

S.I. TECH

Fiber Optic Solutions for IBM Systems

05/12/09



Stand Alone Bit-Driver®



Mini Bit-Driver®

USA & International Headquarters

1101 N. Raddant Road

Batavia, IL 60510

Phone: (630) 761-3640 Fax: (630) 761-3644

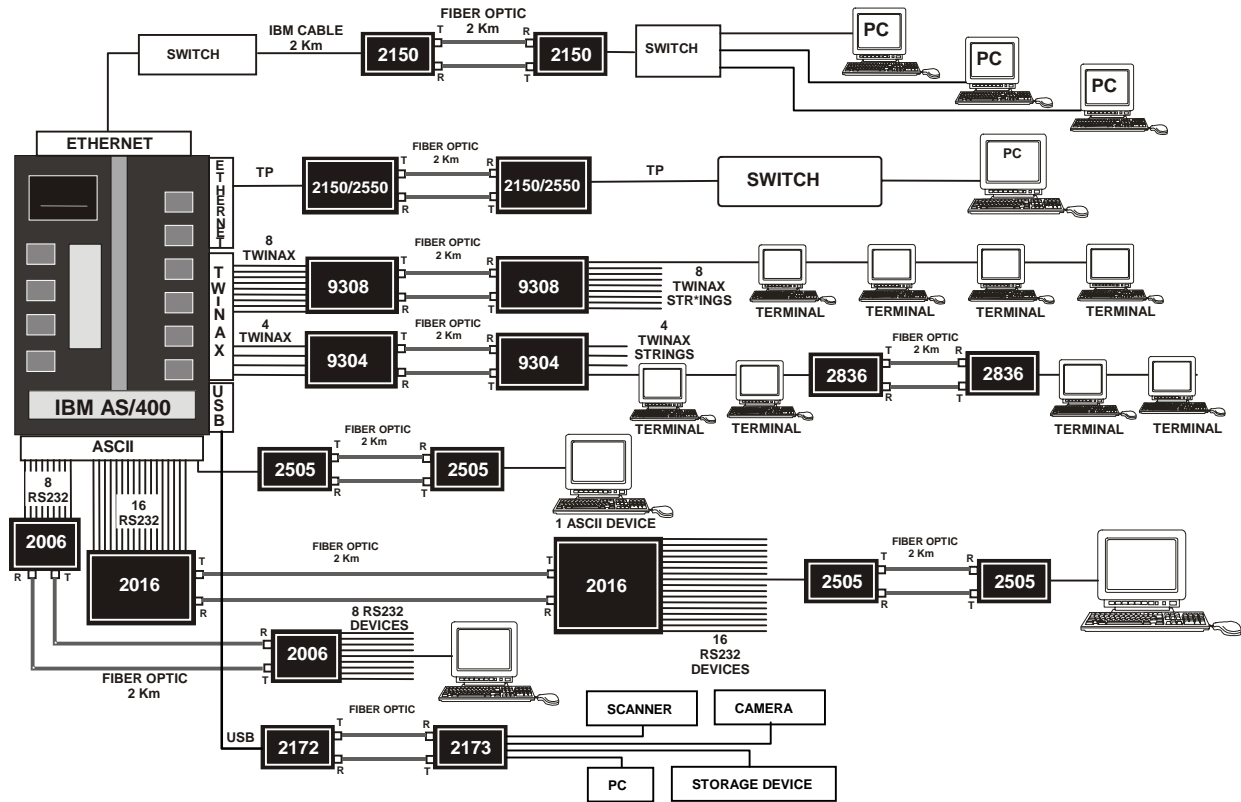
Web Site: <http://www.sitech-bitdriver.com>

©2009 S.I. Tech, Inc. All Copy and Images

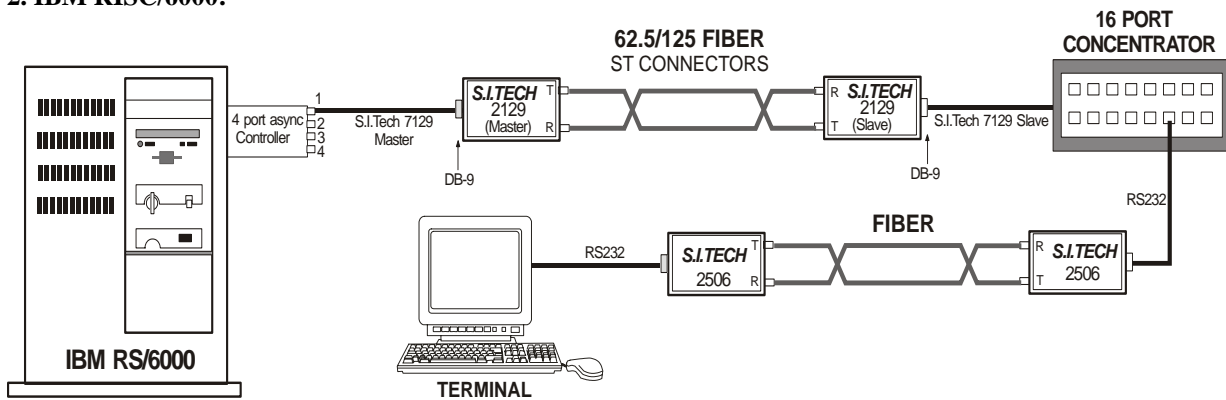
IBM PRODUCTS

IBM PRODUCTS

1. IBM 3X/AS 400/AS 400E:



2. IBM RISC/6000:



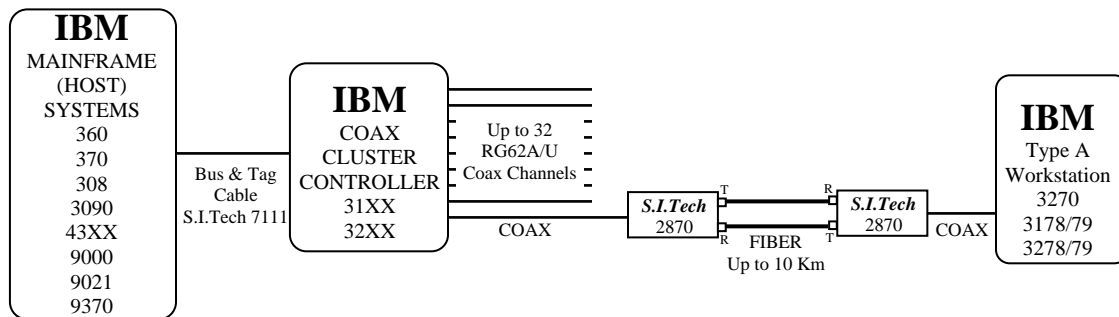
IBM

IBM occupies a unique position in the computer industry being the world's largest computer system manufacturer. The world's largest corporations, governments, and educational institutions use IBM systems, particularly large and medium scale systems. Due to the massive size of these systems, long distance data communication and distributed data communication is a must. Fiber Optics is the most logical choice for these applications.

IBM

308/370/3090/43XX/9000/9021/9370 MAINFRAME NETWORKS SNA

IBM mainframe systems are now used as servers for large data networks and storage networks. SNA – System Network Architecture: Basically a tree structure network to interconnect various IBM data processing equipment. It is also called Hierarchical Network. See Diagram below:



IBM MIDRANGE SYSTEMS

IBM Midrange Systems are typically designed for small to midsize corporations that do not require large systems, such as IBM mainframe. In today's environment Midrange systems support a small number of users to several thousand users. IBM Systems in this category are system 3X, AS/400, AS/400E, and RISC/6000

IBM PC AND NETWORKING

IBM PC (LENOVO) and Networking – IBM popularized Token Ring Network and Personal Computers. Most IBM systems today support Token Ring as well as other Networks, such as Ethernet, Arcnet, FDDI and other protocols such as; RS-232, RS-422, RS-485, USB, V.35 and so on. S.I. Tech makes Fiber Optic products to support most of the communications protocols and many networking products. These are covered in the appropriate section of this Catalog. Only IBM specific products are covered in the IBM section.

Note: IBM is a registered trademark of International Business Machines Corporation
SNA, AS/400, AS/400E, and RISC/6000 are trademarks of International Business Machines Corporation

**TABLE M
IBM SYSTEMS**

SYSTEM	Model #	Package		Channel Data Rate Kbps	Number of Channels	Power* Option	Data Connection	Fiber * Connection Multimode 820 nm	Fiber Connection Singlemode 1300 nm	Distance Km ***		Weight LB/KG	Remarks
		Stand Alone	Mini Rack							2	5		
Mainframe 370/390/3270 SNA Networks													
	2370		√	2.35	1	1,2	BNC	ST/SMA	ST/SC/FC	√	√	1/4	
	2870	√		2.35	1	1,2	BNC	ST/SMA	ST/SC/FC	√	√	3/1.4	
	3799	√		2.35	4	1,2	BNC	ST/SMA	ST/SC/FC	√	√	4.4/2	
Midrange Systems 3X/AS-400/AS-400E													
	2336		√	1.0	1	1,2	RJ45	ST/SMA	ST/SC/FC	√	√	1/4	
	2836	√	√	1.0	1	1,2	Twinax	ST/SMA	ST/SC/FC	√	√	3/1.4	
	9036		√	1.0	1 TO 7	1,2	RJ45	ST/SMA	ST/SC/FC	√	√	6.5/3	
	9302	√	√	1.0	2	1,2	Twinax	ST/SMA	ST/SC/FC	√	√	4/1.8	
	9304	√	√	1.0	4	1,2	Twinax	ST/SMA	ST/SC/FC	√	√	12/6.5	
	9308	√	√	1.0	8	1,2	Twinax	ST/SMA	ST/SC/FC	√	√	12/5.5	
RS/6000****													
	2129		√	1.2	1	6	DB9 F	ST/SMA	ST	√	√	.28/13	for 128 port HUB
LAN/WAN - See LAN/WAN Section													
ASCII - See RS-232/422/485 Section													

* Power Options: See "Power Options and How to Order" sheet p. 106 for options and ordering instructions.

**TW/RJ45/DB9

***Check IBM Timing Specifications

**** 2129 uses M&S 7129 cables.

HOW TO ORDER

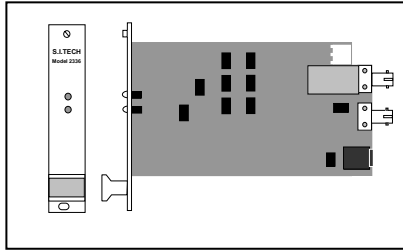
Base Model Number XXXX	Power*	Distance*** 2 Km - STD Other - Specify L	Fiber and Connector			Temperature 0 - 50° C - STD
			Multimode (MM) - STD	Singlemode (SM) - Specify	Other - Specify	
1. 110 VAC - STD 2. 230 VAC - V 6. See Power Supply Chart			ST - STD Other - Specify	ST - STD Other - Specify		

IBM, SNA, AS/400, RS/6000 are trademarks of International Business Machines

e.g. 2836 = 1 part Twinax to Fiber Bit-Driver, Standalone, 110VAC, ST Connector

IBM TWINAX TO FIBER OPTIC BIT-DRIVERS® (IBM AS/400, AS/400E, & S3/X)

2336



- ❑ Card Cage Mounted Fiber Optic Bit-Driver®
- ❑ Synchronous Half or Full Duplex Optical Bit-Driver®
- ❑ Compatible with IBM 3/X and AS/400 systems
- ❑ Power, Transmit Data, and Receive Data LED status indicators
- ❑ Supports 1 RJ11 Connector
- ❑ Max Data Rate is 1 Mbps
- ❑ Fits Series 3000 Card Cage
- ❑ Multimode or Single mode

2836



- ❑ Synchronous Half or Full Duplex Optical Bit-Driver®
- ❑ Compatible with IBM 3/X, AS/400, and AS/400E systems
- ❑ Power, Transmit Data, and Receive Data LED status indicators
- ❑ Supports 1 Twinax Port
- ❑ Works with 9036 Hub to support 7 user terminals
- ❑ Max Data Rate is 1 Mbps
- ❑ Multimode is standard, Single mode optional

9036



- ❑ Synchronous Half or Full Duplex Fiber Cluster® Hub
- ❑ Compatible with IBM 3/X and AS/400 systems
- ❑ Fully Compatible with 2836 Bit-Driver®
- ❑ Max Data Rate is 1 Mbps
- ❑ Allows direct connect RJ45 Twisted Pair – 7 Users
- ❑ Multimode is standard, Single mode optional

9302



- ❑ Two Channel Synchronous Half or Full Duplex Multiplexer Optical Bit-Driver®
- ❑ Compatible with IBM 3/X, AS/400, and AS/400E systems
- ❑ Power, Transmit Data, and Receive Data LED status indicators
- ❑ Max Data Rate is 1 Mbps per Twinax Port
- ❑ Multimode is standard, Single mode optional
- ❑ Supports up to 14 Users

9304



- ❑ Four Channel Synchronous Half or Full Duplex Multiplexer Optical Bit-Driver®
- ❑ Compatible with IBM 3/X, AS/400, and AS/400E systems
- ❑ Power, Sync, Transmit Data, and Receive Data LED status indicators
- ❑ Stand Alone or Rack Mount Options
- ❑ Rack can hold 2 units side by side
- ❑ Max Data Rate is 1 Mbps per Twinax Port
- ❑ Multimode is standard, Single mode optional
- ❑ Supports up to 28 Users

9308



- ❑ Eight Channel Synchronous Half or Full Duplex Multiplexer Optical Bit-Driver®
- ❑ Compatible with IBM 3/X and AS/400 systems
- ❑ Power, Sync, Transmit Data, and Receive Data LED status indicators
- ❑ Stand Alone and Rack Mount Options
- ❑ Rack can hold 2 units side by side
- ❑ Max Data Rate is 1 Mbps per Twinax Port
- ❑ Supports up to 40 Users

Note: Most IBM systems support Ethernet LAN, see LAN section for appropriate product for your application.

IBM

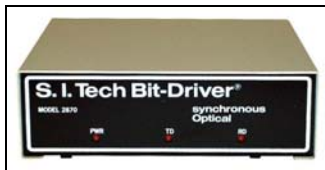
3270 COAX TO FIBER OPTIC BIT-DRIVERS® (IBM Systems 370/390 and SNA Networks)

2370



- ❑ Card Cage Mounted Synchronous Simplex or Full Duplex Fiber Optic Bit-Driver®
- ❑ Fully Compatible with IBM SNA Networks
- ❑ Max Data Rate is 2.35 Mbps
- ❑ Coax (93 Ohm) BNC Connector is standard
- ❑ Series 3000 Card Cage holds 16 Cards
- ❑ Multimode or Single mode

2870



- ❑ Synchronous Simplex or Full Duplex Fiber Optic Bit-Driver®
- ❑ Fully Compatible with IBM SNA Networks
- ❑ Max Data Rate is 2.35 Mbps
- ❑ Coax (93 Ohm) BNC Connector is standard
- ❑ Multimode is Standard, Single mode Optional

3799



- ❑ Four Channel Synchronous Simplex or Full Duplex Multiplexer Optical Bit-Driver®
- ❑ Compatible with IBM Mainframe Computers, 3174, 3274 and other controllers, and 3299 multiplexers
- ❑ Fully Compatible with IBM SNA Networks and 3270 Systems
- ❑ Max Data Rate is 2.35 Mbps per channel
- ❑ Multimode or Single mode

IBM FIBER OPTIC BIT-DRIVERS® FOR IBM RS/6000

2129



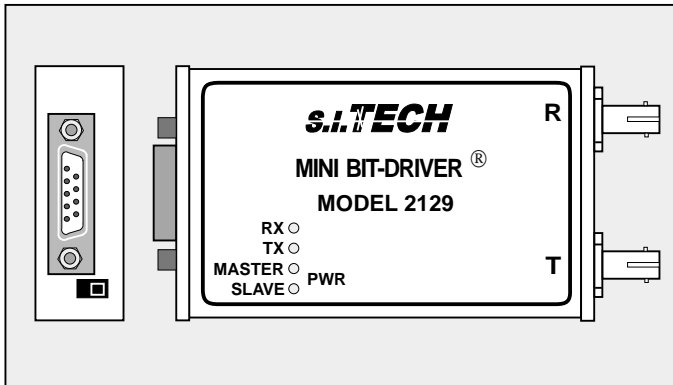
- Mini Synchronous Half or Full Duplex Optical Bit-Driver®
- Compatible with IBM RS/6000 servers and IBM RANS – 128 Users
- Point to Point Links up to 2.5 Km. Each Link consists of one 2129 “master” and one 2129 “slave” Bit-Driver
- Units require S.I. Tech #7129 master/slave cables
- Master or Slave Switch Selectable
- RS-485, 9 wire port operating at 1.2 Mbps
- Receive Data, Transmit Data, Master, and Slave LED Indicators
- RS-485 IBM RS/6000 Protocol
- Multimode or Single mode

Note: Most IBM systems support Ethernet LAN, See LAN section for appropriate product for your application.

Model 2129



Master/Slave Mini Bit-Driver® Pair



Features:

- Custom designed for IBM RS/6000 Unit connected to an IBM or Async concentrator (RS-485 to RS-232 Cluster controller-128 users)
- Point to Point Links up to 2.5 Km
- Link consists of one 2129 "Master" Bit-Driver and one 2129 "Slave" Bit-Driver
- Use 7129 Master/Slave cables

DB-9F RS - 485 9 PIN CONNECTOR - FEMALE PINS UTILIZED BY 2129 MINI BIT - DRIVER®

Pin No.	Description	Master	Slave
1	GND	Gnd	Gnd
2	RX Data +	Output	Input
3	RX Data -	Output	Input
4	RX Clock +	Output	Input
5	RX Clock -	Output	Input
6	TX Clock +	Input	Output
7	TX Clock -	Input	Output
8	TX Data +	Input	Output
9	TX Data -	Input	Output

OPERATING DISTANCE FOR FIBER OPTIC CABLE

Fiber Size (Microns)	Attenuation dB/km	Distance Meters*	Distance Feet*
50	3.0	2000	6600
62.5	4.0	2000	6600
10 SM**	1.0	7000	23000

* High power option available

** Single Mode option (1300 nm)

Meets FCC requirements of Class A, Part 15 Computing Devices Standard.

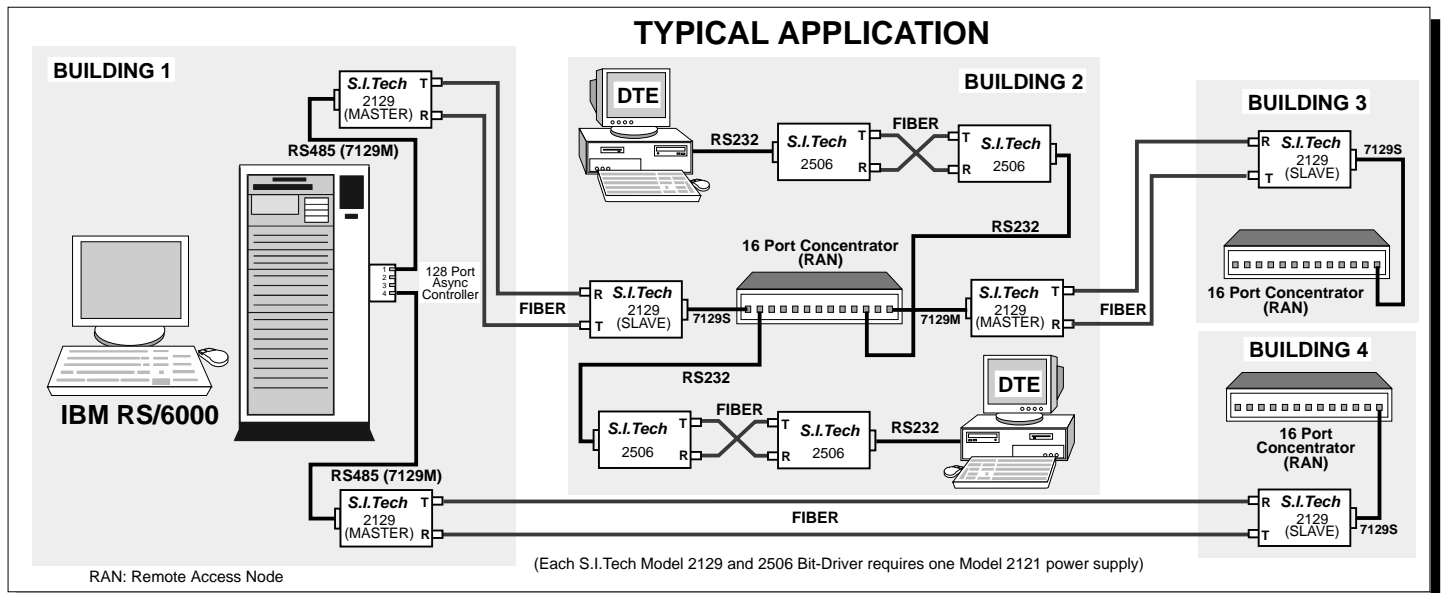
Specifications subject to change without notice.



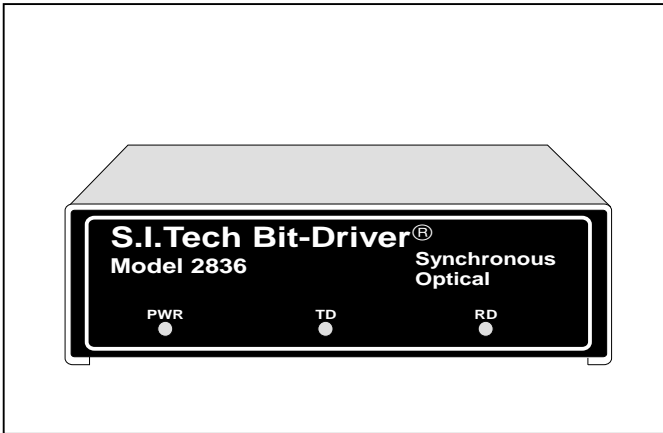
IBM is a registered trademark of International Business Machines Corp.

- Operation Mode:** Synchronous, half or full duplex
- Input/Output Interface:** RS-485, DB-9F, 9 wire port operating at 1.2 Mbps
- Transmission Line Interface:** ST connector is standard for interfacing with fiber optic duplex cable (SMA option)
- Transmission Distance:** See distance chart
- Optical Power into a 62.5 Micron Core Optical Fiber:** 10 microwatts, 13 dB power budget @ 850 nanometers
- Receiver Sensitivity:** 500 nanowatts at less than 10^{-9} bit error rate, 10 microwatts max
- Operating Temperature:** 0 °C to 50 °C
- Metal Enclosure:** 4.5 x 2.2 x 1.0 in (11.5 x 5.7 x 2.5 cm)
Panel or DIN rail mounting option
- Weight:** 0.28 lb (125 grams)
- Input Power:** External with power supply (S.I. Tech #2121 - 110VAC to 12 Volt DC)
- 230V Version:** Use S.I.Tech 2122 power supply

TYPICAL APPLICATION



Twinax to Fiber Optic Bit-Driver[®] - IBM Systems 3/X & AS/400



The S.I.Tech 2836 Bit-Driver[®] is designed to work with IBM 3/X & AS/400 systems using twinax cable. Model 2836 Bit-Driver is a twinax to fiber optic transmitter/receiver full duplex product implementing IBM Protocol. Normal operating data rate is 1 Mbps.

This fiber optic Bit-Driver product eliminates many disadvantages of twinax, especially EMI/RFI, ground loops (electrical isolation with fiber), high attenuation (high signal loss), limiting distance between nodes of system (5000 feet max. twinax), and potential lightning damage outdoors between buildings.

S.I.Tech Model 2836 is a stand alone product allowing easy change from twinax to fiber. Simply disconnect twinax and connect to model 2836 input/output port. Model 2836 comes with power supply and status indicators.

- Operation Mode:** Synchronous, half or full duplex
1 Mbps, Serial Bi-phase data
- Input/Output Interface:** 100 ohm twinax bulkhead jack, IBM Protocol
- Transmission Line Interface:** ST connector fiber optic receptacles (SMA option)
- Transmission Distance:** 6600 ft. (2 Km) (5 Km option)
- Transmitter Output power:** 30 microwatts into 50 micron fiber
- System Wavelength:** 820 nanometers (1300 nm option)
- Receiver Sensitivity:** 3 microwatts at less than 10⁻⁹ bit error rate
- Operating Temperature:** 0 °C to 50 °C
- Metal Enclosure:** 7.5" X 7" X 3" (19 X 17.8 X 7.6 cm)
- Weight:** 3 lb (1.36 kg)
- Input Power:** 110 VAC, 50/60 Hz, 10 W
- 230V Version:** 2836V
- Rack Mount Version:** Model 2336 - RJ11 connector (3000 rack)

OPERATING DISTANCE FOR FIBER OPTIC CABLE

Fiber Size (Microns)	Attenuation dB/km	Distance Meters*	Distance Feet*
50	3.0	2000	6600
62.5	4.0	2000	6600
10**	1.0	7000	23000

* High power option available

** Single mode option (Maximum distance depends upon IBM timeout spec.)

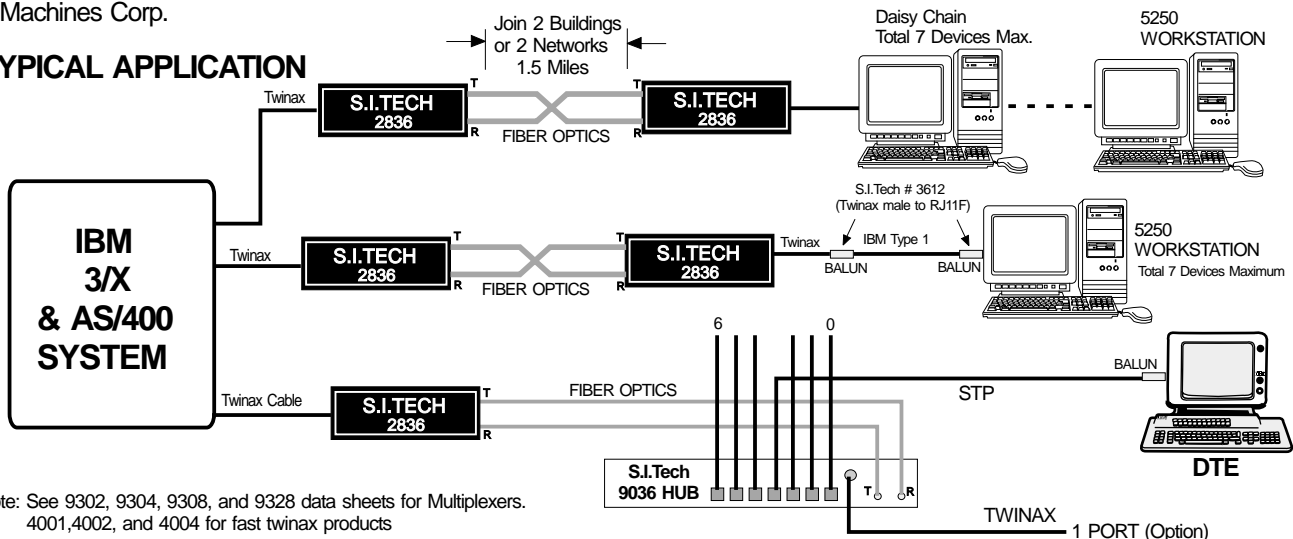
Optical Unit Connection: Connect the optical transmission line to the T and R receptacles. Note which cable channel goes to T or R by noting the cable imprint. On the other end, reverse the connections.

- IBM Specifications: Twinax 5000 ft. (1524 m) max; Local ports - 7 devices max; Remote ports - 4 devices max; 5751 Cluster controller; 5251 remote terminal controller; 5294 and 5394 controllers.
- If other than twinax cable is used, impedance matching transformers (Balun) are needed.
- Some fiber types in short distance application may overload the receiver.

Meets FCC requirements of Class A, Part 15 Computing Devices Standard.
Specifications subject to change without notice.

IBM and AS/400 are trademarks of International Business Machines Corp.

TYPICAL APPLICATION

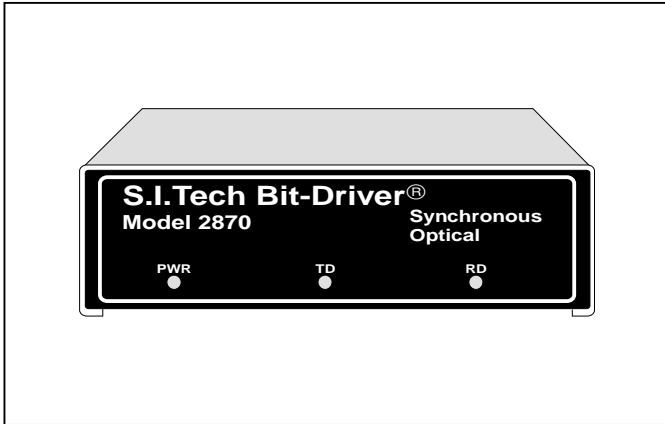


Note: See 9302, 9304, 9308, and 9328 data sheets for Multiplexers. 4001,4002, and 4004 for fast twinax products

Model 2870



Coax to Fiber Optic Bit - Driver[®]



The S.I.Tech 2870 Bit-Driver[®] is designed to work with 93 ohm coaxial cable (RG 62/U type) used by IBM in SNA environment. It is ideally suited to replace coaxial cable between IBM 3274 and 3276 controllers and 3278 terminals. It can also be used between IBM 3299 multiplexer and remote multiplexer. The normal operating data rate is 2.35 Mbps.

This fiber optic Bit-Driver product eliminates many disadvantages of coax, especially EMI/RFI, high attenuation (high signal loss), limiting distance between workstations (2000 feet coax), ground loops (electrical isolation with fiber), weight, and potential lightning damage outdoors between buildings.

S.I.Tech Model 2870 is a stand alone product allowing easy change from coax to fiber: Simply disconnect the BNC connector and plug into the input/output port.

Note: SNA is IBM System Network architecture.

Operation Mode: Synchronous, simplex or full duplex, 2.35 Mbps

Input/Output Interface: 93 ohm coaxial cable BNC bulkhead jack

Transmission Line Interface: 2 ST connector fiber optic receptacles(SMA option)

Transmission Distance: 6600 ft. (2.0 Km) (5 Km option)

Transmitter Output Power: 30 microwatts into 50 micron fiber

System Wavelength: 820 nanometers (1300 nm option)

Receiver Sensitivity: 3 microwatts at less than 10⁻⁹ bit error rate

Operating Temperature: 0 °C to 50 °C

Metal Enclosure: 7.5" X 7" X 3"
(19 X 17.8 X 7.6 cm)

Weight: 3 lbs. (1.36Kg)

Input Power: 110 VAC 50/60 Hz

230V Version: 2870V

Rack Mount Version: 2370 (3000 rack)

OPERATING DISTANCE FOR FIBER OPTIC CABLE

Fiber Size (Microns)	Attenuation dB/Km	Distance Meters*	Distance Feet*
50	3.0	2000	6600
62.5	4.0	2000	6600
10 SM**	1.0	7000	23000

* High power option available

** Single mode (1300nm) option

(Check Network Timing Restrictions)

Meets FCC requirements of Class A, Part 15 Computing Devices Standard. UL and CSA Listed. Specifications subject to change without notice.

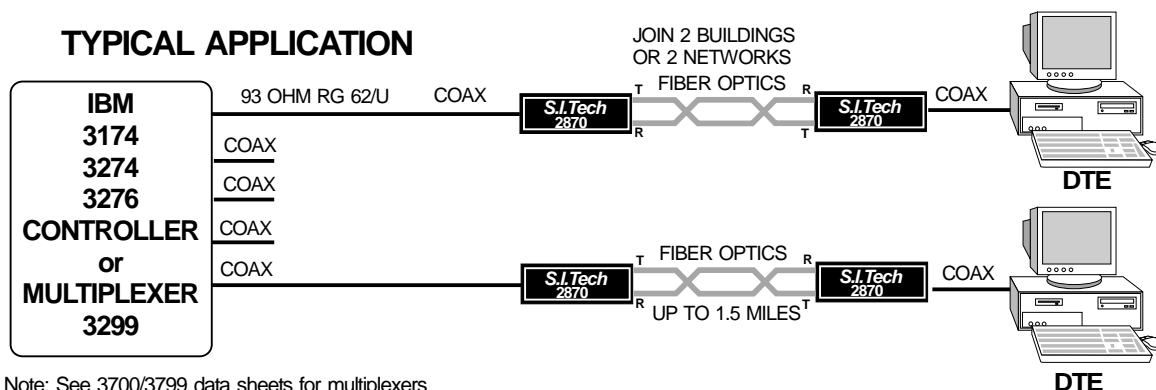
Optical unit connection: Connect the optical transmission line to the T and R receptacles. Note which cable channel goes to T or R by noting cable imprint. On the other end, reverse the connection.

Note: Some fiber types in short distance applications may overload the receiver.

If other than coax cable is used, use balun (impedance matching transformer)

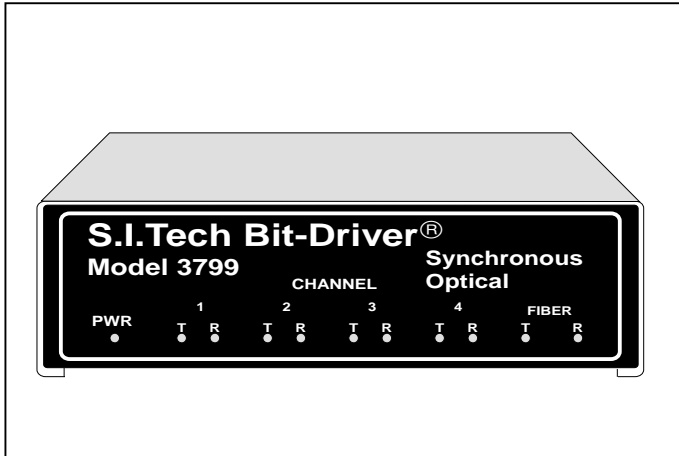
IBM and SNA are registered trademarks of International Business Machines Corp.

TYPICAL APPLICATION



Note: See 3700/3799 data sheets for multiplexers

Coax to Fiber Optic Multiplexer



The S.I.Tech 3799 coax to fiber Multiplexer is designed to work with IBM Mainframe computers and 3174, 3274 controllers and 3299 multiplexer where 8 to 1 pre multiplexed signals are available. At remote end, 3799 requires IBM 3299 de multiplexer.

The S.I.Tech 3799 4 channel coax multiplexer can be used with 4 coax channels from one IBM controller to 4 coax work stations at remote location (i.e. without IBM 3299).

- Operation Mode:** Synchronous, simplex or full duplex, 2.35 Mbps, data on each port
- Input/Output Interface:** 93 ohm coax BNC bulkhead jack IBM SNA Protocol
- Number of Channels:** 4 compatible with IBM 3299
- Transmission Line Interface:** 2 ST connector fiber optic receptacles (SMA option)
- Data link Speed:** 5 Mbps
- Transmission Distance:** 6600 ft. (2.0 Km) (5 Km option)
- Transmitter Output Power:** 20 microwatts into 50 micron fiber
- System Wavelength:** 820 nanometers (1300 nm option)
- Receiver Sensitivity:** 3 microwatts at less than 10^{-9} bit error rate
- Operating Temperature:** 0 °C to 50 °C
- Input Power:** 110/220 VAC, 50/60 Hz, 20 W detachable power cord
- Metal Enclosure:** 7.5" X 7.0" X 3.0" (19 X 17.8 X 7.6 cm)
- Weight:** 4.4 lbs. (2Kg)

OPERATING DISTANCE FOR FIBER OPTIC CABLE

Fiber Size (Microns)	Attenuation dB/Km	Distance Meters*	Distance Feet*
50	3.0	2000	6600
62.5	4.0	2000	6600
10.0 sm	1.0	5000	16000

*Options: High power, 1300 nm multimode fiber, 1300 nm singlemode (sm) fiber

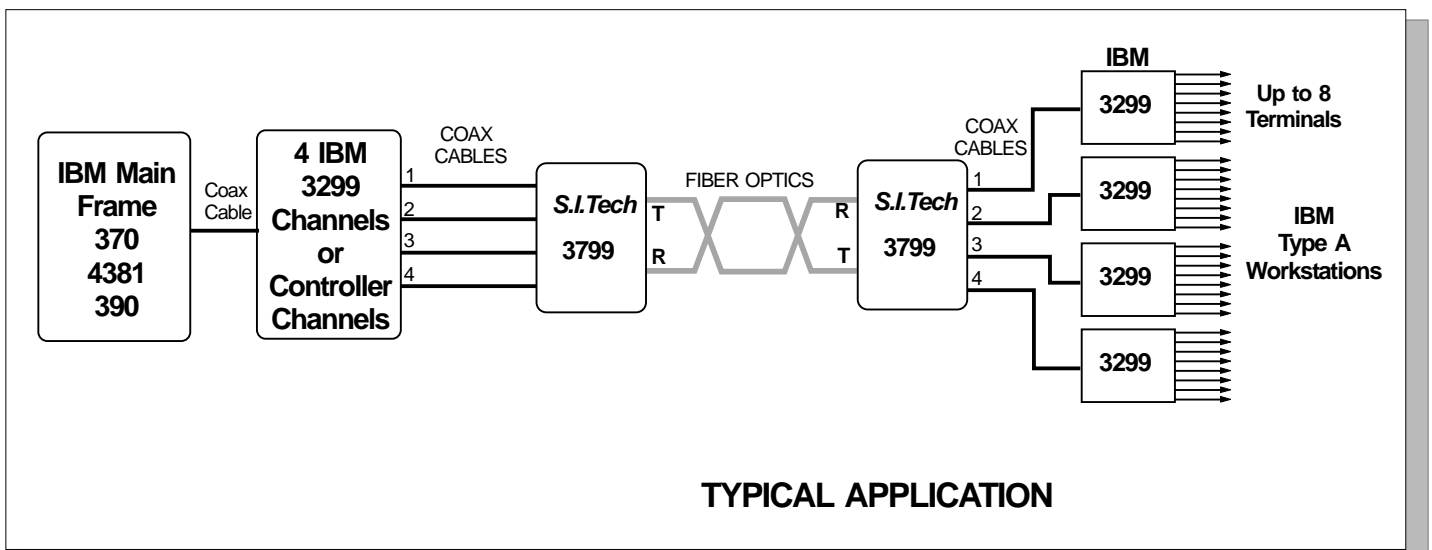
Optical unit connection: Connect the optical transmission line to the T and R receptacles. Note which cable channel goes to T or R by noting cable imprint. On the other end, reverse the connection.

Note: S.I.Tech multiplexer can support one IBM controller i.e. all 4 channels of 3799 must come from the same IBM controller such as 3174/3274 etc.

If other than coax cable is used, use balun (impedance matching transformer)

Meets FCC requirements of Class A, Part 15 Computing Devices Standard. Specifications subject to change without notice.

IBM is a registered trademark of International Business Machines Corp.

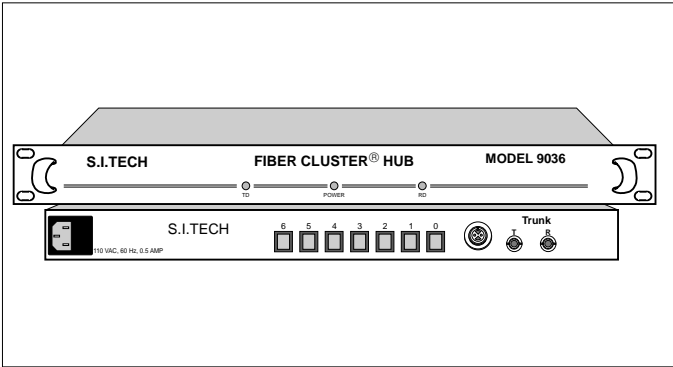


TYPICAL APPLICATION

Model 9036



Fiber to RJ45 HUB - IBM Systems 3X & AS/400



Features:

- Supports IBM 3X & AS/400 Protocol
- Status indicators - TD, RD, and Power
- Allows direct connect to RJ45 twisted pair cable, no balun required.
- Twinax to fiber. Combines fibers to TP in one unit
- Multimode or singlemode option

S.I.Tech 9036 Fiber Cluster[®] is designed to work with IBM 3X & AS/400 systems using twinax cable & STP cable. Model 9036 Bit - Driver[®] is a twinax to fiber optic transmitter/receiver full duplex protocol. Normal operating data rate is 1 Mbps.

This Fiber Cluster[®] Hub product eliminates many disadvantages of twinax, especially EMI/RFI, ground loops (electrical isolation with fiber), high attenuation (high signal loss), limiting distance between nodes of system (5000 feet max, twinax), and potential lightning damage outdoors between buildings.

S.I.Tech Model 9036 Fiber Cluster[®] is a stand alone Star Hub product allowing easy change from twinax to fiber, to STP: simply disconnect twinax and connect to model 9036 input/output port. Model 9036 comes with power supply and status indicators.

At remote end 9036 with RJ45 allows easy connection to 7 terminals or PCs in Star Hub configuration, eliminating a need for separate Hub.

Operation Mode: Synchronous, half/full duplex
1 Mbps, Serial Bi - phase data

Input/Output Interface: 100 ohm twinax bulkhead jack input or fiber & IBM protocol RJ45 output

Transmission Line Interface: 2 ST connector fiber optic receptacles (SMA - Option)

Transmission Distance: 2 km - 6600 ft. (5km Option)

Transmitter Output Power: 30 Microwatts into 50 Micron fiber

System Wavelength: 820 nm (1300 nm Option)

Receiver Sensitivity: 3 Microwatts at less than 10⁻⁹ bit error rate

Operating Temperature: 0 °C to 50 °C

Metal Enclosure: Rack mount - 1U high
17.0"W X 1.7"H X 7.5"L
(43.2 X 4.3 X 19 CM)

Weight: 6.5 lb(3 kg)

Input Power: 110 VAC, 60 Hz, 10W

230 Volt Version: 9036V

Operating Distance for Fiber Cable

Fiber Size (Microns)	Attenuation dB/km	Distance Meters*	Distance Feet*
50	3.0	2000	6600
62.5	4.0	2000	6600
10 SM**	1.0	7000	23000

* High power option available

** Single mode (1300nm) option

(Maximum distance depends upon IBM timeout spec)

Optical Unit Connection: Connect the optical transmission line to the T and R receptacles. Note which cable channel goes to T or R by noting cable imprint. On the other end, reverse the connections.

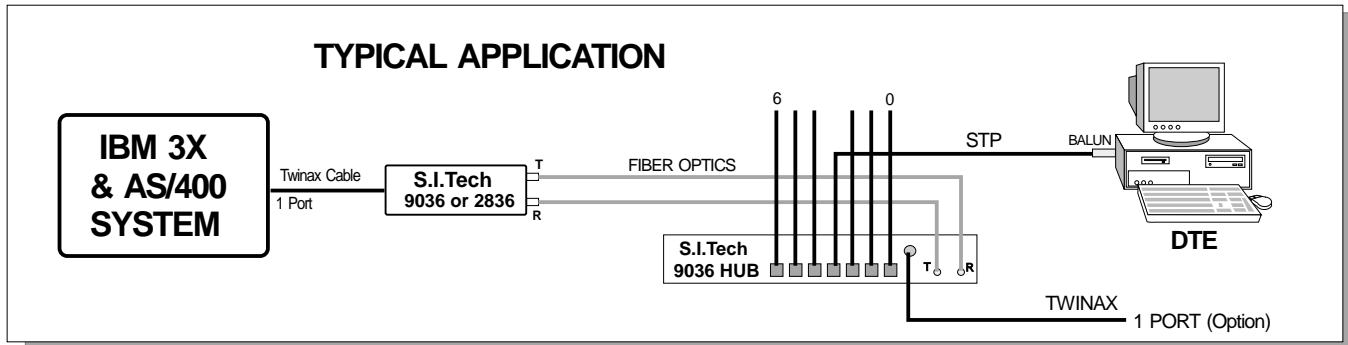
1. IBM specifications: Twinax 5000 ft. (1524 m) max, local ports - 7 devices max, remote ports - 4 devices max, 5751 Cluster Controller, 5294 and 5394 controllers.
2. If other than twinax cable is used, matching impedance transformers (Balun) are recommended. S.I.Tech 9036 Hub is designed to run without balun.
3. Some fiber types in short distance applications may overload the receiver.

IBM and AS/400 are trademarks of International Business Machines Corp.

UL & CSA listed. Meets FCC requirements of Class A, Part 15 Computing Devices Standard.

Specifications subject to change without notice.

TYPICAL APPLICATION



Model 9302



Twinax to Fiber Optic Multiplexer IBM Systems 3/X & AS/400, & 5251 Controller



S.I. Tech Model 9302 multiplexer Bit-Driver[®] is designed to work with IBM System 3/X, AS/400, and 5251 controller using twinax cable. Model 9302 Bit-Driver is a 2 channel twinax to fiber optic transmitter/receiver full duplex multiplexer product implementing IBM Protocol. Normal operating data rate is 1 Mbps on each port.

This fiber optic Bit-Driver product eliminates many disadvantages of twinax, especially EMI/RFI, ground loops (electrical isolation with fiber), high attenuation (high signal loss), limiting distance between nodes of system, and potential lightning damage outdoors between buildings.

S.I. Tech Model 9302 is a stand alone product allowing easy change from twinax to fiber: Simply disconnect twinax cables and connect to model 9302 input/output port. Model 9302 comes with power supply and status indicators.

Operation Mode: Synchronous, half/full duplex, 1 Mbps serial bi-phase data each port

Input/Output Interface: 100 Ohm twinax bulkhead jack, IBM protocol

Number of Channels: 2

Transmission Line Interface: 2 ST connector fiber optic receptacles (SMA option)

Data Link Speed: 2 Mbps

Transmission Distance: 2 Km (6600 ft.), (5 Km option)

Transmitter Output Power: 30 microwatts into 50 micron fiber

System Wavelength: 850 nanometers (1300nm option)

Receiver Sensitivity: 3 μ w at less than 10⁻⁹ bit error rate

Operating Temperature: 0 °C to 50 °C

Input Power: 110/220 VAC, 50/60 Hz, 20 W detachable power cord, power supply meets UL, CSA, VDE, & IEC requirements

230V Version: 9302V

Metal Enclosure: 7.5" X 7.0" X 3.0" (17.8 X 14.0 X 7.6 cm) Rack mount option

Weight: 4 lbs. (1.8 Kg)

Operating Distance for Fiber Optic Cable

Fiber Size (Microns)	Attenuation dB/Km	Distance* Meters	Distance* Feet
62.5	4.0	2000	6600
50	3.0	2000	6600
10 SM**	1.0	7000	23000

* High power option available

** Single Mode (1300nm) option (maximum distance depends upon IBM timeout Spec.)

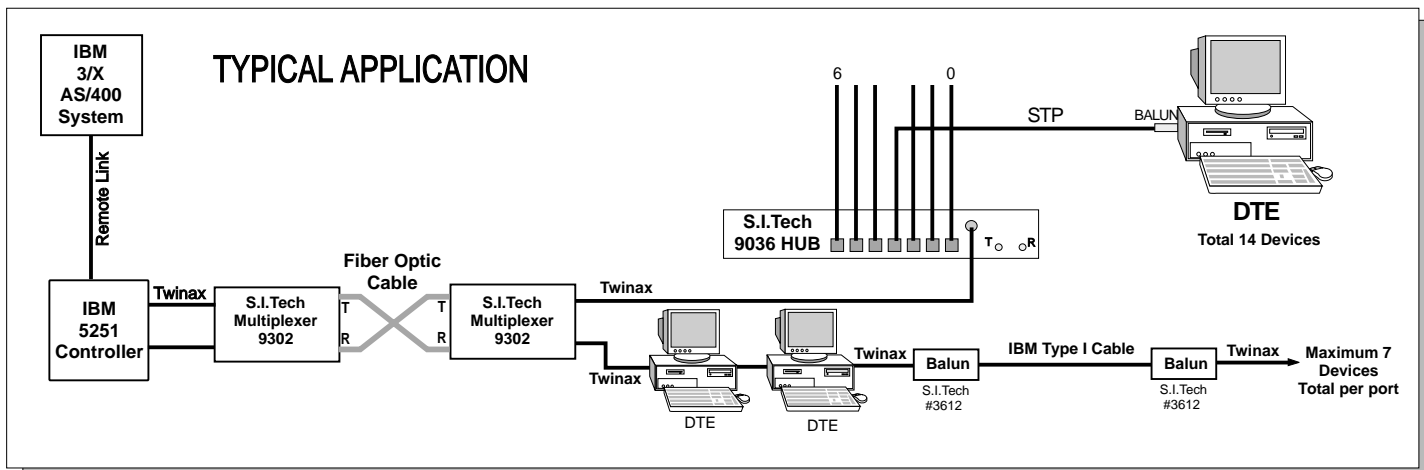
Notes: S.I. Tech multiplexer can support one controller (one card from IBM 3/X and AS/400. Related products: 2836, 9304, 9308, 9328.

If other than twinax cable is used, impedance matching transformers (balun) are needed.

IBM and AS/400 are registered trademarks of International Business Machines Corp.

UL & CSA listed. Meets FCC requirements of Class A, Part 15 Computing Devices Standard.

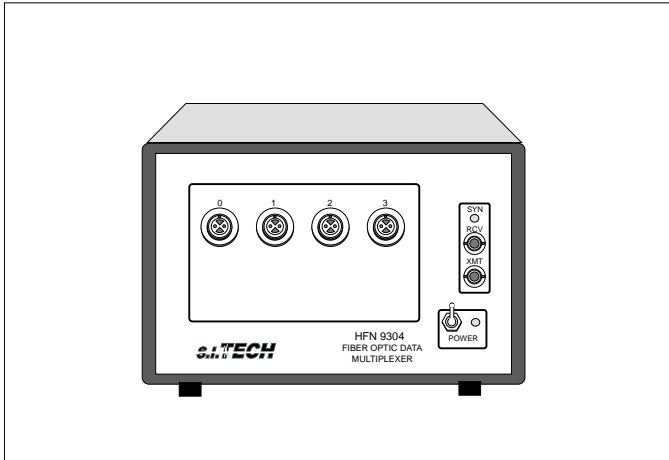
Specifications subject to change without notice.



Model 9304



Twinax to Fiber Optic Multiplexer IBM Systems 3/X, AS/400, & 5251 Controller



S.I. Tech Model 9304 multiplexer Bit-Driver[®] is designed to work with IBM System 3/X, AS/400, and 5251 controller using twinax cable. Model 9304 Bit-Driver is a 4 channel twinax to fiber optic transmitter/receiver full duplex multiplexer product implementing IBM Protocol. Normal operating data rate is 1 Mbps on each port.

This fiber optic Bit-Driver product eliminates many disadvantages of twinax, especially EMI/RFI, ground loops (electrical isolation with fiber), high attenuation (high signal loss), limiting distance between nodes of system (5000 feet max twinax), and potential lightning damage outdoors between buildings.

S.I. Tech Model 9304 is a stand alone product allowing easy change from twinax to fiber. Simply disconnect twinax cables and connect to model 9304 input/output port. Model 9304 comes with power supply and status indicators.

Operation Mode: Synchronous, half/full duplex, 1 Mbps serial bi-phase data each port

Input/Output Interface: 100 Ohm twinax bulkhead jack, IBM protocol

Number of Channels: 4

Transmission Line Interface: 2 ST connector fiber optic receptacles (SMA option)

Data Link Speed: 5 Mbps

***Transmission Distance:** 2 Km (6600 ft.), (5 Km option)

Transmitter Output Power: 30 microwatts into 50 micron fiber

System Wavelength: 850 nanometers (1300nm option)

Receiver Sensitivity: 1 μ w at less than 10^{-9} bit error rate

Operating Temperature: 0^oC to 50^oC

Input Power: 110/220 VAC, 50/60 Hz, 20 W detachable power cord, power supply meets UL, CSA, VDE, & IEC requirements

230V Version: 9304V

Metal Enclosure: 10.0" X 5.5" X 10.5" (25.4 X 14 X 26.7 cm) (2 units can be rack mounted in 19" rack)

Weight: 12 lbs. (5.54 Kg)

*Receiver (0.1 μ w sensitivity) available for 5 Km option 1300 nm singlemode and multimode TR/REC option.

Operating Distance for Fiber Optic Cable

Fiber Size (Microns)	Attenuation dB/km	Distance* Meters	Distance* Feet
62.5	4.0	2000	6600
50	3.0	2000	6600
10 SM**	1.0	7000	23000

* High power option available

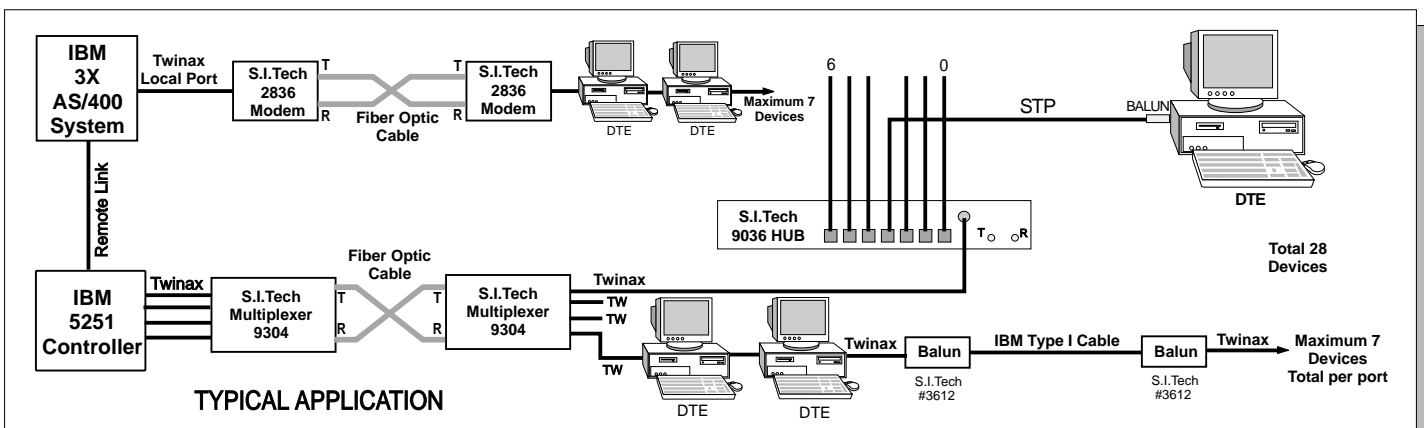
** Single Mode (1300nm) option (maximum distance depends upon IBM timeout Spec.).

NOTES: S.I.Tech multiplexer can support one controller (one card from IBM 3/X and AS/400). IBM machines come with a various number of ports per controller. Check IBM equipment manuals for details. The number of ports is not fixed. While seven devices are supported per any given port, the total devices the controller card can support does not equal 7 x number of ports, e.g. System 36 has options such as: First: 6 devices - one controller card. Second: 28 or 36 devices - one controller card. Third: 72 devices - second controller card. System 38 controller supports 32 devices. Total 400 with 10 controller cards. AS/400 controller supports 40 devices. Total 400 with 10 controller cards. S.I. Tech 9304 can support 28 users as long as only one controller card is connected to 9304 ports. S.I. Tech Model 9304 is totally transparent and uses IBM Protocol and addressing. If other than twinax cable is used, impedance matching transformers (balun) are needed. Related products: 2836/9036/9302/9308/9328.

IBM and AS/400 are registered trademarks of International Business Machines Corp.

UL & CSA listed. Meets FCC requirements of Class A, Part 15 Computing Devices Standard.

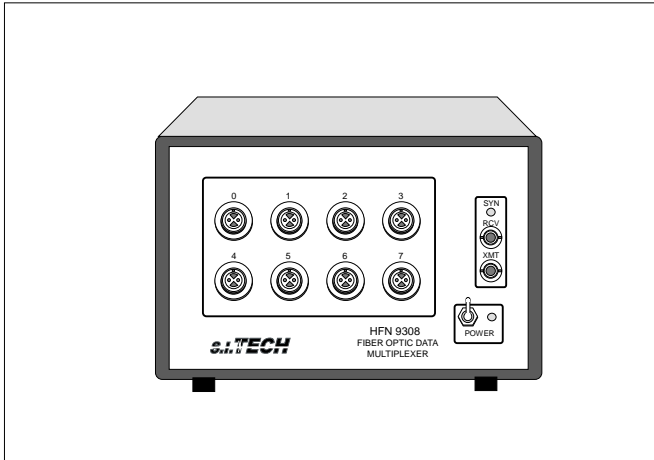
Specifications subject to change without notice.



Model 9308



Twinax to Fiber Optic Multiplexer IBM Systems 3/X, AS/400, & 5251 Controller



S.I. Tech Model 9308 multiplexer Bit-Driver[®] is designed to work with IBM System 3/X, AS/400 and 5251 controller using twinax cable. Model 9308 Bit-Driver is an 8 channel twinax to fiber optic transmitter/receiver full duplex multiplexer product implementing IBM Protocol. Normal operating data rate is 1 Mbps on each port.

This fiber optic Bit-Driver product eliminates many disadvantages of twinax, especially EMI/RFI, ground loops (electrical isolation with fiber), high attenuation (high signal loss), limiting distance between nodes of system (5000 feet max twinax), and potential lightning damage outdoors between buildings.

S.I.Tech Model 9308 is a stand alone product allowing easy change from twinax to fiber: Simply disconnect twinax cables and connect to model 9308 input/output port. Model 9308 comes with power supply and status indicators.

Operation Mode: Synchronous, half/full duplex, 1 Mbps serial bi-phase data each port

Input/Output Interface: 100 Ohm twinax bulkhead jack, IBM protocol

Number of Channels: 8

Transmission Line Interface: 2 ST connector fiber optic receptacles (SMA option)

Data Link Speed: 5 Mbps

***Transmission Distance:** 2 Km (6600 ft.), (5 Km option)

Transmitter Output Power: 30 microwatts into 50 micron fiber

System Wavelength: 850 nanometers (1300nm option)

Receiver Sensitivity: 3 μ w at less than 10⁻⁹ bit error rate

Operating Temperature: 0 °C to 50 °C

Input Power: 110/230 VAC, 50/60 Hz, 20 W detachable power cord, power supply meets UL, CSA, VDE, & IEC requirements

230V Version: 9308V

Metal Enclosure: 10.0" X 5.5" X 10.5" (25.4 X 14 X 26.7 cm) (2 units can be rack mounted in 19" rack)

Weight: 12 lbs. (5.54 Kg)

*Receiver (0.1 μ w sensitivity) available for 5 Km option, 1300 nm singlemode and multimode option.

Operating Distance for Fiber Optic Cable

Fiber Size (Microns)	Attenuation dB/km	Distance* Meters	Distance* Feet
62.5	4.0	2000	6600
50	3.0	2000	6600
10 SM**	1.0	7000	23000

* High power option available

** Single Mode (1300nm) option (maximum distance depends upon IBM timeout Spec.).

NOTES: S.I.Tech multiplexer can support one controller (one card from IBM 3/X and AS/400). IBM machines come with a various number of ports per controller. Check IBM equipment manuals for details. The number of ports is not fixed. While seven devices are supported per any given port, the total devices the controller card can support does not equal 7 x number of ports, e.g. System 36 has options such as: First: 6 devices - one controller card. Second: 28 or 36 devices - one controller card. Third: 72 devices - second controller card. System 38 controller supports 32 devices. AS/400 controller supports 40 devices. Total 400 with 10 controller cards. S.I.Tech 9308 can support 32, 36 and 40 devices as long as only one controller card is connected to 9308 ports. S.I.Tech Model 9308 is totally transparent and uses IBM Protocol and addressing. If other than twinax cable is used, impedance matching transformers (balun) are needed. Related products: 2836/9036/9302/9304/9328.

IBM and AS/400 are registered trademarks of International Business Machines Corp.

UL & CSA listed. Meets FCC requirements of Class A, Part 15 Computing Devices Standard. Specifications subject to change without notice.

