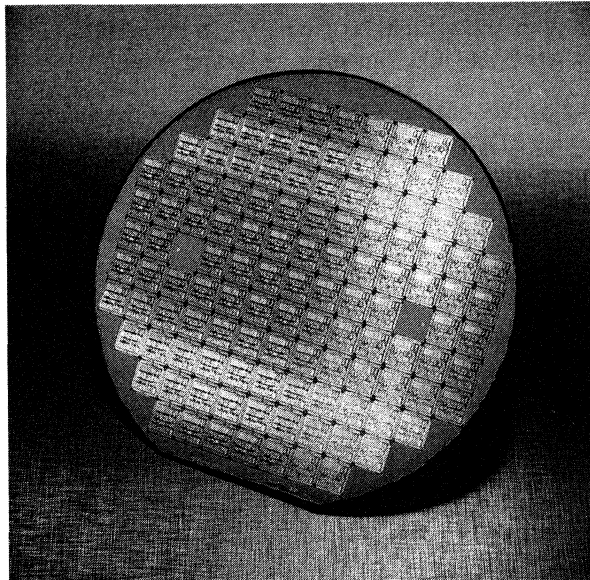
Standard Features

- Implements the Media Access Control protocol
- Includes bus arbiter to access the buffer memory
- Maintains pointers for all buffer memory FIFOs (four transmit and one receive)
- Loopback capability for testing purposes
- Automatic Claim/Beacon capability
- E, A, C status, receive status and transmit status on pins
- Functionality compatible with (RBC, DPC, FORMAC) in "Non-tag" mode
- Include slave node processor interface to access internal registers
- Supports buffer memory bandwidths of 200 to 400 Mbps
- Supports byte parity in buffer memory in both "Tag" and "Non-tag" modes
- Early receiving interrupt
- Burst data transfer during receive and transmit
- Buffer-memory clock frequency range: 12.5 MHz to 25 MHz
- Full-duplex operation: 200 Mbps continuous data rate
- Full support for synchronous transmission
- Three asynchronous priority queues with individually programmable threshold levels

Support

- Worldwide sales and field application engineer support
- Product literature including datasheets
- Complete system solution example

Availability

- 4th quarter 1990

Contacts

For further information contact
your local AMD sales office.

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Advanced
Micro
Devices

SUPERNET™-I
chip set

General Description

The SUPERNET-I chip set is the first commercially availableVLSI solution that implements the ANSI/ISO Fiber Distributed Data Interface (FDDI) standard. The 5-chip SUPERNET family, which consists of Am79C81A RAM Buffer Controller (RBC), Am79C82A Data Path Controller (DPC), Am79C83 Fiber Optic Ring Media Access Controller (FORMAC), Am7984A Encoder/Decoder (ENDEC) and Am7985A ENDEC Data Separator (EDS), meets the FDDI standard and offers a variety of additional systems features.

The SUPERNET-I architecture partitions the buffer management functions common to most network protocols into two chips, the Am79C81A (RBC) and Am79C82A (DPC). The RBC provides DMA channels and arbitrates access to the network buffer memory; the DPC controls the data path between the buffer memory and the medium. Functions specific to the FDDI MAC layer are packaged into the Am79C83 FORMAC. Physical layer tasks defined by the ANSI standard are performed by a two-chip Encoder/Decoder function, the Am7984A ENDEC and the Am7985A EDS, and fiber optic transmitter/receiver.

With over 100 design wins, the SUPERNET-I chip set and its associated support tools are a proven solution designed to assist system designers in implementing a station which complies with the ANSI/ISO FDDI standard. In addition, the chipset has gone through several extensive interoperability tests at AMD, the ANTC™ facility and other interoperability test sites.
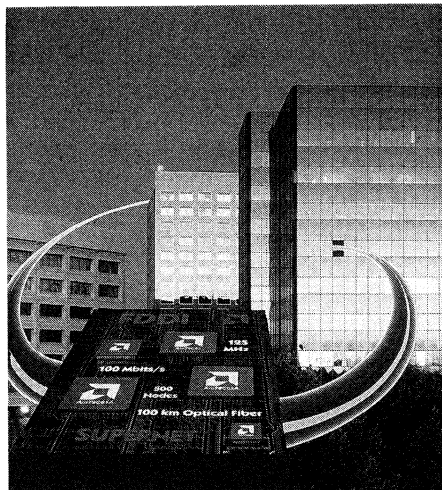
Standard Features

■ Implements the Media Access Control Layer and the Physical Layer Protocols of ANSI Standard X3T9.5 FDDI

■ Total buffer memory management

■ 200 Mbit/sec buffer memory bandwidth

■ Serial interface to fiber optic transceiver

■ Up to 256 kbyte buffer memory address range

■ Parity path from buffer memory to Encoder/Decoder (ENDEC) section and vice versa. Parity generation/checking (32 bit data, 4 bit parity)

■ Error/status updates and interrupt reporting via SUPERNET internal registers and receive frames stored in buffer memory

■ Diagnostics capabilities for the medium and system interface

■ Supports Master and Slave interfaces

■ CRC generator/checker

Support

■ Worldwide sales and field application engineer support

■ Complete system solution example with the FASTcard

■ Product literature including datasheets (PID# 09734C) and Technical Manual (PID# 09779A)

Availability

■ Now

Advanced Micro Devices

*SUPERNET™-I
chip set*

Contacts

For further information contact
your local AMD sales office.

Advanced
Micro Devices

AmPHY

General Description

The AmPHY is AMD's second generation implementation of the physical layer protocol (PHY) specified by the ANSI/ISO FDDI Standard. Additionally, significant portions of the SMT protocol associated with the physical entity are implemented on-chip where previous generation solutions left SMT support to a combination of external logic and software support. The AmPHY provides a direct interface to all AMD MAC-layer devices including the high-integration Formac Plus.

The AmPHY consists of the CMOS Am79C864 Physical Layer Controller and two small bipolar devices, the Am79C865/6, that incorporate the PLLs required to perform the translation between the 25 MHz 5-bit interface to the Am79C864 and the 125 MHz signal transmitted over the medium. The device partitioning not only eliminates coupling problems that could adversely affect PLL performance, but also reduces overall power consumption substantially since almost all of the digital logic is implemented in AMD's leading-edge CMOS process.

The AmPHY solution packaging has been selected in the interest of minimal board space; the Am79C864 is available in 120-pin PQFP while each of the Am79C865/6 are packaged in a small 20-pin PLCC.

**Advanced
Micro Devices**

AmPHY

Standard Features

■ Implements Physical Protocol sublayer (PHY) and portions of the Station Management (SMT) protocol associated with the physical entity as specified by ANSI/ISO FDDI standard

■ Low power consumption

■ Performs scrubbing of ring upon insertion and removal of station

■ On-chip Link Error Monitor (LEM) and Link Confidence Test (LCT)

■ Built in self test and boundary scan

■ Multiplexing of data paths for various configurations

■ Transmit and receive pseudo code signaling (PCS) bits

■ Hardware Physical Connection Management (PCM) assist to SMT processing

■ Maskable interrupts

■ +5V single power supply operation for the PDT and PTR

■ On-chip PLL clock frequency multiplier in PDT does not require external component

■ On-chip clock and data recovery PLL does not require external component

Support

■ Worldwide sales and field application engineer support

■ Product literature including datasheet

■ Complete system solution example

Availability

■ 1st quarter 1991

Contacts

For further information contact
your local AMD sales office.

AMD
Silicon

Advanced
Micro Devices

Am99C10A
256 x 48
Content
Addressable
Memory

General Description

The Am99C10A is a high performance Content Addressable Memory (CAM) with a capacity of 256 words and a user programmable word width of 16-bits or 48-bits. The Am99C10A is ideal for use in high speed Ethernet and FDDI local area network applications where it can function as an address filter and perform the network address look-up function.

The Am99C10A CAM is composed of 256 words, each consisting of a 48-bit comparator and a 48-bit register. When data (the comparand) is presented to the CAM array, a simultaneous compare operation is performed between the comparand and all data (256 words) in the CAM in a *single cycle*. When the comparand and a word in the CAM are matched, the on-chip priority encoder generates a match word address identifying the location of the data in the CAM. If multiple matches occur, the encoder generates the lowest matched address. Any or all bits of the comparand value can be selectively masked. The masked bits do not participate in the compare decisions, allowing comparison on a portion of the data word.

The Am99C10A is user programmable. The user can read and write to any location in the CAM Array and to all of the Am99C10A internal registers. Each word in the CAM array can be loaded with data or set to the empty state so that it does not participate in match operations. All words in the CAM Array can be set to empty in a single cycle.
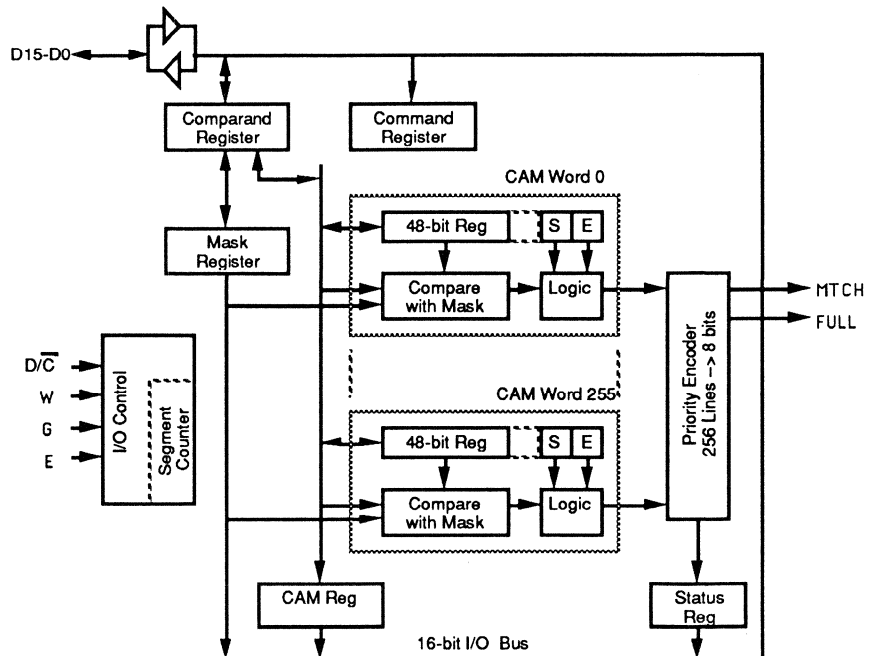
Advanced Micro Devices

*Am99C10A
256 x 48
Content
Addressable
Memory*

FEATURES

■ *High Speed*: 70 ns match time to compare the 48-bit input word against all the 256 words in the CAM.

■ Each CAM word has a 48-bit register and 48-bit maskable comparator which allows maskable bits and maskable works.

■ 48-bit input word compared against all 256 words in the CAM in a single cycle.

■ Single and multiple match detection with fast on-chip priority address encoder.

■ Single cycle reset on all 256 words of the CAM Array.

■ Flexible operation and diagnostics capability through user programmable control logic.

■ TTL-compatible inputs and outputs.

■ Fully Static Memory, no refresh required.

■ Low power CMOS technology
 – 825 mW max. operating power
 – 55 mW max standby

SUPPORT

■ A *FDDI-CAM DEMO BOARD*, along with an application note, is available to demonstrate the use of the CAM as an address filter for a FDDI-Ethernet Bridge. The FDDI-CAM board is an AT card which features a 4K deep, 48-bit wide CAM array functioning as an external address comparator for the AMD SUPERNET FDDI chip set. The board is designed to work with the AMD FAST card.

■ The CAM has been in volume production since December 1988.
 – The initial 400 mil cerdip package is being phased out and new designs should be targeted with the 300 mil PDIP or 32-pin PLCC packages.

AVAILABILITY

■ Available in two speed offerings: fast 70ns and 100ns.

■ 28-Pin 300 mil Plastic DIP in full production.

■ 32-Pin PLCC available for sampling through HMD Marketing, Production release scheduled for October, 1990.

Contacts

For further information contact
your local AMD sales office.

**Advanced
Micro
Devices**

FASTcard ™
*(FDDI AT
based
SUPERNET
Technology
card)*

General Description

The FASTcard is a complete evaluation board that plugs into the IBM PC-AT or compatible computer that uses the AMD SUPERNET I FDDI chip set. The FASTcard is an ideal development tool for FDDI. The card, with accompanying software, can be used to explore and gain FDDI expertise. The card can also be used as a standard node to perform interoperability testing.

The FASTcard uses the AT processor as the node processor and host. Using one FASTcard, a system can be configured as a complete Single Attached Station (SAS). Using multiple FASTcards, systems can be configured as Dual Attached Stations with a Single MAC (DASSM), Dual Attached Stations with Dual MACs (DASDM), or Concentrators (CON).

The development software includes pDEMO, FDDIMON, and the CMT Emulator. The pDEMO software contains the implementation of Station Management (SMT) and also allows high level interaction with the card. The FDDIMON is a low level interface to the FASTcard. The CMT Emulator provides a tutorial on how the Connection Management (CMT) portion of SMT operates.

The FASTcard and accompanying software provide an excellent FDDI development tool in the familiar PC-AT environment.
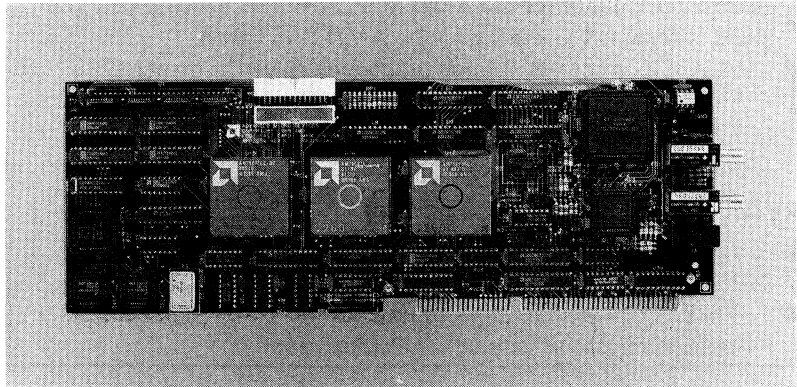
Standard Features

- IBM PC-AT or compatible plug-in board to implement an FDDI station
- Implements single MAC, single PHY
- Jumper configurable for DAS or Concentrator with additional boards
- Contains the AMD SUPERNET™-I chip set
- Implements all four FDDI sections of OSI standard: MAC, PHY, PMD and SMT
- Independent of CPU clock speed or system memory timing
- I/O mapped interface to AT bus
- 32K x 32-bit SRAM as buffer memory
- AT CPU direct access to the buffer memory
- Footprints for four different fiber optic transmitter/receiver pairs
- Proven FDDI design example
- Proven interoperable hardware and software

Software Support

- pDEMO
  - High level interface to FASTcard
  - Contains FDDINET
- FDDIMON
  - Low level interface to FASTcard

Support

- FDDINET
  - Source code for FASTcard drivers and Station Management (SMT).
  - Available separately.
- Complete documentation
  - User manuals for hardware and software
  - SUPERNET data book and technical manual

Availability

- Now

Advanced Micro Devices

FASTcard ™ *(FDDI AT based SUPERNET Technology card)*

Contacts

For further information contact
your local AMD sales office

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Advanced Micro Devices

FASTcard ™ II FDDI PC/AT-based Dual Attachment Concentrator Board Set

General Description

The FASTcard II is a PC/AT-based, single MAC, dual attachment FDDI concentrator board-set, based on AMD's second generation FDDI devices. The board set consists of two board types: a dual attachment station (DAS) board, and a master ports (MP) board. The basic 2-board set configures a 4-station dual attachment concentrator. By adding additional MP boards, 8-station or 12-station dual attachment concentrators can be configured
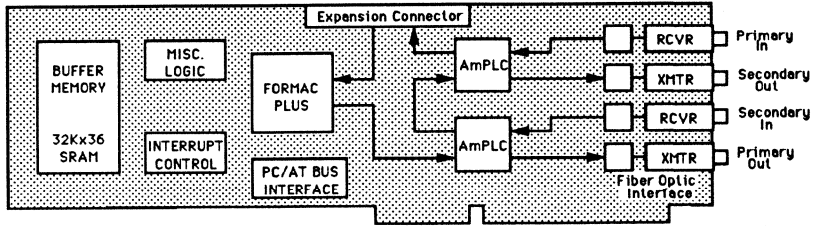
DAS CARD

MP CARD

Standard Features

- Highly integrated: single board DAS, 4 master ports per MP board
- AMD's FORMAC PLUS and AmPHY second generation FDDI devices
- 128K byte SRAM buffer memory with parity
- Extensive implementation of station management (SMT) services in silicon (including physical connection management (PCM), station insertion and removal, station configuration management and fault detection, isolation and recovery)
- Protocol independent—operates with all standard protocols and network operating systems
- Built-in interface for external address matching logic (e.g. CAM)
- LED status indicators for ring operational and for port A , port B, and master ports physical connection
- Station management (SMT) software and device drivers for on-board resources

Support

- Customized implementation—hardware design, prototyping, and manufacturing services; software development
- Application notes
- Software upgrades
- Technical assistance

Availability

Fourth quarter, 1990

Advanced Micro Devices

FASTcard™ II FDDI PC/AT- based Dual Attachment Concentrator Board Set

Contacts

For further information contact
your local AMD sales office.

**Advanced
Micro
Devices**

*SUPERNET
Software
Support
Tools*

FDDINET

FDDINET, when used with the SUPERNET chip set, optical data links, connectors and fiber optic cable, implements all of the functions specified by the FDDI standard. It interfaces to LLC (Logical Link Control, the top half of layer 2 in the OSI model) software, is written in "C", and runs under the VRTX real-time kernel. Customers will be able to use it, as is, with the FASTcard or may modify it to port to other environments.

FDDINET consists of two functional blocks:

■ MAC drivers (residual Media Access Control functions not performed by the Am79C83 FORMAC)

■ SMT (Station Management)

Most of the functions described in the FDDI Media Access Control (MAC) specification are executed by the Am79C83. These include:

■ Timed token passing protocol (providing deterministic access to the network)

■ Claim and beaconing processes

■ Address recognition

■ CRC checking (for data integrity)

■ Delivery of message frames

■ Frame transmission, repetition, or removal

■ CRC generation for transmitted frames
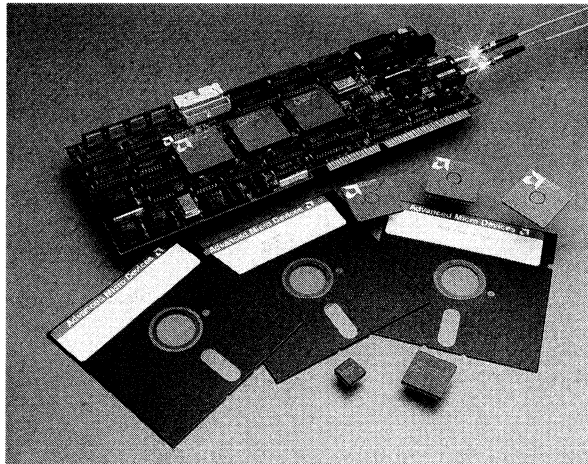
MAC functions not implemented in the Am79C83 FORMAC are provided in FDDINET software:

■ Transmit and receive service request

■ Service request response and status

■ Generation of statistics on frame transmissions, receptions, and errors

■ Queuing of frames to be transmitted

■ Routing of received frames

■ Recovery from certain error conditions

Station Management (SMT) will be part of the FDDI standard but is not part of the SUPERNET-I chip set. Instead, it is handled in software by FDDINET. SMT coordinates the interaction of the LLC, MAC and PHY sublayers. It also inserts and removes stations from the network and verifies that each node is connected to the network in the proper way. SMT is responsible for the overall control of an FDDI node and does not participate in the transmission or reception of application information between stations on the network. Current FDDINET software implements version 6.2 SMT document.

The following list illustrates some of the responsibilities of SMT:

■ Overall control of the station

■ Performs Connection Management (CMT)

■ Accumulates station statistics

■ Self test of the station's connection to the network

■ Physical Connection Management (PCM)

■ Ring Management (RMT)

■ Status Report Frame (SRF)

■ Neighborhood Information Frame (NIF)/Status Information Frame (SIF)

Contacts

For further information contact
your local AMD sales office.

Advanced
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SUPERNET
Software
Support
Tools

pDEMO

The purpose of this software is to assist newcomers to the FDDI SUPER-NET chip set by providing a sample application that demonstrates how AMD's chips communicate on an FDDI network. It is a menu-driven package, written in "C" under the VRTX kernel. pDEMO is intended to be used with FDDINET to allow information about a specific application to be exchanged between remote stations. It is a demo tool; customers will not use it as is in their products.

The features of pDEMO include:

■ Menu-driven user interface

■ Sample FDDI applications

   – Ring mapping

   – Chat

   – Network monitoring

■ Uses FDDI station software (FDDINET)

■ Shows working, cooperating stations on an FDDI ring

■ Allows experimentation with FDDI station operational parameters

■ Provides SUPERNET customers a model to write their software from, thus reducing software development time

FDDIMON

This is a debugger/monitor program written in "C". It is intended to be used to test individual systems which use the SUPERNET chip set. It runs under MS-DOS in a standard IBM PC environment. FDDIMON is written for the FASTcard but it can be ported to other environments.

FDDIMON supports the following features:

■ Access to SUPERNET chip set registers

■ Read/write access to system memory

■ Read/Write access to buffer memory

■ Creation of frames in buffer memory

■ Formatted display of received frames in buffer memory

These features allow the user to perform various FDDI exercise routines such as: start an N-node ring, transmit messages between two stations, or random buffer memory tests.

Control of FDDIMON operation is based on a set of predefined commands. They are normally executed one at a time, as they are entered at the system keyboard, in the interactive mode. Alternatively, strings of commands may be executed from a batch file.

Connection Management (CMT) Emulator

This is a learning tool that is not used with the SUPERNET chip set. Written in "C" to run under the MS.DOS operating system, the CMT Emulator is a tutorial which runs on an IBM PC. It demonstrates and verifies CMT algorithms. (CMT is a subset of Station Management). Simulates SMT Version 4.3.

**Advanced
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Devices**

*SUPERNET
Software
Support
Tools*

Contacts

For further information contact
your local AMD sales office.

Advanced Micro Devices

Am79h1000T/ Am79h1000R Fiber Optic Data Links

General Description

The Am79h1000 is a high-speed fiber-optic transmitter/receiver pair designed for digital data transmission through fiber optic cable.

The Am79h1000T data link transmitter converts differential ECL signals to lightwaves in the 1300 nm band. The Am79h1000T operates from a single 5 V power supply, connected for either ECL or pseudo-ECL operation. The transmitter contains a Transmit Disable input allowing control over the optical output level. The InGaAs/InP high-speed ELED is fabricated with the Metal-Organic Vapor Phase Epitaxy (MOVPE) process for high reliability, performance and consistency.

The Am79h1000R converts lightwaves in the 1300 nm band to differential ECL signals. Operation is from a single +5 V power supply. The InGaAs/InP high-performance planar PIN photodiode is manufactured with the MOVPE process for high reliability and product consistency.

The Am79h1000 set is ideally suited for direct interface with the FDDI SUPERNET Encoder/Decoder and ENDEC Data Separator. For point-to-point applications, the Am79h1000 links directly coupled with the TAXIchip™ set provides the complete byte-wide parallel interface to light output solution.
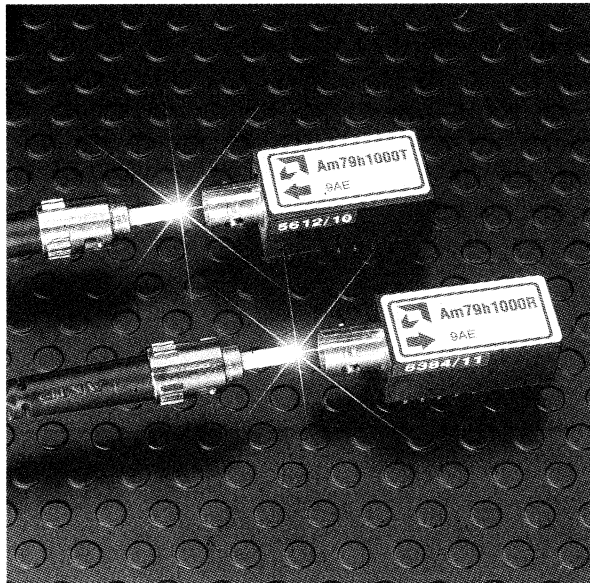
Standard Features

- High speed: Up to 175 Mbaud
- Differential ECL I/O
- Integral ST® connector
- Compact 14-pin DIP package
- Low power consumption
  - Am79h1000T: 600 mW typical
  - Am79h1000R: 400 mW typical
- Performance optimized for 125 Mbps operation
- Reliable 1300 nm MOVPE ELED (Am79h1000T)
- Reliable InGaAs/InP planar MOVPE PIN photodiode (Am79h1000R)
- Full electrical and optical FDDI compliance
- FDDI SUPERNET™ and TAXI™ compatible
- Single 5.0 V power supply operation
- 18dB typical loss budget for Am79h1000T/Am79h1000R link

Support

- Worldwide sales and field applications engineer support
- Factory application support
- Complete system solution example with the FASTcard
- Product literature including data sheets (PID #12677A)

Availability

- Now

Advanced Micro Devices

*Am79h1000T/
Am79h1000R
Fiber Optic
Data Links*

Contacts

For further information contact
your local AMD sales office.

Advanced Micro Devices

Am79h2000X Fiber Optic Transceiver

General Description

The Am79h2000X is a high-speed fiber optic transceiver designed for digital data transmission through fiber optic cable.

The Am79h2000 transmitter section converts differential ECL signals to lightwaves in the 1300 nm band. The transmitter is entirely isolated from the receiver and operates from a single 5 V power supply, connected for either ECL or pseudo-ECL operation. The transmitter contains a Transmit Disable input allowing control over the optical output level. The InGaAs/InP high-speed ELED is fabricated with the Metal-Organic Vapor Phase Epitaxy (MOVPE) process for high reliability, performance and consistency.

The Am79h2000 receiver section converts lightwaves in the 1300 nm band to differential ECL signals. Operation is from a single +5 V power supply. The InGaAs/InP high-performance planar PIN photodiode is manufactured with the MOVPE process for high reliability and product consistency.

The Am79h2000 transceiver is ideally suited for direct interface with the FDDI SUPERNET Encoder/Decoder and ENDEC Data Separator. The unique one piece integrated FDDI duplex receptacle solves the assembly tolerance problems associated with separately mounting a connector receptacle and individual transmitter/receiver modules on your board. For point-to-point applications, the Am79h2000 directly coupled with the TAXIchip™ set provides the complete byte-wide parallel interface to light output solution.

Block Diagram

12688-001A

20
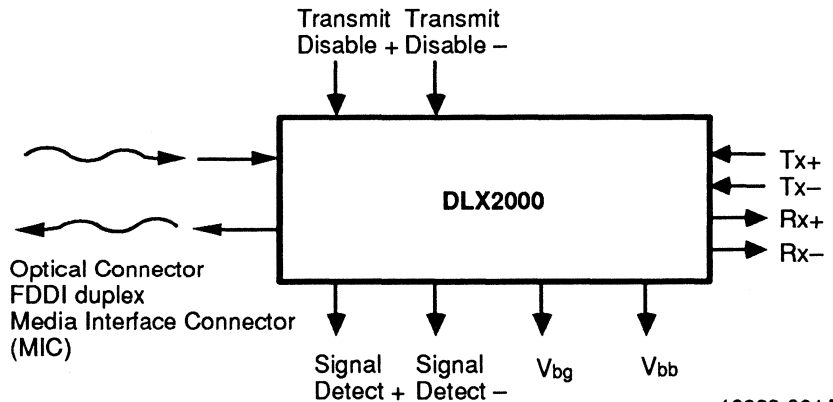
Advanced Micro Devices

Am79h2000X Fiber Optic Transceiver

Standard Features

- Full electrical and optical FDDI compliance
- FDDI SUPERNET™ and TAXI™ compatible
- Single piece integrated FDDI transmitter/receiver duplex receptacle
- Accepts duplex FDDI Media Interface Connector (MIC)
- Single 5.0 V power supply operation
- 18dB typical loss budget when used with another Am79h2000X Transceiver
- High speed: up to 175 Mbaud
- Differential ECL I/O
- Board footprint occupies as little as 2 square inches
- Low power consumption: 1W typical
- Performance optimized for 125 Mbps operation
- Reliable 1300 nm MOVPE ELED
- Reliable InGaAs/InP Planar MOVPE PIN photodiode

Support

- Worldwide sales and field application engineer support
- Factory applications support
- Production literature including data sheets (PID #12688A)

Availability

- Now

Contacts

For further information contact
your local AMD sales office.

Advanced Networking Group

About the Advanced Networking Group

The Advanced Networking Group (ANG), established in June 1989, is a public FDDI users' forum. Its primary objectives are to hasten market adoption of the FDDI standards and to position participating customers as the leading suppliers of FDDI products. ANG's mission encompasses both engineering and marketing goals. The group's engineering objectives are to resolve interoperability and implementation issues, to provide a forum to discuss the impact of unresolved committee issues on implementations and to provide information on system-level issues related to FDDI. The group's marketing goals are promoting FDDI as the high-end networking standard of choice and promoting ANG members as FDDI leaders. Currently, the membership is at over 100 members worldwide.

Activities

■ Meetings—Bimonthly meetings are held one evening during the week of the FDDI Standards Committee meeting. Each member company's designated representative(s) is invited to attend. The purpose of these meetings is to disseminate information on FDDI programs, to resolve interoperability and implementations issues, to discuss the impact of unresolved committee issues on implementations and to provide information on system-level issues related to FDDI.

■ Communique—This bimonthly newsletter is published during the months without a meeting. Each member company's designated representative(s) will receive a copy.

■ Bulletin Board—A dial-in bulletin board is maintained such that members are able to exchange updates and information about FDDI implementation issues. AMD will use the bulletin board to transmit/receive information to/from members.

■ Advertising—Sponsor advertisements will highlight member's involvement with the Advanced Networking Group.

■ Educational Activities—These activities will focus on disseminating information on FDDI to the user community and promoting FDDI.

Membership Fee

- Initial: $500.00/yr
- Renewal: $250.00/yr

Advanced Networking Group

Contacts

Sung-Min Lim
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Sunnyvale, CA 94088
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Fax: (408) 749-5008

For further information contact your local AMD sales office.

*Advanced
Networking
Group*

Advanced Networking Group Publicly Announced Members

3 COM

Advanced Computer Communications

Advanced Micro Devices

Alcatel Standard Electrica, S.A.

American Telephone and Telegraph Company

Applied Signal Technology

Artel Communications Corporation

Ascom Hasler A.G.

AWA Limited

Ballard Synergy Corporation

BICC Data Network Ltd.

Bio-Imaging Research Inc.

BT & D Technologies

Cabletron Systems

cisco Systems

CMC-Rockwell

Codenoll Technology Corporation

Concurrent Computer Corporation

Contel Technology Center

Cumulus Corporation

Dataco

E.I. duPont de Nemours and Company

ERSO/ITRI

Evans and Sutherland

Experdata

Ferranti Computers Systems N.V.

FiberCom, Inc.

Fibermux Corporation

Fibronics International, Inc.

Formation, Inc.

Fotec, Inc.

Fujitsu Limited

Gandalf Data, Inc .

GE Aerospace

GEC Plessey Telecommunication, Inc.

Hewlett-Packard Company

Hughes Aircraft Company

Hummingbird Communications, Ltd.

IN-NET Corporation

Intergraph Corporation

Interphase Corporation

Jet Propulsion Laboratory

KCS Company

Advanced Networking Group Publicly Announced Members *(Continued)*

Kean College of New Jersey

Learning Tree

Martin Marietta

NETCON, Inc.

Network Peripherals Inc.

Network Systems Corporation

Northwest Fiber Telecomm
  Transmission, Inc.

Novell

Olicom A/S

Omron Corporation

ONELAN

PCO, Inc.

Pilkington Ple

Prime Computer, Inc.

Proteon, Inc.

Qualite Ingenierie SA

Raycom Systems, Inc.

SBE, Inc.

Schneider & Koch

Silicon Graphics, Inc.

Sony Corporation

STC Plc

Sun Microsystems, Inc.

Synernetics, Inc.

SynOptics Communications, Inc.

Tekelec

Toshiba Corporation

Trellis Communications
  Corporation

Ungermann-Bass, Inc.

Unisys Corporation

V Band Corporation

Wang Laboratories, Inc.

WELLFLEET Communications,
  Inc.

Xylogics, Inc.

York Technology, Inc.

Advanced Networking Group

Contacts

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For further information contact
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Advanced Micro Devices

Advanced Networking Test Center (ANTC ™) Facility

General Description

The Advanced Networking Test Center (ANTC™) facility is a world-class facility dedicated to FDDI interoperability testing. By combining AMD's experience with the expertise of the world's leading computer manufacturers, ANTC engineers have developed a standard and comprehensive multivendor interoperability test suite for the four FDDI documents. ANTC facility's primary objective is to perform multivendor interoperability tests for members using this test suite. To help ensure that there is one worldwide FDDI, AMD has committed to make the ANTC facility an open test center that provides testing for any FDDI implementation used by its member.

List of ANTC Charter Members (public)

AMD	Interphase
cisco Systems	Martin-Marietta
CMC/Rockwell	Network Peripherals
Codenoll Technology	Network Systems
Crosfield	Proteon
FiberCom	Schneider & Koch
Fibermux/Sumitomo	Sun Microsystems
Fibronics International	Synernetics
Hewlett-Packard	SynOptics
ICL	Timeplex/Unisys
IN-NET	Ungermann-Bass

Advanced Micro Devices

Advanced Networking Test Center (ANTC ™) Facility

Features

- A world-class facility dedicated to FDDI testing
- More than 5,000 dedicated square feet located adjacent to AMD's FDDI engineering center
- Full-time staffing by experts in FDDI and network testing
- Thirty-three work areas with cable drops to support a total of 75 stations
- AT&T cable, patch panel assemblies, and drop outlets from AT&T's Lightguide Fiber Optic Products group
  - ANTC facility is first to use AT&T's new FDDI outlets at work stations
  - Outlets allow ANTC manager to quickly convert between DAS and SAS
- Flexibility for testing all configurations of FDDI equipment: DAS, SAS, DAC, SAC
- Flexible topologies
- Modern, PMD-compliant cable plant
- Secure rooms for stowing proprietary equipment
- Use of ANTC trademark for members who have successfully completed multivendor interoperability testing at the ANTC facility
- Membership fee entitles member to ten core days access to the ANTC facility for up to two years
- Additional core days can be purchased for an additional fee
- ANTC facility was used as the staging site for the INTEROP90 FDDI ring
- Technical Advisory Board (TAB), formed by charter members, guides development of ANTC test suite to ensure that the test suite is rigorous, fair, and applicable to real-world networks

Contacts

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Sunnyvale, CA 94088
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Fax: (408) 749-5008

For further information contact your local AMD sales office.

**AT&T
Computer
Systems**

*StarLAN 100
Network
Concentrator*

General Description

The StarLAN 100 Network Concentrator is an FDDI fiber optic cable distributor used to attach lower cost Single Attachment Stations (SAS) or Dual Attachment Stations (DAS) to a main FDDI ring in a physical star topology. This "wire closet" device isolates the main ring from individual link failures, station insertions and removals.

When coupled with the AT&T SYSTIMAX Premises Distribution System (PDS), StarLAN 100 Network Concentrators provide a total media solution for high-speed connectivity among FDDI workstations and hosts; and the backbone media system for connection to high performance LAN interconnect products, such as the StarWAN Brouter, Model 450, and the StarWAN Multi-Bridge.

The StarLAN 100 Network Concentrator consists of a cabinet with a backplane, power supply, FDDI Control Unit (FCU) and one FDDI Access/ Extension Units (FA/EU). This base configuration supports the FDDI Dual Attachment Concentrator (DAC) configuration, plus two Master (M) Ports for two Single Attachment Stations (SAS) or one Dual Attachment Station (DAS). Up to three FDDI Extension Units (FEU) may be added. Each FEU provides four FDDI M Ports. FDDI Media Interface Connectors (MIC) are used on the FA/EU and FEU modules.

Standard Features
■ Conforms to the ANSI X3T9.5 FDDI standards
■ Implements AMD's SUPERNET™ chip-set
■ SAC/DAC configurable
- DAC configuration provides a dual front end ring attachment and up to 14 Master (M) ports
- SAC configuration provides a single front end ring attachment and up to 15 M ports
■ Local management
- Controlled through a local RS232C interface
■ Easy FDDI station administration
- Station rearrangement, addition and deletion is easily accomplished without effecting the main FDDI network
■ Enables lower cost single attachment stations
■ Isolates faults automatically
- Detects link-related failures
- Isolates defective nodes
- Serves as a centralized point at which a fault can be examined and corrected
■ Enables modular growth
■ AT&T SYSTIMAX Premises Distribution System (PDS) compatibility

Support
■ Comprehensive customer support and technical assistance programs
■ AT&T National Systems Support Center (NSSC)—a 24 hour customer support HOTLINE

Availability
■ Now

FDDI Systems

AT&T Computer Systems

StarLAN 100 Network Concentrator

Contacts
For more information, contact your
AT&T Computer Systems Sales Executive
or call 1-800-247-1212

**AT&T
Computer
Systems**

StarWAN ™
*Multi-
Bridge*

General Description

The StarWAN Multi-Bridge is a high performance transparent, translation bridge that affords the convenience of "plug and play" networking with the performance of FDDI. The Multi-Bridge is a VME-based, full throughput, IEEE 802.3/Ethernet bridge for backbone FDDI networking.

The StarWAN Multi-Bridge consists of a cabinet and backplane, power supply, a Common Central Control (CCU) module, one FDDI Set consisting of an FDDI Processor Unit (FPU) and FDDI Access Unit (FAU), plus one 2–port Ethernet Access Unit (EAU).

Administration is not required during installation or during normal operation. It is transparent to network layer protocols (TCP/IP, ISO) and fits a variety of protocol environments.

The Multi-Bridge is a natural, high performance extension to AT&T Star-LAN and StarLAN 10 Networks, StarGROUP® LAN Manager Server, StarWAN Information Systems Network (ISN) and Datakit® II VCS, delivering on the AT&T commitment to standards-based networked computing solutions.

AT&T
Computer
Systems

StarWAN ™
Multi-
Bridge

Standard Features

■ Conforms to the ANSI X3T9.5 FDDI standards

■ Implements AMD's SUPERNET™ chip-set

■ Modular, expandable design for additional planned features:
FDDI-to-FDDI, 802.5-to-FDDI bridging, and higher density
802.3-to-FDDI configurations

■ High performance transparent bridging
  - Filtering rate: 500,000 pps
  - Forwarding rate: 20,000 pps

■ FDDI-to-Ethernet translation

■ Address filtering/learning

■ Network configuration choices:
  - Dual Attachment Station (DAS) on trunk ring
  - Connected indirectly via a StarLAN 100 Network Concentrators
  - Dual homed to one or several StarLAN 100 Network Concentrators

■ Local Management capability via RS-232C interface

■ Links an ANSI FDDI network with up to two IEEE 802.3 networks
that meet the following IEEE 802.3 standards: 10BASE5, 10BASE2,
or 10BASE-T

■ Can be configured without the FDDI set (FPU and FAU) to support
bridging between 802.3 or Ethernet LAN segments

■ AT&T SYSTIMAX™ Premises Distribution System (PDS)
compatible

Support

■ Comprehensive customer support and technical assistance programs

■ AT&T National Systems Support Center (NSSC)—a 24 hour
customer support HOTLINE

Availability

■ December 1990

Contacts

For more information, contact your
AT&T Computer Systems Sales Executive
or call 1-800-247-1212

**AT&T
Computer
Systems**

StarWAN ™
*Brouter
Model 450*

General Description

The AT&T StarWAN Brouter, Model 450, is a high performance LAN interconnect device specifically designed to support routing requirements for ANSI Fiber Distributed Data Interface (FDDI) and IEEE 802.3/Ethernet™ LANs across a diverse range of campus and wide area networks. The Model 450 will route any combination of 802.3-802.3, 802.3-FDDI, 802.3-WAN, FDDI-WAN and FDDI-FDDI.

The speed and redundant nature of an FDDI network make it very attractive as a campus backbone network to interconnect other networks, such as IEEE 802.3, Ethernet or StarLAN Networks. The StarWAN Brouter, Model 450 enables 10 Mbit/s sub-networks to be connected to 100 Mbit/s backbones and wide area network (WAN) facilities.

The capacity to concurrently support FDDI plus numerous local and wide area links makes the Model 450 well suited for headquarters and regional hub sites where high speed campus backbone networks are needed.

Standard Features

- Conforms to the ANSI X3T9.5 FDDI standards
- Implements AMD's SUPERNET™ chip-set
- Comprehensive protocol support
  - Network protocols: TCP/IP, ISO, DECnet®, DEC®LAT®, XNS, Novell IPX and AppleTalk®
  - Routing protocols: Routing Information Protocol (RIP), Interior Gateway Routing Protocol (IGRP), Exterior Gateway Protocol (EGP) and Border Gateway Protocol (BGP)
- AT&T StarGROUP™ ISO software routing
- Standards-based network management:
  - Simple Network Management Protocol (SNMP)
  - Managed through a local RS232C interface and via TELNET
- AT&T SYSTIMAX™ Premises Distribution System (PDS) compatibility
- FDDI Dual Attachment Station (DAS) configuration
- LAN/WAN module configurations available for Ethernet, low speed synchronous serial and T1.544 Mbit/s
- Performance-High Speed Module (TCP/IP)
  - Forwarding rate: 20,000 pps
- Performance-LAN/WAN Module (TCP/IP)
  Forwarding rate   Intra-Module:12,000 pps

  Inter-Module: 6,000 pps

Support

- Comprehensive customer support and technical assistance programs
- AT&T National Systems Support Center (NSSC)—a 24 hour customer support HOTLINE

Availability

- December 1990

AT&T
Computer
Systems

StarWAN ™
Brouter
Model 450

Contacts

For more information, contact your
AT&T Computer Systems Sales Executive
or call 1-800-247-1212

BICC Data
Networks

ISOLAN™
1420 FDDI/
802.3 Bridge

General Description

The ISOLAN FDDI/802.3 Bridge is fully managed bridge providing a transparent, high-performance connection between a 100Mbits/sec Fiber Distributed Data Interface (FDDI) network and an Ethernet/IEEE 802.3 network.

The ISOLAN FDDI/802.3 Bridge provides a high-performance solution to corporate networking requirements and opens up to the possibility of extending high-speed networking over a larger geographic area than with current LAN technologies. FDDI provides the corporate backbone, and the ISOLAN FDDI/802.3 Bridge provides the connectivity between the backbone and dispersed Ethernet subnets connected to this backbone.

The ISOLAN FDDI/802.3 Bridge provides a protocol-independent connection between an FDDI network and an Ethernet network. Efficiency and performance are maintained by minimizing traffic levels on both the Ethernet and the FDDI networks. The ISOLAN FDDI/802.3 Bridge filters all traffic on a fully-loaded Ethernet network and passes those packets whose destination is on or over the FDDI network at > 14,000 packets/ second. Utilizing the BICC Data Networks' highly-advanced hardware-based FLUT (Fast Look Up Table), the ISOLAN FDDI/802.3 Bridge needs less than 3uS to decide whether is accepts or rejects a packet. For maximum reliability across the entire corporate network, the ISOLAN FDDI/802.3 Bridge implements the Spanning Tree Algorithm to support multiple resilient paths.

Installing FDDI is a golden opportunity to do something about network security. For this reason, the ISOLAN range of bridges offer Closed User Group access control together with other restricted access scheme. These are managed centrally though ISOVIEW network management software.

For maximum reliability across the entire corporate network, the ISOLAN FDDI/802.3 Bridge implements the Spanning Tree Algorithm to support multiple resilient paths.

BICC Data Networks

FEATURES

■ Compliant to the ANSI X3T9.5 FDDI standards

■ Implements AMD's SUPERNET™ chipset

■ Unique LAN security features

■ IEEE 802.1 Spanning Tree Algorithm

■ Implements transparent bridging as specified in IEEE 802.1D

■ Forwarding rate: <14,000 packet/second

■ Filtering address database: 8000 entries

■ Vendor-independent, Open Systems solution

■ Total network control through integrated network management

■ Full fault tolerance and network resilience

SUPPORT

■ ISOVIEW Network manager—a network management package for backbone FDDI and front end 802.3 networks

AVAILABILITY

■ Fourth quarter, 1990

ISOLAN™ *1420 FDDI/ 802.3 Bridge*

Contacts

BICC Data Networks, Inc.
1800 West Park Drive
Westborough, MA 01581
U.S.A.
Tel: (508) 898-2422
Fax: (508) 898-3739

BICC Data Networks, Inc.
39899 Balentine Dr., Suite 125
Newark, CA 94560

Tel: (415) 490-8000
Fax: (415) 490-8406

Cabletron
Systems,
Inc.

EFDMIM
Ethernet to
FDDI Bridges

General Description

Cabletron's EFDMIM, a standalone FDDI-to-Ethernet bridge, is a bridging module for Cabletron's Multi Media Access Center® (MMAC), allow a number of Ethernet/802.3 networks to be bridged together using an FDDI ring as a backbone. The bridges are designed as a Dual Attached Station in compliance with the FDDI standard. Both devices receive packets from the Ethernet network and transmit these packets onto the FDDI ring. A frame encapsulation scheme is used to convert Ethernet packets into FDDI packets. These packets may be received by any other bridges connected to the ring.

The EFDMIM have extensive filtering databases, which is standard for all of Cabletron's bridges. In addition to the dynamic source learning this database provides the network administrator the ability to set up special filters. Using local or remote management, filters can easily be created, deleted or displayed. Special filters may be created to operate on any of the following parameters:

■ Source address
■ Destination address
■ Type field
■ First 10 bytes of data
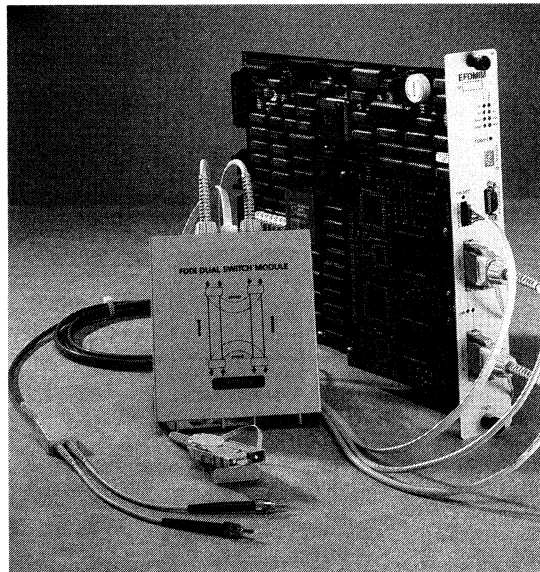
Cabletron Systems, Inc.

EFDMIM Ethernet to FDDI Bridges

Standard Features

- Manageable by Cabletron's Remote LANVIEW™/Windows network management software
- Comply with the Simple Network Management Protocol (SNMP) to be controlled by third-party management packages
- LANVIEW™ on-board diagnostic indicators
- Source address tables that can hold up to 8,191 addresses
- Filter Ethernet packets at a rate of up to 14,000 packets per second and FDDI packets at a rate of up to 100,000 packets per second
- Forward packets at a rate of up to 14,000 packets per second
- Special filtering database
- Has ability to program wildcard filters
- Permanent entries are battery backed up
- Has a user-defined Age Time

Support

- Technical support hotline
- Training courses
- Software update service
- Network installation and design

Availability

- Fourth quarter, 1990

Contacts

Cabletron Systems, Inc.   Tel: (603) 332-9400
35 Industrial Way   Fax: (603) 332-4616
Rochester, NH 03867

Cabletron Systems, Ltd.   Tel: (0635) 580000
Newbury, Berkshire, UK   Fax: (0635) 44578
RG13 2PZ

**cisco
Systems, Inc.**

*AGS+/FDDI
Multi-protocol
Router with
Bridging*

General Description

The AGS+/FDDI system is a multi-media, multi-protocol router with bridging. It provides interconnectivity of FDDI, Ethernet, Token Ring, X.25, T-1, and fractional T-1 networks, and supports 14 protocols including TCP/IP, DECnet™, OSI, AppleTalk™, and Novell IPX™. The AGS+/FDDI system also supports MAC layer bridging and source route bridging.

The AGS+/FDDI uses the industry standard AMD SUPERNET chipset with multiple,16 Mips processors to obtain over 20,000 pps forwarding rates between two FDDI networks or from FDDI to other networks.

Routers are better at interconnecting FDDI to Ethernet and Token Ring networks because they block broadcast storms, optimize the network bandwidth, and create a logical (as well as a physical) segmentation of the overall network.
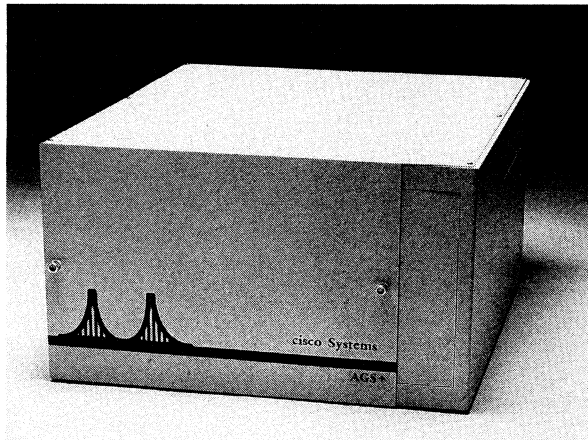
cisco Systems, Inc.

AGS+/FDDI Multi-protocol Router with Bridging

Standard Features

- Complies with ANSI X3T9.5 FDDI standard
- Operates as DAS or SAS
- Supports up to 2 FDDI interfaces
- Internetworks FDDI, Ethernet, Token Ring, X.25, serial lines
- Supports multiple T1 and fractional T1 interfaces
- Routes TCP/IP, DECnet, OSI, XNS™, AppleTalk, IPX, etc.
- Supports source route bridging
- Includes SNMP agent

Support

- Mean Time Between Failures greater than 6 years
- 24 hour/7 day on-site service and Technical Access Center

Availability

- Now

Contacts

U.S. & International

cisco Systems, Inc.
1525 O'Brien Drive
Menlo Park, CA 94025
Tel: (415) 326-1941

Europe

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Z.A. de Courtaboeuf
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(33) 1-6928-1920

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CSSi &
Concurrent
Technologies

386/580
FDDI
Network
Subsystem for
Multibus II

General Description

The CSSi 386/580 FDDI Network Subsystem is a complete ISO/OSI networking solution for MULTIBUS® II. The 386/580 implements the OSI Network and Transport Layers on a powerful 80386 processor board that offloads network protocol overhead from host CPUs and presents a standard Session Layer software interface to the upper OSI layers. The 386/580 interoperates with the Intel family of Networking Software to provide a complete OpenNET™ FDDI networking solution for iRMX® II and UNIX® System V operating systems. Session through Application Layers of the OSI model are supplied by the Network File Access (NFA) protocol and are supported by Intel, Microsoft, and IBM. The 386/580 board implements OSI Physical and Data Link Layers with the AMD SUPERNET™ chip set and Station Management (SMT) software.

The CSSi 386/580 is based on the Concurrent Technologies CL 386/DAS dedicated controller. This controller contains a 20 MHz Intel 80386 processor, one or four Mbytes DRAM, full MULTIBUS System Architecture support, two serial debug ports, Intel's 32-bit 82380 DMA Controller and a Dual Attachment Station (DAS) configuration that supports two counter-rotating FDDI rings with optional optical bypass capability.

386/580 FDDI Network Subsystem
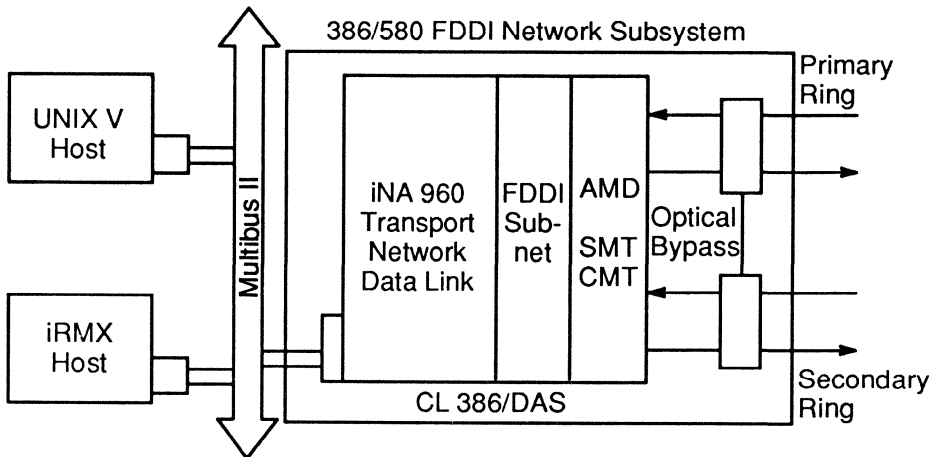
CSSi &
Concurrent
Technologies

386/580
FDDI
Network
Subsystem for
Multibus II

Standard Features

- Full FDDI (X3T9.5) compliance
- Dual Attachment Station supporting two counter-rotating rings
- One or four Mbytes DRAM
- AMD SUPERNET™ chip set
- Intel 32-bit 82380 DMA Controller
- Up to four Mbytes EPROM
- Full Connection Management (CMT) services

Software Support

- Full Intel iNA 960 Networking Software Release 3.1 compliance
- Supports LAN load balancing and redundant networks for fault-tolerant systems
- ISO 8072/8073 Transport Class 4 for reliable full-duplex message delivery
- ISO 8348/8473 Network Class 3 Connectionless Network Protocol
- ISO 9542 End System-to-Intermediate System Network dynamic routing
- ISO 8602 Connectionless Transport Protocol for datagram transmissions
- OSI Logical Link Control (IEEE 802.2)
- Direct access to the data link layer through the External Data Link (EDL) interface

Support

- Toll-free customer support hot-line
- Training courses
- Software and hardware service agreements available

Availability

- Fourth quarter, 1990

Contacts

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10260 Old Columbia Road
Columbia, MD 21046
Tel: (301) 290-9500
Fax: (301) 290-7012

Concurrent Technologies
Fairfax House
Causton Road
Colchester, Essex C01 IRJ, U.K.
Tel: (0206) 42996—U.K.
        (217) 356-7004—U.S.
Fax: (0206) 767333

FiberCom ™

RingMaster ™
7200

General Description

The RingMaster 7200 is a transparent, FDDI Mac-Layer Bridge that provides a filtering rate of 500,000 packets per second and a sustained forwarding rate of 20,000 packets per second. The RingMaster 7200 provides high performance internetworking between FDDI and other 802-compatible networks, including IEEE 802.3, 4 Mbps and 16 Mbps Token Ring, and FDDI-to-FDDI bridging.

RingMaster 7200 is designed as a modular platform with front access, plug-in circuit cards. Up to four Ethernet or Token Ring subnets of any mix can be supported on an FDDI backbone. This design allows a network to be reconfigured by adding or changing the network interface units.

Management of the RingMaster product line is accomplished with standards based Simple Network Management Protocol (SNMP). SNMP agent software in each Bridge collects network management data such as traffice statistics, configuration, and error logging.

Network Management

■ Access   Over extended network via
                                              SNMP, or RS-232

■ Management Information   Configuration, Statistics, Faults
  Base (MIB)   standard, experimental and
                                              RingMaster unique.

FiberCom

Standard Features

- Standards Compliance
  - FDDI   ANSI X3T9.5
  - Bridge Protocols   Transparent per IEEE 802.1d (MAC
                          Bridges) with Spanning Tree
                          Algorithm
  - Network Interface   IEEE 802.3, IEEE 802.5, Ethernet
    Units (NIUs)   Version 2.0, FDDI
  - Ethernet-to-IEEE 802.x   RFC 1042
- Filtering Rate   500,000 packets/sec.
- Forwarding Rate   20,000 packets/sec.
- Networks Supported   IEEE 802.3/Ethernet Version 2.0,
                          Token Ring*, 4 MB/s or
                          16 MB/s, FDDI-to-FDDI
- NIUs per Bridge   Up to 5 NIUs
- Topology   Dual Counter-Rotating Rings
- Address Entries   4,000, Self-Learning

Support

- Customer Training
- Engineering Hot-Line Support
- Warranty and Maintenance

Availability

- Second quarter, 1990
*Consult factory for availability

RingMaster 7200

Contacts

FiberCom, Inc.   Tel: (703) 342-6700
3353 Orange Avenue, NE   Fax: (703) 342-5961
Roanoke, VA 24012
Attn: David P. Gallagher

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**Fibronics
International,
Inc.**

*FX8200
Series*

General Description

The FX8200 series is part of Fibronics' SYSTEM FINEX™ family of FDDI products. These products provide state-of-the-art solutions for extending your LAN resources over a high-speed FDDI backbone and fully comply with the 100 Mbps Fiber Distributed Data Interface (FDDI) ANSI X3T9.5 standards.

FX8200 series bridges support Translation/IEEE 802.1d standards in support of directly attached FDDI stations, and support an Encapsulation mode for backbone applications which provides a complete spectrum of integrated services and wide area connections for the FDDI.

FX8210

The Fibronics FX8210 is a FDDI to LAN learning bridge. This device is specifically designed to alleviate bottlenecks created by heavily loaded networks. It performs all the bridging, FDDI control, LAN control, and network management functions. It can support one or two Ethernet/802.3 or Token Ring/802.5 LAN interfaces or a combination of both.

FX8222

The Fibronics FX8222 FDDI Mainframe Link Controller connects an IBM (or compatible) high-speed mainframe channel to an FDDI network. It performs all data forwarding, FDDI control, channel control, and network management functions.
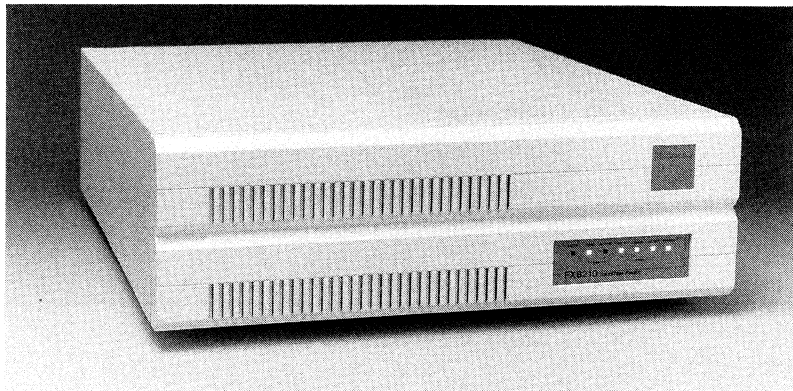
Fibronics International, Inc.

FX8200 Series

Standard Features

- Creates high performance 100 Mbps FDDI Network
- Meets ANSI FDDI standard
- Translation /802.1d and Encapsulation Modes
- Provides FDDI connections for up to two Ethernet or Token Ring LANs
- Provides direct attachment to FDDI backbone for mainframes
- Transparent to all higher layer protocols such as TCP/IP, DECNET, Novell Netware
- Modular design for easy expansion

Optional Features

- Fibronics Network Management System
- Optical bypass switch for built-in recovery
- Extended distance up to 12 km (multi-mode)
- Extended distance up to 20 km (single-mode)

Support

- Design
- Installation
- Training
- 24 hour technical service/support

Availability

- Now

Contacts

Fibronics International Inc.
Communications Way
Independence Park
Hyannis, MA 02601-1892
Tel: (508) 778-0700
Telex: 951297
Fax: (508) 778–0821

Fibronics Ltd.
Advanced Technology Center
Haifa 31905, Israel
Tel: 972-4-566-111
Telex: 46857
Fax: 972-4-536360

Fibronics International Inc.
Spartacus Group
1 Lowell Research Center
847 Rogers Street
Lowell, MA 01852
Tel: (508) 937-1600 Fax: (508) 937-0455
Telex: 948513

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Fibronics International, Inc.

FX8300 Series

General Description

The FX8300 series is a part of Fibronics' SYSTEM FINEX family of FDDI products. This series consists of the FX8310 FDDI IP Router and the FX8322 FDDI Channel Attached Network Controller. Using the American National Standards Institutes FDDI (Fiber Distributed Data Interface) standard, FX8300 products provide sophisticated data routing from Ethernet® LANS to an FDDI network.

The Fibronics FX8310 IP Router uses addressing information from the IP (Internet Protocol) network layer to select the most efficient route for sending information across networks. The FX8310 enables you to communicate with any host or workstation that implements the TCP/IP suite of protocols.

The Fibronics FX8322 FDDI Controller connects your IBM® mainframes (43XX, 380X, and 3090) or any mainframe with a standard block multiplexer channel to an FDDI network.

Running Fibronics' KNET TCP/IP software on the mainframe allows it to communicate with other FDDI-attached hosts or workstations through TCP/IP, and to communicate with remote TCP/IP hosts or workstations through the FX8310 IP Router.

The Fibronics FX8310 Router also supports DECNet Router as defined by DEC's Phase 4 Routing standard.
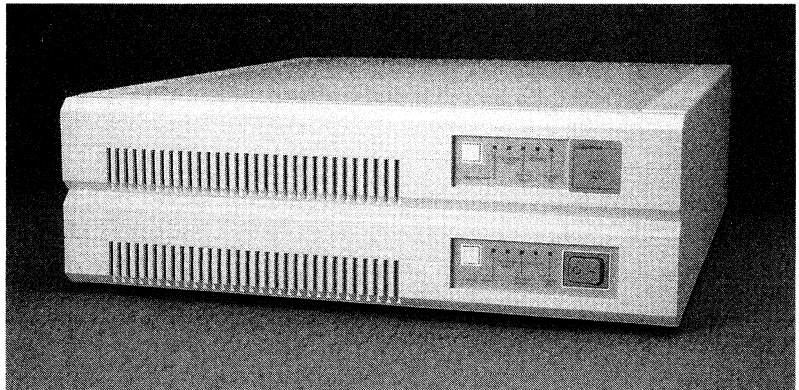
Fibronics International, Inc.

*FX8300
Series*

Standard Features

■ Creates high performance 100 Mbps FDDI Network

■ Meets ANSI FDDI standard

■ Provides FDDI connections for up to two individual Ethernet LANs

■ Provides direct attachment to FDDI backbone for mainframes

■ Supports IP and DECNet Protocols

■ Modular design for easy expansion

■ Forwards 6,500 packets per second

Optional Features

■ Fibronics Network Management System

■ Optical bypass switch for built-in recovery

■ Extended distance up to 12 km (multi-mode)

■ Extended distance up to 20 km (single-mode)

Support

■ Design

■ Installation

■ Training

■ 24 hour technical service/support

Availability

■ Now

Contacts

Fibronics International Inc.
Communications Way
Independence Park
Hyannis, MA 02601-1892
Tel: (508) 778-0700
Telex: 951297
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Fibronics Ltd.
Advanced Technology Center
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Fibronics International Inc.
Spartacus Group
1 Lowell Research Center
847 Rogers Street
Lowell, MA 01852
Tel: (508) 937-1600 Fax: (508) 937-0455
Telex: 948513

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Fujitsu Ltd.

FSLINK LAN

General Description

The FSLINK LAN system is a high performance, standard based system that conforms to the ANSI X3T9.5 FDDI standard. The FSLINK LAN System provides connection to the M Series, VP series, Compact A and Σstation230. The FSLINK LAN also provides a protocol-independent connection to CSMA/CD (ISO8802-3) LANs such as Fujitsu's DSLINK (Distributed System Link) thus extending high speed networking over a larger geographic area. Protocol transparency allows any device on the DSLINK network to transparently communicate with any device attached directly to the FDDI network.

The FSLINK LAN is based on FUJITSU's proprietary network architecture, FNA. When linked with a high-speed digital line, a FSLINK network can be interconnected with remote FSLINK and DSLINK networks as well as to the M Series and VP Series processors. Using network converter (NWC) also allows workstations and personal computers equipped with the V.24 standard (RS-232) to be connected to the network.

Fujitsu Ltd.

FSLINK LAN

Standard Features

■ Uses AMD's SUPERNET chip set

■ Protocol transparency allows to build a network suitable for a multi-vendor environment containing different protocols, such as TCP/IP, OSI, FNA

■ Full range of network management functions:

- Loopback function

- Bypass function

- LAN monitoring system to monitor network traffic

■ Simple address management

■ Transmission medium: Optical fiber cable (GI-type, 50/125 μm multimode fiber)

■ LAN interconnects supported by FSLINK LAN: ISO9314(FDDI), ISO8802-3 (CSMA/CD), 192 Kbps – 6 Mbps high speed digital lines

■ Direct connection support: M Series, VP Series, Compact A, Σstation 230

SUPPORT

■ LAN Technical Center will provide technical support through field SEs.

AVAILABILITY

■ Now

Contacts

**Hewlett-
Packard**

*Apollo Systems
Division*

*DN10000
Personal
Super-
computer* ™

General Description

Hewlett-Packard's Apollo Division now offers the industry-standard 100 Mbit-per-second Fiber Distributed Data Interface (FDDI) for the Series 10000 workstation. The single board controller interfaces the high performance Series 10000 to the FDDI network directly via the workstation system bus. By supporting multiple network controllers, the Series 10000 can provide routing services between FDDI and lower speed LANs such as Ethernet™ and Apollo Token Ring.

The Series 10000 FDDI product is a dual PHY, Dual MAC implementation and is fully ANSI X3T9.5 compatible. This implementation fully supports the industry standard TCP/IP protocol as well as HP/Apollo's Domain™ Distributed Services.

**Hewlett-
Packard**

*Apollo Systems
Division*

*DN10000
Personal
Super-
computer* ™

Standard Features

- ANSI X3T9.5 compatible
- Use of the AMD SUPERNET chip set
- Dual PHY, dual MAC implementation
- Optical bypass switch
- 64-bit DMA controller designed for operation at link speed
- Standard FDDI fiber-optic medium interface connection (MIC) receptacles
- Use of a single system bus slot
- Direct interface to system bus (150 MB/sec)
- Station management software

Support

- Technical assistance
  (1-800) 227-6556

Availability

- Fourth quarter, 1990

Contacts

Hewlett Packard   Tel: (1-800) 323-1864
Apollo Systems Division   Fax: (508) 256-2079
300 Apollo Drive
Chelmsford, MA 01824

IN-NET® Corp.

FiberTalk 5000 802.3 Local Bridge

General Description

The FiberTalk 5000 802.3 Local Bridge is part of IN-NET's FiberTalk™ range of FDDI based networking products that can connect Ethernet LANs to a high-speed, 100Mbps fiber optic FDDI network. The FiberTalk 5000 offers connectivity between an 802.3 Ethernet network or multiple Ethernet networks and an FDDI backbone network. Organizations with several isolated LANs can use the FiberTalk 5000 to form a cohesive manageble network.

The FiberTalk 5000 employs a learning algorithm that decides if messages are local or must be forwarded over the FDDI backbone to another LAN.

The FiberTalk 5000 has a powerful set of message filtering capabilities that prevent forwarding of messages onto the FDDI backbone that are locally intended. The filters aid in fine tuning network performance and ensure network security.

Single point Network Management for FiberTalk 5000 Bridge can be local or remote. Unit configurations can be upline/downline loaded, testing and diagnostics can be invoked and all error conditions and events are continuously reported.
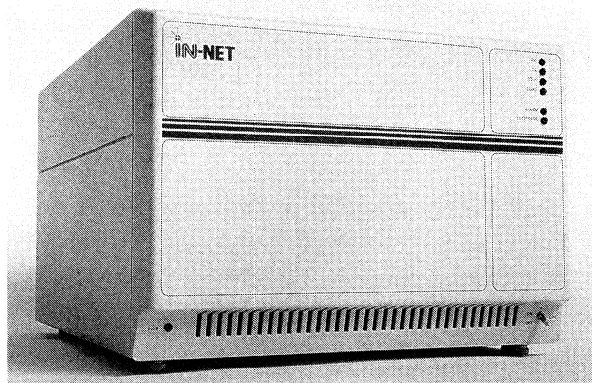
IN-NET® Corp.

FiberTalk 5000 802.3 Local Bridge

Standard Features
- Uses AMD's SUPERNET chip set
- Standards Supported:
  - FDDI: ANSI X3T9.5
  - Ethernet: IEEE 802.3
  - Logical Link Control: IEEE 802.2
  - Safety, EMC: IEC 435
- Protocol transparency
- Extensive filtering capabilities
- Comprehensive network management
- Standard VME bus
- Internal operating system: C code running on INERTX
- Stand alone or rack mount

Support
- Full service and support programs
- 1 year factory warranty

Optional Features
- Optical Bypass
- Redundant load sharing power supplies

Availability
- Now

Contacts

IN-NET Corp.   Tel: (800) 283-FDDI
15150 Avenue of Science   Fax: (619) 487-3697
San Diego, CA 92128-3495

IN-NET® Corp.

FiberTalk 5000 802.5 Token Ring Bridge

General Description

The FiberTalk™ 5000 802.5 Token Ring Learning Bridge is part of IN-NET's FiberTalk range of FDDI based networking products that can connects 4 Mbps Token Ring LANs to a high-speed, 100 Mbps fiber optic FDDI network. The Intelligent FiberTalk 5000 Bridge decides if messages received are local or must be forwarded over the FDDI backbone to remote LANS by applying a learning algorithm offering flexible network configuration.

The modularity of the FiberTalk 5000 Bridge can make it possible to upgrade the current basic model to a future multiport operation. Multiple Token Ring LANs will be attached to a single bridge offering a flexible upgrade path for the future. The bridge will also support 16 Mbps Token Ring LANs later this year.

Connecting the FiberTalk 1000 Network Management System to any IN-NET station on the network provides complete management facilities for comprehensive network management.

IN-NET® Corp.

*FiberTalk 5000
802.5 Token
Ring Bridge*

Standard Features

- Uses AMD's SUPERNET chip set
- Standards Supported:
  - FDDI: ANSI X3T9.5
  - Ethernet: IEEE 802.5
  - Logical Link Control: IEEE 802.2
  - Safety, EMC: IEC 435
- Protocol transparency
- Extensive filtering capabilities
- Comprehensive network management
- Standard VME bus
- Internal operating system: C code running on INERTX
- Stand alone or rack mount

OPTIONAL FEATURES

- Optical Bypass switch
- Redundant load sharing power supplies

SUPPORT

- Full service and support programs
- 1 year factory warranty

AVAILABILITY

- Now

Contacts

IN-NET Corp.   Tel: (800) 283-FDDI
15150 Avenue of Science   Fax: (619) 487-3697
San Diego, CA 92128-3495

IN-NET® Corp.

FiberTalk 3000 Channel Extension Unit (CEU)

General Description

The FiberTalk 3000 Channel Extension Unit (CEU) is part of IN-NET's FiberTalk range of FDDI based networking products. The CEU is a channel-to-peripheral I/O device controller that provides a seamless connection linking multiple IBM, or plug compatible, host computers and peripherals on a high-speed, 100 Mbps fiber optic FDDI backbone network. As many as 15 CEUs can be connected on a single FDDI ring. No address restrictions provide up to 2048 logical data links.

Host computers and peripherals are allowed to communicate without the need of special software or complicated switching products. The CEU operates transparently to the FDDI and host computing network.

FiberTalk 3000 CEUs can be placed up to 2 km apart for true distribution processing. The CEU peripherals can be remotely located from the host computer. This allows complete flexibility of equipment placement. Optical bypass and redundant power supplies are available as an option to ensure complete network uptime.

Single point Network Management for the FiberTalk 3000 CEU can be local or remote. Unit configurations can be upline/downline loaded, testing and diagnostics can be invoked and all error conditions and events are continuously reported.

IN-NET® Corp.

FiberTalk 3000 Channel Extension Unit (CEU)

Standard Features

- Uses AMD's SUPERNET™ chip set
- Standards Supported:
  - FDDI: ANSI X3T9.5
  - Logical Link Control: IEEE 802.2
  - Safety, EMC: IEC 435
- Channel-to-peripheral I/O device controller
- Comprehensive network management
- Standard VME bus
- Internal operating system: C code running on INERTX
- Stand alone or rack mount

Optional Features

- Optical Bypass switch
- Redundant loadsharing power supplies

Support

- Full service and support program
- One year factory warranty

Availability

- Now

Contacts

IN-NET Corp.   Tel: (800) 283-FDDI
15150 Avenue of Science   Fax: (619) 487-3697
San Diego, CA 92128-3495

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IN-NET® Corp.

FiberTalk 3000 Channel Bridging Unit (CBU)

General Description

The FiberTalk 3000 Channel Bridging Unit (CBU) is part of IN-NET's FiberTalk range of FDDI based networking products. The CBU is a channel-to-I/O device controller that provides a seamless connection linking multiple IBM, or plug compatible, host computers and 802.3 Ethernet LANs on a high-speed, 100 Mbps fiber optic FDDI backbone network.

Host computers are allowed to communicate with Ethernet LANs through TCP/IP.

FiberTalk 3000 CBUs can be place up to 2 km apart for true distributed processing. The CBU can be remotely located up to 400' from the host computer. This allows complete flexibility of equipment placement. The CBU works with host block and selector channels and operates in the basic and extended 370 mode. Optical bypass and redundant power supplies are available as an option to ensure complete network uptime.

Single point Network Management for the FiberTalk 3000 CBU can be local or remote. Unit configurations can be upline/downline loaded, testing and diagnostics can be invoked and all error conditions and events are continuously reported.

IN-NET® Corp.

FiberTalk 3000 Channel Bridging Unit (CBU)

Standard Features

- Uses AMD's SUPERNET™ chip set
- Standards Supported:
  - FDDI: ANSI X3T9.5
  - Logical Link Control: IEEE 802.2
  - Safety, EMC: IEC 435
- Channel-to-channel I/O controller
- Utilizes host block and selector channels and operates in basic or extended 370 mode.
- Comprehensive network management
- Standard VME bus
- Internal operating system: C code running on INERTX
- Stand alone or rack mount

Optional Features

- Optical Bypass switch
- Redundant loadsharing power supplies

Support

- Full service and support program
- One year factory warranty

Availability

- Now

Contacts

IN-NET Corp. Tel: (800) 283-FDDI
15150 Avenue of Science Fax: (619) 487-3697
San Diego, CA 92128-3495

N-NET® Corp.

FiberTalk 3000 Channel Interface Unit (CIU)

General Description

The FiberTalk 3000 Channel Interface Unit (CIU) is part of IN-NET's FiberTalk range of FDDI based networking products. The CIU is a channel-to-channel I/O device controller that provides a seamless connection linking multiple IBM, or plug compatible, host computers on a high-speed, 100 Mbps fiber optic FDDI backbone network. As many as 16 CIUs can be connected on a single FDDI ring. No address restrictions provide up to 2048 logical data links.

Host computers are allowed to communicate without the need of special software or complicated switching products. The CIU operates transparently to the FDDI and host computing network.

FiberTalk 3000 CIUs can be placed up to 2 km apart for true distributed processing. The CIU can be remotely located up to 400' from the host computer. This allows complete flexibility of equipment placement. Two or more CIUs can be connected to one host channel to further enhance connectivity performance. The CIU works with host block and selector channels and operates in the basic and extended 370 mode. Optical bypass and redundant power supplies are available as an option to ensure complete network uptime.

Single point Network Management for the FiberTalk 3000 CIU can be local or remote. Unit configurations can be upline/downline loaded, testing and diagnostics can be invoked and all error conditions and events are continuously reported.

IN-NET® Corp.

*FiberTalk 3000
Channel
Interface
Unit (CIU)*

Standard Features

- Uses AMD's SUPERNET™ chip set
- Standards Supported:
  - FDDI: ANSI X3T9.5
  - Logical Link Control: IEEE 802.2
  - Safety, EMC: IEC 435
- Channel-to-channel I/O controller
- Utilizes host block and selector channels and operates in basic or extended 370 mode.
- Comprehensive network management
- Standard VME bus
- Internal operating system: C code running on INERTX
- Stand alone or rack mount

Optional Features

- Optical Bypass switch
- Redundant loadsharing power supplies

Support

- Full service and support program
- One year factory warranty

Availability

- Now

Contacts

IN-NET Corp.   Tel: (800) 283-FDDI
15150 Avenue of Science   Fax: (619) 487-3697
San Diego, CA 92128-3495

Martin
Marietta

MM-DAC

General Description

MM-DAC is a FDDI compliant Dual Attachment Concentrator as speci-fied by ANSI X3T9.5. The Martin Marietta Concentrator provides attach-ing slave station with a total aggregate throughput of 200 Mbp/s in normal operation, and 100 Mbp/s aggregate bandwidth upon fault of the trunk ring or non-bypassed, trunk ring attached station.

The MM-DAC consists of a 7, 12 or 21 slot VME chassis, a 25 MHz 68020-based station controller card, a memory card, two FDDI single ring interface cards, a trunk coupling unit card (optical bypass switches), and one or more FDDI dual"M"aster port cards. All circuit cards are fully VME compliant. The MM-DAC provides two internal paths, with a MAC attached to each path. In normal operation "S"lave devices can attach to either of the two internal concentrator data paths, providing data commu-nications on either of the two fibers of the FDDI trunk ring. The internal concentrator paths are preserved in all modes of operation, providing total fault recovery transparency to attached "S"lave stations.

Martin
Marietta

MM-DAC

Standard Features
- Dual path, dual MAC FDDI compliant Concentrator
- 200 Mbps aggregate throughput
- Fault transparency
- Compliant SMT
- Two "M" ports, expandable to 32
- "Unrooted Tree" topology supported
- Keyed FDDI compliant MIC connectors on all ports
- Station monitor port

Optional Features
- Additional "M"ports
- Non-disruptive insertion (call)

Support
- Limited workmanship and material warranty
- Limited telephone support
- Maintenance agreements available
- Consulting services available
- Special custom engineering services available

Availability
- Fall, 1990

Contacts

Martin Marietta Aero   Tel: (301) 682-0855
   Naval Systems   Fax: (301) 682-1108
103 Chesapeake Park Plaza
Baltimore, MD 21220
Attn: Russ Hewitt

Martin Marietta

MM-DAS

General Description

The Martin Marietta Dual Attachment Station (MM-DAS) provides a VME platform for attaching a multitude of resources to a 100 Mbp/s FDDI trunk ring via VME compliant interfaces, or for the development of FDDI system units. The MM-DAS is packaged in standard double height VME chassis. The basic chassis configuration has seven horizontal slots, and contains both power and cooling.

The Station Controller for the MM-DAS is a Motorola 133XT single board computer. The 133XT hosts all software necessary for the proper operation of the station, and provides the VME system controller functions.

MM-DAS is configured with two Martin Marietta SAFENET II/FDDI Single Ring Interface (SRI), version 2.2, cards to provide a dual MAC, dual PHY station. A single SRI card configuration may be used to provide a fully functional Single Attachment Station (SAS).

The Martin Marietta Trunk Coupling Unit (TCU) consist of two DICON fiber optic bypass switches, associated cabling, and two field key-able FDDI MIC connectors. The TCU is mounted on a VME card and inserted internal to the chassis. The face plate of the TCU provides a sturdy mount for FDDI MIC shrouds or custom interfaces (SMA connectors shown).

**Martin
Marietta**

MM-DAS
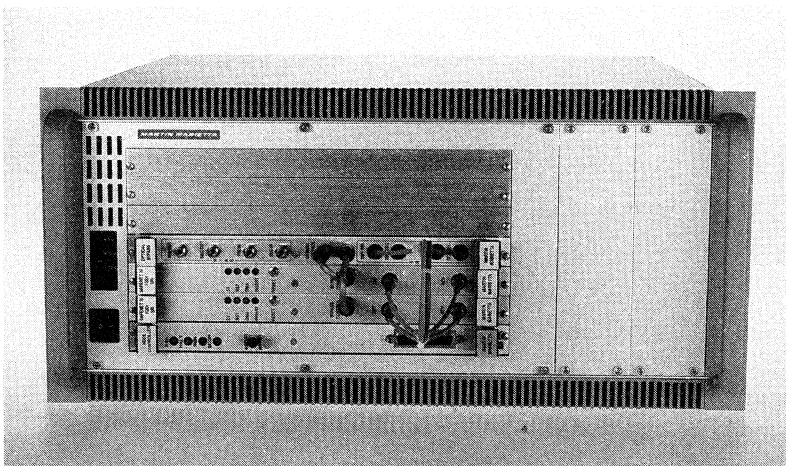
Standard Features

- Link-level, FDDI compliant DAS
- Dual MAC, Dual PHY, FDDI interface
- Compliant SMT
- Protocol, ISO: 8802-2 (Data Link)
- Fully VME compliant architecture
- All circuit cards 6U form factor
- Software Components Group real-time executive
- 25 MHz 68020 station controller w/4 MB of dual ported DRAM
- Trunk ring interface via optical bypass switches w/MIC connectors (TCU)
- Station monitor port

Optional Features

- High performance station controllers (call)
- Alternate station configurations
  - Single attachment
  - Embedded
- Protocols:
  ISO 8073/8602 (Transport)/8473/9542 (Network), TCP/IP, &
  SAFENET II (call)
- Interfaces: RS-232C, RS-485/422, Ethernet, MIL-STD NTDS Type A/B/C, MIL-STD NTDS Type 188C, Audio (Fall, 1990), Video (Summer, 1991), Others (Call)
- 12 and 21 slot chassis

Support

- Maintenance agreements available
- Consulting services available
- Special custom engineering services available

Availability

- Immediate

Contacts

Martin Marietta Aero &
 Naval Systems
103 Chesapeake Park Plaza
Baltimore, MD 21220
Attn: Russ Hewitt

Tel: (301) 682-0855
Fax: (301) 682-1108

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**Network
Systems
Corporation**

*DX4000
Series*

General Description

The DX4000 Series products offers FDDI attachment capability and software support for a variety of computer systems, including IBM mainframes, DEC minicomputers (BI Bus, Qbus, and UNIBUS), Cray supercomputers and VMEbus workstations. These host controllers provide:

■ Host computer access to FDDI networks

■ Support for HYPERchannel TCP/IP applications, without modifications

■ Support for many user-written HYPERchannel applications, without modifications

■ Support for current Network Systems NETEX applications

These products support high-bandwidth applications such as image processing, medical imaging, mechanical and electrical design, and certain scientific and engineering simulations. Potential users include supercomputer environments, universities, manufacturers, financial institutions, and defense contractors.

Standard Features

■ Interoperability with other FDDI compliant implementations.

■ Total compliance with ANSI X3T9.5 standards.

■ FDDI direct access mode.

■ Support for user-written HYPERchannel or NETEX-based applications, without modification.

Optional Features

■ An IP co-processor that functions as both an FDDI media controller and a distributed IP routing engine providing:

   – Built-in-support for Network Systems' Packet Control facility for security and access control.

   – Communication of proper SNMP traps and routing changes in the event of media failure or restoration of service.

■ HYPERchannel network connection.

Support

■ Worldwide sales and service support organization.

■ Consultation services to help users plan the design, installation, and management of complex networks.

■ Maintenance covering site preparation, hardware and software installation, verification testing, and all continuing service.

■ Customer training, on-site or at network systems.

Availability

■ Now

Network Systems Corporation

DX4000 Series

Contacts

Network Systems Corporation Tel: (612) 424-1536
7600 Boone Ave., N.
Minneapolis, MN 55428

**Network
Systems
Corporation**

FE640 Router

General Description

The FE640 Router provides a high-speed gateway for building backbone networks that span a building, a campus, or a metropolitan area. This router can connect a dual-attached FDDI ring to four IEEE 802.3 Ethernet trunks, with the option to add four additional trunks. And, it supports routing of TCP/IP and DECnet protocols across FDDI and Ethernet. The FE640, in addition to complying with the ANSI X3T9.5 FDDI, TCP/IP, and DECnet standards, supports Network Systems' Packet Control Facility for greater security, and it includes SNMP agent software for network management.
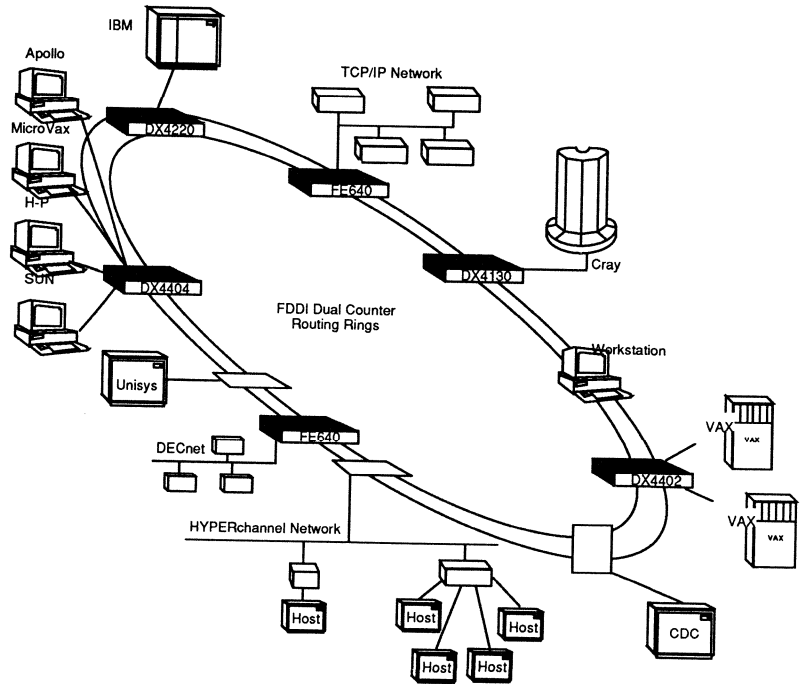
Standard Features

■ Packet Control Facility for enforcement of an access control policy.

■ Total compliance with ANSI X3T9.5 standards ensures interoperability on an FDDI ring.

■ Dual Attach Station containing two PHY components and one MAC component, and which connects to a counter-rotating pair of FDDI rings.

■ Built-in optical bypass switch for both ring connections to ensure the continued integrity of both rings in the event of drastic failure or maintenance of the FDDI interface.

■ SNMP agent software for network management.

■ 2 Mbytes memory.

Optional Features

■ Four additional IEEE 802.3 Ethernet trunks.

■ T1/T3 links (planned).

■ Host module connections (planned).

Support

■ Worldwide sales and service support organization.

■ Consultation services to help users plan the design, installation, and management of complex networks.

■ Maintenance covering site preparation, hardware and software installation, verification testing, and all continuing service.

■ Customer training, on-site or at network systems.

Availability

■ Now

Contacts

Network Systems Corporation Tel: (612) 424-1536
7600 Boone Ave., N.
Minneapolis, MN 55428

Prime Computer, Inc.

TCP/IP over FDDI for the 50 Series Supermini- computer Systems

General Description

Prime Computer, Inc. is introducing their FDDI controller for high-end 50 Series systems. The Prime product implements a dual MAC, dual attach station (DM-DAS), and is architectured with AMD's FDDI SUPERNET chipset. Prime FDDI will provide high speed local area networking capabilities for both heterogeneous and homogeneous environments.

Prime TCP/IP over FDDI will enable users to take advantage of a high speed backbone connecting a variety of slower speed LANs, and the ability to participate in mixed-vendor FDDI networks.

Standard Features

■ Full FDDI compliance with selected SMT options

■ High-performance controller with SUPERNET chipset

■ Optional optical bypass unit

Software Support

■ TCP/IP protocol implementation supports

  – UDP, TCP, IP, ARP, Domain Name Service

  – Telnet, FTP

  – Network File System (NFS)

  – Network Computer System (NCS)

Support

■ Prime Network Service organization support for design and installation of networks

■ Consulting services for optimized application performance over FDDI networks

■ Hotline service

■ Software Update service

Availability

■ 1991

Prime Computer, Inc.

TCP/IP over FDDI for the 50 Series Supermini-computer Systems

Contacts

George Khater   Tel: (508) 655-8000, ext. 5963
Prime Computer, Inc.
Prime Park
Natick, MA 01760

Proteon, Inc.

p4200 Router

General Description

Proteon's FDDI for the p4200 Router provides a high-speed, standards-based backbone for interconnecting multiple LANs and WANs. The p4200 multi-protocol router's wide variety of interfaces and protocols offers an internetworking solution unparalleled for flexibility and connectivity. By incorporating the FDDI dual-card set into the p4200, Proteon offers an ideal backbone solution with high bandwidth, fiber optic media and integrated fault detection/recovery capabilities.

Proteon has extensive experience in high speed fiber optic networks with over two thousand Pronet 80/FDDI nodes installed.

And, Proteon's FDDI provides the highest level of multi-vendor interoperability as demonstrated in the AMD-sponsored FDDI interoperability tests.

Proteon, Inc.

*p4200
Router*
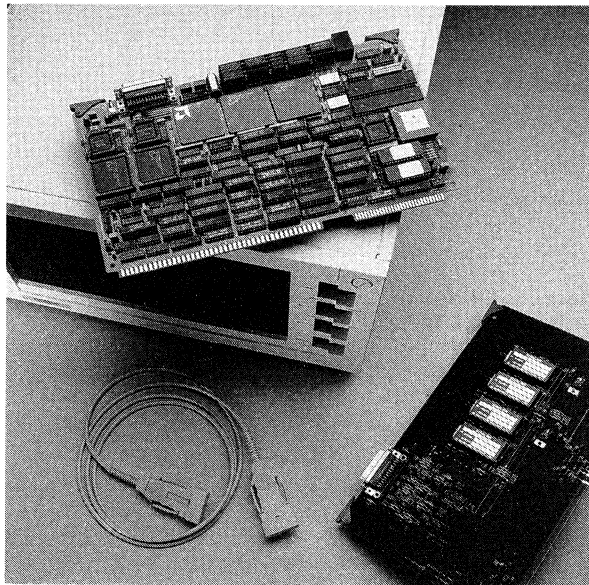
Hardware Specifications

- Dual Attach Single MAC FDDI Interface (DAS)
- Single Attach Single MAC to a concentrator (SAS)
- ANSI X3T9.5 Compatible
- MC68020 Node Processor running at 16 MHz
- AMD SUPERNET Chip set
- 512 kbytes of packet buffer memory
- 256 kbytes SRAM for node processor system memory and packet buffering
- 256 kbytes EPROM for SMT logic storage and power-up diagnostics
- FDDI Software Support*: CMT (Connection ManagemenT), SMT (Station ManagemenT), SNMP (Simple Network Management Protocol), MIB (Management Information Base) Standard statistics, SMI (Structure of Management Information), Power-up diagnostics
- LAN/WAN Interconnects* Supported by the p4200 Router with FDDI: IEEE 802.3 Ethernet, IEEE 802.5 Token Ring, ProNET-10, ProNET-80, dual port TI/EI (2.048 Mbit/s), X.25 (PDN/DDN), quad port Synchronous (up to 64 Kbps)
- Packet Types* Currently Supported by the p4200 with FDDI: IP, DECnet, XNS, IPX, Apollo Domain, OSI

Minimum Configuration

- 1   p4200   Base Router Unit with Version 8.3 Software
- 1   p4222   FDDI dual-board set with driver
- 1   p42xx   Additional LAN or WAN Interface
- 1   p56xx   Protocol Forwarding Software
- 1   p5610-xx   Distribution Media
- Available for 62.5 μm and 50 μm versions

Options

- OverVIEW Network Management System with SNMP & MIB as defined
- Optical Bypass Switch

Availability

- Now

* Proteon is committed to RE-MAIN in compliance with al published standards as their definitions evolve.

Contacts

Corporate Headquarters

Two Technology Drive
Westborough, MA 01581
Tel: (508) 898-2800

Sony Corp.

FDDI Network Board for Sony's NEWS Series Workstation

General Description

The FDDI Network Board is an expansion board for NEWS workstation. The board implements the high-speed optical fiber backbone network complying with the ANSI X3T9.5 FDDI standard: token passing protocol, single MAC and Dual Attachment Station. The board is built around AMD's SUPERNET chipset.

The FDDI Network Board, together with the NEWS workstation, is designed to operate as an IP router in standard UNIX networking environments. The board requires minimal investment for the upgrade from Ethernet backbone to optical fiber backbone.
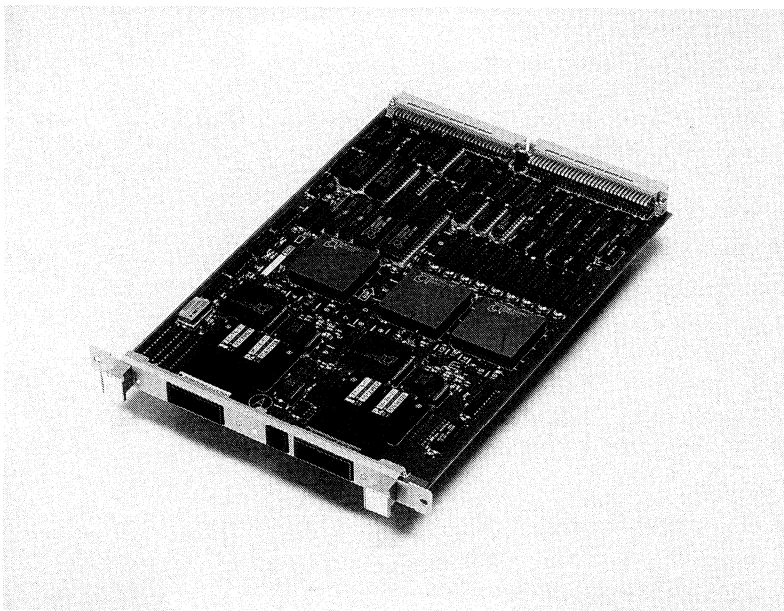
Sony Corp.

*FDDI Network
Board for
Sony's NEWS
Series
Workstation*

Standard Features

■ Implements ANSI X3T9.5 FDDI standard for 100 Mbps optical fiber network

■ Equipped with 256 kbyte fast RAM buffer

■ Implements single MAC, Dual Attachment Station with optical bypass switch control interface

■ Operates as an IP router

■ Occupies only one I/O slot of NEWS workstation

■ Uses AMD's SUPERNET chipset

SUPPORT

■ Supported by NEWS-OS

AVAILABILITY

■ Please contact your local sales office.

Contacts

Sony Corp.
1-22-1 Higashigotanda,
Shinagawa, Tokyo
141, Japan
International Sales Division
Supermicro Systems Group
Tel: 03-448-4041

Sony Microsystems Company
651 River Oaks Parkways
San Jose, CA 95134, USA
Tel: (408) 434-6644

Sony Microsystems Europe
Bleriostr. 1-3, 5000
Koeln 30, West Germany
Tel: 0221-593042

**Timeplex
(A Unisys
Company)**

*TIME/LAN 100
Ethernet
FDDI Router*

General Description

The TIME/LAN 100 Ethernet-FDDI Router is part of the TIME/LAN 100 Series of Networking products. The Ethernet-FDDI Router connects an IEEE 802.3/Ethernet LAN to a FDDI network so that computers and workstations on each network can communicate with one another.

The Ethernet-FDDI Router lets host computers, personal computers, workstations, and other devices communicate across different LANs. The Router is configured as a dual attached station to an FDDI network. The network can provide access to large centralized data bases for the mini-computer on the Ethernet LAN. Personal computers on the LAN typically interact with the minicomputer but can also communicate with the FDDI network for special applications.

Timeplex (A Unisys Company)

TIME/LAN 100 Ethernet FDDI Router
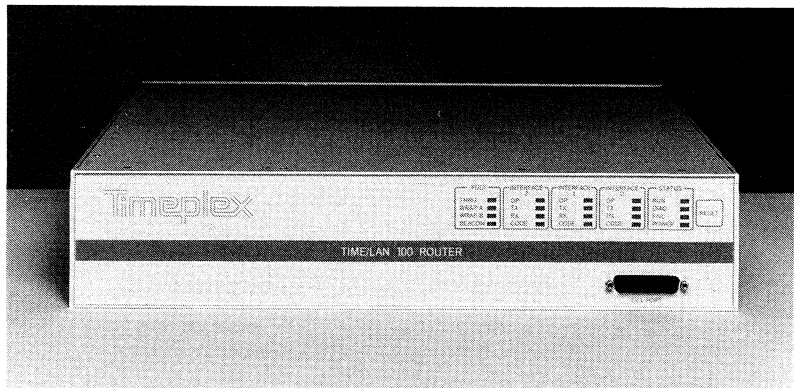
Standard Features
- AMD SUPERNET chipset
- 1 Mbytes RAM
- 384 kbytes EPROM
- Desktop or rack mounted
- Full FDDI compliance
- Internet Protocol (IP) in accordance with MIL-STD-1777
- Internet Control Message Protocol (ICMP) in accordance with RFC 792
- Routing Information Protocol (RIP)

Options
- One or two Ethernet ports

Support
- Timeplex field service

Availability
- Now

Contacts

Timeplex
400 Chestnut Ridge Road
Woodcliff Lake, NJ 07675

Tel: (201) 930-4600

**Timeplex
(A Unisys
Company)**

*TIME/LAN 100
Remote Router*

General Description

The TIME/LAN 100 Remote Router is part of the TIME/LAN 100 Series of Networking products. The FDDI Remote Router in conjunction with a TIME/LAN 100 Ethernet Remote Router connects a remote FDDI to an IEEE 802.3/Ethernet LAN. The connection allows computers and workstations on each network to communicate with one another.

The Remote Router lets an FDDI network connect to a remote Ethernet LAN across a wide area of backbone network. Host computers, personal computers, workstations and other devices on different networks separated by large distances can communicate through the FDDI Remote Router. The FDDI Remote Router combined with a LINK/2 Integrated Connectivity System (ICS) backbone network and a Ethernet Remote Router complete the connection. The minicomputer on the Ethernet LAN gains access to large centralized data bases through the FDDI network. Personal computers on the LAN typically interact with the minicomputer but can also communicate with the FDDI network for special applications.
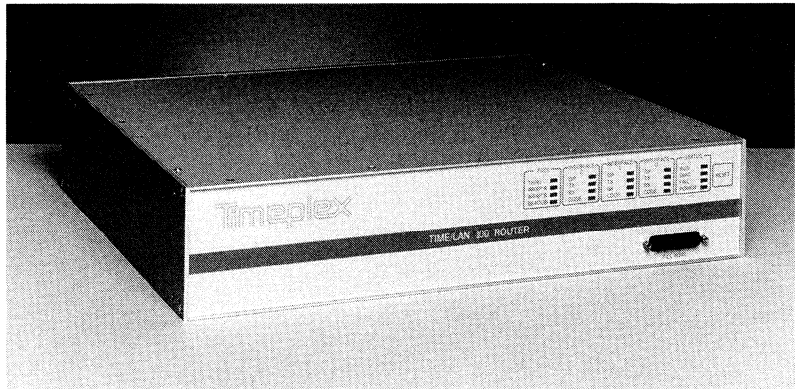
**Timeplex
(A Unisys
Company)**

*TIME/LAN 100
Remote Router*

Standard Features

- AMD SUPERNET chipset
- 1 Mbytes RAM
- 384 kbytes EPROM
- Desktop or rack mounted
- Full FDDI compliance
- Internet Protocol (IP) in accordance with MIL-STD-1777
- Internet Control Message Protocol (ICMP) in accordance with RFC 792
- Routing Information Protocol (RIP)
- Serial interface meets the physical requirements of EIA RS-449 (RS-422-A for balanced transmission) and the data link layer requirements of X.25, level 2 (HDLC LAPB) at data rates of up to 1.536 Mbits/sec. The serial interface is also available for connection to standard X.25 packet data networks. Fractional T1 support

Options

- One or two serial interfaces

Support

- Timeplex field service (optional)

Availability

- Now

Contacts

Timeplex   Tel: (201) 930-4600
400 Chestnut Ridge Road
Woodcliff Lake, NJ 07675

**Timeplex
(A Unisys
Company)**

*TIME/LAN 100
Concentrator+*

General Description

The TIME/LAN 100 Concentrator+ is part of the TIME/LAN 100 Series of Networking products. The Concentrator+ is a dual attachment station for an FDDI network that accepts up to eight single attachment stations for connection to the network. The FDDI Concentrator+ allows the insertion or removal of any of its single attachment stations without perturbation of the network. Workstations and routers can connect to the FDDI network through the Concentrator+.

The Concentrator+ incorporates two MAC implementations. The first MAC provides the network attachment and can be switched onto either the primary or secondary ring of the FDDI dual counter-rotating ring network. The second MAC is used for graceful insertion of a single attachment station into the network. For this operation, a separate ring is established between the FDDI Concentrator+ and the single attachment station.

By testing single attachment stations prior to insertion, the FDDI Concentrator+ can isolate potential system problems. The Concentrator+ also provides the standard FDDI capabilities to perform wrapping of rings, transparent electrical bypass, and optical bypass of both rings.

**Timeplex
(A Unisys
Company)**

*TIME/LAN 100
Concentrator+*

Standard Features
■ AMD SUPERNET chipset
■ 256 kbytes RAM
■ 128 kbytes EPROM
■ Desktop or rack mounted
■ Full FDDI compliance
■ Two electrically switchable MAC interfaces
■ Ten electrically switchable PHY interfaces

Options
■ 4 through 8 Single Attachment Stations (SAS) PHY interfaces

Support
■ Timeplex field service (optional)

Availability
■ Now

Contacts

Timeplex
400 Chestnut Ridge Road
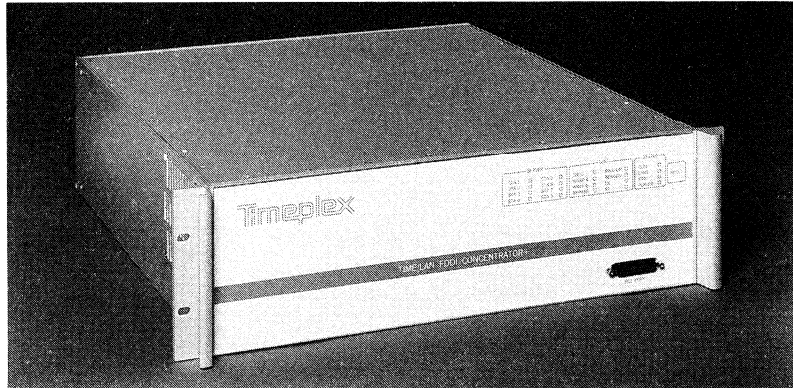Woodcliff Lake, NJ 07675

Tel: (201) 930-4600

**Toshiba
Corp.**

*RING-100F
FDDI
Network*

General Description

The Ring-100F is a 100 Mbps high-speed optical LAN network system that conforms to the FDDI (Fiber Distributed Data Interface) international standard (ANSI X3T9.5, ISO 9314). This advanced ring network unit offers a total system guaranteed to function as a backbone LAN linking multiple frontend LANs. FDDI standard devices can be connected directly to RING-100F.

The Ring-100F interconnects different subnetworks of CSMA/CD (ISO 8802-3), Token-Passing Bus (ISO 8802-4) and Token Ring (ISO 8802-5) to the FDDI backbone. Protocol transparency is provided by the generic routing function which does not depend on a higher-level protocol. This makes it possible to build a network suitable for a multi-vendor environment containing different protocols such as TCP/IP, OSI, XNS® and SNA.

The configuration of RING-100F is:

1-1. Ring Network Unit (RNU)—The RNU operates as the heart of a FDDI-LAN. PMD, PHY, MAC and SMT

1-2. CSMA/CD Interface (CBI-H)—An interface card for connecting to CSMA/CD

1-3. Token Ring Interface (TRI)—An interface card for connecting to Token Ring

1-4. Token Bus Interface (TBI)—An interface card for connecting to Token Bus

2. RNU Management Station (RMS)—RMS, the RNU management device, consists of an IBM PC/AT® or compatibles and RNU support software

3. Concentrator (CR)

Standard Features
- Meets ANSI X3T9.5 FDDI standard
- Implements AMD's SUPERNET chip set
- Interconnects international standard LANS such as
  - CSMA/CD
  - Token-Passing Bus
  - Token Ring
- Protocol transparency allows to build a network suitable for a multi-vendor environment containing different protocols, such as TCP/IP, OSI, XNS and SNA.
- Full range of network management functions:
  - Loopback function
  - Bypass function
  - Status indication, maintenance and diagnosis, and statistical information gathering functions
- Simple address management

AVAILABILITY
- Now

**Toshiba
Corp.**

*RING-100F
FDDI
Network*

Contacts

Toshiba Corp.   Tel: 03-457-2563
1-1, Shibaur 1-chome
Minato-ku, Tokyo 105-01
Japan

Ungermann-Bass, Inc.

Access/One FDDI SuperLAN Bridges

General Description

Ungermann-Bass' Access/One™ Ethernet-FDDI SuperLAN™ bridge (ASM–5360) is a Media Access Control learning bridge, compatible with all Ethernet and IEEE 802.3 protocols. The bridge transparently interconnects multiple types of networks (for example, XNS, TCP/IP, DECnet, OSI). Dynamic learning tables are maintained to continuously monitor traffic on the local network. Messages addressed to local stations are filtered (discarded) and packets destined for stations on the FDDI network are forwarded.

The Access/One Token Ring-FDDI SuperLAN Bridge (ASM-5560) connects token ring LANs to an FDDI network backbone. On the token ring side, the bridge performs IBM compatible source routing functions to allow source routed frames to cross the FDDI ring. The bridge is responsible for the conversion and routing of frames across FDDI, Ethernet and token ring networks.

Ungermann-Bass' FDDI SuperLAN Bridges provide connectivity to both Ethernet and token ring subnetworks. The FDDI SuperLAN Bridges accommodate the dissimilar Ethernet, token ring, and FDDI data structures by using sophisticated hashing algorithms and encapsulation techniques. The two types of FDDI bridges also facilitate communication between Ethernet and token ring subnets over an FDDI backbone. This functionality is transparent to the user as well as the network manager, making the FDDI bridges a powerful internetworking tool in multi-protocol and multi-media environments.
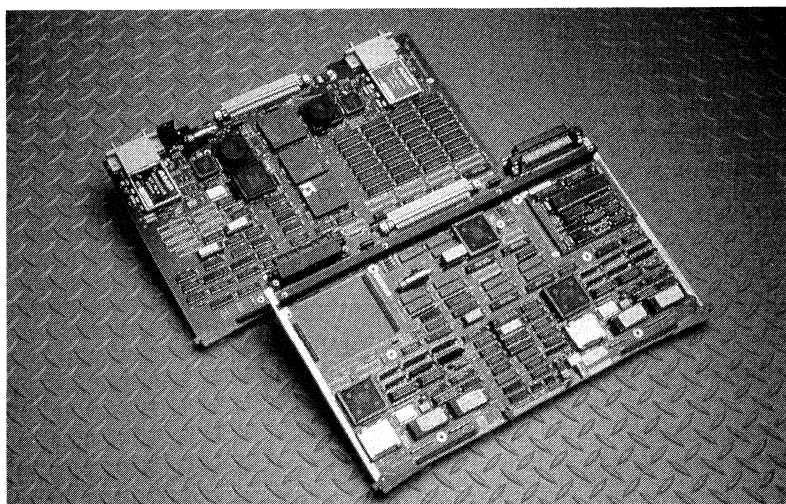
Ungermann-Bass, Inc.

Access/One
FDDI
SuperLAN
Bridges

Standard Features
■ Compatible with the ANSI X3T9.5 specification
■ 100 Mbps filtering provides a high capacity campus backbone network solution
■ Inherently fault-tolerant Dual Attachment Station (DAS) design provides redundancy and reliability
■ Supports both ring and star-based topologies
■ FDDI Bridges allow Ethernet to token ring interoperability across an FDDI fiber backbone
■ FDDI ring statistics and fault management services provide comprehensive network management capabilities

Support
■ Telephone support
■ On-site technical support for installation and maintenance
■ Software support

Availability
■ Now

Contacts

Ungermann-Bass, Inc.   Tel: (408) 494-0111
3900 Freedom Circle
P.O. Box 58030
Santa Clara, CA 95052-8030

**Wellfleet
Communi-
cations**

*Wellfleet FDDI
Multiprotocol
Router/Bridge*

General Description

The Wellfleet Link Node (LN) and Concentrator Node (CN) internet-working products provide high performance, Ethernet, Token Ring, and FDDI connectivity to meet an organization's enterprise-wide LAN inter-connect requirements. Multiprotocol router and bridge services are pro-vided within a single high performance platform that provides both Local Area Network (LAN) to LAN and LAN to Wide Area Network (WAN) connectivity.

The Wellfleet FDDI Intelligent Link Interface (ILI) module fits within an existing Link Node and Concentrator Node chassis, providing simplified migration to FDDI as required by the organization. The FDDI ILI is de-signed as a three board set which includes an FDDI Controller, supporting the Physical and Media Access Control (MAC) layer services, a Fiber Op-tics Interface Board (FOIB), providing the optics interface to the FDDI ring, and a high performance processor to provide full multiprotocol router and simultaneous bridging service. The Wellfleet FDDI interface is fully compliant with the ANSI X3T9.5 FDDI standard.

**Wellfleet
Communi-
cations**

*Wellfleet FDDI
Multiprotocol
Router/Bridge*

Standard Features

■ FDDI-to-Ethernet, FDDI-to-Token Ring, and FDDI-to-FDDI and FDDI-to-wide area within a single, expandable, internetworking platform

■ Multiprotocol Routing (TCP/IP, DECnet, XNS, IPX, AppleTalk) with simultaneous bridging

■ Sustained high performance regardless of number of network links and number of network protocols

■ Local (LAN to LAN) and Remote (LAN to WAN) connectivity

■ RS232/V.35/RS449, X.25, and T1/E1 framed service for cost effective WAN connections

■ Simplified network migration to FDDI with module add-on to existing LN and CN products

■ LN product expandable to 1 FDDI with 4 LAN/4 WAN interfaces

■ CN product expandable to 2 FDDI with 18 LAN/18 WAN interfaces

■ Local and remote management via local console and remote telnet sessions

■ Central, standards-based SNMP-Network Management System

■ Full conformance to ANSI X3T9.5 FDDI standard

Support

■ 24 hour by 7 day technical telephone assistance

■ 8 a.m. to 8 p.m. dial-in diagnostic evaluation (dial modem access)

■ 8 a.m. to 6 p.m. help desk configuration and applications assistance

■ Next business day hardware replacement parts

■ Software subscription service

■ On-site installation and integration services

■ Comprehensive training and documentation

Availability

■ Third Quarter, 1990

Contacts

Wellfleet Communications
15 Crosby Dr.
Bedford, MA 01730
Tel: (617) 275-2400

Codenoll Technology Corporation

CodeNet®-9500 Series FDDI/EISA Network Interface Cards

General Description

The CodeNet-9500 Series Network Interface Card (NIC) connects an EISA bus computer to a CodeNet 100 megabit-per-second FDDI (Fiber Distributed Data Interface) network. The CodeNet-9500 NIC provides single attachment to a single FDDI ring type network. A single attach card can be upgraded to a dual attach at any time by the user. The CodeNet-9503 NIC provides dual attachment to a dual FDDI ring type network.

These NICs conform to ISO-9384 and ANSI-X3T9.5 published standards for FDDI, and provide full 100 megabit-per-second network performance for any EISA bus computer.

The CodeNet-9500 Series occupies a single expansion slot in the EISA computer and provides a direct interface to standard duplex multimode fiber optic cable. Each NIC in the 9500 Series uses bus mastering technology to control the computer system's bus during network to system data transfers, leaving the computer free to perform other tasks. Network performance of 386- and 486-based computers is thus maximized by both the speed of FDDI and the improved performance of the computer. Installation consists of inserting the card into one of the computer's expansion slots and plugging the fiber optic cable directly into the NIC.
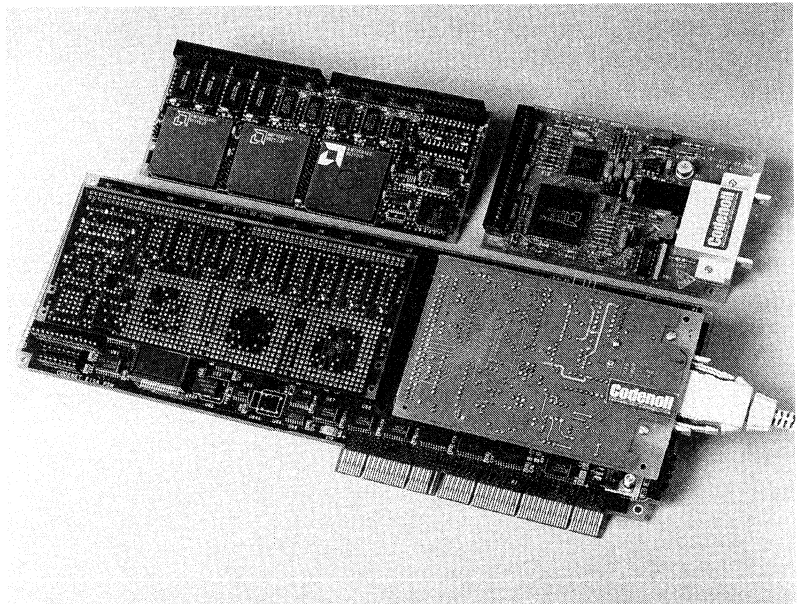
Codenoll Technology Corporation

CodeNet®-9500 Series FDDI/EISA Network Interface Cards

Standard Features

- Full 100 Mbps FDDI functionality
- Conforms to ISO and ANSI FDDI standards
- Uses AMD's SUPERNET™ chip set
- Employs bus mastering technology
- Offloads driver functions from system CPU
- Uses a single expansion slot
- Single attach model – CodeNet 9500
- Dual attach model – CodeNet 9503
- Upgrades from single to dual attach on site
- Up to two kilometers between nodes
- Up to 500 nodes per ring
- Network drivers provided by Codenoll
- Supports Netware, LAN Manager, Unix and others
- Supports both servers and workstations
- Standard FDDI (MIC) duplex plug onboard
- Supports 50, 62.5, 85 or 100 micron optical fiber

Optional Features

- Support for ST or SMA fiber optic connectors
- Choice of 50, 62.5, 85 or 100 micron fiber

Support

- Network design, configuration assistance
- Telephone support
- On-site support
- User documentation
- Training courses

Availability

- Fourth quarter, 1990

Contacts

Codenoll Technology Corporation
Customer Support Group
1086 North Broadway
Yonkers, NY 10701

Tel: (914) 965-6300
Fax: (914) 965-9811

Codenoll Technology Corporation

CodeNet®- 9540 Series FDDI/PC Network Interface Cards

General Description

The CodeNet-9540 Series provide simple connection for an ISA bus computer, such as an IBM AT or compatible, to a FDDI network. The card uses the AMD SUPERNET chip set, plugs into a single slot of the PC, and supports most popular network operating environments including: LAN Manager, Novell Netware (all versions), Unix and others.

These NICs conform to ISO-9384 and ANSI-X3T9.5 published standards for FDDI, and provides full 100 megabit-per-second network performance for any ISA bus computer.

CodeNet FDDI interface cards employ a unique modular architecture that provides the user with two separate upgrade paths. If upgrading from an ISA bus computer to an EISA or Micro Channel bus computer, the network interface components contained in two easily unplugged daughter cards, can be removed and plugged into a new computer interface card. If upgrading the PC from a single attachment to a dual attachment, an additional daughter card is added to the interface and the second cable is attached. Either of these upgrades is easily performed by the user on location and the cost savings compared with buying an entirely new interface is significant.
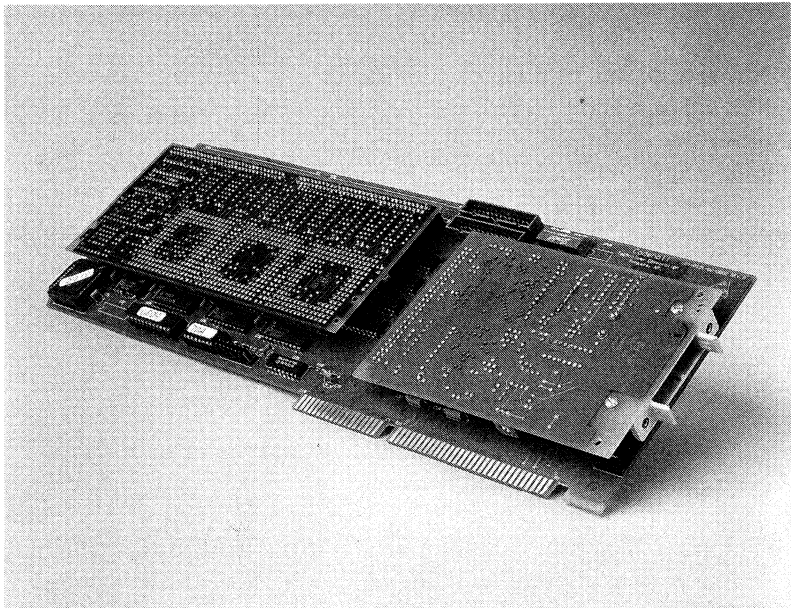
Codenoll
Technology
Corporation

*CodeNet®-
9540 Series
FDDI/PC
Network
Interface
Cards*

Standard Features

- Full 100 Mbps FDDI functionality
- Conforms to ISO and ANSI FDDI standards
- Uses AMD's SUPERNET™ chip set
- Unique modular card architecture
- Single attach mode: CodeNet-9540
- Dual attach mode: CodeNet-9543
- Dual attach model
- Upgrades from ISA (AT) bus computer to EISA or MC
- Network drivers provided by Codenoll
- Supports Netware, LAN Manager, Unix and more
- Supports both servers and workstations
- Standard FDDI (MIC) duplex plug onboard
- Supports 50, 62.5, 85 or 100 micron optical fiber

Optional Features

- Support for ST or SMA fiber optic connectors
- Choice of 50, 62.5, 85 or 100 micron fiber

Support

- Network design and configuration assistance
- Telephone support
- On-site support
- User documentation
- Training courses

Availability

- August, 1990

Contacts

Codenoll Technology
 Corporation
Customer Support Group
1086 North Broadway
Yonkers, NY 10701

Tel: (914) 965-6300
Fax: (914) 965-9811

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Formation, Inc.

FiberNet fv1000 VMEbus-based FDDI Module with Am29000

About the FiberNet fv1000 FDDI Controller

The FiberNet fv1000 is a VMEbus-based Fiber Distributed Data Interface (FDDI) module that is designed for applications that demand high performance. This level of performance is attained because the MAC layer is executed in the hardware; the Am29000 processor runs at high speeds; and the private VME interface allows data transfers at up to 20 Mbytes/sec.

The product consists of two 6U-size VME cards, one of which is AMD's FDDI chip-set and other support circuitry needed to attach this module to the FDDI LAN. The other card consists of the Am29000 processor, running at 25 MHz with two Mbytes 40 ns burst access mode RAM. The card also contains Formation's specialized VME interface.These two cards communicate through a private interface. This allows the user's system to make full use of the VME bandwidth. It also provides the flexibility to connect the processor engine to custom communications interfaces.

Flexibility was a key design criteria for the FiberNet fv1000. Formation makes versions that support single and dual attachment stations. These modules, along with additional VME modules and software, provide the building blocks for assembling advanced systems, such as concentrators. The product complies with and will continue to evolve with the ANSI X3T9.5 draft standard. SMT software as specified in the draft standard is provided with the product.
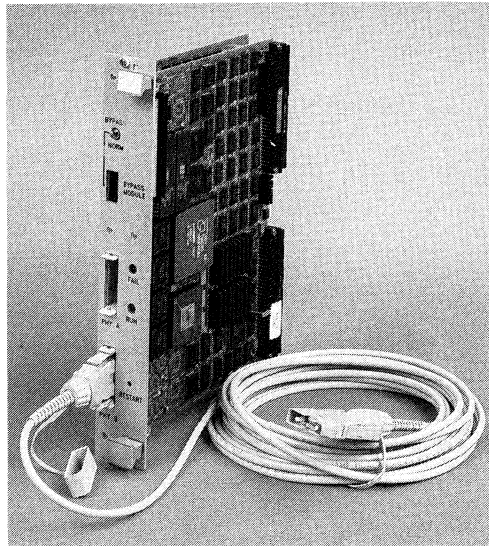
Standard Features

- AMD SUPERNET™ chip-set
- AM29000 RISC CPU at 25 MHz
- 2 Mbyte DRAM
- Single MAC
- Expandable into FDDI concentrator via daisy chain ribbon cable to concentrator expansion ports
- Single or Dual Attachment Station
- 256 Kbyte EPROM, checksum protected
- 256 Kbyte SRAM network traffic buffer memory
- Front Panel Jack for External (optional) Bypass Switch
- Software included:
  - SMT Station Management
  - Real-time Executive VRTX™
  - Self-test diagnostics

Support

- Toll-free phone number to reach experienced product engineers
- Full product-line support
- Timely response to assistance requests, problem/design questions
- Complete in-house manufacturing and repair facilities

Availability

- Subject to completion of ANSI Standard X3T9.5 (SMT)

Formation, Inc.

FiberNet fv1000 VMEbus-based FDDI Module with Am29000

Contacts

Corporate Headquarters:

Formation, Inc.
Attn: Thomas Lynch,
Sales Manager
121 Whittendale Drive
Moorestown, NJ 08057

Tel: (609) 234-5020
(800) 257-0452
Fax: (609) 234-8543

Interphase Corporation

V/FDDI 3211 Falcon

General Description

Interphase Corporation's V/FDDI 3211 Falcon is a high-speed VMEbus node controller for 100-Megabit-per-second Fiber Distributed Data Interface (FDDI) local area networks. One V/FDDI 3211 can be used to implement an FDDI Single Attachment Station, or two can be used in the same VMEbus card cage to implement a dual attachment station.

The V/FDDI 3211 Falcon received "UnixWorld" magazine's Product of the Year designation and was the industry's first 6U VMEbus FDDI solution. The Falcon is manufactured under license from Martin Marietta Corporation.
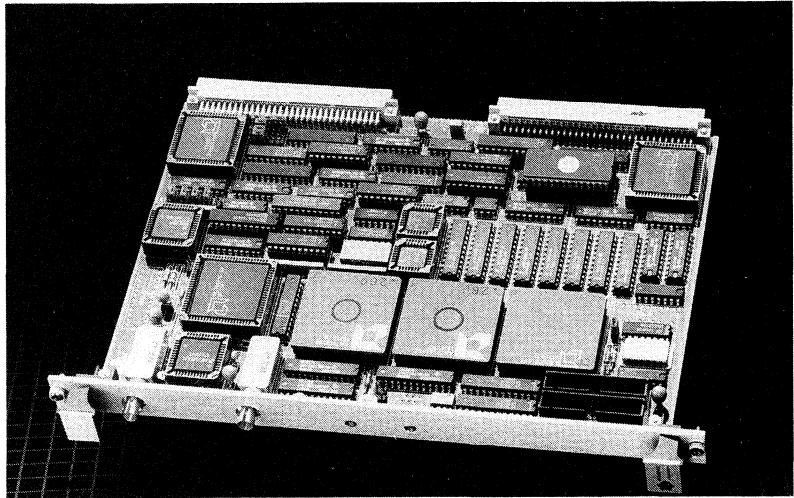
Interphase Corporation

V/FDDI 3211 Falcon

Standard Features

- Based on AMD SUPERNET chip set
- ANSI FDDI compatible
- Standard VMEbus:
  - 6U VME card size:
    Master options: Address 32 or 24 bits, data 32 bits
    Slave options: Address 16 bits, data 16 bits, data 8 bits
    Interrupt options: Seven levels

Optional Features

The 3211 Falcon is available in Interphases's FDDI System Designers' Kit, which includes two 3211 Falcons and everything needed to connect two Sun Microsystems workstations over an FDDI link.

Support

- Access to Customer Support Division and Engineering staff by calling 214/919-9000.

Availability

- Available since September 1989

Contacts

Headquarters:

Interphase Corporation
13800 Senlac
Dallas, TX 75234
Tel: (214) 919-9000
Fax: (214) 919-9200
Contact: Jacob Hsu

European Office:

Astral House
Granville Way
Bicester, Oxon-OX60JT
Tel: (01144) 869-321222
Fax: (01144) 869-247720 #5

Interphase Corporation

V/FDDI 4211 Peregrine

General Description

The RISC-based V/FDDI 4211 Peregrine, with on-board SMT, is a single slot, 6U, single or dual attach node processor for connecting VMEbus computer systems or workstations to a 100-megabit-per-second Fiber Distributed Data Interface (FDDI) network.

The V/FDDI 4211 can be configured to support any application, including the use of FDDI as a local area network or backbone connection. It supports single or dual attached stations, with single or dual MACs. On-board SMT enables the V/FDDI 4211 to handle FDDI network operation and certain management tasks, freeing the host to execute applications.
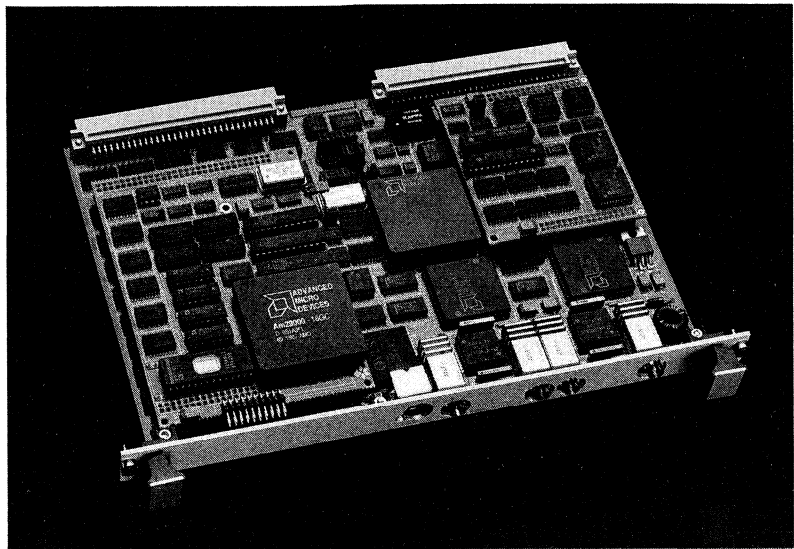
Interphase Corporation

V/FDDI 4211 Peregrine

Standard Features

- Based on AMD SUPERNET chip set
- High speed AM29000 RISC microprocessor
- ANSI X3T9 FDDI compliant
- Single or dual attach
- On-board station management
- Single slot 6U form factor
- 35 MB/s VME BUSpacket Interface

Support

- Access to Customer Support Division and Engineering staff by calling (214) 919-9000.

Availability

- Available now, 30 days ARO

Contacts

Headquarters:

Interphase Corporation
13800 Senlac
Dallas, TX 75234
Tel: (214) 919-9000
Fax: (214) 919-9200
Contact: Jacob Hsu

European Office:

Astral House
Granville Way
Bicester, Oxon-OX60JT
Tel: (01144) 869-321222
Fax: (01144) 869-247720 #5

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Litton Data Systems

Litton LAN

General Description

The Litton LAN provides a survivable data communication system for mission critical shipboard applications. It has sufficient bandwidth to support the combat system as well as other data transmission requirements including machinery control, damage control, navigation, meteorology and logistic planning.

The Litton LAN is compliant with SAFENET II, FDDI and ISO/OSI-RM. It makes use of the AMD FDDI Formac+ chip set and the Am29000 processor, is packaged on two double Eurocards (6U x 160 mm) and supports two fiber optic paths. The card set has a VME interface and will be available in Futurebus+ profile A in the near future.

ISO TP-4, XTP and NTP are implemented on the board. Interface to the card set is by NIIF which provides access to the on-board Transport Layer. The two boards comprising the Litton LAN communicate via private port to minimize backplane bandpass impact.

The Litton LAN is a SAFENET II and FDDI compliant network which meets the requirements of TADSTAND B.

Litton
Data
Systems

Litton LAN
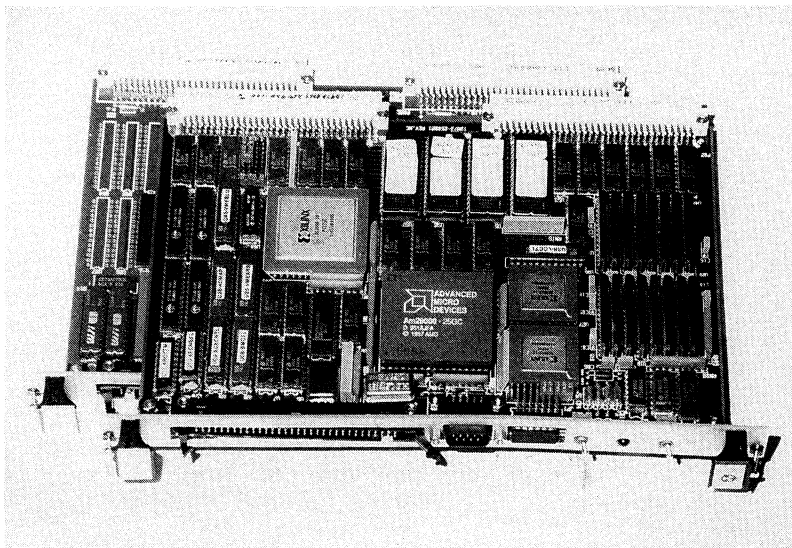
Standard Features

- Formac+ chipset
- Am29000 RISC Processor at 25 MHz
- 2 MByte dual ported VDRAM
- 512 kbyte PROM space
- SAFENET II and FDDI compliant
- 100 MBit/sec data rate
- Two card set - LAN controller and node processor
- Two fiber path support from LAN controller
- TP-4, XTP, NTP and SMT resident in ROM
- NATO Network Independent Interface (NIIF)
- PCM state machine implemented in hardware
- Reconfiguration by TCU, wrap and global hold
- Front panel display of fiber and LAN condition
- Diagnostic and maintenance access via RS-232 port on node processor

Optional Features

- Support for a four fiber attachment to improve survivability
- Card set may be repackaged for other standard profiles and interfaces

Support

- Telephone assistance
- Training courses
- Update services for software and hardware
- Application design assistance

Availability

- VME version - 4th quarter 1990
- Futurebus+ version - 2nd quarter 1991

Contacts

Litton Data Systems   Tel: (601) 935-6210
2810 Old Mobile Highway   Fax: (601) 762-6332
Pascagoula, MS 39567

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ꓛNELAN, Ltd.

ONELAN
FAT Card

General Description

The ONELAN FAT card is an IBM/AT adapter card for FDDI. It is based on AMD's SUPERNET chip set and provides a connection from an IBM/AT computer to either a single or dual fiber FDDI ring at minimum cost.

Available with cabling, hardware details and software, the FAT card is a minimum cost method of achieving a 'leg up' into FDDI technology.

The board occupies a single IBM/AT slot and functions entirely as a slave on the AT bus for minimum integration problems.

It is provided with a demonstration binary program and support software which allows integrators to construct FDDI related communications products such as intelligent interfaces, routers, bridges and concentrators. The software includes:

- ONESMT
  - Station Management
- ONEK
  - a real time executive
- ONETCP
  - a TCP/IP protocol stack with Telnet and TFTP

All software is available in source form and written in "C".
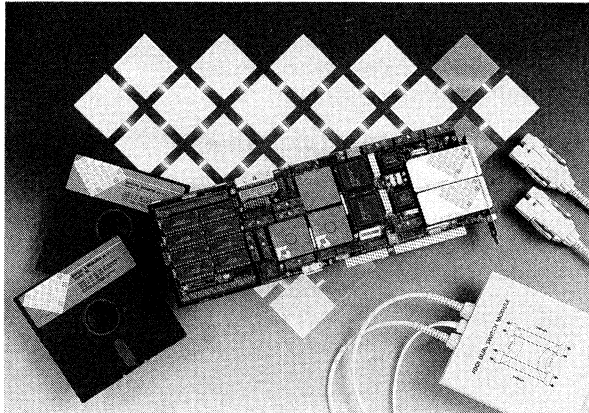
ONELAN, Ltd.

ONELAN
FAT Card

Standard Features

- Single AT bus slot
- AMD SUPERNET Chip set (7 chip set)
- 256 kbytes frame buffer
- DAS (single MAC, dual PHY) or SAS FDDI connection
- FDDI "MIC" connectors
- Low cost COAX option
- Hooks for concentrators
- Hooks for external CAMs
- Hooks for external DMA
- 16 bit AT slave only interface
- Fiber bypass relay support
- 48 bit and 16 bit multicast recognition
- Hardware support for driving software CMT

Software Support

- ONESMT
- ONEK – Real time executive with direct DOS interface
- ONETCP – TCP/IP protocol stack with Telnet, TFTP, PING
- FDDI encapsulation as per RFC1103
- Source code available in "C"
- Interoperability demonstrated against SUN, IBM Channel Unit, Apollo at Telnet/TCP level
- Software update service
- Hardware support service for SUPERNET implementation available

Availability

From January 1990

Contacts

ONELAN, Ltd.　　　　Tel:　44-734-404859
P.O. Box 107　　　　 Fax:　44-734-404885
Henley on Thames
Oxon, RG9 3NO
United Kingdom

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Rockwell/
CMC

CMC-1055
CMC-1056
Full Through-
put (FXP TM*)*
FDDI
Processors
for VMEbus

General Description

The CMC-1056 Class A Dual Attachment and CMC-1055 Class B Single Attachment FDDI processors offer a fully featured FDDI implementation with the highest performance in the industry. They use CMC's exclusive FXP™ architecture to offload the host and provide FDDI and VMEbus throughput at maximum data transfer rates (up to 100 Mbits/second over FDDI network, greater than 35 MBytes/second VMEbus block burst mode). The AMD SUPERNET™ FDDI chipset is used to efficiently manage the physical and media access functions. The CMC-1050 Series products occupy a single VMEbus slot using a 9U form factor. CMC's fully compliant SMT software and powerful link level driver firmware execute onboard the CMC-1050. Host interface software is provided for SunOS™ and BSD UNIX environments.

Through the FDDI Forerunners Program, CMC is building partnerships with developers to provide the technology and support required to build an FDDI system. The program accelerates the Forerunner's development of a fully-compliant, operational FDDI product by offering advanced software for interfacing with the host, complete tools, documentation, two days training at CMC's Santa Barbara facility, and support.
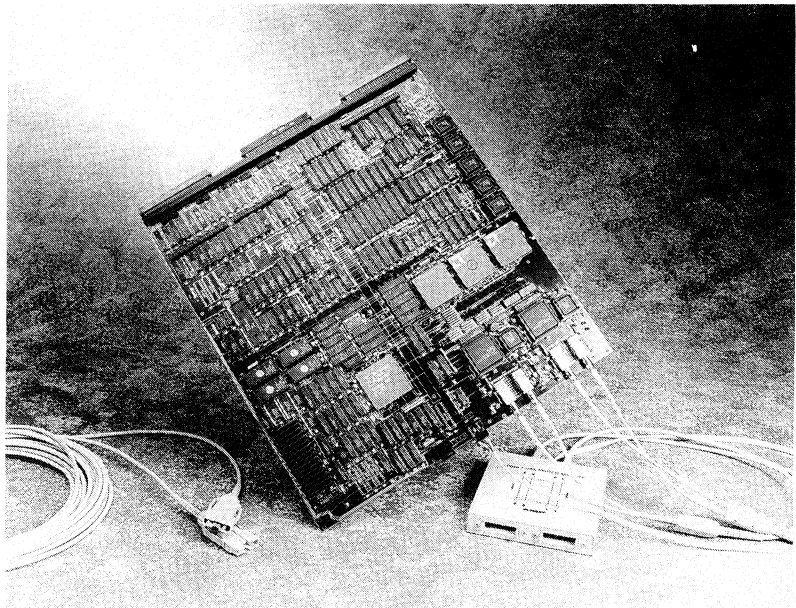
Rockwell/ CMC

*CMC-1055
CMC-1056
Full Through-
put (FXP ™)
FDDI
Processors
for VMEbus*

Standard Features

- AMD SUPERNET FDDI chipset providing LLC interface functions
- Am29000 RISC processor clocked at 25 MHz
- 512 KB zero-wait-state Video DRAM dedicated to MPU for code and stack access without contention from other elements
- 512 to 2048 KB multiport Video DRAM packet memory ensuring fastest possible packet data transfer and high latency tolerance
- 256 KB local frame buffer Static RAM
- 512 KB EPROM containing onboard diagnostics, CMC's exclusive K1 Kernel, and powerful link-level firmware
- High performance 32-bit VMEbus master mode DMA controller specialized for use with front-end communications processors
- Optimized 32-bit VMEbus slave access to packet memory for host-controlled exchanges
- Hardware logic computes TCP data checksum "on-the-fly"

Software Support

- CMC's ANSI X3T9.5-compliant Station Management (SMT)
- Host-resident link-level driver software provided for implementation in SunOS™ 4.1 and 4.3 BSD UNIX environments
- Optional TCP/IP or GOSIP-compliant OSI protocol software executes on board; interfaces to host via STREAMS and BSD Sockets in AT&T UNIX System V Release 3 environments

Support

- FDDI Forerunners Program including two-day, hands-on training class and direct engineering support
- Optional Extended Software Maintenance
- Standard two year hardware warranty

Availability

- Available immediately

Contacts

CMC
A Rockwell International Co.
U.S. Sales
125 Cremona Drive
Santa Barbara, CA 93117
Tel: (805) 968-4262
     (800) 262-8023
Fax: (805) 968-6478

CMC U.K. Ltd.
Central House
3 Lampton Road
Hounslow, Middlesex, England
TWC 1HY
Tel: 44-81-577-2800
Fax: 44-81-572-7716

Schneider & Koch & Co.

SK-Net

General Description

The SK-NET FDDI Board facilitates a direct connection of IBM computers and compatibles to the FDDI optical fiber network for the first time.

The board's circuits have been realized on two boards. The core of the bottom board is the AM29000 processor with video DRAM memories, the bus interface to the AT-bus and the SUP interface to the FDDI SUPER-NET chip set. Of the FDDI chip set only the RAM buffer controller, the data path controller, and the 128 KB RAM buffer are located on this board. An FDDI media access controller as well as two ENDECs and optical transceivers are implemented. It is optional to equip the board as Dual Attachment Station (DAS) for use in a Class A Station or as Single Attachment Station (SAS) for use in a Class B Station.

At the same time, Schneider & Koch is developing a routing software which facilitates the connection of FDDI, Ethernet, and Token Ring LANs. TCP/IP and NetWare packets can be routed. Within the SK-Connectivity strategy UPPS (Universal Portable Protocol Stack), NetBIOS and ISO TP4 will follow.

Schneider & Koch & Co.

SK-NET
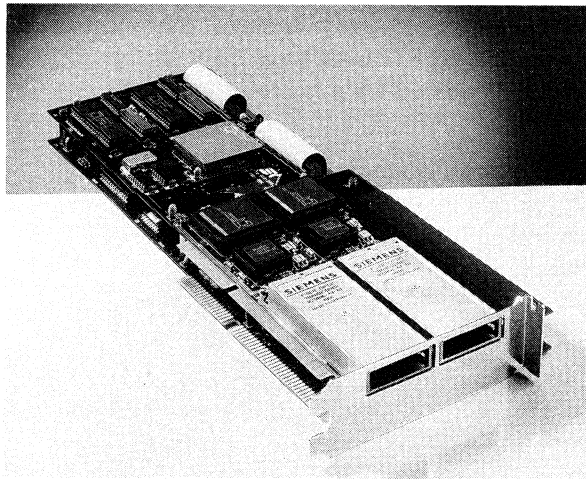
Standard Features

- SUPERNET Chip set
- Am29000 RISC CPU at 20 MHz
- 1 Mbyte VDRAM with burst-mode support
- Full FDDI compliance
- 100 Mbyte optical link interface
- SMT in firmware
- 128 Kbyte static RAM for network controller
- 16-bit AT Bus master interface
- Software programmable AT bus timing
- Both versions available: Class A and Class B

Software Support

- Transport-level software interface with asynchronous I/O
- Berkeley socket emulation
- TCP/IP protocol implementation, including ARP, IP, UDP, TCP, Domain Name System, TELNET, mail, rcp, rsh, FDDI encapsulation per RFC 1042
- ISO TP4 protocol
- C library for DOS environment
- Novell NetWare driver
- Low memory requirement for DOS-resident driver
- Demo driver source

Support

- Hot-line service
- Training courses
- Software update service
- Network installation

Availability

- Third quarter 1990

Contacts

Schneider & Koch & Co.
Datensysteme GmbH
Daimlerstrasse 15
D-7500 Karlsruhe 21
West-Germany
Tel: (721) 7920
Fax: (721) 792 89

Sun Microsystems, Inc.

SunNet FDDI/DX Controller

General Description

The SunNet™ Fiber Distributed Data Interface/Dual Attach (FDDI/DX™) Controller is part of the SunNet family of standard network products designed to expand connectivity through the implementation of industry-standard communication protocols. SunNet FDDI/DX offers an industry-standard network interface for high bandwidth FDDI connections. The American National Standards Institute (ANSI) has developed the Fiber Distributed Data Interface (FDDI) definition, a 100 Mbit/second token ring networking standard based on a fiber optic physical media. Adhering to this definition, SunNet FDDI/DX offers significant capacity improvements over current networking standards. FDDI/DX provides the bandwidth to support many more network applications that can be supported with Ethernet®.

The SunNet FDDI/DX Controller consists of a full-height (9U) VME printed circuit board assembly, driver software, and network monitoring utilities. Together, these components allow the Sun host to interface to the ANSI FDDI dual attachment network and connect to two fiber optic rings for high network availability.

Ethernet will continue to be used in many applications. Any Sun server or deskside workstation that supports FDDI can act as a router between an Ethernet and an FDDI network, through the onboard Ethernet port and the bundled routing software in SunOS™.

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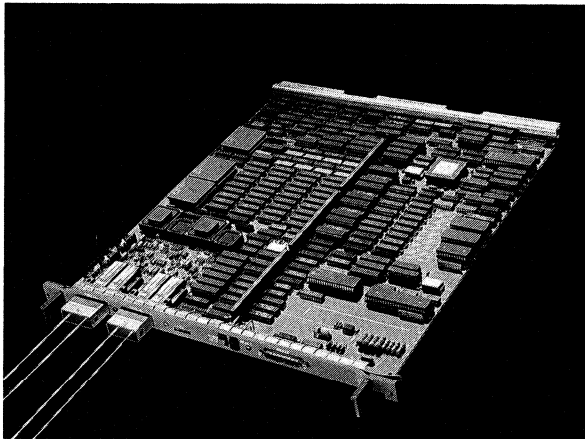
Standard Features

- Supported as both a dual and single attachment device
- Full access to the 100 Mbit/sec network bandwidth
- Onboard MC68020 for flexibility and expandability
- Firmware downloadable for upgrades to the Station Management
- Architected for highly efficient processing of packets
  - DVMA architected for fast VMEbus transfer rates
  - Location monitor for interprocessor interrupts
  - Linked-list buffer memory transfer, allowing multiple packets to be queued for processing at one time, reducing interrupts to the node processor
- Provision for IEEE 48-bit individual addressing and 48-bit group (multicast) addressing
- VMEbus master and slave interfaces allow configuration flexibility
- Extensive built-in test and power-on diagnostics
- Faceplate LEDs for troubleshooting/failure isolation
- VME board for VMEbus in Sun-3™, Sun-4™, or SPARCsystem™ product families
- Easy to install software tape

Support

- Hotline service
- Software upgrade service
- Network planning and installation

Availability

- December, 1989

Sun Microsystems, Inc.

SunNet FDDI/DX Controller

Contacts

Sun Microsystems, Inc.
2550 Garcia Avenue
Mountain View, CA 94043
Tel: (415) 960-1300

Summit Microsystems Corporation

smFD-AT101 FDDI PC/AT Single Attachment Station Interface Card

General Description

The smFD-AT101 is a single MAC, single attachment station (SM-SAS) FDDI interface card, based on AMD's second generation FDDI devices. The card installs in a standard AT slot to connect any PC/AT bus computer to an ANSI standard FDDI network.
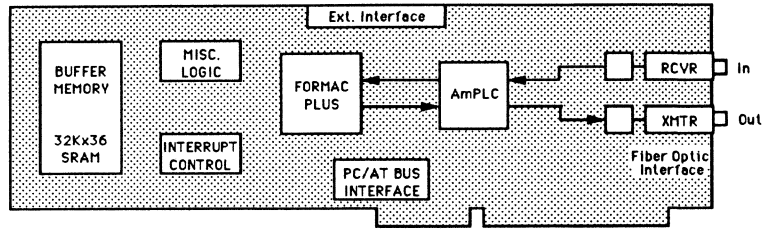
Summit
Microsystems
Corporation

*smFD-AT101
FDDI PC/AT
Single
Attachment
Station (SAS)
Interface Card*

Standard Features

■ Highly integrated single board, uses one AT slot

■ AMD's FORMAC Plus and AmPHY second generation FDDI devices

■ 128K byte SRAM buffer memory with parity

■ Extensive implementation of station management (SMT) services in silicon (including physical connection management (PCM), station insertion and removal, station configuration management and fault detection, isolation and recovery)

■ Protocol independent—operates with all standard protocols and network operating systems

■ Built-in interface for external address matching logic (e.g. CAM)

■ Built-in interface for a concentrator

■ LED status indicator for ring operational

■ Station management (SMT) software and device drivers for on-board resources

Support

■ Customized implementation—hardware design, prototyping and manufacturing services; software development

■ Application notes

■ Software upgrades

■ Technical assistance

Availability

■ Fourth quarter, 1990

Contacts

Summit Microsystems
 Corporation
949 Hillsboro Avenue
Sunnyvale, CA 94087

Tel: (408) 730-4996
Fax: (408) 996-0631

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**Summit
Microsystems
Corporation**

*smFD-AT201
FDDI PC/AT
Dual
Attachment
Station (DAS)
Interface Card*

General Description

The smFD-AT201 is a single MAC, dual attachment station (SM-DAS) FDDI interface card, based on AMD's second generation FDDI devices. The card installs in a standard AT slot to connect any PC/AT bus computer to an ANSI standard FDDI network.

Source code of basic operational software is available to ease development of proprietary software drivers.

Standard Features

■ Highly integrated single board, uses one AT slot

■ AMD's FORMAC Plus and AmPHY second generation FDDI devices

■ 128k byte SRAM buffer memory with parity

■ Extensive implementation of station management (SMT) services in silicon (including physical connection management (PCM), station insertion and removal, station configuration management and fault detection, isolation and recovery)

■ Protocol independent—operates with all standard protocols and network operating systems

■ Built-in interface for external address matching logic (e.g. CAM)

■ Built-in interface for a concentrator

■ LED status indicators for ring operational and port A and port B physical connection

■ Station management (SMT) software and device drivers for on-board resources

Support

■ Customized implementation—hardware design, prototyping and manufacturing services; software development

■ Application notes

■ Software upgrades

■ Technical assistance

Availability

■ Fourth quarter, 1990

Summit Microsystems Corporation

smFD-AT201 FDDI PC/AT Dual Attachment Station (DAS) Interface Card

Contacts

Summit Microsystems Corporation
949 Hillsboro Avenue
Sunnyvale, CA 94087

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Fax: (408) 996-0631

Summit Microsystems Corporation

smFD-AT301 FDDI PC/AT-based Dual Attachment Concentrator Board Set

General Description

The smFD-AT301 is a PC/AT-based, single MAC, dual attachment FDDI concentrator board-set, based on AMD's second generation FDDI devices. The board set consists of two board types: a dual attachment station (DAS) board, and a master ports (MP) board. The basic 2-board set configures a 4-station dual attachment concentrator. By adding additional MP boards, 8-station or 12-station dual attachment concentrators can be configured

DAS CARD

MP CARD

Summit Microsystems Corporation

smFD-AT301 FDDI PC/AT-based Dual Attachment Concentrator Board Set

Standard Features

- Highly integrated: single board DAS, 4 master ports per MP board
- AMD's FORMAC PLUS and AmPLC second generation FDDI devices
- 128K byte SRAM buffer memory with parity
- Extensive implementation of station management (SMT) services in silicon (including physical connection management (PCM), station insertion and removal, station configuration management and fault detection, isolation and recovery)
- Protocol independent—operates with all standard protocols and network operating systems
- Built-in interface for external address matching logic (e.g. CAM)
- LED status indicators for ring operational and for port A , port B, and master ports physical connection
- Station management (SMT) software and device drivers for on-board resources

Support

- Customized implementation—hardware design, prototyping, and manufacturing services; software development
- Application notes
- Software upgrades
- Technical assistance

Availability

Fourth quarter, 1990

Contacts

Summit Microsystems
 Corporation
949 Hillsboro Avenue
Sunnyvale, CA 94087

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Fax: (408) 996-0631
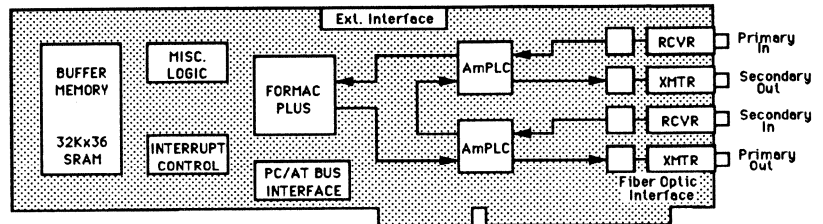
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Summit Microsystems Corporation

sm4k-FD FDDI Address Filtering Accelerator Board

General Description

The sm4k-FD FDDI address matching accelerator is a companion board to Summit's smFD-AT FDDI interface cards and to AMD's FAST card. The PC/AT plug-in board identifies the message source and destination address on the FDDI network for message forwarding/stripping in a single cycle (<100 nsec).

The heart of the system is a Content Addressable Memory (CAM) array where up to 4,096 node addresses are stored. The CAM allows parallel searching of all stored node addresses against a given 48 bit source or destination address in a single cycle.

Summit Microsystems Corporation

sm4k-FD FDDI Address Filtering Accelerator Board

Standard Features

- Performs address matching operation in FDDI LAN systems in a single 100ns cycle
- Stores up to 4,096 48 bit LAN addresses
- Message 48 bit source and destination addresses are simulataneously compared against all stored addresses. The sm4k-FD responds with a match/no match flag and the address of the CAM word that found an exact match with the input pattern
- Dual bus configuration—Direct access to AMD's FDDI chip set, and Programmable access through the PC/AT bus
- An interlock mechanism arbitrates between the PC/AT bus and the FDDI bus. High speed FIFO memory guaranties data integrity and immediate response to the FDDI bus
- Flexible operation and diagnostic capabilities through software control

Support

- Customized implementation—hardware design, prototyping and manufacturing services
- Application notes
- Software upgrades
- Technical assistance

Availability

Available now. Delivery is within two weeks ARO.

Contacts

Summit Microsystems   Tel: (408) 730-4996
 Corporation   Fax: (408) 996-0631
949 Hillsboro Avenue
Sunnyvale, CA 94087

**Summit
Microsystems
Corporation**

*sm4k-GPX
CAM-based
Address
Filtering
Accelerator
Prototyping
Board*

General Description

The sm4k-FD FDDI address matching accelerator is a companion board to Summit's smFD-AT FDDI interface cards and to AMD's FAST card. The PC/AT plug-in board identifies the message source and destination address on the FDDI network for message forwarding/stripping in a single cycle (<100 nsec).

The heart of the system is a Content Addressable Memory (CAM) array where up to 4,096 node addresses are stored. The CAM allows parallel searching of all stored node addresses against a given 48 bit source or destination address in a single cycle.

PC/AT Bus

PC/AT Bus

Summit Microsystems Corporation

sm4k-GPX CAM-based Address Filtering Accelerator Prototyping Board

Standard Features

- Performs address matching operation in FDDI LAN systems in a single 100ns cycle
- Stores up to 4,096 48 bit LAN addresses
- Message 48 bit source and destination addresses are simultaneously compared against all stored addresses. The sm4k-FD responds with a match/no match flag and the address of the CAM word that found an exact match with the input pattern
- Dual bus configuration—Direct access to AMD's FDDI chip set, and Programmable access through the PC/AT bus
- An interlock mechanism arbitrates between the PC/AT bus and the FDDI bus. High speed FIFO memory guaranties data integrity and immediate response to the FDDI bus
- Flexible operation and diagnostic capabilities through software control

Support

- Customized implementation—hardware design, prototyping, and manufacturing services
- Application notes
- Software upgrades
- Technical assistance

Availability

Available now. Delivery is within two weeks ARO.

Contacts

Summit Microsystems
Corporation
949 Hillsboro Avenue
Sunnyvale, CA 94087

Tel: (408) 730-4996
Fax: (408) 996-0631

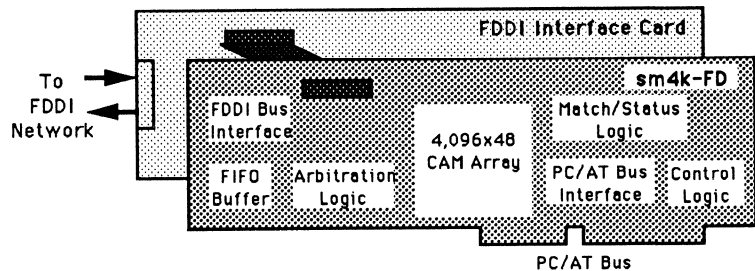## Fibronics International, Inc.

KNET TCP/IP Network Software

General Description

KNET TCP/IP Network Software brings together the resources of the IBM or compatible mainframe with the features and functions of non-IBM workstations, computers, and PCs. By implementing the ARPAnet TCP/IP suite of protocols on the IBM host, KNET opens the mainframe to the many systems that use TCP/IP for their networking. Those include systems from Digital Equipment Corporation, Sun Microsystems, Apollo, Compaq, Hewlett-Packard, Prime, Data General and others.

KNET provides reliable, high-speed, low cost connections through Ethernet and FDDI networks. Working in conjunction with Fibronics network control units, such as the K2000 Ethernet Control Unit and the FX8322 FDDI Control Unit, KNET handles all communication to and from the IBM host.

KNET implements all Standard TCP/IP application services such as FTP, TelNet, SMTP, as well as full screen emulation for 3270 and ASCII terminals. KNET also supports Network File System (NFS), based on Sun Micro Systems implementation.

KNET may also serve as the Network Connection to transport mainframe data base information from companies such as Oracle and Ingres.

Fibronics International, Inc.

KNET TCP/IP Network Software

Standard Features

- Implements the ARPAnet TCP/IP Suite of Protocols on the IBM Host
- Supports Network File System (NFS) for Host/Network file sharing
- Provides Remote Logon (Telnet, File Transfer (FTP), and Electronic Mail (SMTP) services
- Supports subnetworking and multi-homing
- Supports Ethernet, FDDI, and HYPERchannel connections
- Allows application-to-application communication between IBM mainframe and workstations
- No operating systems modifications necessary

Support

- Design
- Installation
- Training
- 24 hour technical service/support

Availability

- Now

Contacts

Fibronics International Inc.
Communications Way
Independence Park
Hyannis, MA 02601-1892
Tel: (508) 778-0700
Telex: 951297
Fax: (508) 778–0821

Fibronics Ltd.
Advanced Technology Center
Haifa 31905, Israel
Tel: 972-4-566-111
Telex: 46857
Fax: 972-4-536360

Fibronics International Inc.
Spartacus Group
1 Lowell Research Center
847 Rogers Street
Lowell, MA 01852
Tel: (508) 937-1600   Fax: (508) 937-0455
Telex: 948513   **119**

N-NET® Corp.

FiberTalk 1000 Network Management System (NMS)

General Description

The FiberTalk 1000 Network Management System (NMS) is part of IN-NET's FiberTalk range of FDDI based networking products, providing a complete network management and control solution. The NMS offers central point network management and control services that monitor, control and regulate all aspects of a complex network.

The FiberTalk 1000 NMS operates on a color IBM or compatible PC platform. No special or custom cards are required in the PC. A keyboard or mouse interface provides for effortless operation of the system, while a printer can be attached to produce 24-hour, hard copy reports related to the network and the network stations. All messages and reports are time and date stamped for unattended operation.

The FiberTalk 1000 NMS is based on the NMS software package—a product of IN-NET's design philosophy to provide a simple, easy-to-use software interface that visually provides network status information. The NMS software operates under the latest technology of the OS/2™ operating system—making full use of the multi-tasking features that allow several concurrent tasks to run while providing the user with up-to-date information on the network.

The versatility of the FiberTalk 1000 NMS enables an IN-NET FDDI station to be used as the central NMS operator station while managing all IN-NET products resident on the high-speed FDDI fiber optic ring.

IN-NET® Corp.

*FiberTalk 1000
Network
Management
System (NMS)*

Standard Features

- Centralized local and remote management of the network and all attached stations
- Easy to understand color graphic display
- Menu driven configurations with pull down windows to provide easy selection and execution of network operations
- Multi-level passwords to protect vital network resources from unauthorized use
- Fault management including network status and error reporting
- Local and remote diagnostics for unattended operation.

Support

- Full service and support program
- One year factory warranty

Availability

- Now

Contacts

IN-NET Corp.   Tel: (800) 283-FDDI
15150 Avenue of Science   Fax: (619) 487-3697
San Diego, CA 92128-3495

Synernetics, Inc.

Component SMT ™

General Description

Component SMT is a complete Station Management (SMT) solution which you can install quickly and easily into any FDDI design. With Component SMT, you no longer have to expend time developing and verifying industry-standard SMT. This pre-qualified product frees you to focus on adding value to your products.

Component SMT is supplied as a single, invariant block of executable code. It has clear, stable interfaces which are analogous to the pinout of a VLSI chip. Synernetics' use of a binary core with well-defined interfaces is similar to the approach used with silicon kernels for real-time operating systems. To adapt Component SMT to your target environment, you develop interface packages between Component SMT and the operating system, the FDDI driver, and optional network management applications. Interface packages translate the semantics of Component SMT to those used by your system. These interface packages typically do not require modification for new releases of Component SMT, making updates "plug and play."

By providing SMT in a "component" format, Synernetics ensures that it will be interoperable and standards compatible in equipment from a variety of manufacturers. Since Component SMT is executed "as is" in your system, the extensive testing done by Synernetics applies directly to your product. If the binary core does not meet our specifications in your system, then Synernetics will fix it. At the same time, the interfaces to Component SMT provide the hooks necessary for you to exploit SMT's full functionality to add value to your product. Although Component SMT is designed such that source code is not required, it is available if necessary through a license agreement or escrow service.

Component SMT supports all FDDI station configurations. It efficiently delivers the FDDI standard's full potential while requiring only minimum processing power, hardware support, and operating system services.

Synernetics, Inc.

Component SMT

Optional Features

- Source code escrow service
- Source code
- Completed integration with a target system

Hosts Supported

- Advanced Micro Devices 29K Family
- Motorola 680x0 Family
- Intel 80x89/6 Family
- Intel 80960
- Others to be added

Technical Support

- Example interface packages
- Verification program for interface packages
- System-level SMT tester
- Telephone consulting package
- Complete integrations into target systems
- Annual maintenance agreement

Availability

- Now

Contacts

Synernetics, Inc.   Tel: (508) 670-9009
85 Rangeway Road   Fax: (508) 670-9015
North Billerica, MA 01862

XLNT
Designs, Inc.

XLNT
Manager ™

General Description

All Fiber Distributed Data Interface (FDDI) implementations must include the functions required by the Station Management (SMT) standard. Of the four documents defining basic FDDI functions, only SMT remains as a draft proposed standard. Implementors can reduce risk, time to market, and development costs with XLNT Manager™, XDI's Station Management software package.

XDI offers licenses for Station Management software source code to FDDI equipment implementors and users with terms to meet the differing requirements of original equipment manufacturers, system integrators, and value-added resellers. At press time, the current release of XLNT Manager implements the Draft Proposed American National Standard for Fiber Distributed Data Interface, Station Management, Revision 6.2 (contact XDI for information on the current release). Future releases of XLNT Manager will implement subsequent revisions of the standard. The highly modular software includes three major components: Connection Services, Frame Services, and Management Services.
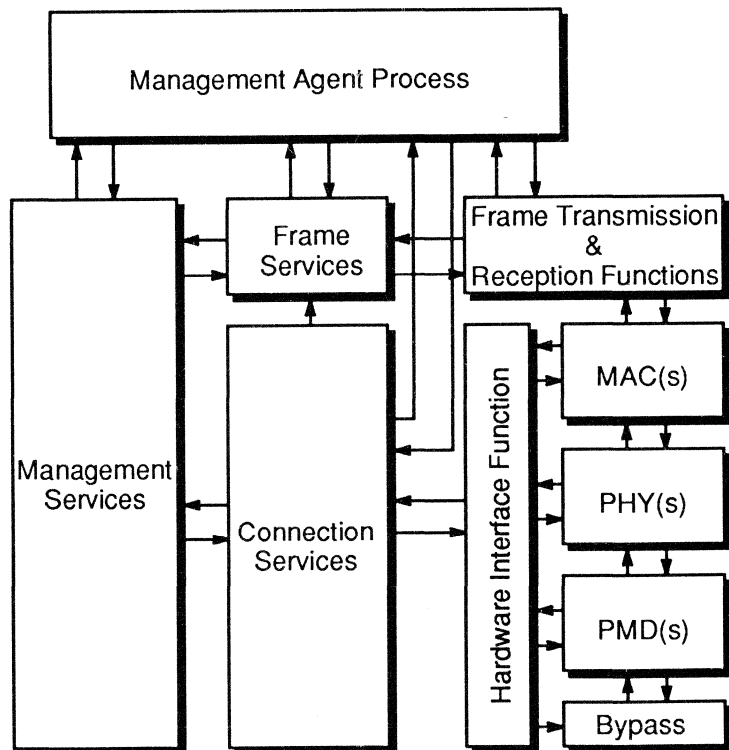
XLNT
Designs, Inc.

XLNT
Manager ™

STANDARD FEATURES

- Implements Connection Management, Ring Management and Frame Based Management protocols
- Includes both required and optional SMT functions
- Includes XDI proprietary enhancements
- Operating system independent
- Can be partitioned over multiple processors
- Supports AMD, Motorola, and National chip sets
- Supports single and dual attachment stations and concentrators
- Well documented ANSI standard C
- Source code license
- Options on terms
- Free updates through 1990

SUPPORT

- Experienced engineering support
- Ample documentation
- Maintenance and update service

AVAILABILITY

- Available now
- Contact XDI for release information

Contacts

XLNT Designs, Inc.   Tel: (619) 487-9320
15010 Avenue of Science   Fax: (619) 487-9768
Suite 100
San Diego, CA 92128

AMP
Incorporated

AMP
OPTIMATE
FSD
Connector

General Description

The AMP OPTIMATE FSD connector meets all of the design specifications defined within the FDDI specification for its Media Interface Connector.

It is a two-channel snap-fit connector that combines low loss (0.6 dB typical) with positive side-latch mating, polarization, keying, and fiber strain relief. The fiber ferrules are 2.5 mm ceramic. A rigid protective shroud guards the connector's floating ferrules against damage from mishandling or mismating. Included is a dust cap which protects against contamination and provides for key storage. The simple design of the AMP OPTIMATE FSD Connector allows for termination in the field.

FDDI Networks or any duplex systems are prime applications for this "standard" connector.
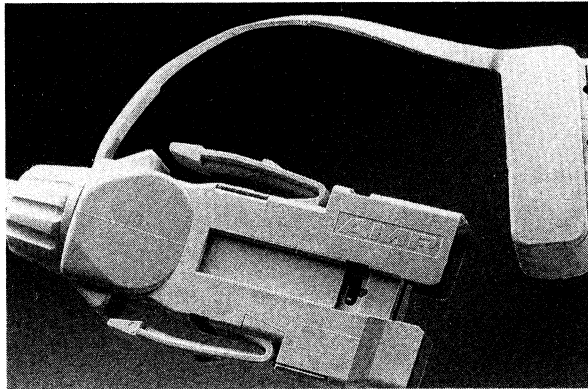
Standard Features

■ FDDI compatible

■ Protective Fixed Shroud Duplex design

■ Uses 2.5 mm ceramic free floating ferrules for low loss (0.6 dB typical)

■ Positive side-latch mating

■ Designed-in polarization and keying

■ Dust cap with key storage

■ Bend-limiting strain relief boot

■ Field installable

Part Numbers

Cable Size (μm)	Cable Type	
	DUALAN	Light Duty Dual
125	501780-1	502015-1
140	501780-2	502015-2

AMP Incorporated

AMP OPTIMATE FSD Connector

Contacts

AMP Incorporated
Harrisburg, PA 17105
Product Information Center:
(1-800) 522-6752

AMP offices are also located throughout Europe, Scandinavia, and the Far East.

AMP
Incorporated

*AMP
Optimate
FSD
Receptacles*

General Description

Two types of AMP FSD Receptacles are available. The bulkhead adapter allows the interconnection of an FSD plug and a 2.5 mm Bayonet (ST style) plug; the duplex-to-duplex coupling assembly provides for the mating of two FSD plugs.
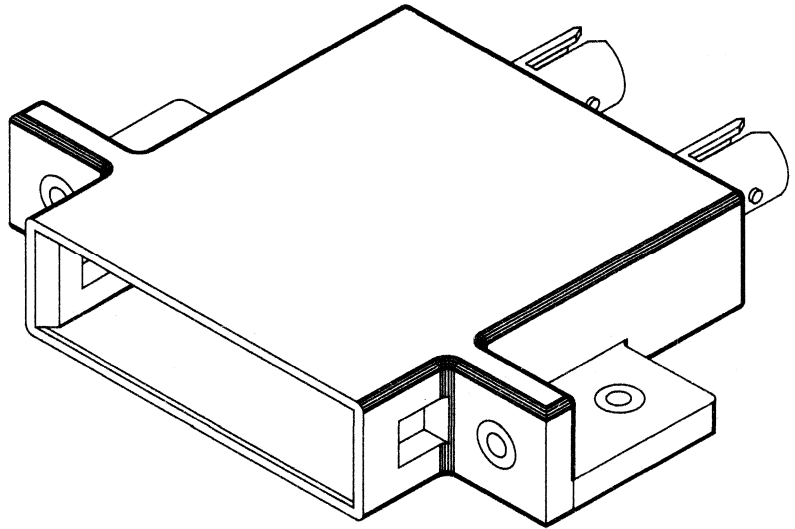
Standard Features

■ Self-aligning, free-floating interface for constant, low-loss mating

■ Conforms to the requirements of the FDDI PMD specification

■ Bulkhead adapter is available in choice of plastic or metal housing

■ Duplex-to-duplex coupling assembly is available with or without mounting ears

Part Numbers

Bulkhead Adapters

Housing Material	Threaded Insert Size	Keying Type			
		A	B	M	S
Plastic	4-40	501798-1	501798-2	501798-3	501798-4
Plastic	M3	501933-1	501933-2	501933-3	501933-4
Zinc	4-40	501799-1	501799-2	501799-3	501799-4
Zinc	M3	501932-1	501932-2	501932-3	501932-4

Duplex-to-Duplex Couplings

Style	Threaded Insert Size	Keying Type	
		A to B	M to S
With mounting ears	4-40	501926-1	501926-2
	M3	501931-1	501931-2
Without mounting ears	—	501805-1	501805-2

AMP Incorporated

*AMP
OPTIMATE
FSD
Receptacles*

Contacts

AMP Incorporated
Harrisburg, PA 17105
Product Information Center:
(1-800) 522-6752

AMP offices are also located throughout Europe, Scandinavia, and the Far East.

**AMP
Incorporated**

*AMP FDDI
Transceiver
Adapters*

General Description

The AMP Transceiver Adapter provides for the interconnection of an FSD connector to an active device—the AMP Transceiver. Its design meets the criteria defined by the FDDI PMD specification and allows for connection to active FDDI ports.

AMP
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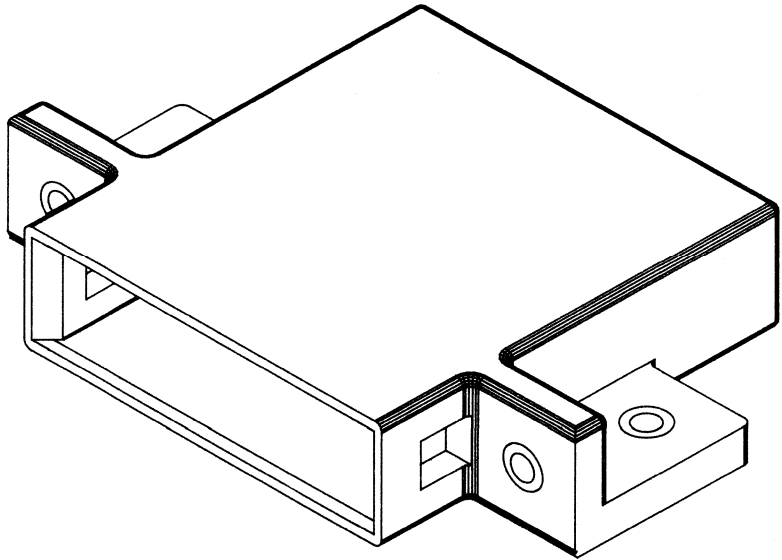
*AMP FDDI
Transceiver
Adapters*

Standard Features

■ Accepts AMP transceivers

■ Available in choice of plastic or metal housing

■ Conforms to the requirements of the FDDI PMD specification

Part Numbers

Bulkhead Adapters

Housing Material	Threaded Insert Size	Keying Type			
		A	B	M	S
Plastic	4-40	501801-1	501801-2	501801-3	501801-4
Plastic	M3	501930-1	501930-2	501930-3	501930-4
Zinc	4-40	501802-1	501802-2	501802-3	501802-4
Zinc	M3	501929-1	501929-2	501929-3	501929-4

Contacts

AMP Incorporated
Harrisburg, PA 17105
Product Information Center:
(1-800) 522-6752

AMP offices are also located throughout Europe, Scandinavia, and the Far East.

AMP
Incorporated

AMP
OPTIMATE
FSD
Wall Outlets

General Description

A number of OPTIMATE FSD Wall Outlets are available. All provide the capability of bringing an FDDI Network or any Duplex System directly to the desktop. Their functionality allows for efficient and organized cable plant design while providing optimum versatility.

The AMP FSD Wall Outlet is a two-position outlet which pops out for easy plug-in and fits flush with the wall when not in use. It is available with or without a 4-inch electrical box, drywall flange, two-ferrule assembly, outlet, and wall plate. Two of these outlets may be installed into a dual gang box.

For interconnection with 2.5 mm Bayonet (ST style) connectors, the OPTIMATE FSD to 2.5 mm Bayonet (ST style) outlet is available. An FSD is inserted in the front of the outlet to mate with a 2.5 mm Bayonet (ST style) connector within the cable plant. It has a spring hinged door which automatically closes when the FSD connector is removed. Two and four port versions are available.

FSD/ACO outlets combine the aforementioned FSD outlets with the AMP Communications Outlet (ACO). The ACO is a flexible communications interface which provides the benefit of one time wiring to the user workstation. It connects virtually any voice or data communications equipment to a variety of popular twisted-pair (shielded or unshielded), coaxial, and, with the FSD inserts, fiber optic cables.

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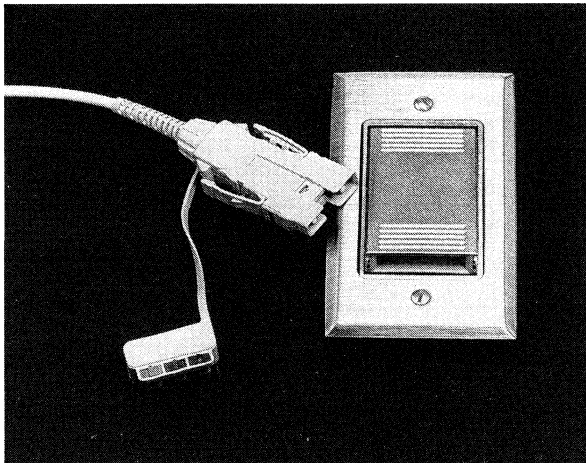
AMP
OPTIMATE
FSD
Wall Outlets

Standard Features

■ Durable construction

■ Low profile

■ Available with or without receptacle box

■ Adaptable assemblies available that allow keying changes to existing outlets

■ Single, 2, and 4 port versions

■ "Pop out" or spring-hinged doors close to prevent the collection of dust and contamination

■ A variety of configurations to meet all application needs and provide maximum flexibility

Part Numbers

FSD Wall Outlet w/Box & Flange	501801-x (dash number depends on keying options)
FSD Wall Outlet w/o Box & Flange	502199-x " "
FSD/ACO Wall Outlet w/o Box & Flange	502334-x " "
Dual FSD Wall Outlet w/Box & Flange	502377-x " "
Dual FSD Wall Outlet w/o Box & Flange	502376-x " "
2 Port FSD Wall Outlet w/Box & Flange	502484-x " "
2 Port FSD Wall Outlet w/o Box & Flange	502486-x " "
4 Port FSD Wall Outlet w/Box & Flange	502485-x " "
4 Port FSD Wall Outlet w/o Box & Flange	502487-x " "
2 Port FSD/ACO Wall Outlet w/Box & Flange	502502-x " "
2 Port FSD/ACO Wall Outlet w/o Box & Flange	502503-x " "
2 Port FSD Wall Outlet w/o Box & Flange w/two 2.5 mm bayonet connector kits (501380-1)	502507-x " "

Contacts

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AMP offices are also located throughout Europe, Scandinavia, and the Far East.

AMP
Incorporated

AMP
OPTIMATE
FDDI Dual
Bypass
Switch

General Description

The AMP FDDI Dual Bypass Switch integrates two fully reversing optical bypass switches in a single unit, allowing for bypassing of nodes on both the primary and secondary rings of a Fiber Distributed Data Interface (FDDI) network. The Physical Layer Medium Dependent Section of the FDDI Specification defines the bypass function as an option to maintain ring integrity in the event that a station experiences a loss of power.

Optical switching is electronically actuated at high speed by slight motion of a pivoting spherical mirror, thereby keeping optical losses to a minimum.

Packaged in a 5-inch W x 5.5 inch L x .93 inch H metal case with AMP OPTIMATE FSD connectors installed, the unit is designed to provide a simple user installable station bypass option when connecting a dual-attached node to an FDDI network. The unit effectively becomes part of the cable plant, allowing the node to be disconnected without disruption of the FDDI rings.

AMP
Incorporated
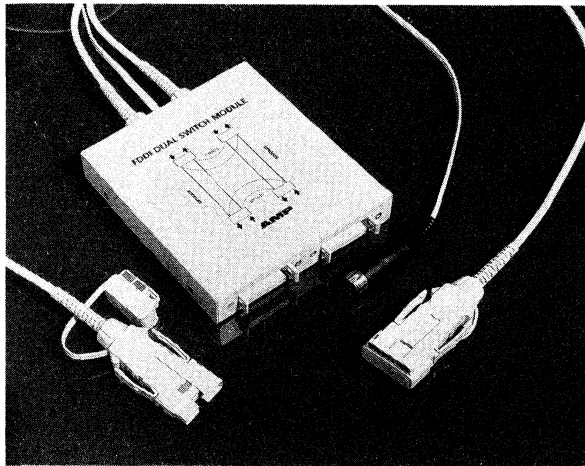
*AMP
OPTIMATE
FDDI Dual
Bypass
Switch*

Standard Features

■ Integrates two bypass switches, fully interconnected per ANSI X3T9.5 PMD specification

■ Fully connectorized with AMP OPTIMATE Fixed Shroud Duplex (FSD) connectors

■ User installable

■ Low optical loss: 1.4 dB mean (includes two half connections under short launch conditions)

■ Fast switching speed (<10 msec.)

Part Numbers

Electrical Connector	Switch Part Number
DIN	501916-2
Modular Plug	501916-3
MTE Receptacle	501916-1

Contacts

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AMP offices are also located throughout Europe, Scandinavia, and the Far East.

**AMP
Incorporated**

*AMP
FDDI
Network
Designers
Kit*

General Description

The AMP FDDI Network Designers Kit is the fast, easy way to construct and evaluate a single-ring FDDI connection. The 125 Mb/s transceiver, which houses both transmitter and receiver circuitry in a single 24-pin module, comes mounted on a PC board. It is socketed for easy removal and replacement.

The transceiver meets all current requirements of ANSI X3T9.5 PMD document. Optical launched power and receiver sensitivity exceed the specification by at least 1 dB. Kits are available for either standard ECL (–5.2 V) or raised ECL (+5 V). Either type requires +5 and –5.2 V supplies.

AMP FDDI-compatible OPTIMATE Fixed Shroud Duplex (FSD) connectors use ceramic ferrules and a floating interface to provide consistent low-loss connections of 0.6 dB (typical). The rugged connectors feature positive side-latch mating, polarization, easy-to-use keying, and bend-limiting strain relief.

A PMD-compatible media interface connector (MIC) receptacle adapts the transceiver for direct plug-in of an FSD connector. A duplex cable assembly, for attaching the transceiver board to test equipment, contains an FSD connector at one end and an ST-compatible 2.5 mm bayonet connector on the other.
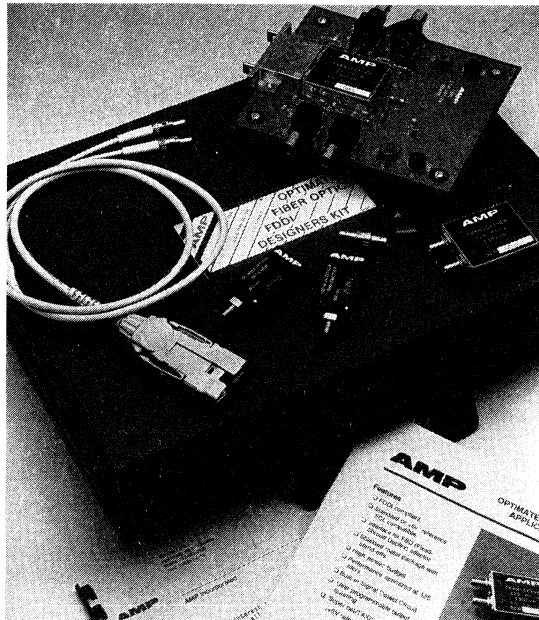
Standard Features

- Provides all components needed to complete single-ring FDDI connection
- Exceeds current Physical Layer Medium Dependent (PMD) performance specifications
- Available with −5.2 V (standard) or +5 V (raised) ECL transceiver
- Compatible with AMD FDDI ENDEC chip
- Allows fast evaluation of AMP FDDI-compatible production parts
- Precise physical alignment for low-loss optical connections

Contains: 125 Mb/s transceiver
PC board
FDDI MIC receptacle
Duplex cable assembly, 1 meter long, terminated on one end
  with OPTIMATE FSD connector and other end with two
  2.5 mm bayonet (ST style) connectors
2.5 mm bayonet coupling bushing
Transceiver Application Note 4661-8

Part Numbers

Kit Description	Part Number
Standard (−5.2 V) ECL Logic	501953-1
Raised (+5 V) ECL Logic	501954-1

AMP Incorporated

AMP FDDI Network Designers Kit

Contacts

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AMP offices are also located throughout Europe, Scandinavia, and the Far East.

AMP
Incorporated

AMP
High Density
Patch Panels

General Description

AMP High Density Patch Panels are capable of handling 48 FSD to 96 2.5 mm Bayonet (ST style) couplers. This is achieved in a panel height of less than seven inches. A hinged mounting bracket allows for easy access on the 96 port version of the patch panel. The panels may be purchased fully loaded or in component form, allowing for interconnects to be done in increments of six. The back end tray lends itself to cable support.
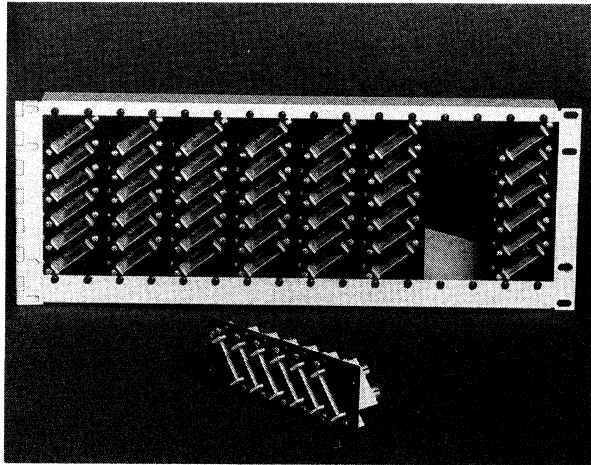
Standard Features

■ Hinged mounting bracket on the 96 port patch panel allows for easy access

■ Available in three versions:

- 16 port FSD to 36 port 2.5 mm bayonet (ST style)
- 48 port FSD to 96 port 2.5 mm bayonet (ST style)
- 48 port FSD to 96 port 2.5 mm bayonet (ST style), fully loaded

■ Back end tray adds support to cable

■ 48 port FSD to 96 port 2.5 mm bayonet version available in office beige enamel finish

■ 16 port FSD to 36 port 2.5 mm bayonet version available in blue enamel finish

Part Numbers

Description	Part Number
16 port FSD to 36 port 2.5 mm bayonet	502521-1
48 port FSD to 96 port 2.5 mm bayonet	502498-1
48 port FSD to 2.5 mm bayonet patch panel assembly pends	502499-x (dash number de- on keying option)

AMP
Incorporated

AMP
High Density
Patch Panels

Contacts

**AMP
Incorporated**

*AMP
OPTIMATE
FSD
Patch Panels
Inserts*

General Description

AMP OPTIMATE FSD Patch Panel Inserts attach to a variety of enclosures to provide wiring closet and cable plant organization. 6-Pack Panel Assemblies are available in an FSD to 2.5 mm Bayonet (ST style) version which allows six duplex connections. 4-Pack Panel Assemblies are available in two FSD versions: FSD to 2.5 mm Bayonet (ST style) and FSD to FSD. Each FSD 4-Pack assembly allows two duplex connections and snaps into AMP wall-mounted and rack-mounted distribution enclosures. (Both 6-pack and 4-pack panel assemblies are available in other standard connector style versions including ST style, FSMA, etc).

The Tri-Pack Adapter holds three bulkhead adapters in a panel that will fit into Siecor enclosures. It provides for the interconnection of FSD connectors to 2.5 mm bayonet (ST style) connectors.
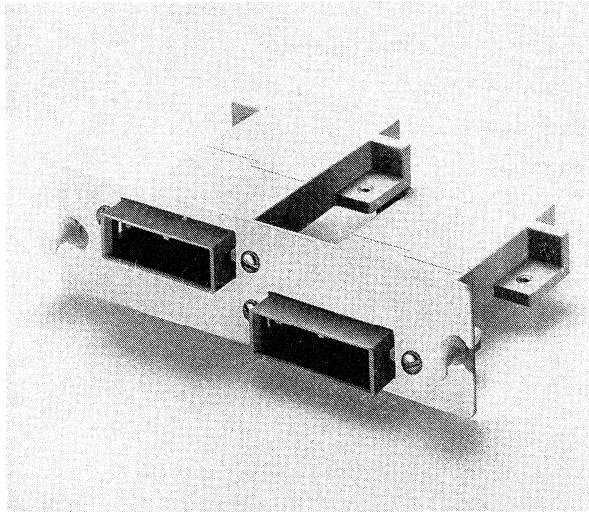
Standard Features

■ Self-aligning, free-floating interface for constant, low-loss mating

■ Allows multiple duplex connections

■ Fits into AMP and other vendors' enclosures and patch panels

Part Numbers

Description	Part Number	
6-Pack Panel Assembly, FSD to 2.5 mm bayonet (ST style)	502497-x	(−1 for A Key; −2 for B Key, −3 for M Key; −4 for S Key)
4-Pack Panel Assembly, FSD to 2.5 mm bayonet (ST style)	502046-x	(−1 for S Key; −2 for A–B Key)
4-Pack Panel Assembly, FSD to FSD	502047-x	(−1 for M–S Key; −2 for A–B Key)
Tri-Pack Adapter	502476-x	(−1 for A Key; −2 for B Key, −3 for M Key; −4 for S Key)

**AMP
Incorporated**

*AMP
OPTIMATE
FSD
Patch Panels
Inserts*

Contacts

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AMP
Incorporated

AMP
Wall-
Mount
Enclosures

General Description

AMP Wall-Mount Enclosures are available in 12, 24, and 48 port versions. (Note that when using the FSD to 2.5 mm bayonet 6-Pack Panel Assemblies, the number of FSD ports is half that of the ST style ports. For example, the 48 port enclosure connects 24 FSD connectors to 48 ST style connectors.) The wall-mount enclosures accept AMP 6-Pack Panel Assemblies. Each has a double-hinged, lockable door which limits access to the cable and splicing chamber. Optionally, splice holders are available for the 12 port enclosures and organizer trays are available for the 24 and 48 port enclosures.
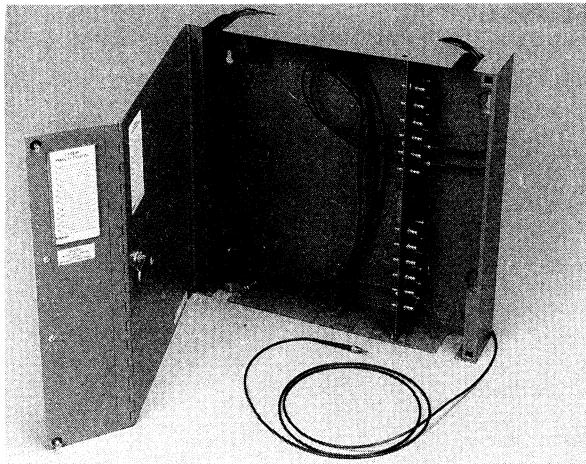
AMP Incorporated

AMP Wall- Mount Enclosures

Standard Features

■ Available in 12, 24, and 48 port versions

■ Double-hinged, lockable door limits access to the cable and splicing chamber (12 port version also available without lock)

■ Optional organizer trays available

■ Blue enamel finish

Part Numbers

Description	Part Number
12 port wall-mount enclosure, with cover	502533-1
12 port wall-mount enclosure, without cover	502533-2
12 port wall-mount enclosure, with lock	502513-1
24 port FSD wall-mount enclosure	502553-1
48 port FSD wall-mount enclosure	502554-1

Contacts

AMP
Incorporated

AMP
Rack-
Mount
Patch Panel
Enclosures

General Description

AMP Rack-Mount Patch Panel Enclosures allow easy access through hinged magnetic doors in both the front and the rear. In addition, they have tie-down bars in the rear with grounding clamps to secure the cables. Identification labels for fiber routing are located on the front and rear of the enclosure, and room is provided in the rear for cable management. These enclosures fit a 19.0 inch rack; bracket extenders are available to fit 23.0 inch telephone equipment racks.

AMP Rack-Mount Patch Panel Enclosures, which use 6-Pack Panel Assemblies, are available in 12, 36, 72, and 144 port versions. (Note that when using the FSD to 2.5 mm bayonet 6-Pack Panel Assemblies, the number of FSD ports is half that of the ST style ports. For example, the 144 port enclosure connects 72 FSD connectors to 144 ST style connectors.)

AMP
Incorporated
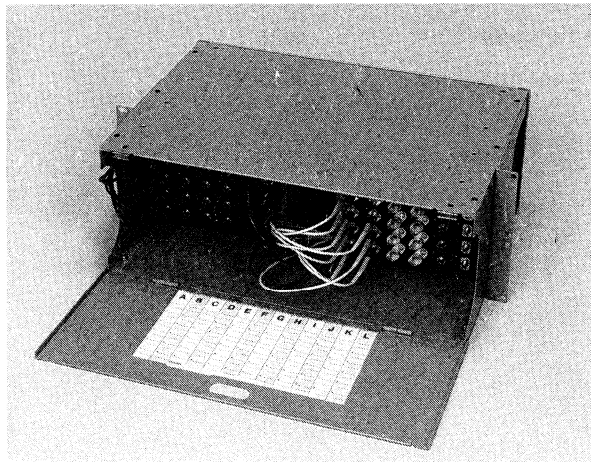
AMP Rack-Mount Patch Panel Enclosures

Standard Features

■ Available in 12, 36, 72, and 144 port versions

■ Front and rear access easily obtained via hinged magnetic doors in front and back

■ Tie-down bars located in the rear with grounding clamps to secure cable

■ Identification labels for fiber routing provided on front and back

■ Fits 19.0 inch rack; bracket extenders are available to fit 23.0 inch telephone equipment rack

■ Blue enamel finish

Part Numbers

Description	Part Number
12 port rack-mount Patch Panel enclosure	502522-1
36 port rack-mount Patch Panel enclosure	502523-1
72 port rack-mount Patch Panel enclosure	502524-1
144 port rack-mount Patch Panel enclosure	502525-1

Contacts

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AMP offices are also located throughout Europe, Scandinavia, and the Far East.

**AMP
Incorporated**

*AMP
Distribution
Enclosures*

General Description

Available in 12, 24, 48, 72, and 144 port versions, AMP Distribution Enclosures include sliding splice trays that can be removed. (Note that when using the FSD to 2.5 mm bayonet 6-Pack Panel Assemblies, the number of FSD ports is half that of the ST style ports. For example, the 144 port enclosure connects 72 FSD connectors to 144 ST style connectors.) The enclosures permit easy access through hinged magnetic doors in both the front and the rear, and they provide ample space to route cable from front to rear without leaving the enclosure. In addition, they have tie-down bars in the rear with grounding clamps to secure the cables.

A distribution enclosure which holds up to nine 4-Pack Panel Assemblies and accepts a splice tray is also available.

AMP
Incorporated
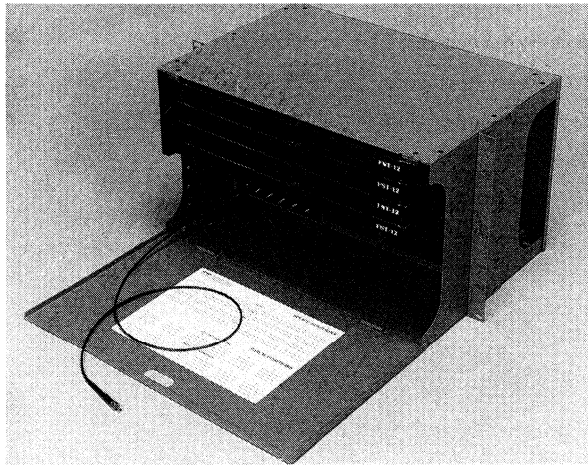
AMP
Distribution
Enclosures

Standard Features

- Available in 12, 24, 48, 72, and 144 port versions that hold 6-Pack Panel Assemblies as well as 36 port version that holds up to nine 4-Pack Panel Assemblies

- Includes removable sliding splice trays (Splice holders must be purchased separately)

- Front and rear access easily obtained via hinged magnetic doors in front and back

- Tie-down bars located in the rear with grounding clamps to secure cable

- Space provided to route cable from front to rear without leaving enclosure

- Blue enamel finish

Part Numbers

Description	Part Number
Uses 6-Pack Panel Assemblies:	
12 port distribution enclosure, including one 12 splice capacity tray	502518-1
24 port distribution enclosure, including one 24 splice capacity tray	502519-1
48 port distribution enclosure, including two 24 splice capacity trays	502520-1
72 port distribution enclosure, including three 24 splice capacity trays	502534-1
144 port distribution enclosure, including six 24 splice capacity trays	502535-1
Uses 4-Pack Panel Assemblies:	
36 port distribution enclosure	501486-1

Contacts

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AMP offices are also located throughout Europe, Scandinavia, and the Far East.

AMP
Incorporated

AMP OPTIMATE Cable Assemblies

General Description

AMP OPTIMATE Cable Assemblies are available with various connector styles and cable types. Shown here are some of the standard FSD and FSD/2.5 mm Bayonet (ST style) cable assemblies. Specialized lengths, connector styles, and cable types can be addressed.

The three cable types listed are DUALAN (DU), Light Duty Dual (LDD), and Plenum cables. DUALAN cable is a heavy duty, dual cable in a round, beige colored jacket. It is suitable for use in office applications where its appearance matches that of typical computer equipment and office furniture. Two fibers in a tight 900 micron buffers are cabled with Kevlar and a PVC jacket. DUALAN cable is OFNR rated and available in a plenum grade (OFNP rated) too. Light Duty Dual is a less expensive cable also suited for office applications. It is cabled with two individual strength members and has either a TPE or PVC jacket. The PVC jacketed cable is OFNR rated. Plenum cables are rated OFNP for use in an air handling space (plenum) without using conduit. It is available in both of the aforementioned cables, DUALAN Plenum (DUP) and Plenum Light Duty Dual (PLDD).

A Breakout Kit (P/N 502020-1) is available to provide rugged protection at the transition between a DUALAN cable and simplex (single fiber) termination (See Cable "H").

AMP
Incorporated

AMP
OPTIMATE
Cable
Assemblies

Standard Features

■ Various connector types—only FSD and FSD/2.5 mm Bayonet (ST style) shown

■ Various cable types and lengths (only standard styles shown)

■ Heavy duty/rugged styles available

■ Easily installed

■ Terminated with quality AMP connectors and manufacturing techniques

■ Fully tested and inspected

Part Numbers

Description Code	Cable Type Code	Part Numbers Length L (m)						
		1	2	3	5	8	10	15
	DU	502121-1	-2	-3	-4	-5	-6	-7
F	DUP	502123-1	-2	-3	-4	-5	-6	-7
	PLDD	502124-1	-2	-3	-4	-5	-6	-7
G	LDD	502122-1	-2	-3	-4	-5	-6	-7
H	DU	501955-3	-4	-5	-2	-	-6	-
	DUP	502126-1	-2	-3	-4	-5	-6	-7
I	LDD	502125-1	-2	-3	-4	-5	-6	-7
J	PLDD	502127-1	-2	-3	-4	-5	-6	-7

Cable size (microns) 62.5/125

Contacts

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AMP Inc., & Lytel Inc.

AMP FSD ™ Transceiver

General Description

This AMP Transceiver contains all of the transmit and receive functions needed to communicate over the FDDI Standard Network. The Electrical interface performance is fully compatible with AMD's SUPERNET chip sets as well as all other standard differential ECL FDDI chip set implementations. This Transceiver is packaged in the popular 22 PIN DIL style, adopted by the industry for full multisourced operability.

The unitized body is manufactured from a high quality engineering polymer. It provides for light weight ease of use, Wave Soldering, and Aqueous Cleaning.

This FDDI Transceiver product is Field Keyable and offers advanced performance and mechanical features not available in alternate multisourced offerings.
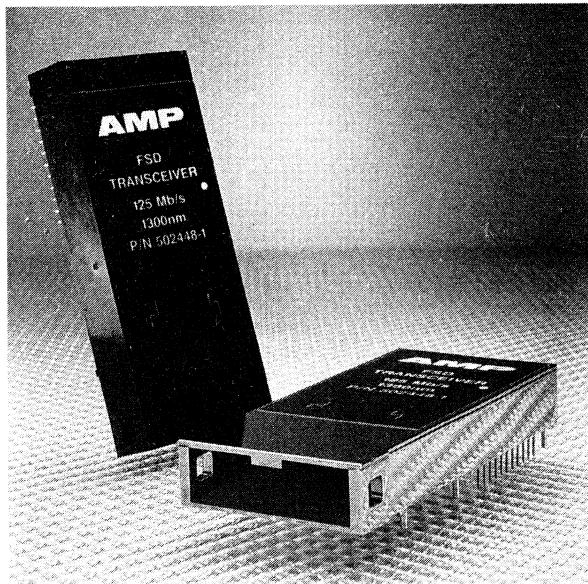
AMP Inc., & Lytel Inc.

AMP FSD ™ *Transceiver*

Standard Features

- 22 PIN multisourced footprint
- Single ±5 V power supply requirement
- Field keyable MIC receptacle
- Wave solderable
- Aqueous cleanable
- 125 Mb/s transmission rate

Special Features

- Ground post board retention mounts
- Temperature stabilized transmitter
- Extended duty cycle receiver
- Enhanced internal supply filtering
- Optional bulk head mounts

Availability

- Now

Contacts

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P.O. Box 3608
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Lytel Incorporated
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AT&T
Micro-
electronics

ODL® 125 &
FDDI Optical
Data Links

General Description

For the FDDI market AT&T offers the *ODL*(R) 125 and FDDI Optical Data Links. The AT&T transmitters consist of a long-wavelength, high-speed LED; a silicon integrated circuit; and several discrete components. The receiver is equipped with a PIN photodetector and includes components similar to those in the transmitter. These modules operate at data rates from 10 Mbits/s to 125 Mbits/s (NRZ) at a typical distance of 3 Km.

The *ODL* 125 *ST*(R) product can be used for an FDDI application because its packaging size offers a great advantage compared to the FDDI MIC receptacle. A typical application for this part is on an interface card.

The *ODL* FDDI Lightwave Data Link is a high-performance link. The transmitter and receiver are housed in connectorized, 16-pin DIPs. They are integrated with an FDDI-compliant, media interface connector (MIC) receptacle.
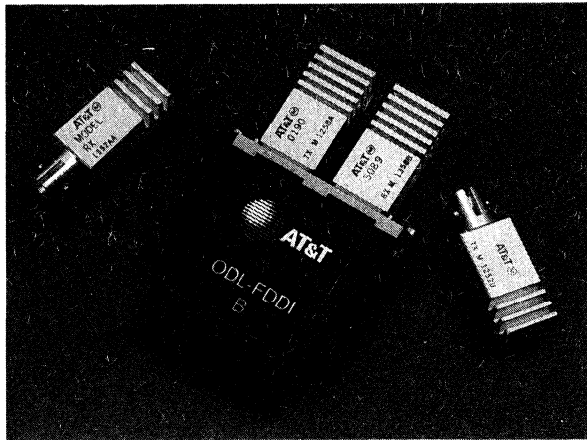
AT&T Micro-electronics

*ODL® 125 &
FDDI Optical
Data Links*

Standard Features
■ FDDI-compliant specification
■ Low power dissipation
■ Signal-detect indicator
■ 100K ECL compatible
■ Single power supply
■ Ambient operating temperature range: 0° C to 70° C
■ 16-pin DIP with FDDI receptacle or $ST^{(R)}$ Connector

Support
■ Training courses
■ Field application support in U.S., Europe, and Japan
■ Hotline service

Availability
■ Now

Contacts

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West Germany
Japan: AT&T
 Microelectronics

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Tel: (1-800) 553-2448 (Canada)

Tel: 089/95086-0

Tel: (03) 5371-2700

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**AT&T
Micro-
electronics**

*1402A &
1403A
Transceiver*

General Description

For the FDDI market AT&T offers the 1402A and 1403A Transceiver. The 1403A Transceiver is packaged with a pin-out identical to that of the *ODL* 125 and *ODL* FDDI (four rows of six pins), allowing for an easy transition from a standard transmitter and receiver to a low-cost transceiver. The 1402A Transceiver is packaged with two rows of 11 pins. The 1403A and 1402A Transceivers feature switchable keying and can be wave-soldered and rinsed. The transceivers are high-performance and cost-effective links. These transceivers operate at data rates from 10 Mbits/s to 125 Mbits/s (NRZ) at a typical distance of 3 Km.
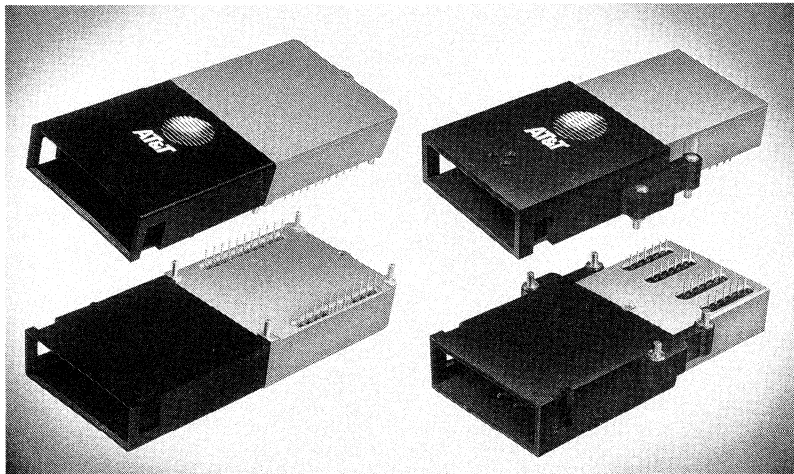
AT&T
Micro-
electronics

1402A &
1403A
Transceiver

Standard Features
■ FDDI-compliant specification

■ Low power dissipation

■ Signal-detect indicator

■ 100K ECL compatible

■ Single power supply

■ Ambient operating temperature range: 0° C to 70° C

■ Selectable keying

Support
■ Training courses

■ Field application support in U.S., Europe, and Japan

■ Hotline service

Availability
■ Now

Contacts

AT&T
Micro-
electronics

9A
Multimode
2X2
Optical
Bypass
Switch

General Description

For the FDDI market, AT&T offers the 9A Multimode 2x2 Optical By-pass Switch which meets FDDI requirements. The moving-mirror switch is one of the smallest of its kind in the market. The high performance and small size of the device are made possible by using a novel switch design. The mirror design offers optimal fiber routing, with loop-in and loop-out on one side of the switch and terminal-in and terminal-out on the other side. The package fits the footprint of a standard 18-pin dual in-line package (DIP) and is readily board-mountable.

AT&T
Micro-
electronics

9A
Multimode
2X2
Optical
Bypass
Switch
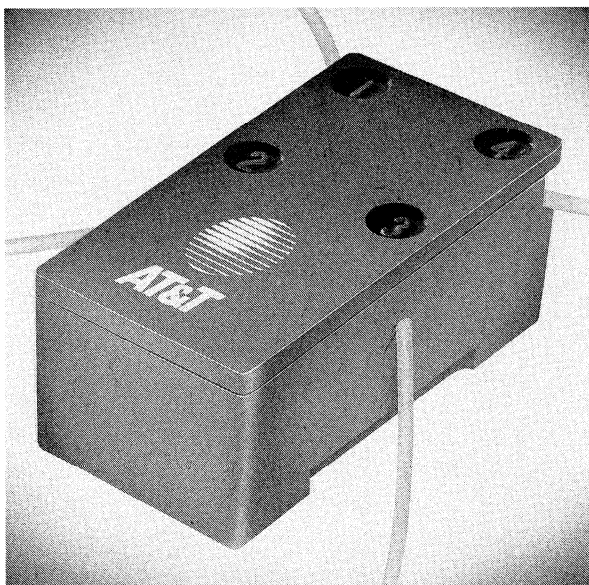
Features
- Small size: 1.046 in. x 0.540 in. x 0.434 in.
- Switching time <10 ms
- Fail-safe return to bypass mode in power-off state
- Low insertion loss
- FDDI compatible
- Board-mountable
- Low power
- High reliability

Support
- Training courses
- Field application support in U.S., Europe, and Japan
- Hotline service

Availability
- Now

Contacts

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Tel: 089/95086-0

Tel: (03) 5371-2700

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**AT&T
Network
Systems**

*FDDI
Connector
Products*

General Description

The AT&T FDDI connector plug meets or exceeds the requirements of the Media Interface Connector (MIC) described in the ANSI X3T9.5 PMD document describing FDDI media components. This means the AT&T connector plug will mate with any other FDDI-compatible connector. The low loss of AT&T FDDI jumpers allows a designer to stretch his FDDI loss budget. The connector's removable shroud* permits easy access to the connector tips to permit proper cleaning. The removable shroud also acts as the key, permitting easy changing of the key in the field.

To complement the AT&T FDDI jumpers, there is a family of products to enable a system designer to quickly and easily design and implement a new FDDI wiring plan or to modify an existing wiring plan to be compatible with FDDI. The FDDI-to-ST® Connector coupling permits easy substitution of an FDDI interface for existing ST Connectors in the "behind the walls" cabling while maintaining FDDI system integrity at the user interface. There are connector panels for AT&T LGX fiber optics distributing frames and AT&T Lightguide Interface Unit (LIU) cross-connect cabinets and work station outlets.

*Patents pending

**AT&T
Network
Systems**

*FDDI
Connector
Products*
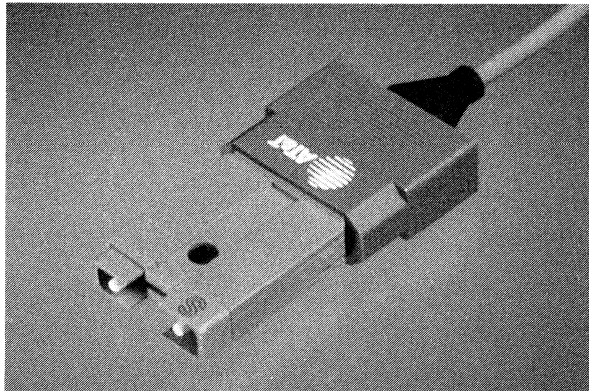
Standard Features
■ Meets X3T9.5 PMD

■ Low loss

■ Removable shroud

■ Field-changeable keys

■ AT&T Systimax™ Premises Distribution System Approved
Components

Product Features/Benefits
■ Removable Fixed Shroud

  – Provides a means of cleaning the tips which is very important in
fiber optics.

■ Polarization

  – The duplex connector allows for polarization of the transmit and
receive ends of the connector.

■ Keying

  – Meets all of the keying requirements of the standard allowing for
removal of equipment from the ring.

■ Designed by AT&T Bell Labs

■ ST assures compatibility

  – Compatibility of products and vendors—increase source of supply.

Support
■ Hot line service

■ Training courses

■ Network installation

Availability
■ Now

Contacts
AT&T
Network Systems
Tel: (1-800) NET-SYST

For Lightguide Fiber Optic Products technical assistance,
please call 1-800-824-1931.

BT&D
Technologies

DLT1000
Transmitter
and
DLR1000
Receiver

General Description

Full FDDI PMD compliant transmitter (DLT1000) and receiver (DLR1000) are featured with 14 pin DIP plastic packages and ST™ connector receptacles. Excellent 18 dB typical loss budgets are attained for 62.5 μm fiber and 17 dB typical for 50 μm fiber.

The DLT1000 Data Link Transmitter converts serial ECL signals to lightwaves in the 1300 nanometer band. It is capable of data rates from DC to 220 Mbits/second. A single +5-volt power supply is required. The DLT1000 will operate with either V_{CC} or V_{ee} grounded and can easily interface with ECL, TTL or CMOS logic families.

The DLR1000 Data Link Receiver converts lightwaves in the 1300 nanometer band to serial ECL signals. Data rates from 1 to 170 Mbits/second are supported. A single +5-volt power supply is required. The assert/de-assert parameters are compliant with the FDDI PMD Standard.

For high reliability and performance a Planar PIN photodiode is used. 18 dB typical loss budget for system through 62.5 μm fiber. 17 dB typical loss budget when used with 50 μm fiber. 14 Pin DIP package, ST receptacle. Evaluation board available.
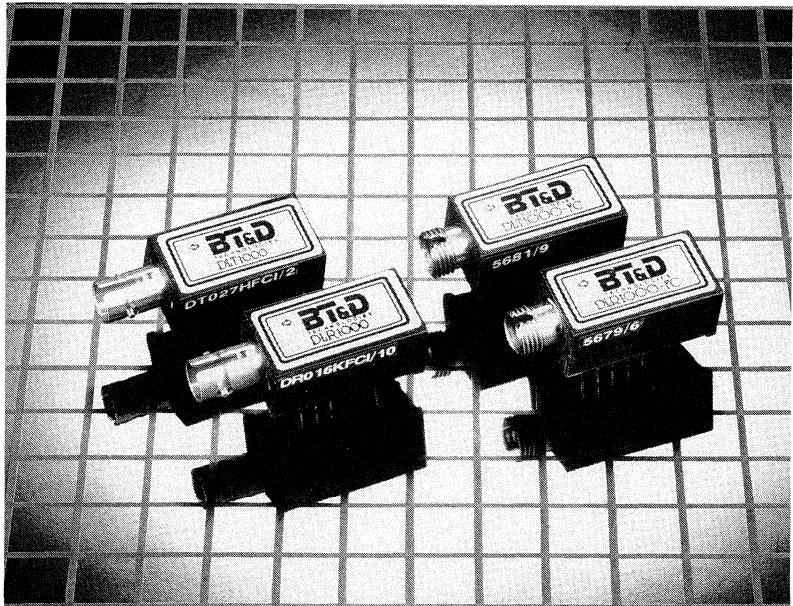
BT&D Technologies

*DLT1000
Transmitter
and
DLR1000
Receiver*

Standard Features

- Full FDDI compliance
- Reliabie 1300 nanometer MOVPE ELED
- Reliable InGaAs/InP Planar MOVPE PIN detector
- Single 5-volt power supply
- Compact ST® connectorized 14-pin DIP package
- High speed to > 170 Mbits/second
- Low power consumption
  - DLT1000: 600 mW typical
  - DLR1000: 400 mW typical
- Transmission distances up to 5 kilometers
- 18 dB typical loss budget for DLT1000/DLR1000 system through 62.5 μm fiber
- 17 dB typical loss budget when used with 50 μm fiber

Applications

- FDDI systems
- Local area networks
- Point-to-point data communications
- Digital television
- Military communications and control systems
- Switching systems

Support

- Applications Engineers
- Regional Account Manager

Available

- Now

Contacts

BT&D Technologies   Tel: (302) 479-9560
2 Righter Pkwy, Ste. 200   Fax: (302) 479-0300
Wilmington, DE 19803

BT&D Technologies

DLT1000-FC Transmitter and DLR1000-FC Receiver

General Description

Full FDDI PMD compliant transmitter (DLT1000-FC) and receiver (DLR1000-FC) are featured with 14 pin DIP plastic packages and FC connector receptacles. Loss budgets of 18 dB are attained on both 50 and 62.5 μm fiber due to the powerful ELED transmitter.

The DLT1000-FC Data Link Transmitter converts serial ECL signals to lightwaves in the 1300 nanometer band. It is capable of data rates from DC to 220 Mbits/second. A single +5-volt power supply is required. The DLT1000-FC will operate with either V_{cc} or V_{ee} grounded and can easily interface ECL, TTL, or CMOS logic families.

The DLR1000-FC Data Link Receiver converts lightwaves in the 1300 nanometer band to serial ECL signals. Data rates from 1 to 170 Mbits/second. A single +5-volt power supply is required. The assert/de-assert parameters are compliant with the FDDI PMD standard.

The planar PIN photodiode detector and high speed ELED emitter are manufactured by the Metal-Organic Vapor Phase Epitaxy (MOVPE) process for high reliability, performance, uniformity and low cost. Evaluation boards are available.

BT&D
Technologies
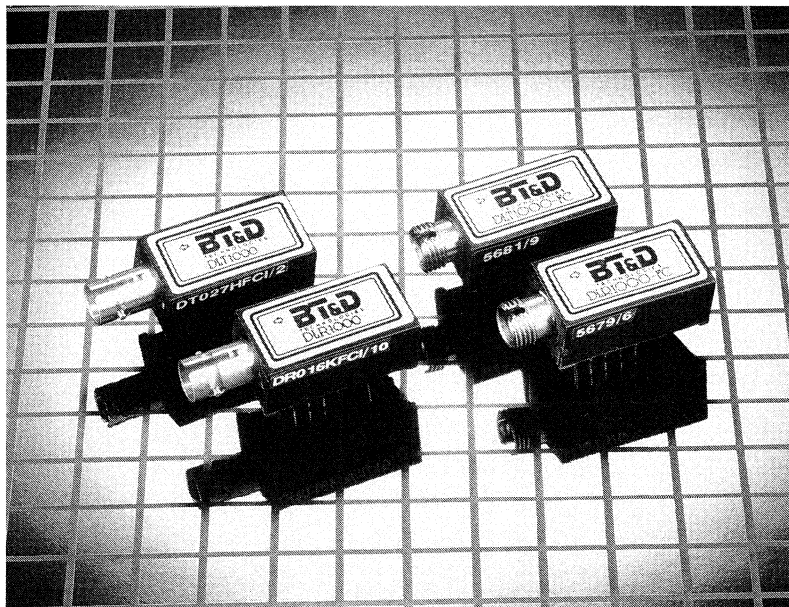
DLT1000-FC
Transmitter
and
DLR1000-FC
Receiver

Standard Features

- Full FDDI compliance specified for 50/125 μm
- Reliable 1300 nanometer MOVPE ELED
- Reliable InGaAs/InP Planar MOVPE PIN detector
- Single +5-volt power supply
- Compact FC connectorized 14-pin DIP package
- High speed to >170 Mbits/second
- Low power consumption
  DLT1000-FC:600 mW typical
  DLR1000-FC: 400 mW typical
- Transmission distance up to 5 kilometers
- 18 dB typical loss budget from DLT1000-FC/DLR1000-FC system
  when used with 50 μm fiber

Applications

- FDDI systems
- Local area networks
- Point-to-point data communications
- Digital television
- Military communications and control systems
- Switching systems
- Intra-office networks

Support

- Applications Engineers
- Regional Account Manager

Availability

- From stock

Contacts

BT&D Technologies   Tel: (302) 479-9560
2 Righter Pkwy, Ste. 200   Fax: (302) 479-0300
Wilmington, DE 19803

BT&D
Technologies

DLT1040
Transmitter
and
DLR1040
Receiver

General Description

Full FDDI PMD compliant DLT1040 Transmitter and the DLR1040 Receiver with an industry standard 16 pin DIP package and ST™ connector receptacles. A 20 dB typical loss budget is attained for 62.5 µm fiber and 19 dB typical for 50 µm fiber.

The DLT1040 Transmitter converts serial pseudo-ECL signals to lightwaves in the 1300 nanometer band. It is capable of data rates from DC to 200 Mbits/second. A single nominal +5-volt power supply is required.

The DLR1040 Receiver converts lightwaves in the 1300 nanometer band to serial pseudo-ECL signals. Data rates from 1-200 Mbits/sec are also supported along with a single +5-volt power supply.

The DLR1040's planar PIN photodiode detector and the DLT1040's high speed ELED emitter are manufactured by the Metal-Organic Vapor Phase Epitaxy (MOVPE) process for high reliability, performance, uniformity and low cost. Evaluation boards are available.

BT&D Technologies

DLT1040 Transmitter and DLR1040 Receiver

Standard Features

- Full FDDI Compliance
- Reliable 1300 nanometer MOVPE ELED
- Reliable InGaAs/InP Planar MOVPE PIN detector
- Single +5-volt power supply
- Compact ST® connectorized 16-pin DIP package
- High speed to 200 Mbits/second
- Low power consumption
- Pin compatible with ODL125®
- 20 dB typical loss budget for DLT1040/DLR1040 system through 62.5 μm fiber
- 19 dB typical loss budget when used with 50 μm fiber.

Applications

- FDDI systems
- Local area networks
- Point-to-point data communications
- Digital television
- Military communications and control systems
- Switching systems
- Intra-office networks

Support

- Applications Engineers
- Regional Account Manager

Availability

- From stock

Contacts

BT&D Technologies   Tel: (302) 479-9560
2 Righter Pkwy, Ste. 200   Fax: (302) 479-0300
Wilmington, DE 19803

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**BT&D
Technologies**

*DLT1101-FC
and
DLT1102-FC
Laser
Transmitter*

General Description

Full FDDI SMF-PMD compliant transmitters (DLT1101-FC) are featured in compact 14 pin DIP packages with FC connector receptacles. These −16 dBm modules are pin compatible with the DLT1000 (multimode/ELED version) for easy interchangeability on PC boards.

An alternate version is available, the DLT1102-FC, which has output power compatible with SONET requirements of −9 dBm and PIN compatible with both other versions.

The DLT1101 and 1102 Laser Transmitters convert serial ECL or TTL signals to lightwaves in the 1300 nanometer band. They are capable of data rates from 50-250 Mbits/second. A single +5-volt power supply is required.

The laser diode emitters are manufactured by the Metal-Organic Vapor Phase Epitaxy (MOVPE) process for high reliability, performance, uniformity and low cost. Evaluation boards are available.
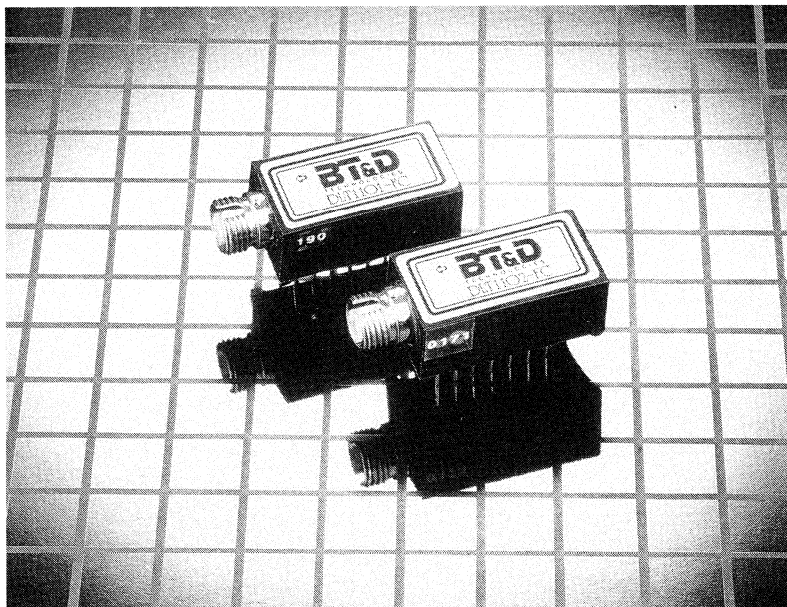
BT&D Technologies

DLT1101-FC and DLT1102-FC Laser Transmitter

Standard Features

- Full FDDI SMF–PMD Category 1 compliance for the DLT1101-FC
- Reliable 1300 nanometer MOVPE Buried heterostructure laser
- Single +5-volt supply
- Compact FC® connectorized 14-pin DIP plastic package
- High speed to 250 Mbits/second
- Low power consumption: 500 mW typical
- Pin compatible with BT&D ELED Transmitters DL1000, DL1103
- Optical Output Power Options
  - DLT1101-FC/–16 dBm (25 µW)
  - DLT1102-FC/–9 dBm (125 µW)
- Compatible with BT&D DLR1000-ST or FC receiver for complete FDDI SMF-PMD

Applications

- FDDI systems
- Local area networks
- Point-to-point communications
- Digital television
- Military communications and control systems
- Switching systems
- Intra-office networks

Support

- Applications Engineers
- Regional Account Managers

Contacts

BT&D Technologies
2 Righter Pkwy, Ste. 200
Wilmington, DE 19803

Tel: (302) 479-9560
Fax: (302) 479-0300

BT&D
Technologies

DLX2000
Transceiver

General Description

Full FDDI PMD compliant Transceiver with a one piece integrated duplex housing for the transmitter, receiver and Media Interface Connector (MIC) receptacle. Introduced in January 1989, the one piece shell arrangement was the first of its kind and solved assembly tolerance problems of separate mounting of receptacles, transmitters, and receiver modules on the PC board without complicated gauges and plugs. Using advanced technology is eliminates noise and cross talk.

The transceiver accepts the industry standard duplex FDDI MIC plug design and has a 4 row electrical footprint with many thousands in service since introduction.

The DLX2000 combines the high speed capability (over 170 Mbits/second), low power consumption (typically less than 1W) and requires a single +5-volt power supply. The device has an 18 dB typical loss budget when used with another DLX2000 through 62.5 μm fiber and 17 dB when used with 50 μm fiber.

The DLX2000's planar PIN photodiode detector and the high speed ELED emitter are manufactured by the Metal-Organic Vapor Phase Epitaxy (MOVPE) process for high reliability, performance, uniformity and low cost. Evaluation boards are available.

**BT&D
Technologies**

*DLX2000
Transceiver*
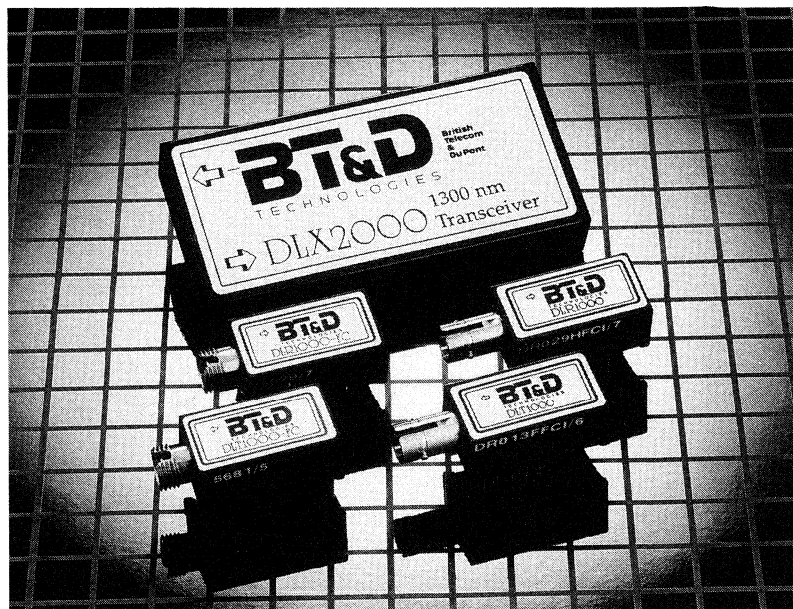
Standard Features

- Full FDDI compliance
- Single piece integrated FDDI transmitter/receiver/duplex receptacle
- Accepts duplex FDDI Media Interface Connector (MIC)
- Board footprint as little as two square inches
- Reliable 1300 nanometer MOVPE ELED and Planar PIN detector
- High speed to >170 MBits/second
- Single +5-volt power supply
- Low power consumption: 1 W typical
- 18 dB typical loss budget when used with another DLX2000 through 62.5 µm fiber
- 17 dB typical loss budget when used with 50 µm fiber

Applications

- FDDI systems
- Local area and metropolitan area networks
- Point-to-point data communications
- Digital television
- Military communications and control systems
- Switching systems
- Intra-office networks

Support

- Applications Engineers
- Regional Account Managers

Contacts

BT&D Technologies   Tel: (302) 479-9560
2 Righter Pkwy, Ste. 200   Fax: (302) 479-0300
Wilmington, DE 19803

BT&D
Technologies

DLX2040
Transceiver

General Description

Full FDDI PMD compliant transceiver, is a one piece integrated duplex housing for transmitter, receiver and Media Interface Connector (MIC) receptacle. This arrangement solves assembly tolerance problems of separate mounting of receptacle, transmitter and receiver modules onto the PC board and, using advanced technology, it eliminates noise and crosstalk.

The transceiver accepts the industry standard duplex FDDI MIC plug design. It is in the 4 row industry standard configuration supported by at least three other suppliers assuring second source availability.

The DLX2040 combines high speed capability (over 170 Mbits/second), low power consumption (typically less than 1W), and requires a single +5-volt power supply. The device has an 18 dB typical loss budget when used with another DLX2040 through 62.5 μm fiber and 17 dB when used with 50 μm fiber.

The DLX2040's planar PIN photodiode detector and the high speed ELED emitter are manufactured by the Metal-Organic Vapor Phase Epitaxy (MOVPE) process for high reliability, performance, uniformity and low cost. Evaluation boards are available.

BT&D
Technologies

DLX2040
Transceiver

Standard Features

- Full FDDI compliance
- Compatible with 4-row industry standard pin-out
- Single piece integrated FDDI transmitter/receiver/duplex receptacle
- Accepts duplex FDDI Media Interface Connector (MIC)
- Board footprint as little as two square inches
- Reliable 1300 nanometer MOVPE ELED and Planar PIN detector
- High speed to > 170 Mbits/second
- Single +5-volt power supply
- Low power consumption: 1 W typical
- 18 dB typical loss budget when used with another DLX2040 through 62.5 μm fiber
- 17 dB typical loss budget when used with 50 μm fiber

Applications

- FDDI systems
- Local area and metropolitan area networks
- Point-to-point data communications
- Digital television
- Military communications and control systems
- Switching systems
- Intra-office networks

Support

- Applications Engineers
- Regional Account Manager

Available

- Now

Contacts

BT&D Technologies   Tel: (302) 479-9560
2 Righter Pkwy, Ste. 200   Fax: (302) 479-0300
Wilmington, DE 19803

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DiCon Fiberoptics, Inc.

Stand Alone Dual Ring 2x2 Switch

General Description

The Stand Alone Dual Ring 2x2 Switch is used for bypassing dual attachment FDDI nodes or concentrators. It is designed for mounting on a wall or within a wiring closet as part of the FDDI cable plant.

The Stand Alone Dual Ring 2x2 Switch is fully FDDI compliant. It can be built with 50, 62.5, 85 or 100 micron fibers. The connectors on the ring-side of the switch are bulkhead FDDI MIC receptacles. Connection to the node is made through pigtailed FDDI MIC plugs, ST, SMA, FC or other connector types.

DiCon
Fiberoptics,
Inc.

*Stand Alone
Dual Ring
2x2 Switch*
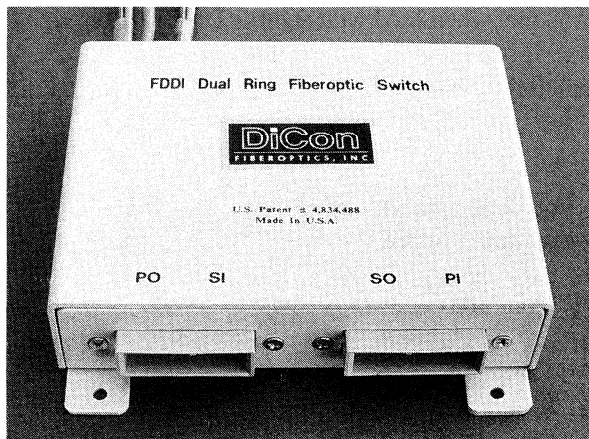
Standard Features

■ Low insertion loss (1.2 dB typical including connectors)

■ Compact stand alone housing

■ Fully FDDI compliant

■ Durability (10,000,000 cycles minimum)

■ Fast 22 msec maximum switching time

Optional Features

■ Loopback loss 3 to 6 dB or as specified

■ ST, MIC, FC connectors or as specified

■ Electrical connectors Mini-DIN, MTE or as specified

Support

■ Engineering support

■ Technical documentation

Availability

In stock

Contacts

Tel: (415) 528-0427
Fax: (415) 528-1519
950-C Gilman Street
Berkeley, CA 94710

DiCon
Fiberoptics,
Inc.

FDDI Optical
Bypass Switch

General Description

The FDDI Optical Bypass Switch is a 2x2 switching component which can be mounted directly on an FDDI controller board or within a separate enclosure. When used singly, it can connect a single attachment station to an FDDI concentrator. When used as a pair, these component-style 2x2 switches can provide direct access to the FDDI dual ring.

The FDDI Optical Bypass Switch is fully FDDI compliant. It features low losses of only 0.45 dB typical without connectors. The switch is actuated by a +5 V DC signal applied to either bottom or side mounted electrical terminals.
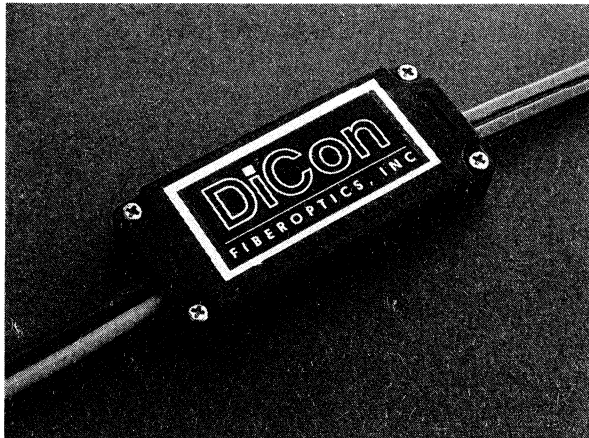
Standard Features

■ Compact component-style switch for printed circuit board mounting

■ Low insertion loss (0.45 dB typical without connectors)

■ Fully FDDI compliant

■ Durability (10,000,000 cycles minimum)

■ Repeatability 0.05 dB

■ Fast 22 msec maximum switching time

Optional Features

■ 50, 62.5, 85 or 100 micron fiber

■ ST, MIC, FC connectors or as specified

■ Electrical connectors can be bottom or side mounted

Support

■ Engineering support

■ Technical documentation

Availability

■ In stock

DiCon Fiberoptics, Inc.

FDDI Optical Bypass Switch

Contacts

Tel: (415) 528-0427
Fax: (415) 528-1519
950-C Gilman Street
Berkeley, CA 94710

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Fibronics
International,
Inc.

FX8410 FDDI
Extender

General Description

The FX8410 FDDI extender increases the nominal distance between FDDI multi-mode fiberoptic stations (0-2 km) to a maximum of 40 km using single-mode fiberoptic medium. The FX8410 enables 100 Mbps Fiber Distributed Data Interface (FDDI) networks to be used in Metropolitan Area Networks (MANS) or in extended campus environment.

The FX8410 is a self-contained unit that accepts the multi-mode fiberoptic medium of a conventional FDDI dual ring network and interfaces to a 8-10 micron single-mode fiberoptic cable plant.

Fibronics International, Inc.

FX8410 FDDI Extender

Standard Features

- Extends distance between FDDI stations up to 40 km
- Converts between FDDI multi-mode to single-mode fiberoptic medium
- Fully compliant with the ANSI Single Mode PMD standard
- Laser optical technology used to drive single-mode fiberoptic medium

Optional Features

- Design
- Installation
- Training
- 24 hour technical service/support

Availability

- Now

Contacts

Fibronics International Inc.
Communications Way
Independence Park
Hyannis, MA 02601-1892
Tel: (508) 778-0700
Telex: 951297
Fax: (508) 778–0821

Fibronics Ltd.
Advanced Technology Center
Haifa 31905, Israel
Tel: 972-4-566-111
Telex: 46857
Fax: 972-4-536360

Fibronics International Inc.
Spartacus Group
1 Lowell Research Center
847 Rogers Street
Lowell, MA 01852
Tel: (508) 937-1600 Fax: (508) 937-0455
Telex: 948513

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FOCS, Inc.

FDDI-CA
Cable
Assemblies

General Description

The FDDI - CA is a product series of fiber optic cable assemblies that interconnect FDDI devices with other FDDI devices, or with fiber optic patch panels configured with either the fixed shroud duplex connector (FSD) or with another industry standard connector. These assemblies are made to custom lengths to ideally fit the users application and are delivered no later than 48 hours ARO.

The FDDI - CA are manufactured with the round FDDI DUALAN cable from AMP, Incorporated which meets or exceeds all FDDI bandwidth, attenuation, and construction specifications. The DUALAN cable is color coordinated to match the FDDI connectors for office aesthetics.

The cable is terminated with AMP Fixed Shroud Duplex (FSD) connectors for connection of two dual attach stations (class A stations). For applications where a class A station must be attached to a patch panel, a jumper cable may be constructed with an FSD on one end and an industry standard connector on the other. This allows the mating of FDDI stations with currently installed cable plants that utilize the ST, Biconic, or other connector.
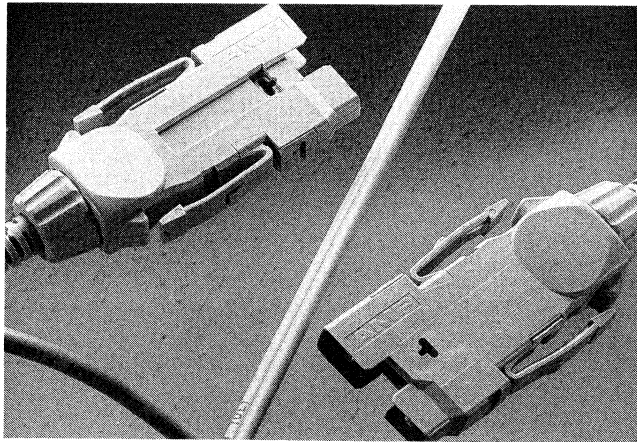
FOCS, Inc.

FDDI-CA Cable Assemblies

Standard Features

- FDDI specified DUALAN, OFN rated cable
- AMP Fixed Shroud Duplex (FSD) ceramic component connectors
- Compatible with all class A, dual attach FDDI stations
- Compatible with other FSD connectors
- Keyed for ease of use
- Manufactured as a jumper from FSD to ST, Biconic or other industry standard connector
- May be manufactured to meet plenum (OFNP) requirements
- Colored keyed to match FSD connector for aesthetics
- Manufactured to custom lengths
- Available 48 hours ARO

Support

- Telephone service for configuration, quotation, technical support
- Fiber optic workshop (4 day training school)
- Field service organization
- Network design/project management services
- Network system hardware sales and system integration

Availability

- Currently available for immediate shipment

Contacts

FOCS, Incorporated   Tel: (508) 757-0611
Cable Assembly Sales Dept.   Fax: (508) 757-0645
93 Grand Street
Worcester, MA 01610

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Fotec, Inc.

T310-FDDI Fiber Optic Test Kit for FDDI Networks

General Description

The Fotec T310-FDDI fiber optic test kit was designed to test all optical parameters of the FDDI fiber optic cable plant (PMD). It includes an LED source to be used with the fiber optic power meter to measure optical loss of completed cable runs, individual cable assemblies and bypass switches. The fiber optic power meter is also used to measure the transmitter output and receiver power levels of the stations to insure proper operation.

The T310-FDDI can be used to verify cable plant performance after installation and to diagnose faults in the network when problems arise.

It is supplied with full operating instructions on FDDI network testing and maintenance and is backed by a toll free applications hotline.

Fotec, Inc.

*T310-FDDI
Fiber Optic
Test Kit for
FDDI Networks*

Standard Features

- Complete fiber optic test capability for FDDI
- Includes all equipment and instructions needed
- Ideal for installation, troubleshooting, and maintenance
- Test cable plant loss, bypass switch operation and station transmit and receive power
- Compatible with FDDI MIC and ST connectors
- Upgradeable for single mode FDDI

Equipment Included

- M210A fiber optic power meter
- S370 Dual LED source 850/1300 nm
- Adapters for ST and FDDI MIC connectors
- FDDI-ST test cables
- FDDI-FDDI and ST-FDDI splice connectors
- Universal launch cable
- Carrying case and instruction manual

Support

- Toll-free applications hotline
- Video and onsite seminars available
- Available locally from major distributors

Ordering Guide

- T310-FDDI FDDI fiber optic test kit
- A115 Upgrade kit for Fotec T310
- S380 laser source for single mode upgrade

Availability

- Now

Contacts

Fotec, Inc.
529 Main Street
Boston, MA 02129

Tel: (800) 537-8254
      (617) 241-7810 (MA)
Fax: (617) 241-8616

Fotec, Inc.

FDDI Cable Plant Test Taps

General Description

The Fotec A175 (multimode) and A170 (single mode) test taps divide the optical power in the fiber optic cable and provide a calibrated point for network testing. They introduce a small known loss in the cable plant, but provide a convenient point for attaching test instruments like optical power meters or BER testers.

By measuring the optical power from the test port of the tap, one can calculate the actual power at the receiver for testing network performance (BER vs. received optical power) or to diagnose system faults for troubleshooting. One can also attach a receiver and examine the actual bit stream without affecting network operation.

Fotec, Inc.

FDDI Cable Plant Test Taps

Standard Features

- Optical taps for monitoring FDDI link performance
- Use for power monitoring, testing bypass switch operation or bit error rate testing
- Insert minimal loss in link, MIC 1 dB
- Available with ST or FDDI connectors

Support

- Compatible with all fiber optic power meters and test receivers
- Calibrated split ratios and insertion loss
- Toll free applications hotline

Ordering Guide

- A170 for single mode fiber
- A175 for multimode fiber
- Specify connector and fiber type when ordering

Available

- From stock to two week delivery

Contacts

Fotec, Inc.
529 Main Street
Boston, MA 02129

Tel: (800) 537-8254
(617) 241-7810 (MA)
Fax: (617) 241-8616

Fotec, Inc.

*FDDI Optical
Loopback
Attenuator*

General Description

The Fotec FDDI loopback attenuators are designed to allow self testing of FDDI stations by providing an optical loopback path between transmitter and receiver. By inserting a calibrated loss, the loopback test (also called a wrap test), one can determine if the fiber optic components of the station are operating properly.

Loopback testing can work in several ways. For single attach stations, one merely loops the transmitter to the receiver. On dual attach stations, the loopback can be done in one MIC (which loops between the two rings) or across two MICs to stay on one ring. The test will be determined by how the station manufacturer has configured loopback testing.

In addition, testing can be done either before or after the bypass switch, but after the bypass switch, one is adding the loss of two bypasses, not one. Thus different loopback loss values may be needed for testing beyond the switches.

Fotec loopback attenuators are available in several standard configurations appropriate for general FDDI usage. In addition, custom OEM versions are available which can be shipped with FDDI stations for end user diagnosis and maintenance.

Fotec, Inc.

FDDI Optical Loopback Attenuator

Standard Features

■ Provides optical loopback path for station self-test

■ Completely independent, requires no other fiber optic test equipment

■ Inserts 11 dB loss, equal to maximum link loss

■ Directly compatible with FDDI MIC

■ Versions for OEM and end user application

■ Versions for stations with/without bypass

■ Options for various fiber sizes, including single mode

Network Support

■ Supports all versions of FDDI PMD, including 62.5/125, 85/125 and single mode fiber

■ Can support nonstandard fibers also, including 50/125 and 100/140

■ Compatible with FDDI MIC or optionally other connectors like ST, Biconic, etc.

■ Calibrated at 1300 nm

Support

■ Toll-free applications hotline

■ Instructions and applications notes provided

Available

■ Standard loopbacks from stock, OEM and custom designs in 4–6 weeks

■ Available through local stocking distributors

Contacts

Fotec, Inc.   Tel: (800) 537-8254
529 Main Street   (617) 241-7810 (MA)
Boston, MA 02129   Fax: (617) 241-8616

Fotec, Inc.

FDDI Fiber Optic Cable Plant Bandwidth Simulation Package

General Description

Fotec's Cable Characterizer software package uses the model of James Refi of AT&T to calculate the bandwidth performance or the fiber in the FDDI cable plant bandwidth. Since the FDDI cable plant bandwidth is determined by chromatic dispersion in the cable plant, the model characterizes the fiber with LED source characteristics which can be specified in the range of typical FDDI LEDs. The program requires inputting the source wavelength and spectral width, the modal dispersion of the fiber (500 MHz minimum for FDDI) and the length of the fiber. It then calculates the 3 dB bandwidth of the fiber link specified.

A Lotus spreadsheet to graph the data is provided. As an option, an inexpensive Fotec A500 spectrum analyzer can be used to characterize actual LEDs.

Fotec, Inc.

*FDDI Fiber
Optic Cable
Plant
Bandwidth
Simulation
Package*

Standard Features

■ Simulates bandwidth performance of cable plant

■ Model covers variations in source and fiber characteristics and cable plant length

■ Optional spectrum analyzer tests source spectral characteristics

■ Runs on IBM PC or compatible

Hardware Requirements

■ PC/XT/AT compatible, 256K

■ MS-DOS 2.0 or higher

■ Lotus 123 for graphics

Support

■ Toll-free applications hotline

■ Applications notes provided

Ordering Guide

■ P500 Cable Characterizer Software

■ A500 Digital Spectrum Analyzer

Availability

■ Now

Contacts

Fotec, Inc.
529 Main Street
Boston, MA 02129

Tel: (800) 537-8254
(617) 241-7810 (MA)
Fax: (617) 241-8616

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Hewlett-Packard Company

HFBR-1125/ 2125

1300 NM FDDI Transmitter and Receiver

General Description

The HFBR-1125/2125 transmitter and receiver pair is the first of a family of FDDI PMD solutions from Hewlett-Packard. These parts are fully characterized and guaranteed to meet the optoelectronic requirements of the FDDI Physical Layer Medium Dependent (PMD) document approved as International Standard for Organization (ISO) Developmental International Standard (DIS) 9314-3.

This transmitter and receiver pair are manufactured in individual 20 pin dual-in-line packages. The small package with a simplex ST* connector port provides flexibility to the FDDI interface designer. This flexibility is particularly useful where there are board space or system packaging constraints that prevent the utilization of FDDI Transceivers with the large duplex FDDI Media Interface Connector (MIC) receptacle and companion MIC plugs.

Hewlett-Packard is a vertically integrated manufacturer. The HFBR-1125/2125 contain a 1300 nm LED and PIN along with three custom bipolar integrated circuits. All of these semiconductors have been developed and are manufactured by Hewlett-Packard. The electrical interface to the transmitter and receiver is Shifted ECL supplied by a single +5 V supply. They are directly compatible with the Advanced Micro Devices FDDI Physical Layer (PHY) solution; Am7984A ENcoder DECoder (ENDEC) and Am7985A ENDEC Data Separator (EDS).

*ST is a registered trademark of AT&T for Lightguide Cable Connectors.

Hewlett-Packard Company

HFBR-1125/ 2125

1300 NM FDDI Transmitter and Receiver

Future Products Under Development

In addition to the HBFR-1125/2125, Hewlett-Packard is developing a FDDI Transceiver which is compliant with the Hewlett-Packard, Siemens and AT&T Multisource Agreement. This product design includes the FDDI PMD MIC/Receptacle in one fully integrated 22 pin dual-in-line package.

Standard Features

■ Guaranteed compliance with FDDI PMD standard performance requirements

■ Single +5 V power supply

■ Shifted ECL logic interface

■ Directly compatible with the AMD Am7984A/Am7985A FDDI PHY solution

■ ST* style port compatible with ST* connector plugs

■ Small outline 20 pin dual-in-line package

Optional Features

■ Optical performance guarantee with 50/125 µm optional FDDI cable plant

Availability

■ Third quarter 1990

Contacts

PCO

FDH-1300-S &
FDH-1300-SA
1300 nm
Transmitter/
Receiver
Module

General Description

The FDH-1300-S Fiber Optic Transmitter and Receiver Data Link Set is designed to meet or exceed all the requirements of the Physical Layer Medium Dependent (PMD) specifications for FDDI.

Highly reliable PCO-manufactured 1300 nm surface-emitting LEDs selected for proper rise/fall time, center wavelength and spectral width are utilized in the Transmitter module. The Receiver incorporates a PCO fabricated InGaAs/InP PIN Photodiode and high speed Transimpedance Amplifier to meet the sensitivity and dynamic range requirements of FDDI. The Transmitter and Receiver modules may be operated on either +5 volt or –5.2 volt power supplies. Both modules features all-metal hermetic hybrid packages for EMI and environmental protection.

PCO

*FDH-1300-S &
FDH-1300-SA
1300 nm
Transmitter/
Receiver
Module*

Standard Features
- Full FDDI compliance
- Single 5 V power supply
- Standard 16 pin footprint
- Hermetic metal package
- 0 to +70° C operating temperature
- Integral ST™ connector coupling
- FDH-1300-SA is pinout compatible with AT&T ODL-125
- Signal detect function
- Differential ECL outputs

Optional Features
- Second sourcing available

Support
- Application notes
- Application hot-line assistance
- Worldwide sales and distribution network
- Custom system integration and design

Availability
- Now

Contacts

Corporate Headquarters

20200 Sunburst St.
Chatsworth, CA 91311
Tel: (818) 700-1233

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PCO

FTR-1300-S1 FDDI Data-Only Transceiver

General Description

The PCO FTR-1300-S1 is a fully compliant Physical Layer Medium Dependent (PMD) fiber optic transceiver for use with FDDI local area networks. Convenient single supply operation, simple direct connection to commercial FDDI chip sets, and secure second sourcing make the FTR-1300-S1 an ideal choice for either single or dual attach station implementation.

Both transmit and receiver functions are contained in a single sturdy metal housing which provides excellent heat dissipation. A Media Interface Connector (MIC) with selectable keying mates with the FDDI duplex cable plug.

The FTR-1300-S1 converts serial differential ECL data to and from 1300 nanometer optical energy using PCO's reliable InGaAsP high performance surface emitting LED and InGaAs PIN photodiode. For applications other than FDDI, the FTR-1300-S1 offers transmission rates over the 1 to 130 Megabaud range for use in a wide variety of point-to-point data link or local area network configurations.

PCO

FTR-1300-S1 FDDI Data-Only Transceiver

Standard Features
- Full FDDI compliance
- 5 V power supply
- Serial differential ECL signal interconnections
- Interfaces directly with AMD SUPERNET™ FDDI Chip set
- Signal detect status output
- Sturdy package with integral FDDI MIC receptacle

Optional Features
- Multiple sourced package and pinouts

Support
- Application notes
- Application hot-line assistance
- Worldwide sales and distribution network
- Custom system integration and design

Availability
- Now

Contacts

Corporate Headquarters

20200 Sunburst St.
Chatsworth, CA 91311
Tel: (818) 700-1233

PCO

FTR-1300-S
FDDI Data-Only
Transceiver

General Description

The FTR-1300-S Transceiver provides a fully compliant Physical Layer Medium Dependent (PMD) fiber optic transceiver for use with FDDI local area networks. Convenient single supply operation, simple direct connection to commercial FDDI chip sets, and secure second sourcing make the FTR-1300-S an ideal choice for either single or dual attach station implementations.

Both transmit and receive functions are contained in a single sturdy metal housing which combines EMI protection with excellent heat dissipation capability. A detachable Media Interface Connector with selectable keying mates with the FDDI duplex cable plug.

The FTR-1300-S transceiver converts serial differential ECL data into 1300 nanometer optical energy, using PCO's reliable InGaAsP high performance surface emitting LEDs and sensitive PIN diodes. For applications other than FDDI, the FTR-1300-S offers transmission rates over the 12.5 to 130 Megabaud range for use in a variety of point-to-point data link or local area network configurations.

PCO

FTR-1300-S FDDI Data-Only Transceiver

Standard Features

- Full FDDI compliance
- Standard +5 V power supply
- Serial differential ECL signal interconnections
- Second sourced by AT&T model ODL™-FDDI
- Integral ST™ connector coupling
- Interfaces directly with AMD SUPERNET™ FDDI Chip set
- Signal detect status function
- Transmit enable control input
- Sturdy package with integral FDDI MIC receptacle

Support

- Application notes
- Application hot-line assistance
- Worldwide sales and distribution network
- Custom system integration and design

Availability

- Now

Contacts

Corporate Headquarters

20200 Sunburst St.
Chatsworth, CA 91311
Tel: (818) 700-1233

Siecor

FDDI
Interconnect
Hardware

General Description

Siecor provides a complete and integrated line of FDDI interconnect hardware. Because of the wide range of innovative and modular products, system installation, reconfiguration, and growth are easily accomplished. Most importantly, Siecor products simplify overall cable plant management.

Siecor provides:

■ FDDI termination/crossconnect panels

■ Splice centers, closures, trays, and mechanical splices

■ FDDI and ST compatible interconnection sleeves

■ FDDI and field installable ST compatible connectors

■ FDDI wall outlets

■ Other cable plant components necessary for FDDI/fiber optic systems

SIECOR
FDDI
Cable Plant

LEGEND:

① = Fiber Distribution Center
   Part No. FDC-001

② = Splice Tray
   Part No. M67-031
   (12 Fiber Splice Capacity)
   Part No. M67-053
   (6 Fiber Splice Capacity)

③ = Mechanical Splice
   Part No. 95-000-04

④ = FDDI — FDDI Interconnect
   Jumper
   Part No. C333302L7123XXX

⑤ = Connector Panel Modules
   Part No. FDC-CP1P-33-X

⑥ = ST Compatible Pigtail
   Part No. J00151A4 - - 00001

⑦ = Field Installable ST Connectors
   Part No. 95-100-01
   (Glass in Ceramic)
   Part No. 95-000-00
   (No Polish)
   Part No. 95-100-21
   (Crimp On)

⑧ = FDC Housing
   Part No. 96-500-03

⑨ = FDDI — ST Jumper
   Part No. C153302L7123XXX

⑩ = Wall Mountable Interconnect
   Center
   Part No. WIC-024
   (24 Fiber Capacity)
   Part No. WIC-001
   (12 Fiber Capacity)

⑪ = Connector Panel Modules
   Part No. WIC-CP1-33-X

⑫ = Wall Outlet
   Part No. UTS-IO

⑬ = Connector Panel Module
   Part No. IO-P-FDDI-X

⑨ DAC = Dual Attachment Concentrator

SAS = Single Attachment Station

Siecor Horizontal Distribution Cable

Riser Wiring Closet

Riser Wiring Closet

DAS = Dual Attachment Station

Data Center

Intermediate Distribution Frame

Riser Cable
Siecor Multifiber
Indoor/Outdoor Cable

Siecor Outdoor
Splice Closure

Siecor Outdoor
Loose Tube Cable

Note: This illustration is Not to Scale

AD65-2a
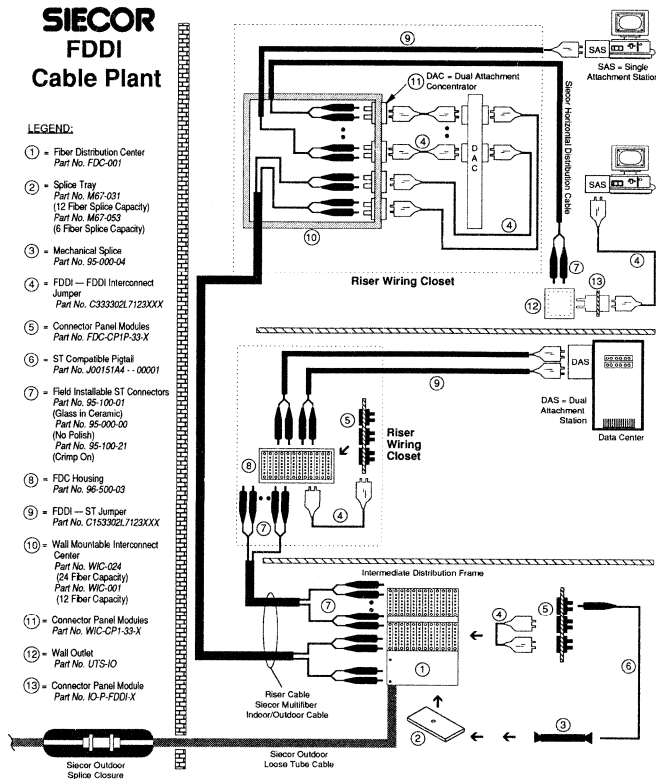
Siecor

FDDI
Interconnect
Hardware

Standard Features
■ The family of interconnect hardware comprises a complete structured wiring system
■ Modular units for future expansion
■ Forward and backwards integration
■ Craft friendly
■ Wide selection to meet specific applications
■ Labeling provided for addressability and cable plant management

Availability
■ All FDDI interconnect products are currently available.

Contacts

Siecor Customer Service Representative
Tel: (704) 327-5000 or (1-800) 634-9064

Siecor

FDDI Cable Plant Test Equipment

2001HR High Resolution OTDR

The Siecor Model 2001HR is an easy use OTDR with a minimal dead zone and pinpoint accuracy for measurement of FDDI cable plant compliance. The 2001HR consists of a mainframe, a variety of optical plug-in modules, and optional accessories.

The 2001HR can determine the optical power loss of cable, connectors, splices, and bypass switches in any system segment. In addition, it can determine total link distances and locate cable faults during restorations. A standard disk drive gives the user the ability to save, recall, display and print over 100 files. Printing can be done in batch form or instantaneously with an optional built-in printer.

Operation is made easy with a HELP facility which provides an instant display of instructions and on-line application notes.

FDDI Hand-held Loss Test Kit

The FDDI Loss Test Kit measures the end-to-end attentuation of FDDI cable links. The kit includes two power meters, two light sources and two ST/FDDI access jumpers which allows simultaneous measurements in two directions and cuts the verification testing time in half. The hand-held units can also be used to provide quick fault detections during restoration.

The power meters and light sources can also be bought individually which allows the user to match his equipment resources to his testing requirements.
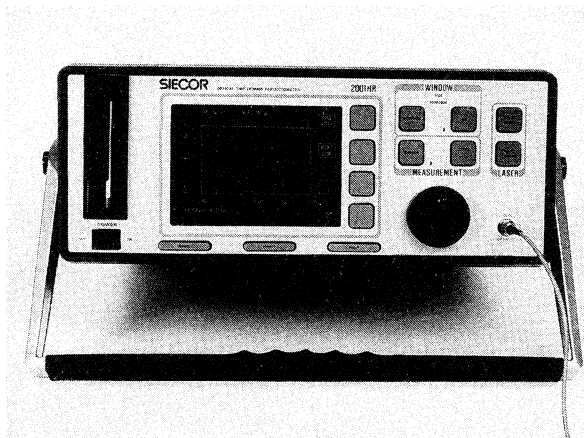
Standard Features
2001HR High Resolution OTDR
■ Easy to use with minimum number of buttons

■ Modular architecture with a variety of plug-in modules

■ Choice of connector options

■ Menu driven soft key operation

■ Disk drive for mass data storage

■ On-line HELP screens

■ Two point and LSA measurement methods

■ Optional printer mounts into OTDR mainframe

■ Light weight and portable

■ Batch printing

FDDI Hand-Held Loss Test Kit
■ Easy one-touch operation

■ Minimal training

■ Built-in, rechargeable battery

■ Economical testing option

■ Stabilized LED at 1300 nm

■ Full wavelength detector with 850, 1300, and 1550 nm settings

■ ST compatible/FDDI MIC access jumper provided

■ Units also available separately

Availability
The 2001HR OTDR will be available at the end of the second quarter 1990. The FDDI Loss Test Kit is currently available.

Siecor

FDDI Cable Plant Test Equipment

Contacts
Siecor Customer Service Representative
Tel: (704) 327-5000 or (1-800) 634-9064

Siecor

*FDDI Fiber
Optic Cable
Multimode/
Singlemode*

General Description

Siecor offers the highest performing multimode fiber that meets all telecommunication transmission needs. Siecor's new FDDI Plus fiber meets or exceeds all existing or currently proposed multimode standards including ANSI X3T9.5 (FDDI) and EIA 41.8.1 (Commercial Building and Wiring). In addition, FDDI Plus meets or exceeds the fiber specifications of all data communication equipment manufacturers including DEC and IBM.

The FDDI Plus fiber can be included in any of Siecor's cable designs: indoor (tight buffer) and outdoor (loose tube) cables, single fiber and multifiber designs, plenum and nonplenum options. In addition, FDDI Plus can be used in Siecor's Optitwist cable which combines fiber with the IBM Cabling System's copper requirements.

By using FDDI Plus fiber, the end user is assured of the greatest flexibility for his network design. He can operate Ethernet, token ring, FDDI, and all other multimode systems in the foreseeable future without ever having to upgrade the cable plant. The high performance of the fiber also allows increased distances between stations and more flexibility in the use of crossconnect panels and FDDI bypass switches.

Siecor also provides singlemode fiber meeting the specifications of the ANSI X3T9.5 Single-Mode PMD. As with FDDI Plus, the singlemode fiber can be used in all of Siecor's cable designs. Siecor's singlemode fiber cable can be used for FDDI links greater than 2 km—the limitation of multimode connections. It also can carry high speed voice, video, and data transmission should other non-FDDI applications be required.
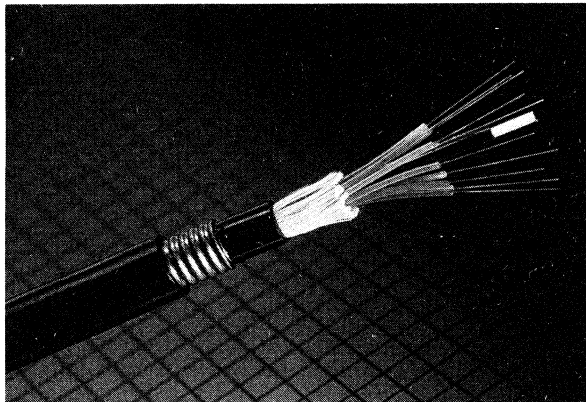
Siecor

FDDI Fiber Optic Cable Multimode/ Singlemode

Features

■ 62.5 micron core with measured performance @ 850 and 1300 nm

■ Meets or exceeds all ANSI X3T9.5 (FDDI) and EIA 41.8.1 fiber specifications

■ Meets or exceeds all OEM fiber requirements including IBM and DEC

■ Lowest attentuation available—maximum of 3.5/1.5 dB/km @ 850/1300 nm

■ Attenuation values valid over entire operating temperature range (–20 to +70 degrees C for PVC indoor cable).

■ Available in all cable styles.

Ordering Information

Multimode FDDI Plus Cable Part Numbers

Tight buffer cable (indoor)   –   aaaKbc-31141-00

Loose tube cable (outdoor)   –   aaaK1c-11141-20

aaa = fiber count (e.g., 006 = six fibers)

b   =   cable type code
    3   =   single fiber   7   =   dual intrabuilding (2 fiber)
    5   =   zipcord (2 fiber)   8   =   multifiber indoor/outdoor
    6   =   fanout
c   =   jacket construction code
    1   =   PVC (UL 1666 OFNR)
    2   =   plenum (UL 910 OFNP)
    Note – codes 1 and 2 only apply to tight buffer cable types
    4   =   polyethylene (PE) for duct/aerial applications
    5   =   double jacketed PE with armor for direct bury applications
    Note – codes 4 and 5 only apply to loose tube cable types

Singlemode Cable
    Call Siecor at 1-800-634-9064 for ordering information

Availability

■ All cable products currently available.

Contacts

Siecor Customer Service Representative
Tel: (704) 327-5000 or (1-800) 634-9064

Siecor

*FDDI Optical
Duplex
Connector*

General Description

Siecor's multimode ODC assembly provides a high performance connection for FDDI applications. The duplex connector meets the FDDI Physical Layer Medium Dependent (PMD) specifications of the American National Standards Institute Committee X3T9.5.

High performance ceramic ferrules offer low attenuation, and the ferrule design is compatible with FDDI compliant transmitters and receivers, resulting in a truly "universal" connector. All assemblies are 100 percent optically tested prior to delivery, insuring quality performance in the field.

A unique cable strain relief design and a special spiral boot isolates the fiber inside the connector shell, protecting them from external cable forces.

Siecor's connector comes with field installable keys allowing the user to selectively insert and remove keys to match the application. The keys are color-coded and clearly marked with the appropriate lettering for easy identification during installation and system re-arrangement.
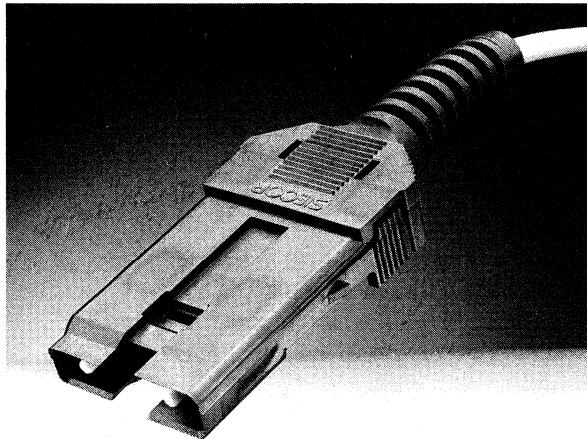
Siecor

FDDI Optical Duplex Connector

Standard Features

■ Meets all PMD requirements

■ Low profile

■ High performance ceramic ferrules

■ Field-installable keys

■ Enhanced strain relief up to 50 lbs.

■ Low insertion loss, typically 0.3 dB

■ Color coded labels for easy identification

■ Compatible with all FDDI compliant receptacles

Ordering Information

Part Number

C xx   33   02L7123yyy

└─ length in meters (e.g. 015 = 15 meters)

2nd connector code – predesignated FDDI duplex connector

1st connector code
  33 = FDDI duplex
  50 = two ST compatibles
  00 = no connector (pigtail)
  other connector types also available
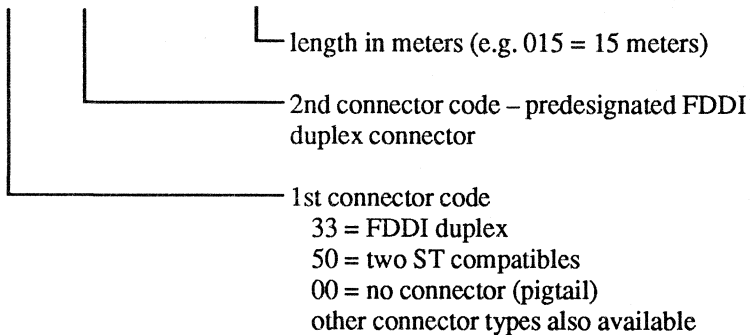
Availability

■ The FDDI connector is currently in stock.

Contacts

**Digital
Technology,
Inc.**

*DTI-3726
FDDI Symbol
Generator*

General Description

Digital Technology, Inc.'s (DTI's) 3726 Symbol Generator installs in your PC-AT/XT and connects to your FDDI test ring. The 3726 provides the user with the ability to inject streams of user-defined valid and invalid symbols onto the active FDDI test ring, creating unique scenarios of symbol patterns for understanding issues of: interoperability, latency, wrapping, beaconing, link errors, responsiveness to link errors, sensitivity to frame check sequence validity.

The 3726 includes both a receiver and transmitter, and appears to the FDDI ring as a repeater device, having little impact on ring timing, while optimizing the ring's light budget.

Digital Technology, Inc.

DTI-3726 FDDI Symbol Generator
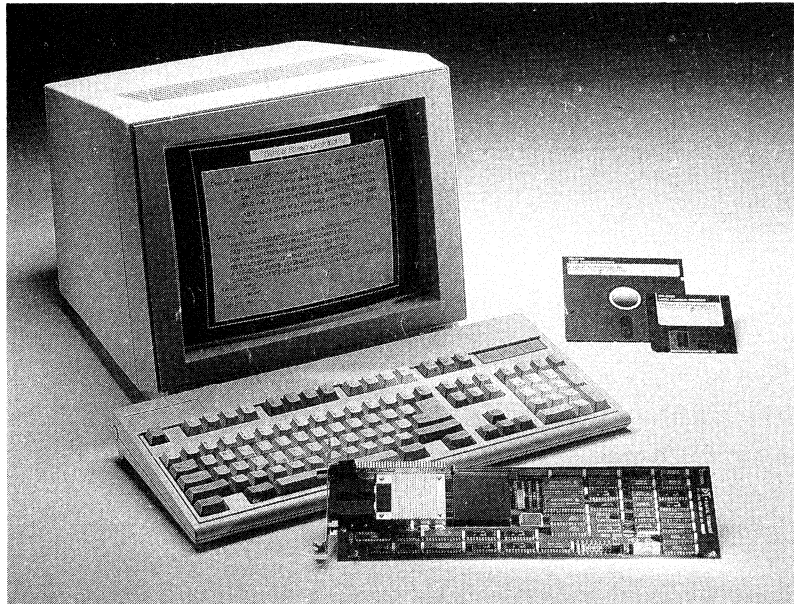
Standard Features

- Generates symbol-level test scenarios
- Generation of any FDDI line state (idle, halt, noise, master, active, quiet)
- Generates violation symbols
- Automatically injects between message user-specified fill patterns
- External clock synchronization
- Continuous and user-specified message repetition mode
- Multi-tasking capability
- Discrete output
- LED control
- 100 Megabit/second transmit speed
- 16K Bytes onboard RAM
- PC–XT/AT compatible
- MSDOS format files
- Diagnostic tests (memory, receiver, and transmitter)
- Help-oriented C language software

Support

- Hot-line service
- Training courses
- Update service
- Easy-to-understand documentation

Availability

- April 90

Contacts

Digital Technology, Inc.   Tel: (1-513) 443-0412
2300 Edwin C. Moses Blvd.   Tel: (1-800) 852-1252
Dayton, OH 45408   Fax: (1-513) 443-0618

Digital Technology, Inc.

DTI-5708 FDDI to Logic Analyzer Interface

General Description

The DTI-5708 couples with your logic analyzer to provide first-level testing capability for development and maintenance of FDDI networks and devices.

A window into the FDDI LAN. With the DTI-5708 users can link their logic analyzers to the FDDI ring, receive all of the FDDI frames and fragments, receive line state change indication signals, and receive notification of all frame sequence errors.

Cost Effective Monitor. Using DTI's own discrete interface implementation, and onboard logic, the 5708 with logic analyzer has the power and intelligence to monitor FDDI traffic at full bandwidth.
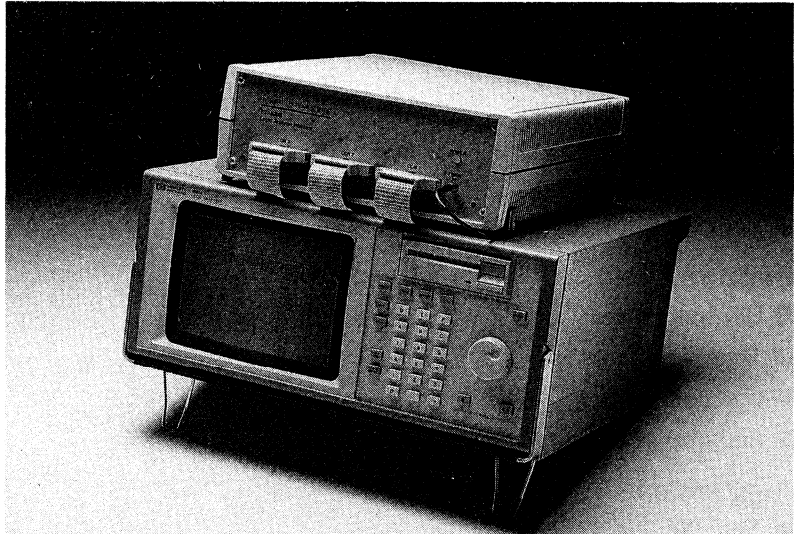
Standard Features

■ Intelligently signals logic analyzer of present and last line state

■ Signals logic analyzer of detected line state changes

■ Calculates frame check sequences (FCS) and signals logic analyzer of valid and invalid FCS frames

■ Assigns each byte of an active frame a byte count

■ Supports 100% ring bandwidth

■ Passive monitoring – no impact on ring timing

■ Easy-to-use setup software

Support

■ Hot-line service

■ Training courses

■ Update service

■ Easy-to-understand documentation

Availability

■ September, 89

Digital Technology, Inc.

*DTI-5708
FDDI to Logic
Analyzer
Interface*

Contacts

Digital Technology, Inc.
2300 Edwin C. Moses Blvd.
Dayton, OH 45408

Tel: (1-513) 443-0412
Tel: (1-800) 852-1252
Fax: (1-513) 443-0618

Digital Technology, Inc.

DTI-5750 FDDI Network Monitor

General Description

Top-of-the-line Network Monitor. Digital Technology, Inc.'s (DTI's) 5750 Network Monitor is the most powerful and expandable real-time FDDI LAN monitor. Using DTI's own interface implementation coupled with the dual power of the Intel 80386 and Motorola 68030 processors, in a variety of packages, the 5750 has the performance and growth potential to match the most demanding FDDI LAN requirements.

High-powered monitoring makes your job easier. Capture FDDI traffic, gather ring optimization statistics, both real-time and trend, all at the same time. Easy-to-understand and use full-color, pull-down menu screen presentations.
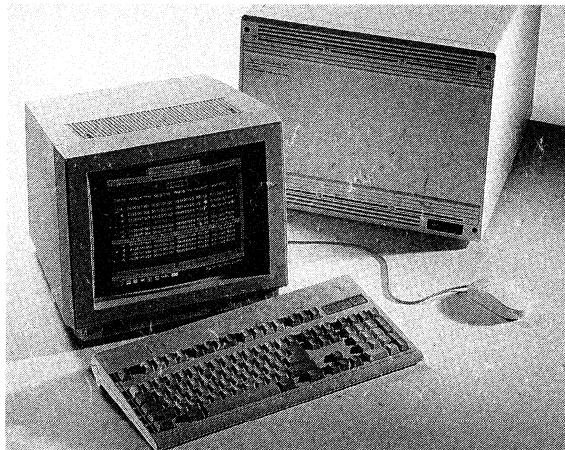
Standard Features

- Passive monitoring—no impact on ring timing
- Integrated monitoring for up to four FDDI taps
- Pull-down, menu-oriented software
- Load and go monitoring scenarios
- Accepts discrete input synchronization
- 40 MByte file-base storage area (MSDOS Format)
- 4-16 MByte real-time RAM
- Optional 300-600 MByte long term data storage
- Remote operation via TCP/IP or asynchronous communication lines

Capture, Filter, Search Features

- Variable capturing modes
- Data capture truncation
- Intelligent, multi-layered capturing logic
- Time stamp
- Frame analysis and error detecion logic
- Line state and line state change detection
- Message type classification and size logic
- Comprehensive filtering
- Flexible and quick searching techniques
- Upper-level protocol stack decode

Statistics Features

- Line-oriented trend statistics
- Bar graph oriented real-time statistics
- Utilization statistics
- Frame statistics
- Alarm log

Support

- Hot-line service, training courses and update service
- Easy-to-understand documentation

Availability

- June 90

Digital Technology, Inc.

DTI-5750 FDDI Network Monitor

Contacts

Digital Technology, Inc.   Tel: (1-513) 443-0412
2300 Edwin C. Moses Blvd.   Tel: (1-800) 852-1252
Dayton, OH 45408   Fax: (1-513) 443-0618

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TEKELEC

ChameLAN 100 FDDI Network Analyzer

General Description

The ChameLAN 100 FDDI analyzer provides complete monitoring and statistical analysis capabilities for FDDI developers, systems integrators, and network managers. It is especially designed for continuously monitoring the full 125 Mbps bandwidth, regardless of traffic load or network problems.

The ChameLAN 100 acts as an FDDI repeater (PMD relay) without effecting the network traffic. It may connect to the network as dual attachment stations (DAS) or single attachment stations (SAS) using standard connectors. FDDI network status is displayed in real-time for immediate trouble identification. Symbols, frames, frame fragments and line state changes may be captured and stored for interpretation and statistical analysis. Triggering, filtering, and frame slicing capabilities assist in trouble isolation by making efficient use of the capture buffer. Protocol interpretation is available for MAC and SMT frames, and for decoding higher layer protocols such as TCP/IP and OSI.

TEKELEC is committed to add an optional add-on board that supports simulation of an FDDI station. Features will include load generation capability, confidence tests and MAC, SMT and LLC simulation.

Standard Features

■ Capture modes include all frames, symbols, or line state changes at full bandwidth

■ Monitors and displays ring state changes and traffic statistics in real-time

■ Capture buffer efficiency is maximized by the use of triggering, filtering, and frame slicing

■ Ring status and traffic statistics may be recorded and replayed for trend analysis

■ Provides protocol interpretation for MAC, SMT (ANSI X3T9.5), and higher protocol layers such as TCP/IP.

■ User interface features a flat Thin Film Transistor (TFT), VGA compatible color display; MOTIF style multiple windows; and a mouse

■ Network data is captured into a 5 MB or 20 MB capture buffer on the FEP, and may be permanently stored on a 100 MB or optional 200 MB hard disk drive

■ Remote access is possible via X-Windows, an optional Ethernet interface, and the TCP/IP protocol suite

Support

■ Backed by TEKELEC Quality and Customer support

■ One year limited warranty; extended warranty and service contract available

■ Telephone support: (800)-TEKELEC

Availability

■ 1st Quarter, 1991

TEKELEC

ChameLAN 100 FDDI Network Analyzer

Contacts

TEKELEC
25680 W. Agoura Rd.
Calabasas, CA 91302
Tel: (800)-TEKELEC
Fax: (818) 880-6993

Fotec, Inc.

Videotape Seminar on FDDI

General Description

The Fotec videotape seminar on FDDI is one of a series of video seminars developed from Fotec's seminar series on fiber optic technology. The half-hour video covers the FDDI standard, FDDI networking examples, how to install FDDI cable plants and test them for FDDI compliance. Each videotape comes with a workbook covering the material and additional workbooks may be purchased for distribution.

The FDDI videotape is one of a series of video seminars covering fiber optic LANS and testing. Contact Fotec for a complete listing.

Fotec, Inc.

Videotape Seminar on FDDI

Standard Features

- Brief introduction to FDDI
- Covers technology, applications and support
- Ideal for beginners or as a management review
- Available on VHS or Beta format
- NTSC standard, PAL and SECAM available

Support

- Toll-free applications hotline
- Onsite seminars available

Ordering Guide

- VHS-4: VHS NTSC Format
- Beta-4: Beta NTSC Format
- WB-4: Workbook
- PAL and SECAM format tapes are available on special order.

Availability

- Now

Contacts

Fotec, Inc.
529 Main Street
Boston, MA 02129

Tel: (800) 537-8254
(617) 241-7810 (MA)
Fax: (617) 241-8616

Siecor

FDDI Design & Installation Services

Network Design and Site Survey

Siecor will provide an experienced Design Engineer to visit a customer site to discuss FDDI communication requirements and inspect available fiber optic cable routes. Recommendations are made regarding proper fiber optic cables and hardware, connectivity, routing, potential problem areas, and splicing and testing requirements. All information is summarized in a report format with drawings.

On-Site Technical Assistance

Siecor will provide a Field Engineer for on-site technical assistance for FDDI cable plant installations. The Engineer performs an advisory role with regards to cable placement, splicing, termination and testing and will provide assistance during actual operations.

Termination and Testing

Siecor will provide an installation crew to perform fiber optic splicing, termination and testing on installed fiber optic cable. All work will be fully tested and documented.

Troubleshooting and Restoration

Siecor will provide a restoration crew to determine the reason for a failure, the location of a fault, and the required restoration services needed. The restoration crew will assist the customer in procuring any needed materials. The restored system will be fully tested and documented.

Siecor

FDDI Design & Installation Services

Standard Features

- Siecor has over 12 years of fiber optic installation experience
- Fully trained and experienced fiber optic Field Engineers
- Work performed to Siecor's field proven procedures
- Testing performed recognized industry test procedures
- State of the art, properly calibrated equipment
- Professional reports and complete documentation provided
- Warranty available on work performed

Support

- Siecor Field Engineers can also provide installation training courses
- Rental equipment for installation and testing available

Availability

- All services are currently available.

Contacts

Siecor Customer Service Representative
Tel: (704) 327-5000 or (1-800) 634-9064

Siecor

FDDI Training Courses

Course Number TR-02
Network Cabling Design for LAN, Building and Campus Applications

A three day course that teaches basic cabling system design for voice, data, and video applications in today's premise environment. Concepts for universal transport systems are also covered, including integrated networks of fiber optics and copper. The course also utilizes a case study to pull the various concepts together. This is a practical course that provides immediate, usable skills for engineers, designers, contractors, installers, and end users.

Key topics include:

■ Basic theory of fiber optics

■ Networking topologies and applications

■ Fiber, cable, hardware types and selection

■ Cable placement, splicing and connector termination methods

■ Testing methods and selection

Course Number TR-21
FDDI Network Design and Implementation

A two day course that teaches cabling system design and implementation for an FDDI Physical Layer Medium Dependent (PMD) network. Both logical and physical topologies are addressed with respect to new cable plants and migration from existing cable plants. Structured networks are examined to show how FDDI integrates with voice, video, and other data applications. The course also utilizes a case study to pull the various concepts together. This is a practical course that provides immediate, usable skills for engineers, designers, contractors, installers, and end users. A prerequisite for this course is Siecor's TR-02 (see previous page) or equivalent.

Key topics include:

■ Overview of FDDI, FDDI components and connectivity

■ Multimode and singlemode PMD

■ Applications and implementation of FDDI networks

■ FDDI cable, connectors, hardware type and selection

■ FDDI cable plant testing and certification

Standard Features

■ All courses are taught by active, experienced engineers

■ Course content is based on Siecor's extensive product knowledge and field experience

■ Courses are continually updated to reflect changes in the fiber optic industry

■ Courses are structured for telephony and data communication applications

■ Class sizes are small to encourage student/instructor interaction

■ Classes are offered at Siecor's facility in Hickory, NC, or can be given at the customer's location

■ Courses TR-02 and TR-21 are held consecutively to facilitate travel plans

Support

Siecor has a number of other training courses covering most every aspect of fiber optic cable plants. Contact the Siecor Training Center at (704) 327-5539 for further information on any fiber optic training need.

Availability

■ All courses are scheduled regularly throughout the year.

Siecor

*FDDI
Training
Courses*

Contacts

Siecor Customer Service Representative
Tel: (704) 327-5000 or (1-800) 634-9064

**Trellis
Communi-
cations
Corp.**

*FDDI Network
Design and
Implementation*

General Description

Trellis Communications Corp. is the leader in providing fiber optic networks for building and campus communications. We specialize in *applying the technical features and benefits* of FDDI technology in order to provide our clients with high speed networking capability which results in *economical features and benefits*. We are dedicated to the "wire once" philosophy. We strive to create and provide the most flexible, economical information utility for our clients—and yet minimize your risk—important when applying new network standards.

Many of the world's foremost educational, technical, government and financial centers have selected Trellis Communications Corp. to custom engineer and implement their campus and building fiber "backbone" networks for voice, video and high speed data applications since 1985. Our skill and experience can be traced to the beginning of fiber optics history; members of our technical staff have been involved in the design, engineering, and installation since 1976, of many of the largest and most significant fiber-based cable systems for clients such as AT&T, GTE and NASA.

Two of the earliest and most significant Fiber Distributed Data Interface (FDDI) networks to be implemented were *both designed and installed* by Trellis Communications. The FDDI Interoperability Laboratory (IOL) at the University of New Hampshire in Durham, NH and the Advanced Networking Test Center (ANTC™) Facility for Advanced Micro Devices in Sunnyvale, CA, were both conceived, engineered and implemented by Trellis. Both of these networks are significant in that they are the *"FDDI networks by which all others will be measured"*. Interoperability test centers on both the east and west coast of America chose Trellis' technical expertise to implement these critical and exacting systems.

Standard Features

- Complete FDDI system integration
- Utilize only top name products
- Complete network plan and design
- PMD compliance
- Detailed SPAN engineering
- Comprehensive short and long wavelength testing
- Low reflection connections for "jitter free" operation
- AutoCAD documentation and "as builts"
- Two year warranty

Optional Features

- FDDI network planning and design service
- Consulting services
- Project management
- Training in fiber & FDDI
- Maintenance plan
- Network administration and operation staffing

Support

- International field service
- 24 hour technical support
- Emergency restoration
- Network operation and administration training
- FDDI certified spare parts from stock
- Custom FDDI product

Availability

- First quarter, 1990

Trellis Communications Corp.

FDDI Network Design and Implementation

Contacts

Trellis Communications Corp.
Cable Engineering Department
749 East Industrial Park Drive
Manchester, NH 03103
Tel: (603) 668-1213
Fax: (603) 668-9211

XLNT Designs, Inc.

FDDI Services

XLNT Designs, Inc. (XDI) provides a complete set of services to developers and users of high performance networks. The services include market research, product planning, architecture, project management, and implementation. XDI's hardware and software design capabilities range from initial system design through debugging and release to manufacturing. XDI has a proven track record with FDDI experience in the following areas:

- FDDI implementation using the AMD SUPERNET chip set
- Use of the Am29000 as an embedded processor in high performance network attachments
- Integration of FDDI attachments into host systems with their associated transport layer protocols, for example TCP/IP
- Design for high performance buses such as VMEbus

XDI is very active in standards development and contributes to the FDDI committee. The company licenses its FDDI Station Management (SMT) software in source form for integration into developers' systems. XDI's software and hardware expertise in FDDI allows its customers to enter the FDDI marketplace on an aggressive schedule with low risk.

Contacts

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5010 Avenue of Science
Suite 100
San Diego, CA 92128

Tel: (619) 487-9320
Fax: (619) 487-9768

Silicon Products

System Products

Company	Product	Telephone #
AMD	SUPERNET-I FDDI chip set, FORMAC Plus, Am99C10A (CAM)	(800)538-8450

Internetworking Products

Company	Product	Telephone #
AT&T Computer Systems	StarWAN Bridge, Brouter	(800)247-1212
BICC Data Networks	ISOLAN FDDI 802.3 Bridge	(508)898-2422
Cabletron Systems	EFDMIM Ethernet to FDDI Bridge	(603)332-9400
cisco Systems	AGS+/FDDI Multi-protocol Router with Bridging	(415)326-1941
FiberCom, Inc.	RingMaster 7200 FDDI Mac-Layer Bridge	(703)342-6700
Fibronics	FX 8200 Series, FX 8300 Series	(508)778-0700
Fujitsu (Japan)	FSLINK LAN	03-216-3211
IN-NET	FiberTalk 5000 802.3 & 802.5 Bridges	(800)283-FDDI
Network Systems	FE640 Router	(612)424-1536
Pirelli Focom	FDDI 802.5 Bridge	(0532)77 5757
Timeplex/Unisys	TIME/LAN 100 FDDI Routers	(201)930-4600
Toshiba (Japan)	Ring-100F FDDI Network	03-457-2560
Ungermann-Bass	Access/One FDDI SuperLAN Bridges	(408)494-0111
Wellfleet Communications	FDDI Multiprotocol Router/Bridge	(617)275-2400

Concentrators

Company	Product	Telephone #
AT&T Computer Systems	StarLAN 100 Network Concentrator	(800)247-1212
Martin Marietta	MMDAC	(301)682-0855
Timeplex/Unisys	TIME/LAN 100 Concentrator+	(201)930-4600
Toshiba (Japan)	Ring-100F FDDI Network	03-457-2560

FDDI Systems

Company	Product	Telephone #
CSSi	386/580 FDDI Network Subsystem for Multibus II	(301)290-9500
Concurrent Technology	386/580 FDDI Network Subsystem for Multibus II	(217)356-7004
Fujitsu (Japan)	FSLINK LAN	03-216-3211
HP/Apollo	FDDI for the DN10000 Personal Supercomputer	1-800-323-1864

Company	Product	Telelephone #

FDDI Systems (cont'd.)

Company	Product	Telelephone #
Martin Marietta	MMDAS	(301)682-0855
Network Systems	DX4000 Series	(612)424-1536
Prime Computer	FDDI for 50 Series Supermini-computer Systems	(508)655-8000
Proteon	p4200	(508)898-2800
Raycom	5600-Series FDDI DAS	(303)530-1620
Sony Corporation (Japan)	FDDI Network Board for the NEWS Series	03-448-3553

Board Products

Company	Product	Telelephone #
AMD	FASTcard, FDDI card for PC/AT or compatible	(800)538-8450
Codenoll Technology	CodeNet-9500, 9540 Series for FDDI/EISA & FDDI/PC Cards	(914)965-6300
Formation, Inc.	FiberNet fv1000 VMEbus-based FDDI Module	(800)257-0452
Interphase	V/FDDI 3211 & 4211 VMEbus Node Controllers	(214)919-9000
Litton Data Systems	Litton LAN	(601)935-6210
ONELAN Ltd. (U.K.)	FAT card for IBM/AT or Compatible	44-734-404859
Rockwell/CMC	CMC-1055, CMC-1056 VMEbus FDDI Processors	(800)262-8023
Schneider & Koch	SK-Net (West Germany)	(721)7920
SimpleNet Systems	FDDI cards for PC/AT or Compatibles	(714)529-8850
Sun Microsystems	SunNet FDDI/DX Controller	(415)960-1300
Summit Microsystems	FDDI PC/AT Board Set, FDDI Address Filtering Board	(408)730-4996

Software Products

Station Management Software

Company	Product	Telelephone #
AMD	FDDINET-SMT package	(800)538-8450
Synernetics	Component SMT	(508)670-9009
XLNT Designs	XLNT Manager for Station Management	(619)487-9320

TCP/IP

Company	Product	Telelephone #
Fibronics International	KNET TCP/IP Network Software	(508)778-0700

Optical Products

Company	Product	Telephone #

Fiber Optic Transmitter/Receiver

Company	Product	Telephone #
AMD	Am79h1000T/R, Am79h2000X	(800)538-8450
AT&T	ODL® 125 & FDDI ODL, 1402A & 1403A Transceiver	(800)372-2447
BT&D	DLT 1000 T/R, DLX20X0 Transceiver DLT1101, 2-FC Laser Transmitter	(302)479-9560
Fibronics	FX8410 FDDI Extender	(508)778-0700
Hewlett-Packard	HFBR-1125/2125 1300nm Transmitter/Receiver	(800)752-0900
Lytel/AMP	FSD Transceiver	(908)685-2000
PCO, Inc.	FDH-1300-S T/R Module FTR-1300-S1, S FDDI Data-Only Transceiver	(818)700-1233
Siemens	FDDI Transceiver	(812)422-2322
Sumitomo	FDDI Transmitter/receiver	(212)308-6444

Connectors

Company	Product	Telephone #
AMP	FSD Connector	(800)522-6752
AT&T	FDDI Connector Products	(800)NET-SYST
Siecor	FDDI Optical Duplex Connector	(800)634-9064

FDDI Interconnect Hardware and Cables

Company	Product	Telephone #
AMP	Patch Panels, Enclosures, Cables etc.	(800)522-6752
Belden Wire and Cable	FDDI Cables	(800)BELDEN4
Corning, Inc	Multimode Optical Fiber	(607)974-7522
FOCS, Inc.	FDDI-CA Cable Assemblies	(508)757-0611
Siecor	FDDI Interconnect Hardware, Cables	(800)634-9064

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Company	Product	Telelephone #

Optical Bypass Switch

Company	Product	Telelephone #
AMP	FDDI Dual Bypass Switch	(800)522-6752
AT&T	9A Multimode 2x2 Optical bypass Switch	(800)372-2447
DiCon	FDDI Optical Bypass Switch	(415)528-0427

Optical Test Kit

Company	Product	Telelephone #
Anritsu America	Bit Error Test Set	(201)337-1111
fotec, Inc.	T310-FDDI Fiber Optic Test Kit, Cable Test Taps, etc.	(800)537-8254
Siecor	FDDI Cable Plant Test Equipment	(800)634-9064

Company	Product	Telelephone #
Digital Technology	FDDI Symbol Generator, Network Monitor etc.	(800)852-1252
Tekelec	ChameLAN FDDI Network Analyzer	(800)TEKELEC

Services

Company	Product	Telelephone #
AMD	Advanced Networking Group—FDDI Forum	(800)538-8450
	ANTC FDDI Interoperability Test Center	
XLNT Designs	FDDI Services	(619)487-9320

FDDI Training

Company	Product	Telelephone #
fotec, Inc.	Videotape Seminar on FDDI	(800)537-8254
Siecor	FDDI Training Courses	(800)634-9064

FDDI Design & Installation

Company	Product	Telelephone #
Siecor	FDDI Design and Installation Service	(800)634-9064
Trellis Communications Corp.	FDDI Network Design and Implementation	(603)668-1213

North American

ALABAMA ....(205) 882-9122
ARIZONA ....(602) 242-4400
CALIFORNIA,
  Culver City ....(213) 645-1524
  Newport Beach ....(714) 752-6262
  Sacramento(Roseville) ....(916) 786-6700
  San Diego ....(619) 560-7030
  San Jose ....(408) 452-0500
  Woodland Hills ....(818) 992-4155
CANADA, Ontario,
  Kanata ....(613) 592-0060
  Willowdale ....(416) 224-5193
COLORADO ....(303) 741-2900
CONNECTICUT ....(203) 264-7800
FLORIDA,
  Clearwater ....(813) 530-9971
  Ft. Lauderdale ....(305) 776-2001
  Orlando (Longwood).............................(407) 862-9292
GEORGIA ....(404) 449-7920
ILLINOIS,
  Chicago (Itasca) ....(708) 773-4422
  Naperville ....(708) 505-9517
KANSAS ....(913) 451-3115
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MASSACHUSETTS ....(617) 273-3970
MINNESOTA ....(612) 938-0001
NEW JERSEY,
  Cherry Hill ....(609) 662-2900
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  Brewster ....(914)279-8323
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  Harrisburg ....(704) 455-1010
  Raleigh ....(919) 878-8111
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  Columbus (Westerville)..........................(614) 891-6455
  Dayton ....(513) 439-0268
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  Dallas ....(214) 934-9099
  Houston ....(713) 785-9001
UTAH..(801) 264-2900

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FRANCE, Paris ....TEL ....(1) 49-75-10-10
                    FAX ....(1) 49-75-10-13
                    TLX 263282F
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  Hannover area ....TEL ....(0511) 736085
                    FAX ....(0511) 721254
                    TLX 922850
  München ....TEL ....(089) 4114-0
                    FAX ....(089) 406490
                    TLX 523883
  Stuttgart ....TEL ....(0711) 62 33 77
                    FAX ....(0711) 625187
                    TLX 721882
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  Wanchai ....FAX 852-8654335
                    TLX 67955AMDAPHX
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                                      (02) 3533241
                    FAX ....(02) 3498000
                    TLX 843-315286
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  Atsugi ....TEL 462-29-8460
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  Kanagawa ....TEL 462-47-2911
                    FAX 462-47-1729
  Tokyo ....TEL ....(03) 346-7550

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  Osaka ....TEL 06-243-3250
                    FAX 06-243-3253
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                    FAX 822-784-8014
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  Ft. Lauderdale ....TEL ....(305) 484-8600
                    FAX ....(305) 485-9736
                    TLX ....5109554261 AMDFTL
NORWAY, Hovik ....TEL ....(03) 010156
                    FAX ....(02) 591959
                    TLX 79079
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                    FAX 65-3480161
                    TLX ....55650 AMDMMI
SWEDEN,
  Stockholm ....TEL ....(08) 733 03 50
  (Sundbyberg) ....FAX ....(08) 733 22 85
                    TLX 11602
TAIWAN ....TEL 886-2-7213393
                    FAX 886-2-7723422
                    TLX 886-2-7122066
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  Manchester area ....TEL ....(0925) 828008
  (Warrington) ....FAX ....(0925) 827693
                    TLX 851-628524
  London area ....TEL ....(0483) 740440
  (Woking) ....FAX ....(0483) 756196
                    TLX 851-859103

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Calgary, Alberta - DAVETEK MARKETING ....(403) 291-4984
Kanata, Ontario - VITEL ELECTRONICS ....(613) 592-0060
Mississauga, Ontario - VITEL ELECTRONICS..(416) 676-9720
Lachine, Quebec - VITEL ELECTRONICS.........(514) 636-5951
IDAHO
  INTERMOUNTAIN TECH MKTG, INC ....(208) 888-6071
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  HEARTLAND TECH MKTG, INC ....(312) 577-9222
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  CONSULTANTS, INC ....(317) 921-3450
  Indianapolis - ELECTRONIC MARKETING
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IOWA
  LORENZ SALES ....(319) 377-4666
KANSAS
  Merriam – LORENZ SALES ....(913) 469-1312
  Wichita – LORENZ SALES ....(316) 721-0500
KENTUCKY
  ELECTRONIC MARKETING
  CONSULTANTS, INC ....(317) 921-3452
MICHIGAN
  Birmingham - MIKE RAICK ASSOCIATES ....(313) 644-5040
  Holland – COM-TEK SALES, INC ....(616) 392-7100
  Novi – COM-TEK SALES, INC ....(313) 344-1409
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  Mel Foster Tech. Sales, Inc. ....(612) 941-9790
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  LORENZ SALES ....(314) 997-4558
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  LORENZ SALES ....(402) 475-4660
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  THORSON DESERT STATES ....(505) 293-8555
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  East Syracuse – NYCOM, INC ....(315) 437-8343
  Woodbury – COMPONENT
  CONSULTANTS, INC ....(516) 364-8020
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  Centerville – DOLFUSS ROOT & CO ....(513) 433-6776
  Columbus – DOLFUSS ROOT & CO ....(614) 885-4844
  Strongsville – DOLFUSS ROOT & CO ....(216) 238-0300
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  ELECTRA TECHNICAL SALES, INC ....(503) 643-5074
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  DOLFUSS ROOT & CO ....(412) 221-4420
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  COMP REP ASSOC, INC ....(809) 746-6550
UTAH, R² MARKETING ....(801) 595-0631
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  ELECTRA TECHNICAL SALES ....(206) 821-7442
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  HEARTLAND TECH MKTG, INC ....(414) 792-0920