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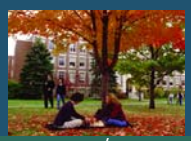
YOUR NETWORK


ENTERPRISE


GOV / ED


RETAIL


SERVICE PROVIDER


INDUSTRIAL


VIDEO

OUR SOLUTIONS


MEDIA CONVERSION


SWITCHING


CONNECTIVITY


AGGREGATION

TRANSITION NETWORKS®

Product Catalog 2007

Corporate Overview

Founded in 1987 as Transition Engineering, the company's first products adapted coaxial cable to twisted-pair cables; connecting terminals to mainframe computers. The company was renamed **Transition Networks, Inc.** in 1995 and experienced continued rapid growth as its products evolved from general Ethernet networking equipment to a complete line of conversion technology solutions. In 1998, Transition Networks was purchased by Communication Systems, Inc, (AMEX: JCS).

Today, Transition Networks, Inc. offers a full suite of networking connectivity solutions that make networks perform better, faster and more reliably while helping companies leverage their existing networking infrastructure. The company's Transition Networks brand of media converters makes conversion between disparate media types possible; providing conversion technology solutions that offer the necessary adaptations without affecting the performance, nature or appearance of the network. These media conversion technologies are offered across a broad spectrum of networking protocols including Ethernet, Fast Ethernet, Gigabit, T1/E1, DS3, ATM, RS232/485, video, power over Ethernet, and many more. Transition Networks offers its products in chassis, stand alone, and PCI form factors. Our devices are SNMP manageable and can be managed via our graphical interface Focal Point, web browser, or command line interface.

In the fall of 2005, Communication Systems, Inc. announced the integration of MILAN Technologies into Transition Networks. This integration expanded the Transition Networks product portfolio to include a complete line of MILAN branded multilayer switches. The MILAN switch products are designed to facilitate low-cost network evolution with unique solutions; easing the stress on networks caused by high-bandwidth applications.

Based in Minneapolis, Transition Networks distributes hardware-based connectivity solutions exclusively through a network of resellers in more than 100 countries.

Market Opportunity

Computer networks have evolved into an indispensable asset for corporations around the world. These complex systems of cables, jacks, patch panels, switches, routers, and servers provide the foundation for the communications of our global economy. Many corporations view their networks as a strategic advantage over their competition and focus on constant improvement in performance of their networks.

While network managers yearn for the latest equipment and higher speeds, budgetary restrictions impose limitations and precipitate a less than homogenous network. Inevitably, network administrators must contend with a variety of protocols, speeds, and media in their networks. Media conversion technology was developed to address these problems and has evolved from a stop gap technology into a technology that offers network administrators new choices for deploying fiber optics into their networks cost effectively.

Conversion technology enables network evolution, allowing network planners to migrate to new technologies without overhauling existing infrastructure investments or being locked into less flexible and more expensive networking equipment. Fiber provides the distance and bandwidth capability needed for the network backbone, making it the core technology for network evolution.

Transition Networks leverages its expertise in fiber and physical connectivity into a full suite of product offerings unmatched by other industry players. Our products are used by a wide variety of customers including enterprise, government, education, retail, industrial, security, and service providers.

Product Quality

Transition Networks' conversion products are known for their ruggedness and reliability. They have a 99.4 percent customer acceptance rating, meaning that approximately one in 1,000 experience failure in the field. All Transition Networks brand of media converters carry a lifetime warranty. MILAN by Transition Networks offers a five-year warranty on wired products.

For further information call 800-526-9267 or +1-952-941-7600, or visit the Web site at www.transition.com.

Why Transition Networks?

- **Free Worldwide Technical Support**
  via the web or telephone
- **Built to Perfection**
  99.4% of Transition Networks's products are delivered without functional failure
- **ISO 9001 2000**
  Quality System Certified
- **ISO 14001**
  Environmental Certification
- **Lifetime Warranty**
  on all Transition Networks brand products (including power supply and fan)
- **100% Channel**
  100% of Transition Networks's products are distributed exclusively through the channel
- **Transition NOW**
  - "Chat" Live via the Web
  - Free Live Web-based training with 12 – 16 seminars per month

Media Converters by Network Type

	Network Type	Product Number	Description	Product Type	Page
	Ethernet	CETTF10xx-x0x	10BASE-T to 10BASE-FL MM or SM	Point System™ Chassis Card	33
	Ethernet	E-TBT-FRL-05(xxxx)	10BASE-T to 10BASE-FL MM or SM	Stand-Alone	74 – 75
	Ethernet	E-TBT-FRL-Nxx-01(xx)	10BASE-T to 10BASE-FL MM	PCI-Based	133
	Ethernet	J/E-CF-02(xx)	10BASE-T to 10BASE-FL MM - Just Convert-IT™	Stand-Alone	77
	Ethernet	J/E-CX-TBT-02	10BASE-T to 10BASE2 - Just Convert IT™	Stand-Alone	76
	Power Over Ethernet	SEPOE101x-150	10BASE-T to 10BASE-FL MM or SM	Stand-Alone	78
	Ethernet or Token Ring	F-SM-MM-05	MM to SM	Stand-Alone	79
	Ethernet or Fast Ethernet	CSEFE10xx-10x	10BASE-T to 10BASE-FL or 100BASE-TX to 100BASE-FX	Point System™ Chassis Card	34
	Ethernet or Fast Ethernet	SSEFE10xx-10x	10BASE-T to 10BASE-FL or 100BASE-TX to 100BASE-FX	Stand-Alone	80
	Fast Ethernet	CFETF101x-105	100BASE-TX to 100BASE-FX MM or SM Class A	Point System™ Chassis Card	35
	Fast Ethernet	CFETF10xx-2xx	100BASE-TX to 100BASE-FX MM or SM Class B	Point System™ Chassis Card	36
	Fast Ethernet	CRMFE10xx-20x	100BASE-TX to 100BASE-FX MM or SM with Remote Mgmt.	Point System™ Chassis Card	37
	Fast Ethernet	E-100BTX-FX-05(xxxx)	100BASE-TX to 100BASE-FX MM or SM	Stand-Alone	81 – 82
	Fast Ethernet	E-100BTX-FX-Nxx-01(xx)	100BASE-TX to 100BASE-FX MM or SM	PCI-Based	133
	Fast Ethernet	J/FE-CF-03(xx)	100BASE-TX to 100BASE-FX MM or SM - Just Convert-IT™	Stand-Alone	83
	Fast Ethernet	SRMFE10xx-20x	100BASE-TX to 100BASE-FX MM or SM with Remote Mgmt.	Stand-Alone	84
	Power Over Fast Ethernet	SFEPE101x-1x0	100BASE-TX to MM or SM	Stand-Alone	86
	Fast Ethernet or ATM	CFMFF1xxx-20x	MM to SM	Point System™ Chassis Card	38
	Fast Ethernet or ATM	F-SM-MM-02 or SFMFF1x29-20x	MM to SM	Stand-Alone	85
NEW	10/100	CBFTF1010-130	10/100BASE-TX Redundant Link Protector	Point System™ Chassis Card	42
NEW	10/100	SBFTF1010-130	10/100BASE-TX Redundant Link Protector	Stand-Alone	92
	10/100	CSETF101x-205	10/100BASE-TX to 10/100BASE-SX MM	Point System™ Chassis Card	39
	10/100	SSETF101x-205	10/100BASE-TX to 10/100BASE-SX MM	Stand-Alone	87
	10/100 Bridging	CFBRM10xx-1xx	10/100BASE-TX to 100BASE-X MM or SM	Point System™ Chassis Card	40
	10/100 Bridging	SFBRM10xx-1xx	10/100BASE-TX to 100BASE-X MM or SM	Stand-Alone	88
NEW	10/100 Bridging	SFBRM10xx-18x	10/100BASE-TX to 100BASE-X MM or SM	Stand-Alone	89
	10/100 Bridging	MIL-FT240TX	10/100BASE-TX Port Selector Transceiver	Stand-Alone	91
	10/100 Bridging	CBFTF10xx-1xx	10/100BASE-TX to 100BASE-FX MM or SM	Point System™ Chassis Card	43 – 46
	10/100 Bridging	SBFTF10xx-xxx	10/100BASE-TX to 100BASE-FX MM or SM	Stand-Alone	93 – 95
	10/100 Bridging	J/E-PSW-FX-02(xx)	10/100BASE-TX to 100BASE-FX MM or SM - Just Convert-IT™	Stand-Alone	96
	10/100 Bridging	Mx/E-PSW-FX-01(xx)	10/100BASE-TX to 100BASE-FX MM or SM	Mini Stand-Alone	99
	10/100 Bridging - PoE	SPOEB10xx-100	10/100BASE-TX to 100BASE-FX MM or SM	Stand-Alone	97
	10/100 Bridging - PoE	J/POE-CF-01(xx)	10/100BASE-TX to 100BASE-FX MM or SM - Just Convert-IT™	Stand-Alone	98
NEW	10/100 Bridging Industrial	SISTF101x-111-LRx	10/100BASE-TX to 100BASE-FX MM or SM	Industrial Stand-Alone Converter	124
NEW	10/100 Bridging Industrial	SISTF101x-141-LRx	(4) 10/100BASE-TX to (1) 100BASE-FX MM or SM	Industrial Stand-Alone Redundant Switch	125
NEW	10/100 Bridging Industrial	SISTF1010-1x0-LRx	(5) 10/100BASE-TX or (8) 10/100BASE-TX	Industrial Stand-Alone Switch	126
	10/100 Bridging Industrial	SIBTF10xx-1xx-Mx	(1), (3) or (4) 10/100BASE-TX to (1) or (2) 100BASE-FX MM or SM	Substation Industrial Switch	128
NEW	10/100 Bridging Industrial	SISTM101x-1xx-LRx	(8) or (6) 10/100BASE-TX to (2) 100BASE-FX	Industrial Stand-Alone Switch	127
NEW	100/1000 Bridging	CFBRM13xx-1xx	100BASE-FX to 1000BASE-X MM or SM	Point System™ Chassis Card	41
	10/100/1000 Ethernet	CGFEB10xx-1xx	10/100/1000BASE-TX to 1000BASE-SX/LX MM or SM	Point System™ Chassis Card	47 – 48
	10/100/1000 Ethernet	SGFEB10xx-10x	10/100/1000BASE-TX to 1000BASE-SX/LX MM or SM	Stand-Alone	100
NEW	10/100/1000 Bridging	CBFFG10xx-1xx	10/100/1000BASE-TX to 1000BASE-X	Point System™ Chassis Card	49
NEW	10/100/1000 Bridging	SBFFG10xx-1xx	10/100/1000base-T to 1000BASE-X	Stand-Alone	101
	10/100/1000 Bridging	CMEFG10xx-11x	10/100/1000BASE-TX to 1000BASE-BX/SX/LX MM or SM	Point System™ Chassis Card	51
	10/100/1000 Bridging	SMEFG10xx-1xx	10/100/1000BASE-TX to 1000BASE-BX/SX/LX MM or SM	Stand-Alone	103
NEW	1000 Bridging	SFBRM13xx-1xx	100BASE-FX to 1000BASE-X	Stand-Alone	90
	Gigabit Ethernet	1000MCC-1	SC	Mode Conditioning Cable	55
NEW	Gigabit Ethernet	CCH-MCMxx-xx-xxx	1000BASE-T to 1000BASE-SX MM	Stand-Alone	108
	Gigabit Ethernet	CFMFF1xxx-22x	1000BASE-SX MM to 1000BASE-LX SM	Point System™ Chassis Card	53
NEW	Gigabit Ethernet	CBFFG13xx-1xx	1000BASE-X to 1000BASE-X	Point System™ Chassis Card	50
NEW	Gigabit Ethernet	SBFFG13xx-1xx	1000BASE-X to 1000BASE-X	Stand-Alone	102
	Gigabit Ethernet	CFMFF13xx-28x	1000BASE-SX MM to 1000BASE-LX SM retiming	Point System™ Chassis Card	54
NEW	Gigabit Ethernet	CGETF10xx-11x	1000BASE-T to 1000BASE-SX/LX MM or SM	Point System™ Chassis Card	52
	Gigabit Ethernet	J/GE-CF-01(xxx)	1000BASE-T to 1000BASE-SX/LX MM or SM - Just Convert-IT™	Stand-Alone	105
	Gigabit Ethernet	SFMFF1xxx-22x	1000BASE-SX MM to 1000BASE-LX SM	Stand-Alone	106
	Gigabit Ethernet	SFMFF13xx-28x	1000BASE-SX MM to 1000BASE-LX SM retiming	Stand-Alone	107
NEW	Gigabit Ethernet	SGETF10xx-110	1000BASE-T to 1000BASE-SX/LX MM or SM	Stand-Alone	104
	Gigabit Ethernet	TN-GB-xM5	1000BASE-SX or LX	GBIC Module	134
	Gigabit Ethernet	TN-SFP-xxx	1000BASE-SX or LX	Small Form Factor Pluggable	135
NEW	Gigabit Ethernet	TN-SFP-xxx-Cxx	CWDM Wavelengths	Small Form Factor Pluggable	136
	Protocol Independent	CFMFF040-100	(2) slots for SFP modules	Point System™ Chassis Card	56
	Protocol Independent	SFMFF040-100	(2) slots for SFP modules	Stand-Alone	109
	ATM/OC-X	CFMFF1xxx-21x	MM to SM	Point System™ Chassis Card	57
	ATM/OC-X	F-SM-MM-06(xx)	MM to SM	Stand-Alone	111
	ATM/OC-X	SFMFF131x-210	MM to SM	Stand-Alone	111
	STM/OC-3	SSTM1EOxx	(2) Mini BNC to MM or SM	Stand-Alone	110
	DS3-E3/T3	CCSCF30xx-10x	(2) BNC to MM or SM	Point System™ Chassis Card	58
	DS3-E3/T3	SCSCF30xx-10x	(2) BNC to MM or SM	Stand-Alone	112
	High Speed Serial	CPSVT26xx-10x	26-pin to MM or SM	Point System™ Chassis Card	59
	High Speed Serial	SPSVT26xx-10x	26-pin to MM or SM	Stand-Alone	113
	RS232	CRS2F311x-100	DB9 to MM or SM	Point System™ Chassis Card	60
	RS232	SRS2F311x-100	DB9 to MM or SM	Stand-Alone	114
	RS232	J/RS232-xF-01(xx)	DB9 to MM - Just Convert-IT™	Stand-Alone	115
	RS232 Industrial	SDSFE311x-100	DB9 to MM or SM	Industrial Device Server	129
	RS232/422/485	SDSFE311x-120	DB9 to RJ-45 or MM or SM	Stand-Alone Device Server	130
	RS422/485	CRS4F3x1x-100	DB9 or Terminal Block to MM or SM	Point System™ Chassis Card	61
	RS422/485	SRS4F3x1x-100	DB9 or Terminal Block to MM or SM	Stand-Alone	116
	RS422/485 Industrial	SDSFE321x-110	Terminal Block to MM or SM	Industrial Device Server	131
	T1/E1	CSDTFx0xx-1xx	(2) BNC or RJ-48 to MM or SM	Point System™ Chassis Card	62 – 63
	T1/E1	SSDTFx0xx-1xx	(2) BNC or RJ-48 to MM or SM	Stand-Alone	117 – 118
	4x T1/E1/J1	C4TEF10xx-10x	(4) RJ-48 to MM or SM + 6-pin DIN	Point System™ Chassis Card	64
	4x T1/E1/J1	S4TEF10xx-10x	(4) RJ-48 to MM or SM + 6-pin DIN	Stand-Alone	119
	4x T1/E1/J1 + 10/100 Ethernet	C4TEF10xx-11x	(4) RJ-48 + (1) 10/100 RJ-45 to MM or SM + 6-pin DIN	Point System™ Chassis Card	65
	4x T1/E1/J1 + 10/100 Ethernet	S4TEF10xx-11x	(4) RJ-48 + (1) 10/100 RJ-45 to MM or SM + 6-pin DIN	Stand-Alone	120
	E&M, 2/4-wire	CEMTF10xx-10x	Twisted Pair to MM or SM	Point System™ Chassis Card	66
	POTS 2-wire	CAPTF33xx-1xx	Twisted Pair to MM or SM	Point System™ Chassis Card	67
	POTS 2-wire	SAPTF33xx-1xx	Twisted Pair to MM or SM	Stand-Alone	121
	Analog Video	CVIDF20xx-15x	BNC to MM or SM	Point System™ Chassis Card	68
NEW	Analog Video	CVIDF201x-110	BNC to MM or SM	Point System™ Chassis Card	69
	Analog Video	J/VD-xX-01	BNC to MM or SM - Just Convert-IT™	Stand-Alone	122
NEW	Analog Video	SVIDF201x-xxx	Analog CCTV Video + Data: Transmitter and Receiver	Stand-Alone	123

Switch Selection Table

Transition Networks offers a large selection of MILAN switches to meeting your networking needs including fully managed switches in a wide range of port counts. Below is a matrix of switches with their corresponding features to help you select the switch that best meets your needs.

Click on switch part number to go to that product page.

To view a definition of a feature, place your cursor over the question mark.

		Fast Ethernet		Gigabit		
	Feature/Protocol	**SM801x**	**SM2401M-STK**	**SM4804G**	**SM8002TG**	**SM24004TG**
	page	144 & 145	147	151	152	153
	Security Features					
?	802.1Q VLANs	Yes	Yes	Yes	Yes	Yes
?	802.1x Authentication		Yes	Yes	Yes	Yes
?	L2/L3/L4 ACLs			Yes	L2/L3	Yes
?	MAC-based Security	Yes	Yes	Yes	Yes	Yes
?	Private VLANs			Yes		Yes
?	RADIUS Authentication (Management)		Yes	Yes	Yes	Yes
?	SSH			Yes		Yes
?	SSL			Yes		Yes
?	TACACS+ Authentication (Management)			Yes		Yes
	Network Performance Features					
?	802.1p Prioritization	Yes	Yes	Yes	Yes	Yes
?	Bandwidth Provisioning		Yes	Yes	Yes	Yes
?	CoS Queues Per Port	2	2	4	4	8
?	IPToS			Yes	Yes	Yes
?	LACP	Yes	Yes	Yes	Yes	Yes
?	RSTP		Yes	Yes	Yes	Yes
?	STP	Yes	Yes	Yes		Yes
?	TCP/UDP Port Prioritization			Yes		Yes
?	WFQ	Yes	Yes	Yes	Yes	Yes
	Management & Monitoring Features					
?	Command Line Interface		Yes	Yes	Yes	Yes
?	DHCP Client		Yes	Yes	Yes	Yes
?	DSCP Remark					Yes
?	Event log			Yes	Yes	Yes
?	Port Labeling			Yes		Yes
?	RMON	Yes	Yes	Yes	Yes	Yes
?	SNMPv1	Yes	Yes	Yes	Yes	Yes
?	SNMPv2		Yes	Yes	Yes	Yes
?	SNMPv3				Yes	
?	SNTP			Yes	Yes	Yes
?	Telnet	Yes	Yes	Yes	Yes	Yes
?	TFTP download/upload	Yes	Yes	Yes	Yes	Yes
?	Web-based Management	Yes	Yes	Yes	Yes	Yes
	General Features					
?	Auto MDI / MDI-X	Yes	Yes	Yes	Yes	Yes
?	Auto-Negotiation	Yes	Yes	Yes	Yes	Yes
?	Flow Control	Yes	Yes	Yes	Yes	Yes
?	GVRP	Yes	Yes	Yes	Yes	Yes
?	IGMP Query Mode	Yes	Yes	Yes	Yes	Yes
?	IGMP Snooping	Yes	Yes	Yes	Yes	Yes
?	IP Stacking		Yes			
?	Jumbo Frames	Yes	Yes	Yes	Yes	Yes
?	Hardware Stacking			Yes		
?	MAC Table Size	8K	8K	8K	8K	16K
?	Max Static VLANs	255	255	255	255	255
?	Port Trunking	Yes	Yes	Yes	Yes	Yes
?	SPF			Yes		Yes
?	Static MAC Entry	Yes	Yes	Yes	Yes	Yes

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What's New?

Click on any description or page number to go to that product page.

Media Conversion Solutions

Advanced Features

Advanced Certification

Conversion Technology Products

Connectivity Products

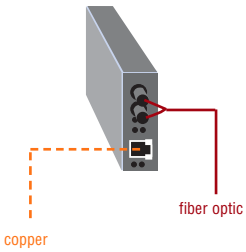
Switching Solutions

Networking Cables

Reference

Media Conversion Solutions

Transition Networks offers the widest variety of media conversion solutions for network extension. Our solutions section explores some typical applications that illustrate how our products can be utilized in your network.



Click on a solution to go to that page.

What is Media Conversion?

Put simply, media converters transparently connect one type of media, or cabling, to another—for example: copper to fiber.

Media converters allow the use of fiber where and when it is needed; effectively integrating new equipment into your existing cabling network. This gives the network administrator power to:

- Extend the lifespan of existing non-fiber based equipment
- Extend the distance of an existing network
- Extend the distance between two like devices
- Integrate data and telecommunication networks over fiber

Enterprise Applications

- Internal LAN Deployments
- Campus Deployments
- Metro Area Networks

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Government / Education Applications

- Internal LAN Deployments
- Campus Deployments

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Industrial Applications

- Factory Floor Deployments
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Retail Applications

- Large Warehouse Retail Applications
- Internal LAN Deployments

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Traditional Voice & Data Applications

- Data Solutions
- DSL Backhaul Applications
- Cell Tower Applications
- POTS Applications

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Service Provider Applications

- Internet Services
- Transparent LAN Services

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Video Applications

- Analog Video
- IP Video

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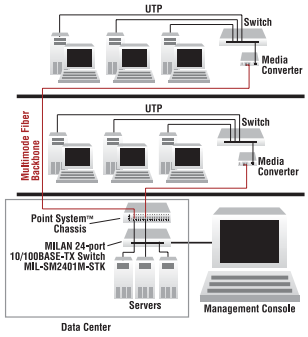
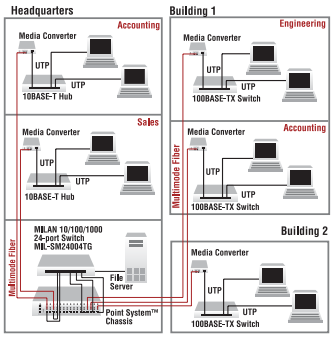
Use Media Converters for Internal LAN Deployments

- Connect enterprise switches to a fiber backbone running up the vertical risers in a multi story office building
- Connect legacy workgroup copper switches with copper interfaces to a fiber backbone.



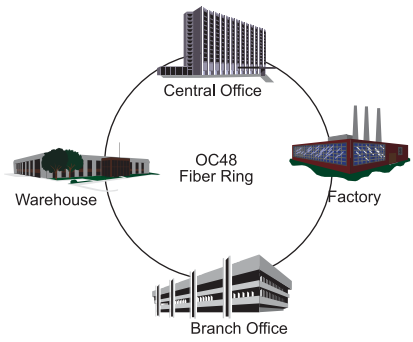
Use Media Converters in Campus Deployments

- Connect multiple buildings on your campus using media converters to convert copper interfaces to fiber; maximizing efficiencies and saving money
- Use T1/E1 media converters to connect PBXs over fiber between departments

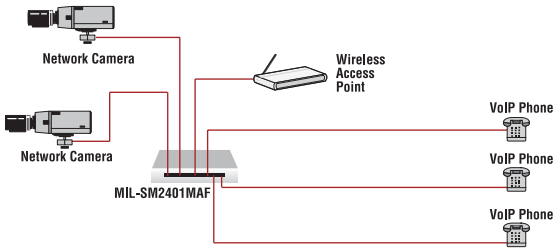


Use Media Converters in Metro Area Networks

- Connect offices located throughout the metro. Companies can eliminate or reduce the number of leased lines required to connect offices using long haul media converters. The biggest advantage to this configuration is that the companies have created a network capable of 10 or 100 or 1000 Mbps speeds, significantly faster than dial up or T1 connections.



Use MILAN POE Switches to connect and power WAPs & VOIP



Enterprise level networks are the privately owned networks within a business or organization. Media converters are a cost-effective solution to integrate different media and equipment in today's less than homogeneous network environments. Media conversion technology offers network administrators new choices for deploying fiber optics into their networks cost effectively.

Applications for media conversion solutions:

Ease migration and flexibility
Simple to install and transparent to the network, media converters allow for network growth when and where you need it.

Maximize rack space or real estate using high-density conversion solutions from Transition Networks.

Monitor and configure remote devices with the SNMP management provided with Transition's managed conversion solutions.

Maximize distance and savings using media converters to convert to fiber signaling.

Future proof your network using media converters to support high speed protocols.

Avoid EMI and security issues using fiber optic technology.

Keep up with technology without forklift upgrades using low cost media conversion solutions.

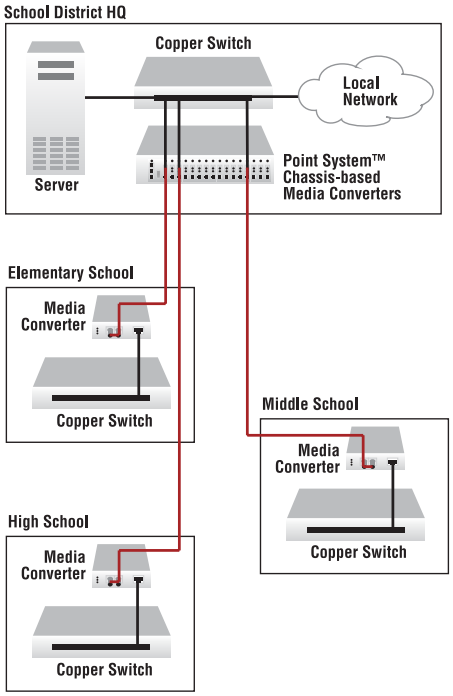
Recommended Product Families

- Point System™ Chassis
- Ethernet, Fast Ethernet and Gigabit media converters
- Long Haul Media Conversion Products

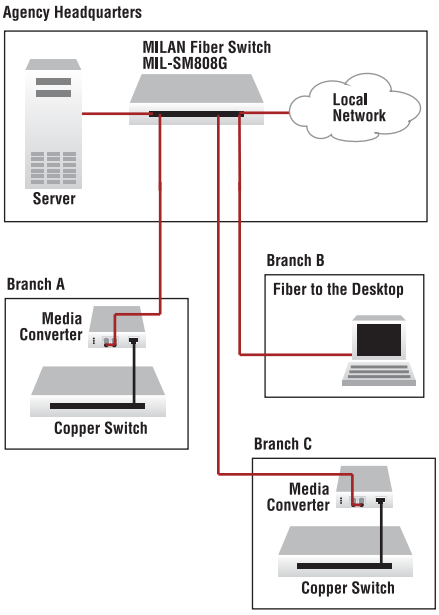
Table of Contents
Select Media Converter
Select Switch

Use Media Converters in Education Applications

- School District Headquarters
  - Chassis based solution
  - Use existing copper switch
  - Hot swappable media converter cards
  - Redundant Power Supplies
  - SNMP Management Module
- Each School
  - Stand-Alone media converter to receive fiber and connect to main copper switch
  - Optional remote management
  - Chassis based converters may be helpful if fiber is used within individual schools



Use Media Converters in Government Applications



Recommended Product Families

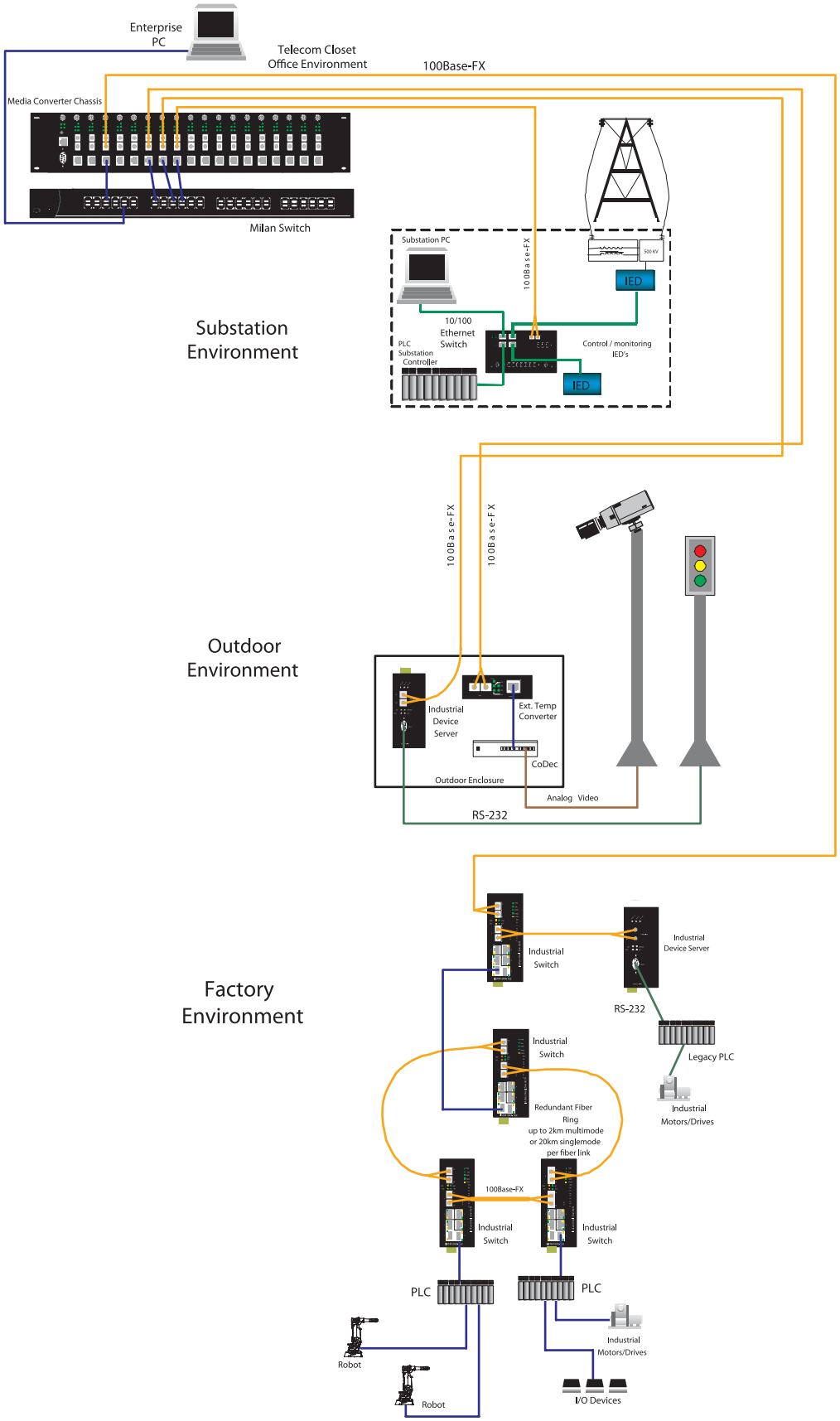
- Point System™ Chassis loaded with Ethernet media converters
- Redundant Power Supplies for Point System™ Chassis
- SNMP Management Module
- Stand-Alone Ethernet Media Converters

Whether it's a an **educational campus or a government agency campus**, a wide area network operating at local area network speeds can be a major contributor to the success of any organization.

Traditionally, when organizations link multiple buildings in their campuses they would choose between dial-up and T1/E1 connections ranging in speeds from 56Kbps to 1.544Mbps. Compare this to Ethernet with speeds from 10Mbps to 1000Mbps. Media converters can be used to deploy fiber optic cable as a high-speed backbone between buildings; providing a campus environment with connections at Ethernet speeds.

- Media converters connect disparate media types:
  - Transparently connect coax, twisted pair, and fiber cable
  - Connect new technologies to legacy systems
- Fiber cable in the outside plant protects data from the negative effects of electrical storms:
  - On fiber, data travels as waves of light, versus electrical pulses on copper cable
  - Data can be corrupted and networks can fail due to lightening strikes
  - Government agencies will value the security benefits of transmitting sensitive data through unsecured areas on fiber cable
- An all-inclusive Ethernet network provides communications at LAN network speeds:
  - 10Mbps, 100Mbps, and 1000Mbps connections are significantly faster than dial-up or T1/E1 connections
  - Combine media converters, fiber cable, and existing copper switches to create a high-speed backbone between schools
- Protect investments in RJ-45 based copper networking equipment:
  - Experience the benefits of fiber without the expense of replacing copper-based networking equipment
- Fiber offers unlimited bandwidth possibilities:
  - Future Proofing - Fiber can handle tomorrow's faster technologies

Use Media Converters for Industrial Applications



Industrial Conversion Solutions from Transition Networks:

- Eliminate EMI concerns easily & affordably by converting electrical signaling into fiber optic signaling.
- Extend the life of copper equipment and avoid costly equipment upgrades.
- Maximize efficiency and control by using SNMP management to access remote devices.
- Future proof networks allowing companies to keep up with technology while keeping within budget.
- Connect legacy equipment such as PLCs and automation systems to high speed networks.
- Increase product uptime and reliability by using Extended Temperature converters in non-climate controlled environments.
- Reduce quality issues using quality converters from Transition Networks backed by a lifetime warranty on all Transition Networks brand products, including power supplies.

Recommended Product Families

- **Extended Temperature Ethernet and Fast Ethernet:**
  E-TBT-FRL-05(xxHT) and
  E-100BTX-FX-05(xxHT)
- **High Speed Serial:**
  CPSVT26xx and SPSVT26xx
- **RS232 and RS485:**
  CRS2F3111, SRS2F3111, CRS4F3111 & SRS4F3111
- **Industrial Media Converters**
  SISTF10xx-111
- **Industrial Unmanaged Switches**
  SISTF10xx-141
  SISTF1010-150
  SISTF1010-180
- **Industrial Managed Switches**
  SISTM10xx-162
  SISTM1010-180
- **Device Servers**
  SDSFE3xxx-1xx
- **Substation Unmanaged Switches**
  SIBTF10xx-1xx

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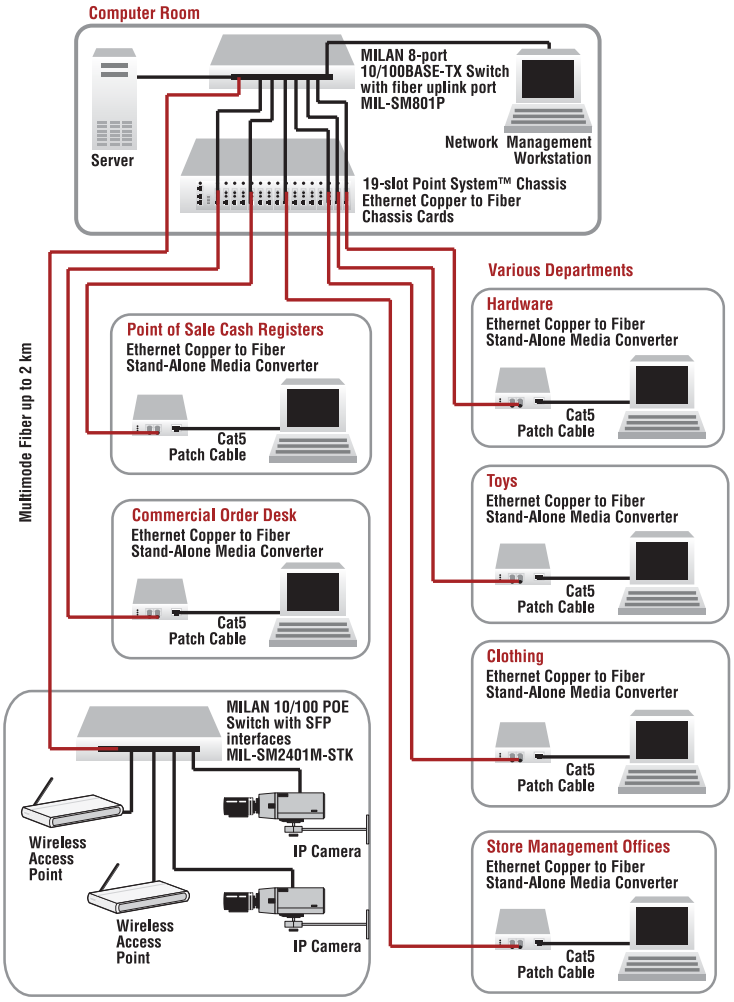
Use Media Converters in Retail Applications



Recommended Product Families

- Point System™ Chassis loaded with Ethernet media converters, a redundant power supply, and a management module
- Stand-Alone Ethernet media converters

Retail sales companies are seeing the benefits of having state of the art information technology systems in their stores. Instant access to sales volumes and inventory levels has allowed store managers to control costs while ensuring they have the right mix of products on their shelves.

Large warehouse retailers in particular can benefit from using media converters while deploying fiber cabling to connect their point of sale equipment, receiving dock workstations, and printers back to the main computer room over long transmission distances.

- Network signals can travel farther on fiber optic cable than on twisted pair:
  - 2 km on multimode
  - 20 km on single mode
  - Long haul options for 40, 60, 80 & 120 km
- Solutions requiring less equipment cost less:
  - Use fiber to create direct links between the main computer room and the end stations
  - Reduce the number of communication closets required with a copper solution
- Media converters allow fiber to be deployed into twisted pair networks:
  - Protect investments made in UTP based hubs and switches
  - Copper switches cost less than their fiber equivalents
- Savings of 40% are often realized with the installation of copper switches and media converters versus an all fiber solution.
- POE switches allow for centralized and managed power distribution and backup.
- Low port count switches connect multiple devices over fiber in a very cost-effective manner.

Chassis Based Solution in Main Computer Room

- Hot swappable media converters
- Redundant Power Supplies
- SNMP Management

Stand-Alone Converters at the End Stations

- Optional remote management
- Allows use of copper NIC's
- Wall mount brackets are available

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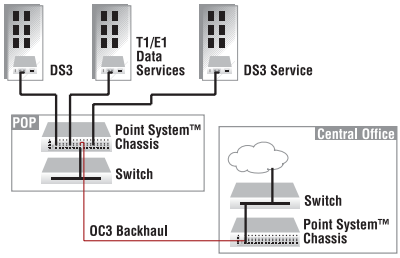
T1/E1, ATM, V.35/X.21/RS530, POTS, E&M

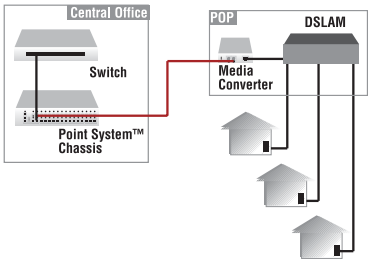
Use Media Converters for Data Solutions

- T1/E1 converters offer remote end management to assist in troubleshooting without sending a technician to the remote site.
- Loopback allows the network to be fully tested during installation and assist in troubleshooting the network.



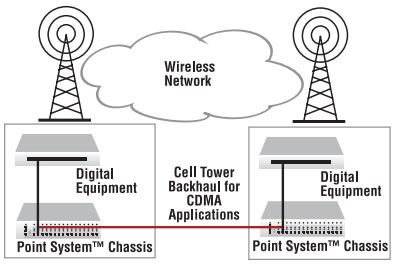
Use Media Converters in DSL Backhaul Applications

- OC3, V.35, IP DSLAM Backhaul applications



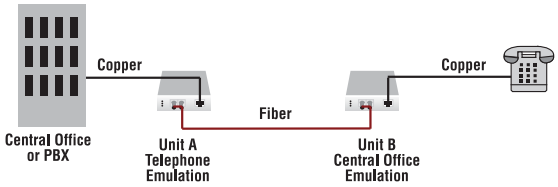
Use Media Converters in Cell Tower Applications

- Use Transition Networks OC12 single mode to multimode converters to connect remote cell towers.



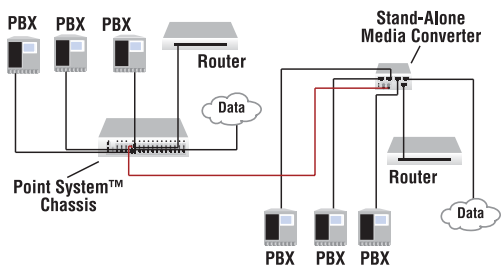
Use Media Converters in POTS Applications

- Transition Networks POTS converters allow fiber to be deployed where lightening strikes may cause network outages.



4x T1/E1, 10/100 Ethernet & RS232 Fiber Mux

- Use 4x T1/E1 converters to transport multiple T1/E1 lines and RS232 data channel over one fiber.
- Monitor local & remote end device
- Configure remote devices using in-bound management
- Troubleshoot the segment using Loopback and channel monitor port



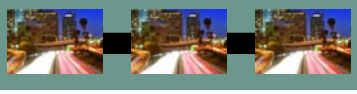
Media converters allow service providers to deploy traditional voice and data solutions to customers.

Chassis-based Solution in Data Center:

- Hot-swappable converters
- Power Supplies:
  - AC
  - 48VDC
  - Redundant power
  - Hot-swappable
- SNMP Management
- NEBS Compliance

Stand-alone Devices used for Customer Premise Equipment:

- Low Cost
- Ease of Installation
- Remote Management available for many protocols



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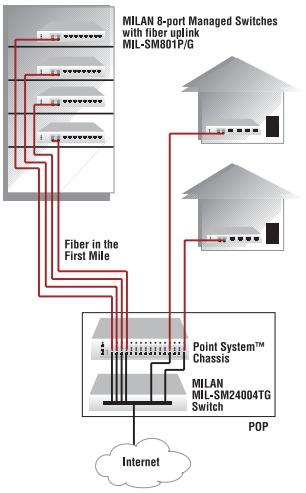
Use Media Converters for Internet Services

- Data Delivery in multi-tenant dwellings
- 802.1P provisions traffic to packet order sensitive data such as VoIP and video
- Spanning tree offers network redundancy for customers
- Redundant links for mission critical applications

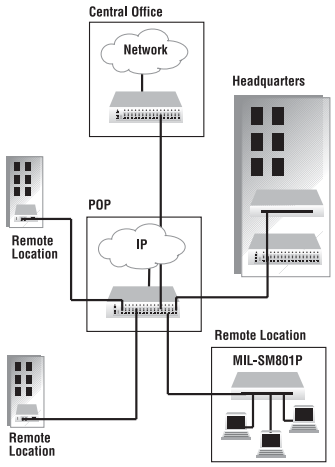
Remote Management

- Upstream and downstream bandwidth control allows service providers to offer an array of services
- Remote Loopback assists in diagnosing network problems



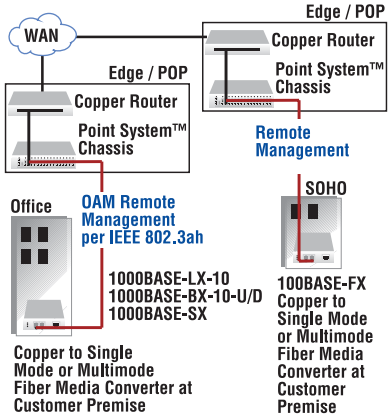
Use Media Converters for Transparent LAN Services

- Connect remote locations to the main office in Metropolitan Area Networks
- Remote Management helps troubleshoot problems at remote locations
- Physical LAN link established for security data connections



Use Media Converters in COs and as CPE devices in Ethernet Access Networks

- Provide cost-effective Ethernet services to customer
- Remotely monitor and manage devices in-band
- Provide different service levels using Bandwidth Allocation
- Easily troubleshoot the segment using remote Loopback



Ethernet Solutions

The simplicity, ease of use, and low costs have made Ethernet an excellent option for many service providers that are offering data solutions. Media converters are a perfect choice for last mile delivery, back haul applications and any network extension need.

- 10Mbps, 100, 10/100, 1000, 10/100/1000Mbps media converters
- Reduce fiber strand counts with MILAN switching solutions
- Complete control of the equipment with unified SNMP management on media converters and switches
- Modular chassis allow hardware to be purchased when customers are acquired
- Stand-alone devices offer a low cost, easy to install CPE device
- Reach customers up to 125 km (77.7 miles)

Chassis-based Solution in Data Center

- Hot-swappable converters
- Power Supplies:
  - AC
  - 48VDC
  - Redundant power
  - Hot-swappable
- SNMP Management
- NEBS Compliance

Video Surveillance or Security over Fiber

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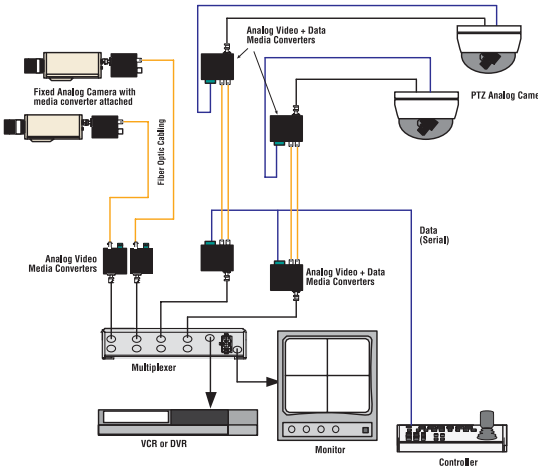
Analog Video Networks

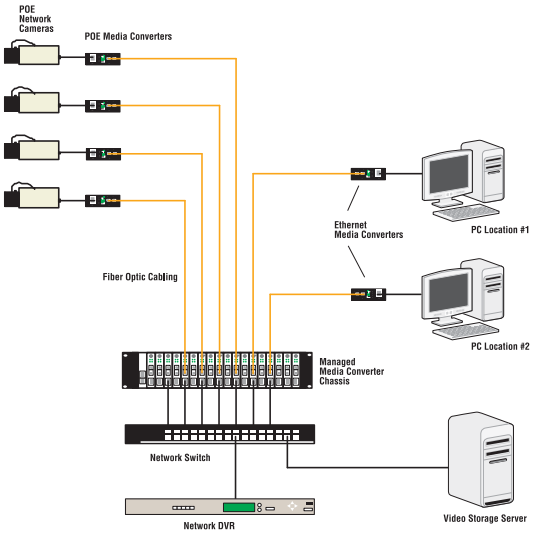
- Transport analog video over fiber optic cabling
- Realize the improved bandwidth, quality and transmission distance of fiber optics
- Media converters available for:
  - Fixed analog cameras
  - PTZ analog cameras
- Available in stand alone or chassis-based form factors
- Extended operating temperature for non-temp controlled environments



IP Video Networks

Cost-effectively integrate IP cameras into your network with:

- Industry-leading Ethernet Media Conversion portfolio
  - Managed or un-managed
  - Chassis-based or stand-alone
  - Office-grade, extended temp or industrial grade
- Multi-layer managed and un-managed Ethernet switches
- Power-over-Ethernet (PoE) Media Converters, injectors and switches
- Enterprise-class 802.11g Wireless Access Points and Adapters



Video security and surveillance are now a corporate and government strategy reality. Whether retailers are monitoring for shoplifting or employee theft, corporations identifying visitors and employees or monitoring hazardous work areas, governments and municipalities combating street crime and terrorism, casinos preventing cheating and fraud or even homeowner's protecting their families and assets, one cannot deny the benefits of an effective video security system.

In the ever increasing reach of today's video security and surveillance systems, many security professionals are finding that the quality, bandwidth and distance needed to perform even the most basic surveillance is beyond the reach of coaxial and UTP cabling, posing an insurmountable hurdle when trying to monitor the many outreach locations of a typical surveillance installation.

- IP-based video security systems are limited to 100 meters (328 feet) or less over UTP cabling infrastructure
- Analog-based CCTV video security systems are limited to 228 meters (750 feet) or less over coaxial cabling infrastructure

Video media conversion solutions from Transition Networks can help you to:

- Integrate fiber optic cabling into your existing video surveillance network
- Access existing fiber infrastructure to transport video from established surveillance network
- Realize the benefits of fiber optic cabling
- Extend surveillance network reach with increased video transport distances of over 10km
- Reduce video quality issues common with UTP and coaxial cabling
- Improved security of the closed video system
- Immunity to interference from high voltages, EMI and RFI
- Improved reliability and overall transmission performance

Advanced Product Features

Auto-Negotiation (802.3u)

Auto-Negotiation allows devices to perform automatic configuration to achieve the best possible mode of operation over a link. Devices with this feature will broadcast their speed (10Mbps, 100Mbps, etc.) and duplex (half/full) capabilities to other devices and negotiate the best mode of operation between the two devices.

- No user intervention required to determine best mode of operation
- Optimal link established automatically
- Quick and easy installation

While the inclusion of this feature is beneficial, the ability to disable it is equally beneficial. In the event of a non-negotiating end device trying to connect to a negotiating device, the mode of operation will drop to the least common denominator between the two devices (i.e. 100Mbps, half-duplex). Disabling this feature gives the user the ability to force the connection to the best mode of operation when trying to link with a non-negotiating device. Most Transition converters with Auto-Negotiation will allow you to disable this feature.

AutoCross™

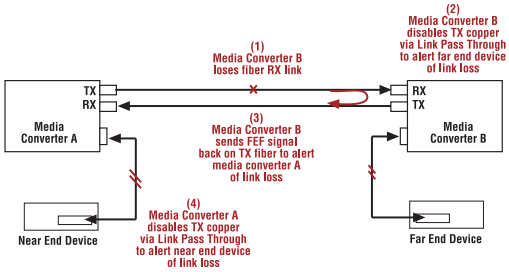
Automatically detects and configures the twisted pair port on the converter to the correct MDI or MDI-X configuration.

- Eliminates an entire category of troubleshooting
- No need to identify cable type—straight-through or crossover
- No user intervention required to determine correct button / switch settings

Far End Fault (802.3u)

Far End Fault (FEF) is a troubleshooting feature that is generally used in conjunction with Link Pass Through to notify both end devices of a loss of link. In the event of a loss of the fiber RX signal on the far end converter the converter will automatically generate a Far End Fault signal and send it on its TX fiber port to notify the near end converter of a fiber link loss. Link Pass Through will then disable the copper links on both ends; alerting both end devices of network trouble (see diagram below).

- Both end devices automatically notified of link loss
- Prevents loss of valuable data unknowingly transmitted over invalid link
- Allows for quick diagnosis and resolution of network problems



Transition Networks's media converters that include the FEF feature do not need to be used as pictured above as they will work with other network devices that support Far End Fault per IEEE standards.

If someone tells you media conversion is a commodity product that anyone can bring to market, they probably haven't looked at the extensive product suite offered by Transition Networks. With the industry's most comprehensive offering of full-featured products, Transition's media converters stand out as "the choice" among industry IT professionals.

Generally, media converters are low-level OSI model devices with no IP or MAC addresses and therefore are transparent to the network. This "transparency" makes them very inexpensive and easy to use, but also can make troubleshooting the network very difficult. In an effort to overcome this difficulty and to make media converters "visible" to network managers, Transition has designed their full-featured products to include the most advanced features on the market today, including:

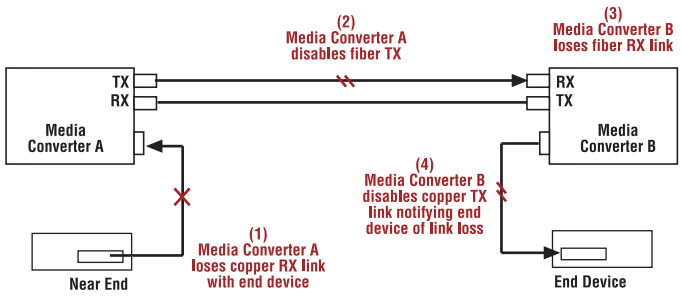
- Auto-Negotiation
- AutoCross™
- Far End Fault
- Link Pass Through
- Transparent Link Pass Through
- Pause
- Remote Management
- Automatic Link Restoration
- Loopback
- Bandwidth Allocation
- Remote Firmware Upgrade
- Source Address Change
- Last Gasp
- Single Fiber Optics

Advanced Product Features

Link Pass Through

Link Pass Through is a troubleshooting feature that prevents media converters from isolating link failures and it allows end devices to be notified in the event of a loss of link. Link Pass Through provides the media converter with the ability to monitor both the fiber and the copper RX ports for a loss of signal. If a loss of RX signal occurs on one media port, the converter will automatically disable the TX signal on the other port. By shutting down the fiber TX port, the link failure is "passed through" to the remote converter and device (see diagram below).

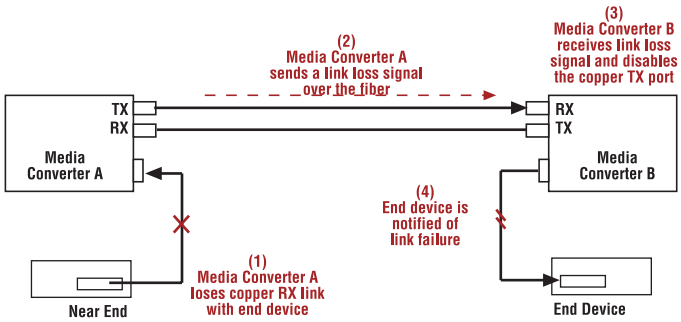
- End device automatically notified of link loss
- Prevents loss of valuable data unknowingly transmitted over an invalid link



Transparent Link Pass Through

Transparent Link Pass Through will notify an end device of a link failure just like Link Pass Through, however it uses a different method for "passing through" this information. Transparent Link Pass Through sends a link-loss signal over the fiber, instructing the remote converter to shut down the copper port thus notifying the end device, while maintaining the fiber link between the two converters (see diagram below).

- End device automatically notified of link loss
- Fiber link remains up as it carries a link-loss signal



Pause (IEEE 802.3xy)

PAUSE signaling is an IEEE feature that temporarily suspends data transmission between two devices in the event that one of the devices becomes overwhelmed. In the event that a device needs some time to clear network congestion, it will send out a PAUSE signal to the other end device, which will then wait a pre-determined amount of time before re-transmitting the data. Transition's converters will pass PAUSE signaling unhindered; ensuring that the message is delivered to the end device.

- PAUSE enabled devices allowed to work properly
- Prevents loss of valuable data transmission
- Reduces bottlenecks and allows for efficient use of network devices

PAUSE signaling is not standardized over fiber media. Transition's media converters will communicate this signaling over fiber between the converters to pass this signaling on to the other end device.

Remote Management

All chassis-based converters from Transition Networks® can be managed through SNMP. Now, select stand-alone products can also be managed through SNMP when used in conjunction with a chassis based converter. While chassis based products are generally placed in the telecommunications room, stand-alone converters are generally placed in remote locations away from network administrators. Remote in-band management over fiber allows administrators access to the remote device to check status and enable/disable features or the device itself.

- Visibility of remote converters for network administrators
- Allows for centralized management of media converters

Advanced Product Features

Automatic Link Restoration

After a link failure condition has been corrected, Transition Networks's converters will automatically re-establish link in all network conditions.

- No need to reset devices

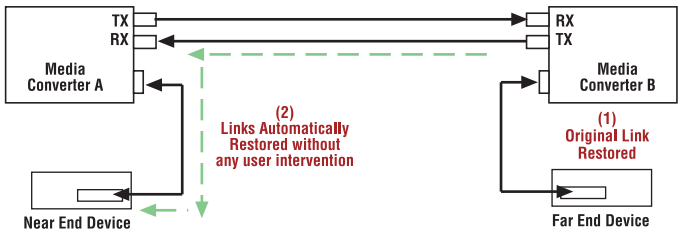
Transition Networks's converters will automatically re-establish link when connected to switches if link was lost. With other manufacturers' converters the user must reset the converter to re-establish the link.

- Auto-Negotiation Enabled

Automatic Link Restoration allows the users to continue using Auto-Negotiation with Link Loss Notification features. With other manufacturers' converters the user must disable Auto-Negotiation and hard set the link.

- Link Pass Through Activated in both directions

Automatic Link Restoration on Transition Networks's products allows users to continue using Link Loss Notification feature activated in both directions. Many competitive solutions allow for Link Loss Notification activation only in one direction. If Link Loss feature is activated in both directions, competitive products are put in a "deadly embrace" and they cannot restore the link without resetting the converters.

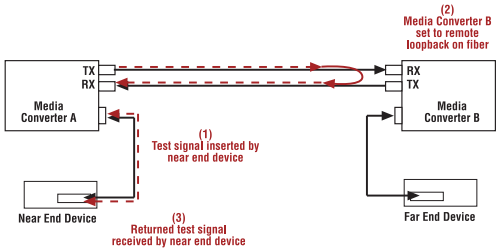


Loopback

Select Transition Networks products are equipped with Loopback. This feature puts a converter in a special mode that enables the device to loop back the signal from the RX port to the TX port on either media for testing and troubleshooting purposes. Test signals from a tester (Firebird, etc.) can then be inserted into the link and looped back as received by a device to test a particular segment of the link (i.e. copper or fiber). Loopback can be either local or remote depending on the location of the converter in the link.

- Allows network diagnostics from local or remote location
- Quickly pinpoints problem areas of end to end link by testing a particular segment

Some converters have separate copper and fiber loopback functions that can be enabled separately, while others will loopback both copper and fiber at the same time when enabled. Please refer to the specific product page for details.



Bandwidth Allocation

Bandwidth allocation is an important feature found on select converters which allows network administrators to set the bandwidth of the converter in 64KB increments via SNMP management. The bandwidth can be allocated in any multiple of 64KB from 0Kb up to the full bandwidth capability of the media converter and can be entered in either KB or Mb values.

- Effectively manage bandwidth usage in the network to support critical processes or activities
- Provide only the contracted amount of bandwidth to paying customers
- Provide only the bandwidth necessary to end users

Remote Firmware Upgrade

New product features are continuously being added to Transition Networks's products. These improvements are also available for many products already installed in the field. Management modules and many media converters can be updated remotely via firmware upgrade. The remote upgrade feature eliminates the need to ship the products back to the manufacturer. The firmware upgrades can be performed by a user either locally via a Console port or remotely via TFTP.

The upgrades do not require the reconfiguration of the SNMP management or converter feature settings.

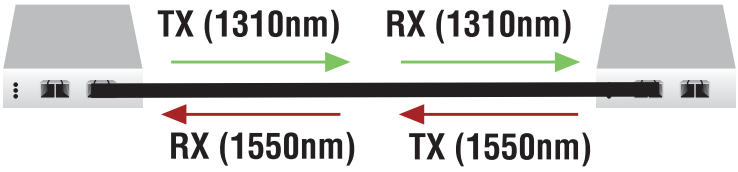
Advanced Product Features

Single Fiber

Single fiber technology offers a 50% savings in fiber utilization. It is an attractive solution to maximize the usage of a limited number of fiber runs.

In a traditional optical link, a fiber pair consists of two uni-directional strands. The single fiber technology multiplexes two optical wavelengths of 1310nm and 1550nm into a single strand fiber. In a single fiber media converter each wavelength is responsible for either the transmit or receive function. Consequently, the bi-directional transmission is achieved by using a single strand. The converters in a single fiber scenario "match" each other's wavelengths. Converter A transmits at the wavelength of 1310nm and receives at 1550nm while the other converter transmits at 1550nm and receives at 1310nm. Therefore, converters are usually used in pairs.

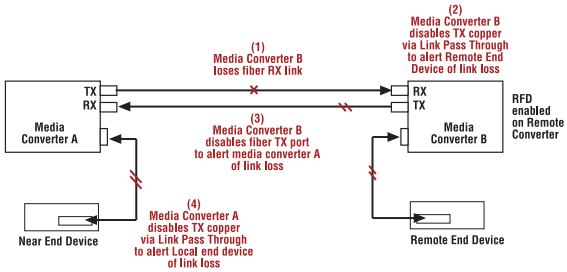
Single fiber technology is available on all Transition Networks Media Converters in maximum distance ranges from 20 to 120km.



Remote Fault Detect

Remote Fault Detect (RFD) is a trouble shooting feature found on Gigabit Ethernet copper-to- fiber media converters. By enabling Remote Fault Detect on the remotely located media converter, the status of the fiber link will be monitored and any link failures will be reported back to the local converter. Should the remote converter lose its fiber RX signal, Remote Fault Detect will force the converter to shut down its fiber TX port. If Link Pass Though is enabled on both ends, then the copper ports will also be shut down to notify both end devices of the link failure.

- Enable Remote Fault Detect on the remote device
- Local end-device will be notified of remote fiber RX loss



Source Address Change

Select bridging media converters are capable of detecting and reporting changes in the MAC (Ethernet hardware) address of the attached equipment. This feature is very useful when administrators intend that only a particular physical device be attached to a particular port.

When the MAC address of a connected device changes (new device is inserted) the administrator receives the trap with the notification of a change.

Last Gasp

Select Transition Networks products are equipped with Last Gasp. This feature enables the device to store a small amount of power to enable it to send out an SNMP trap to alert the management console in the event of a power failure.

- Notification of an impending power loss before it happens
- Allows for quicker resolution of the power loss

Network Equipment Building System (NEBS)

The Point System™ has been built to meet NEBS (Network Equipment Building System) requirements. NEBS is a major test of quality that is extremely valuable for any organization supplying or purchasing network equipment. A product that is NEBS certified has passed a suite of tests ensuring that the product will:

- Operate reliably and be serviceable
- Not negatively affect other service providing equipment
- Operate properly in adverse environmental conditions
- Not cause harm to the environment or personnel

NEBS criteria are designed to accomplish the following:

- Ensure equipment compatibility with the telephone industry's electrical environment
- Simplify equipment planning and installation
- Protect telecommunications equipment from service outages caused by incompatible equipment
- Prevent interference to licensed radio transmitters and other close proximity telecommunications equipment
- Minimize the risk of fires to telecommunications equipment
- Ensure equipment operation under the range of temperature, humidity, vibration, and airborne contamination present in telecommunications locations
- Ensure equipment and service survivability in the event of earthquake
- Protect personnel from injury

ROHS Compliance

All Transition Networks products are now available for shipment in compliance with the European Union Commission Decision of August 18, 2005, Directive 2002/95/EC on the Reduction of Hazardous Substances (RoHS), which takes effect on July 1, 2006.

The RoHS Directive prohibits the sale into the European Union of electronic equipment containing certain amounts of lead, mercury, hexavalent chromium, polybrominated biphenyls (PBBs) and polybrominated diphenylethers (PBDEs). Their maximum contents are defined at a maximum concentration value of less than 0.1% by weight in homogenous material. An additional substance, cadmium, is restricted to 0.01% in homogenous material.

The RoHS Directive allows a lead-in-solder exemption for telecommunication products and Transition Networks will be taking this exemption. Our component vendors and sub-contract manufacturers are continuing to remove lead from the entire process whereby this exemption will no longer be required.

There is no change in the model number or ordering procedure.

Waste Electronic Equipment (WEEE)

Transition Networks is also working to implement the WEEE recycling program with its partners in the EU. The WEEE directive addresses the problem of product recycling products and requires product to be labeled to identify participation in the program. The EU approved “double-crossed wheelie bin” symbol will affixed to the product, and recycling instructions included in the user’s manual.

Environmental Stewardship

While the RoHS and WEEE directives are limited to the European Union other countries are considering similar legislation. Transition Networks will continue to monitor the development of new legislation and implement any new requirements. Transition Networks is currently ISO14001 compliant and will continue to work to minimize our impact on the environment.

There are three levels of NEBS approvals. Transition Networks’s Point System™ meets the NEBS Level 3 requirements:

Level 1:
- Minimum environmental compatibility
- Applications: Prototype equipment, equipment used for non-vital services

Level 2:
- Assures limited equipment operability in controlled or normal environment
- Applications: equipment used in data centers or failure-tolerant services

Level 3:
- Assures maximum equipment operability
- Applications: critical network equipment (e.g. switches, transport products, power systems)

CISPR Class B

CISPR is the acronym standing for the Comité International Spécial des Perturbations Radioélectriques (International Special Committee on Radio Interference) of IEC.

CISPR Class B is an international standard that covers the amount of interference from electromagnetic signals allowed from electronics in homes and multi-tenant dwellings. It is more stringent than the Class A certifications required of most electronics. Point System™ products have been tested to meet all requirements of Class A. Transition’s 18-slot Point System™ chassis (CPSMC1800-200) is also FCC Class B and CISPR Class B compliant (residential).

In order to maintain Class B rating all devices in the system must also be Class B rated.

CISPR Class A

FCC (Federal Communications Commission) is the regulatory body that establishes standards for interstate telecommunication services in the United States. Part of the FCC’s responsibilities is to establish standards for radiated emissions for a variety of operating environments such as residential and commercial structures. FCC Class A describes requirements for radiated emissions in commercial structures while FCC Class B describes emissions requirements for residential applications.

In addition to being FCC & CISPR Class A compliant (commercial use) Transition’s 18-slot Point System™ chassis (CPSMC1800-200) is also FCC Class B and CISPR Class B compliant (residential).

Products

The Point System™—Slide-In-Module Media Converters housed in a multi-slot chassis

SNMP Management; High-density applications; Redundant power

Pages 20 – 69

Stand-Alone Media Converters

Single point of conversion; Mid to low density applications; Rack or Wall Mountable

Pages 70 – 123

Corning Plug and Play™ Gigabit Ethernet Media Conversion Module

Integrate fiber optic cabling into your Data Center with the highest density, scalable copper-to-fiber solution on the market today.

Page 108

Analog Video Media Conversion

Our Analog Only and Analog with Data video products give you the flexibility and functionality you need to build or extend your video surveillance system.

Pages 68 – 69 & 122 – 123

Industrial Stand-Alone Media Converters, Switches & Device Servers

Hardened devices designed to reliably operate in harsh environments such as those found on factory floors, outdoor enclosures or other hazardous environments.

Pages 124 – 131

PCI Media Converters

Installs directly into the PCI slot on a workstation or server; No additional power required.

Page 133

GBICs and Small Form Factor Pluggables

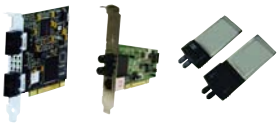
Copper to Fiber connections via the GBIC or SFP port on switches and routers; Economical; Hot-swappable

Pages 134 – 136

CWDM for Optical Networks

While utilizing existing infrastructure, CWDM products allow you to transmit multiple protocols over an existing duplex fiber link.

Page 137



Network Interface Cards & PCMCIA Adapter Cards

Low-cost fiber connectivity; Redundant fiber connections available

Pages 138 – 142

Managed & Unmanaged Switches

Full selection of low port count to high port count Ethernet switching solutions

Pages 143 – 162

POE Switches, Converters and Accessories

Power & data over a single CAT-5: a new technology for wireless access points, VOIP phones & network cameras

Pages 78, 86, 97, 98, 148 – 150 & 163

Fiber and Copper Patch Cords

Page 164 – 165

Point System™ Chassis Specifications

1-slot Point System™ Chassis


with external power


with internal power

Ordering Info

CPSMC0100-200	1-slot Point System™ Chassis with external power supply
CPSMC0100-210	1-slot Point System™ Chassis with internal power supply
CPSMC0100-226	1-slot Point System™ Chassis with two external power supplies

Note: The following slide-in-modules cannot be used with any of the 1-slot Point System™ Chassis: C4TEF, CAPTF, CBFTF-120, CBFTF-140, CEMTF, CGFEB or CMEFG.

1-slot Chassis Specifications

Dimensions	-200 model: Width: 3.85" [98 mm] Depth: 5.67" [145 mm] Height: 1.06" [27 mm] -210 model: Width: 6.1" [155 mm] Depth: 5.88" [149 mm] Height: 1.5" [38 mm] -226 model: Width: 4.4" [113 mm] Depth: 5.67" [145 mm] Height: 1.06" [27 mm]
Power	-200 model: External AC/DC included: wall mount 12V DC, 0.5A unregulated -210 model: Internal AC/DC included: 12VDC, 1.25A, unregulated -226 model: **First External AC/DC included:** 12VDC, 1.25A, 100 – 240VAC, 50/60Hz, Regulated, UL Listed **Second External AC/DC included:** 12VDC, 2.5A, 100 – 240VAC, 50/60Hz, Regulated, UL Listed
Environment	0 – 50°C operating; 5% – 95% humidity, non-condensing; 0 – 10,000 ft. altitude
Shipping Weight	2.0 lbs. [0.90 kg]
Compliance	-226 model: UL Listed -200, -210 & -226 models: EN55024; CISPR22/EN55022 Class A & B; FCC Class A & B; [Class B-compliant only when using Class B-compliant media converters.] CE Mark
Warranty	Lifetime

Optional Accessories	Description
SPS-1872-SA	18 – 60VDC; 17 – 30VMRS input; external power supply; output 12.6VDC; 1.0A max. *(see page 67)*
CPSRE1-190	19" rack mount ears for CPSMC0100-210

Mounting Options *(see page 70)*

WMBD	DIN Rail Mount Bracket
WMBP	Wall Mount Bracket
WMBV	Vertical Wall Mount Bracket

2-slot Point System™ Chassis

Ordering Info

CPSMC0200-200	2-slot Point System™ Chassis
CPSMC0200-210	2-slot Point System™ Chassis with Last Gasp option
CPSMC0200-221	2-slot Point System™ Chassis with two external power supplies; Includes Las Gasp option
CPSMC0200-226	2-slot Point System™ Chassis with two external power supplies

2-slot Chassis Specifications

Slots	(2) slots for slide-in-modules
Dimensions	Width: 5.5" [140 mm] Depth: 5.7" [145 mm] Height: 2.2" [56 mm]
Power	-200 & -210 models: External AC/DC 12V DC 1.5 A -221 & -226 models: **First External AC/DC included:** 12VDC, 1.25A, 100 – 240VAC, 50/60Hz, Regulated, UL Listed **Second External AC/DC included:** 12VDC, 2.5A, 100 – 240VAC, 50/60Hz, Regulated, UL Listed
Environment	0 – 50°C; 5% – 95% humidity, non-condensing; 0 – 10,000 ft. altitude
Shipping Weight	2.0 lbs. [0.90 kg]
Compliance	-221 & -226 models: UL Listed -200, -210, -221 & -226 models: EN55024; CISPR22/EN55022 Class A&B; FCC & CISPR Class A&B [Class B-compliant only when using Class B-compliant media converters.] CE Mark
Warranty	Lifetime

Optional Accessories	Description
CPSMM-120	Single Slot Master Management Module *(see page 24)*
CPSMM-210	Single Slot Expansion Management Module *(see page 24)*
SPS-1872-SA	18 – 60VDC; 17 – 30VMRS input; external power supply; output 12.6VDC; 1.0A max. *(see page 72)*
CPSRE2-190	19" rack mount ears

Mounting Options *(see page 70)*

WMBD	DIN Rail Mount Bracket
WMBP	Wall Mount Bracket
WMBV	Vertical Wall Mount Bracket

8-slot Point System™ Chassis

Ordering Info

CPSMC0800-100	8-slot Point System™ Chassis
CPSMC0810-100	8-slot Point System™ Chassis with -48V power supply

8-slot Chassis Specifications

Slots	(8) slots in front for slide-in-modules
Unit LEDs	Power, Link, Receive, Transmit (with use of optional LED module)
Dimensions	Width: 17.0" [430 mm] Depth: 10.5" [267 mm] Height: 1.75" [45 mm]
Power	Universal Input 100 – 240V, 50/60 Hz, 3.0 – 1.5 A
Environment	0 – 40°C; humidity: 5% – 95% non-condensing; 0 – 10,000 feet altitude
Shipping Weight	8.0 lbs. [3.6 kg]
Compliance	UL Listed; EN60950; FCC & CISPR Class A; CE Mark
Warranty	Lifetime

Optional Accessories	Description
CPSMM-120	Single Slot Master Management Module *(see page 24)*
CPSMM-200	Dual Slot Master Management Module *(see page 24)*
CPSMM-210	Single Slot Expansion Management Module *(see page 24)*
CPSMP-180	Redundant power supply 120/240 VAC
CPSMP-190	Redundant -48V power supply
CPSFP-200	Face Plate (required for all empty slots) [5 included with chassis]
CPSLD-100	LED power status panel
CPSRE-238	23" Rack Mount Ears (1 set)

Point System™ Chassis Options

Number of Ports	Class	Redundant Power Option	Rack Height	LEDs
19-slot	Class A	CPSMP-200 (AC) CPSMP-210 (DC) [rear loading]	2U	Optional LED Module: Power, Link, Receive, Transmit
18-slot	Class B*	CPSMP-200 (AC) CPSMP-210 (DC) [rear loading]	2U	Power, Link, Receive, Transmit
13-slot	Class A	CPSMP-120 (AC) CPSMP-130 (DC) CPSMP-140 [front loading]	2U	Power
8-slot	Class A	CPSMP-180 (AC) CPSMP-190 [rear loading]	1U	Optional LED Module: Power, Link, Receive, Transmit
2-slot	Class B*	yes	2.2" [56 mm]	First Power, Second Power
1-slot	Class B*	yes	1.0" [25 mm]	First Power, Second Power

**when using Class B compliant Slide-In-Modules*

13-slot Point System™ Chassis

Ordering Information

CPSMC1300-100	13-slot Point System™ Chassis
CPSMC1310-100	13-slot Point System™ Chassis with -48V power supply
CPSMC1320-100	13-slot Point System™ Chassis with 24V DC power supply

13-slot Chassis Specifications

Slots	(13) slots in front for slide-in-modules (2) slots in front for power supplies
Unit LED	Power
Dimensions	Width: 17.0" [430 mm] Depth: 12.0" [305 mm] Height: 3.5" [89 mm]
Power	Universal Input 100 – 240V; 50/60 Hz; 3.0 – 1.5 A
Environment	0 – 50°C; humidity; 5% – 95% non-condensing; 0 – 10,000 feet altitude
Shipping Weight	15 lbs. [7.0 kg]
Compliance	UL Listed; EN55022 Class A; EN55024; EN61000; CE Mark
Warranty	Lifetime

Optional Accessories	Description
CPSMM-120	Single Slot Master Management Module *(see page 24)*
CPSMM-200	Dual Slot Master Management Module *(see page 24)*
CPSMM-210	Single Slot Expansion Management Module *(see page 24)*
CPSMP-120	Redundant power supply 120/240 VAC
CPSMP-130	Redundant -48V power supply
CPSMP-140	Redundant 24V DC power supply
CPSFP-200	Face Plate (required for all empty slots) [10 included with chassis]
CPSRE-230	23" Rack Mount Ears (1 set)

18-slot Point System™ Chassis

Ordering Information

CPSMC1800-200	18-slot Point System™ Chassis
CPSMC1810-200	18-slot Point System™ Chassis with -48V power supply

18-slot Chassis Specifications

Slots	(18) slots in front for slide-in-modules; (2) slots in back for power supply modules
Unit LEDs	Power & In Use LEDs for each installed power supply module
Dimensions	Width: 17.0" [430 mm] Depth: 14.3" [363 mm] Height: 3.5" [89 mm]
Power	Input Range: 85 – 265 VAC at 47 – 63 Hz.; Rated at 110 watts max. NOTE: Power supply modules supply +12VDC at 9A maximum. Only one power supply module provides power to the chassis and installed modules; the second power supply is redundant in case the first fails.
Environment	0 – 60°C*; 5% – 95% humidity non-condensing; 0 – 10,000 feet altitude (*0 – 60°C when redundant power or fan module is used; 0 – 50°C if single power supply is used.)
Shipping Weight	17.5 lbs. [7.9 kg]
Compliance	CPSMC18x0-200: UL Listed, CE Mark, EN55022, EN55024, EN61000, FCC Class B, CISPR Class B and NEBS
Warranty	Lifetime

Optional Accessories	Description
CPSMM-120	Single Slot Master Management Module *(see page 24)*
CPSMM-200	Dual Slot Master Management Module *(see page 24)*
CPSMM-210	Single Slot Expansion Management Module *(see page 24)*

Note: To maintain FCC Class B rating, CPSMM-200 should be used.

CPSMP-200	Redundant power supply 120/240 VAC
CPSMP-210	Redundant -48V power supply
CPSFM-200	Fan Module
CPSFP-200	Face Plate (required for all empty slots) [15 included with chassis]
CPSRE-230	23" Rack Mount Ears (1 set)

19-slot Point System™ Chassis

Ordering Information

CPSMC1900-100	19-slot Point System™ Chassis
CPSMC1910-100	19-slot Point System™ Chassis with -48V power supply

19-slot Chassis Specifications

Slots	(19) slots in front for slide-in-modules (2) slots in back for power supply modules)
Unit LEDs	Power, Link, Receive, Transmit (with use of optional LED module)
Dimensions	Width: 17.0" [430 mm] Depth: 14.3" [363 mm] Height: 3.5" [89 mm]
Power	Universal Input 100 – 240V; 50/60 Hz; 3.0 – 1.5 A
Environment	0 – 60°C*; humidity: 5% – 95% non-condensing; 0 – 10,000 feet altitude (*0 – 60°C when redundant power or fan module is used; 0 – 50°C if single power supply is used.)
Shipping Weight	17.5 lbs. [7.9 kg]
Compliance	UL Listed; EN60950; FCC & CISPR Class A; CE Mark
Warranty	Lifetime

Optional Accessories	Description
CPSMM-120	Single Slot Master Management Module *(see page 24)*
CPSMM-200	Dual Slot Master Management Module *(see page 24)*
CPSMM-210	Single Slot Expansion Management Module *(see page 24)*
CPSMP-200	Redundant power supply 120/240 VAC
CPSMP-210	Redundant -48V power supply
CPSFM-200	Fan Module
CPSFP-200	Face Plate (required for all empty slots) [15 included with chassis]
CPSLD-100	LED power status panel
CPSRE-230	23" Rack Mount Ears (1 set)

Point System™ Features

The Point System™ is a cost effective, fully configurable, managed modular media conversion platform, that provides users with the flexibility to build their own custom media conversion system. The system includes rack mountable chassis and modular, hot-swappable slide-in-cards. Each Point System™ Slide-In-Module media converter, regardless of protocol, can be slid into the same chassis and provide managed media conversion services to suit a custom network application.

The Point System™ modular media conversion system is a desired solution in enterprise and service provider networks, because it offers:

- Cost Savings
- Flexibility
- Maximum Control
- Reliability
- Potential for Future Growth

Cost Savings

Transition's media converters allow users to only pay for fiber ports used when adding fiber to their networks. **Combining media conversion with copper-based equipment can save up to 45% in cost.** The Point System™'s modular design allows users to add converters as they need to add fiber to their network. Therefore, users can utilize their existing copper-based equipment and not buy fixed multiport fiber devices.

Flexibility

(☑ I need one place to convert multiple links)
(☑ I need one place to convert multiple protocols/speeds)

Because the cards are modular, users can add them gradually when fiber is added to the network and the network grows. All card blades are **hot-swappable** and powered by chassis power supplies. The modularity also means that the Point System™ supports a mix of various protocols in the chassis. For example, a 19-slot chassis could be populated with 19 homogenous or unique converters (e.g. (Ethernet, T1/E1, ATM or OC-12). Network designs differ widely, so Transition Networks has introduced a **variety of chassis models** to address each specific need. The chassis cabinets are available in **19, 18, 13, 8, 2, or 1 slots**.

Maximum Control

(☑ I need SNMP managed media converters)

Administrators continuously monitor the network, allowing them to quickly respond to and troubleshoot possible issues. Configuring the network is essential to the administrators as no one has a perfect network that can run without any intervention. To improve the efficiency and save response time administrators turn to **SNMP management** because it offers them considerable cost savings by eliminating the need to send a technician to a remote location and by improving the accuracy of the configuration.

The Point System™ offers a full control over the media conversion process. This full control translates into three major aspects of network management. It offers:

- **A complete monitoring capability** where cards can be monitored for power status, link status, individual card settings and connection options. The chassis cabinet itself provides information about internal temperature conditions, redundancy configuration of each power supply and current power consumption by each power supply.
- **Active configuration** of the media conversion platform (drive-by-wire). The users have the ability to power on or off chassis card slots and reconfigure each power supply's mode (primary/secondary). Each media converter card provides a distinct set of user configurable features such as Auto-negotiation Disable/Enable; Force 100Mbps/Full Duplex; Assign priority level threshold (IEEE 802.1P); etc.
- **Alarm notification capability.** Failure conditions and specific events discovered by Point System™ are reported to multiple user-defined destinations in the form of an SNMP Trap.

This full control is protected by sophisticated SNMP Management Security Features (page 31) to ensure that only authorized personnel can access the management.

Is Point System™ What I Need?

- ☑ I need one place to convert multiple links.
- ☑ I need redundant power supplies.
- ☑ I need SNMP managed media converters.
- ☑ I will be adding links in the future.
- ☑ I will be upgrading protocols in the future.

If you answered YES to the majority of the questions the Point System™ was designed for you.

Why Point System™?

- Complete Modularity
- SNMP Management
- Management Redundancy
- Power Redundancy
- Power Surge Protection
- Hot-swappable converters
- Remote firmware upgrade
- Scalability

Point System™ Chassis Features

Point System™ Features

Reliability
(☑ I need redundant power supplies or redundant management)

Network uptime is crucial and the Point System™ includes several features that will ensure your network will stay up and running. The Point System™ chassis offers a **redundant power option**. Each chassis is shipped with one power supply. The chassis can accommodate a second power supply. Power supplies are available for AC or DC power. The power supplies are hot swappable so they can be replaced while the chassis is running. The instant fail-over bus ensures that if one power supply fails, the second power supply will keep the chassis up and running.

Redundancy of SNMP management is also available by placing two primary management modules in a chassis or a stack of chassis. The management modules negotiate primary and secondary responsibility to manage the chassis or stack of units. In the event the primary management module fails the secondary unit takes control.

Furthermore, each individual converter **maintains its feature configuration** within a microcontroller on the converter card. If a management module fails the cards will stay up and running because the configuration information is not lost with the loss of a management module. Each card and power supply has built in surge protection to protect the unit from power surges. The power supplies are equipped with a standard 4-amp fuse and can be repaired in the field.

When multiple chassis are connected to each other the SNMP management protection in case of failure becomes critical. Healing Bus enables the users to maintain full control of the daisy chained chassis so that the failure of any one module will not effect remaining modules in the stack.

Future Growth
(☑ I will be adding links in the future)

Point System™ bridges the gap between continuous development of new networking technologies and the long-term nature of an investment in networking gear. Transition Networks has implemented several features that will allow you to keep your Point System™ Chassis current.

- Each of the management modules can be updated via **firmware upgrade**. So, as network technologies advance and new converters are introduced, the management module of today can support the media converter of tomorrow.
- Similarly, our media converters can also be updated in the field. The firmware upgrade can be performed either:
  - **locally** via a Console port or
  - **remotely** via TFTP.
- Furthermore, a new converter addition does not require the reconfiguration of the SNMP management settings.

Point System™ Components

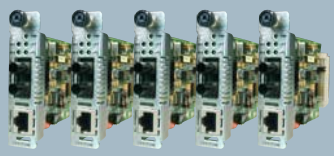
The typical Point System™ will consist of four major components:

- Chassis Cabinet (19, 18, 13, 8, 2, or 1 slots) *(pages 20 – 21)*
- Management card for SNMP management *(page 24)*
- Media Converter Slide-In-Modules *(pages 32 – 65)*
- System Accessories (GUI, redundant power supplies, fans, rack extensions, etc.)

Point System™ Product Family

Point System™ Chassis

Point System™ Slide-In-Module Media Converters



Point System™ Management Modules

Focal Point™ 2.1 SNMP Management Platform

Point System™ SNMP Management

Point System™ Management Modules

CPSMM-120 - Single Slot Master Management Module

The most popular management card. This device occupies a single slot in the Point System™ chassis and it fully supports all management features. The CPSMM-120 has a DB-9 serial interface for the CLI (command line interface) as well as a 10BASE-T RJ-45 interface for network management. The CPSMM-120 should be used when the Point System™ chassis is intended to be used as a single device (when the user does not intend to stack multiple Point System™ Chassis together.)

CPSMM-200 - Dual Slot Master Management Module

The CPSMM-200 should be used when the user intends to manage multiple stacked chassis (up to 8 chassis per stack) via a single IP or if the application requires an FCC/CISPR Class B rating.

This device occupies two slots in a Point System™ chassis and will also fully support all management features. The CPSMM-200 has a DB-9 serial interface as well as a 10BASE-T interface similar to the CPSMM-120. However, it also includes two (2) additional RJ-45 ports ("in" and "out") to accommodate stacking of multiple Point System™ Chassis. The CPSMM-200 also differs from the CPSMM-120 in that it is FCC/CISPR Class B rated (can be used in residential applications.)

CPSMM-210 - Single Slot Expansion Management Module

This device, used in conjunction with the CPSMM-200 (or CPSMM-120 when inserted in the same chassis) management module, allows the user to manage up to eight Point System™ chassis together in a "virtual cabinet". This brings the total number of media converters managed by a single IP to 143. The CPSMM-210 has two RJ-45 ports ("in" and "out") used for stacking multiple Point System™ chassis. The CPSMM-210 incorporates a self-healing bus so that the failure of any one module will not effect remaining modules in the stack.

The CPSMM-210 should be used when the user has a requirement to stack multiple chassis. The CPSMM-210 also has a FCC/CISPR Class B rating for deployment in residential applications.

Specifications

Product Number	**CPSMM-120** Single Slot Master Management Module
Protocol	IP, UDP, SNMP, TCP, TFP, ARP, ICMP, TFTP, HTTP
Ports	DB-9 (x1), RJ-45 (x1)
LEDs	Power, Link, TX, RX
MIB Supported	MIB I , MIB II
Storage Temp	-40 – 80° C
Operating Temp	0 – 50° C
Altitude	0 – 10,000 ft.
Shipping Weight	1 lb. [0.45 kg]
Dimensions	Width: 0.86" [22 mm] Depth: 5.0" [127 mm] Height: 3.4" [86 mm]
Compliance	FCC & CISPR Class A; CE Mark
Warranty	Lifetime

Specifications

Product Number	**CPSMM-200** Dual Slot Master Management Module
Protocol	IP, UDP, SNMP, TCP, TFP, ARP, ICMP, TFTP, HTTP
Ports	DB-9 (x1), RJ-45 (x3)
LEDs	Power, Link, TX, RX
MIB Supported	MIB I , MIB II
Storage Temp	-40 – 80° C
Operating Temp	0 – 50° C
Altitude	0 – 10,000 ft.
Shipping Weight	2 lbs. [0.90 kg]
Dimensions	Width: 2.0" [51 mm] Depth: 5.0" [127 mm] Height: 3.4" [86 mm]
Compliance	FCC & CISPR Class B; CE Mark
Warranty	Lifetime

Specifications

Product Number	**CPSMM-210** Single Slot Expansion Management Module: Used in conjunction with CPSMM-120 or CPSMM-200
Protocol	IP, UDP, SNMP, TCP, TFP, ARP, ICMP, TFTP, HTTP
Ports	RJ-45 (x2)
LEDs	Power, Link
MIB Supported	MIB I , MIB II
Storage Temp	-40 – 80° C
Operating Temp	0 – 50° C
Altitude	0 – 10,000 ft.
Shipping Weight	1 lb. [0.45 kg]
Dimensions	Width: .086" [22 mm] Depth: 5.0" [127 mm] Height: 3.4" [86 mm]
Compliance	FCC & CISPR Class B; CE Mark
Warranty	Lifetime

Point System™ SNMP Management

All Point System™ Slide-in-Modules can be SNMP managed.
The card inside the chassis slot is connected to the backplane. Through the backplane the management card communicates with each card in the chassis and sends requests for status and configuration. Each card has a set of predefined features that are known to the management card so the user can receive current status and can enable or disable all configurable features. The information about these manageable features are included in the MIB document so the management application software can access this document and ask for a particular feature to be changed accordingly. The user communicates with the management card over the Ethernet cloud or directly through the serial port.

Remote Management
Select Transition converters can be remotely managed. This enables administrators to monitor & configure remotely located stand-alone converters straight from the Network Management Station (NMS) without leaving the office. IEEE802.3ah standard is implemented on remotely managed 10/100 and 10/100/1000 converters. These products also comply with MEF 9 and MEF 14 Carrier Ethernet technical specifications.

SNMP v.1, Telnet, HTTP, TFTP are the standard protocols used by The Point System™ SNMP Agent.

Chassis cabinets can be daisy chained (max 8 can be stacked) and managed via a single IP.

The following suite of features are currently available and manageable on Transition's converters:

- Auto-Negotiation enabled/disabled
- AutoCross enabled/disabled
- Link Pass Through enabled/disabled
- Far End Fault enabled/disabled
- Bandwidth Allocation
- Remote Loopback
- Pause enabled/disabled
- 802.1P enabled/disabled
- Port mirroring enabled/disabled
- Pause enabled/disabled
- Source Address Change
- AIS fiber enabled/disable
- AIS Copper enabled/disabled
- Loopback copper enabled/disabled
- Loopback fiber enabled/disabled
- Chassis reset
- Module reset
- Module - software mode/hardware mode
- Power Supply - hardware mode/software mode
- Signal detect
- Line build out
- Redundant management mode (Primary/Secondary)
- Redundant Power Supply mode (Primary/Secondary)

Alert Notification Features
The users can receive information about possible failures happening on the network. These notifications are referred to as traps. The traps inform administrators either about the failure or when the failure was removed and the network is back to its full operational capability. Several events are considered trappable; which means when they happen a trap will be generated. The management module is capable of generating the traps to up to four user specified IPs. The following traps are generated by Transition Networks management agent:

pSError(111) - A monitored MIB variable (e.g. Fiber Link) has changed from its 'operational' state to its 'error' state.

pSErrorClear(112) - A monitored MIB variable has changed from its 'error' state back to its 'operational' state.

pSDeviceInserted(113) - A new slide-in device was detected on the bus.

pSDeviceRemoved(114) - A slide-in device that had previously been detected on the bus has not been recording its presence for a long time, and is presumed to have been physically removed.

pSDeviceColdStart(115) - A slide-in device has indicated that it has rebooted. This is most common when the device is initially powered up, but in some cases this trap indicates a warm start.

pSPowerLost(116) - The cabinet (e.g. chassis) into which this management module is installed has lost power and is running on capacitors. Both the cabinet and the management module must support the Last Gasp feature for this trap to be sent.

pSCabinetInserted(117) - A new cabinet was detected.

pSCabinetRemoved(118) - A cabinet that had previously been detected has not been heard from in a long time, and is presumed to have been physically removed.

Group Control String
One of the most distinguished features of the Point System™ management solution is "Group Control String". This feature allows users to put similar cards in functional groups. If the user needs to enable or disable a certain feature, it does not have to be done on each card individually. To save time changes can be applied to these groups of cards at the same time by a single click.

The following information is provided by the management:

- Part Number
- Serial Number
- Description
- Firmware revision level
- Software revision level
- Power Status - Chassis
- Power Status - Converter
- Port Number
- Port Type
- Speed of operation
- Mode (Full/half duplex)
- Link up/down
- Feature On/Off Status
- Module - inserted/removed
- Operating Temperature
- Power Consumption
- RMON Statistics
- Digital Monitoring of Optical Interfaces (DMI)
- VLAN Status and Settings
- QOS Status and Settings

Point System™ SNMP Management

SNMP Management Access Methods

There are several ways to access media conversion management and perform maintenance or monitoring functions.

It can be accessed via:

- Transition's Focal Point™ 2.1 Graphical User Interface (GUI) Application
- Web-Based application, standard web browser already installed on the network (Internet Explorer, Netscape, Opera)
- Command line interface via:
  • Console Port
  • Telnet

The management capabilities of Focal Point™ and Web Based are almost identical.

Users who already use other management platforms such as HPOV or Cisco Works can also manage Transition Networks' converters with these applications. Focal Point™ 2.1 is then used as Plug-in within HPOV or Cisco Works. Other NMS application can also be used to Manage Transition's products provided the users imported the Transition's MIB (available on-line) into these applications. This process is called Compiling the MIBs.

Focal Point™ 2.1—(Free of Charge)

Transition Networks SNMP software management platform, Focal Point™ 2.1, is **free of charge** and is available to users with any chassis or management card purchase. Focal Point™ 2.1 is designed to offer full SNMP read/write management capabilities via a user friendly graphical user interface (GUI).

Focal Point™ 2.1 software allows the user to enable and disable features incorporated into each of the media converter modules. See page 24 for list of manageable converter features.

Focal Point™ 2.1 has several new unique features to simplify network administration. The new features include:

- Universal Trap Viewer allows viewers to receive all traps, including traps from third party devices, on the network
- Service providers can utilize the RMON tools compatible with JDBC database
- One-click-telnet
- Upgrade tool
- Live-chat with Transition Networks Tech support personnel
- Direct links to product literature such as datasheets, manuals and release notes
- Email notification and audible alarms

Focal Point™ 2.1's newly designed screens are very intuitive, and easy to navigate. Customers can now navigate between multiple agents from within one screen and switch between chassis cabinets through the drop down menu. The Focal Point™ 2.1 has two types of views: a summary screen, that reports the converter's link status and its critical features, and a detailed screen that brings up everything about the particular device. These views provide quick access to network management.

One of the most important features of this package is an integrated Trap Viewer application.

It allows users to see and log received traps from IP based network equipment (including third party devices). Traps are displayed in a user friendly, readable format. Users can filter traps to read desired messages only.

Product Configuration

Transition's Focal Point™ 2.1 supports the following software platforms:

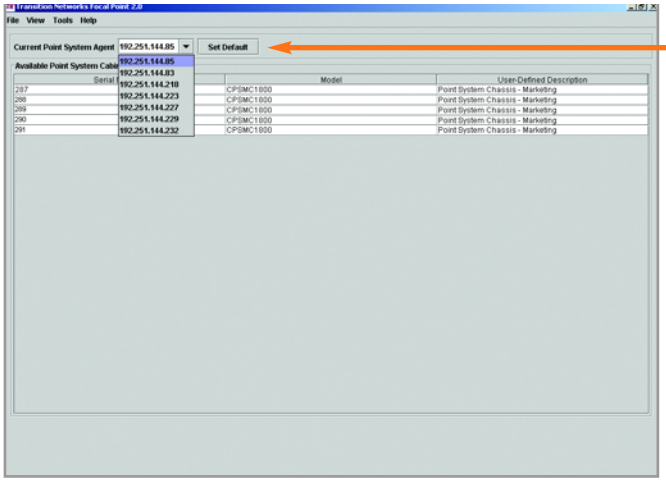
- MS Windows® 95/98/Me
- MS Windows® NT 4.0 (x86), 2000, XP
- HP OpenView NNM 5.0 or Higher
- Sun Solaris 2.5 or higher, HP OpenView NNM 4.11 or higher
- HP-UX 10.20 or higher, HP OpenView NNM 4.11 or higher
- Java™ Runtime Engine (JRE™) 2 version 1.4.0 or higher required; (included in installation CD)

Focal Point™ 2.1 Features

- Graphical User Interface (GUI)
- Status monitoring
- Enables/disables converter features
- **Universal Trap Viewer** Allows viewers to receive all traps, including traps from third party devices, on the network.
- One-click-telnet
- Upgrade tool
- Live-chat with Transition Networks Tech Support personnel
- Direct links to product literature

Main Screen

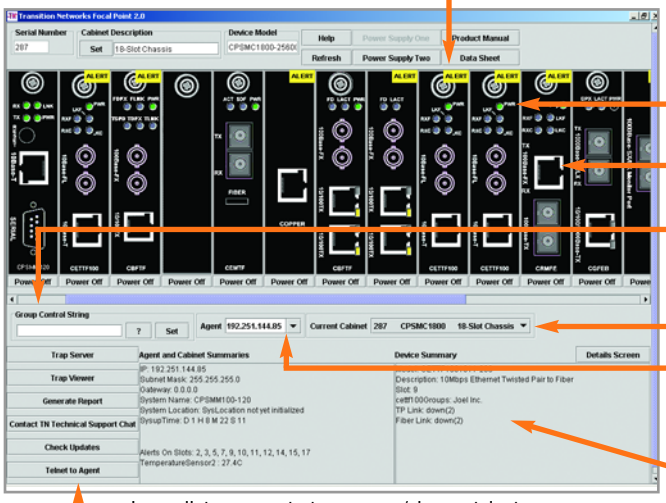
The main screen allows users to enter new or select existing IPs of all agents (management cards). When the IP is entered/selected the list of available chassis is displayed.



List of previously accessed IPs are stored in the program. No need to retype the IP once entered.

Cabinet View Screen

Displays the selected chassis information. Each converter is displayed with connectors, LEDs, and status (e.g. ALERT).



An Alert is displayed if a link is lost or if there is another problem

LEDs display actual status

Specific cards with connectors are displayed

Group Control String for ease of simultaneous feature changes on multiple cards

View other chassis managed by the same agent

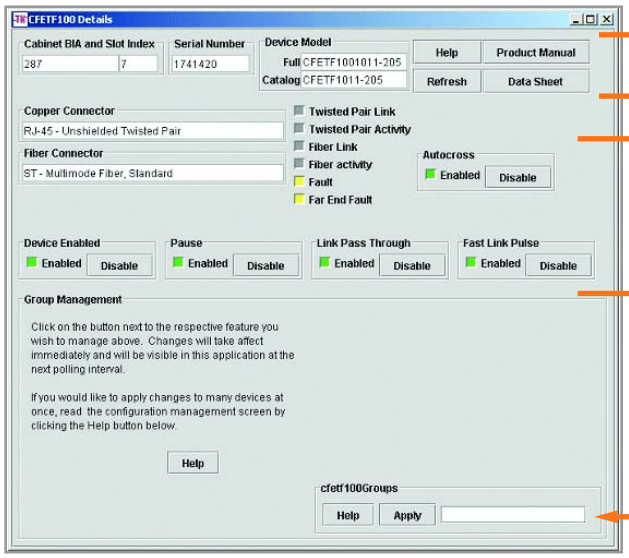
Ability to switch agents (management cards) and view them from the same window

Agent & card summaries for ease of monitoring

Immediate access to trap server/viewer; telnet, technical support & upgrade agent.

Converter Card Screen

An individual card can be highlighted by clicking on the converter in the Chassis Screen. A screen is displayed that allows the network administrator to edit the converter's configuration.



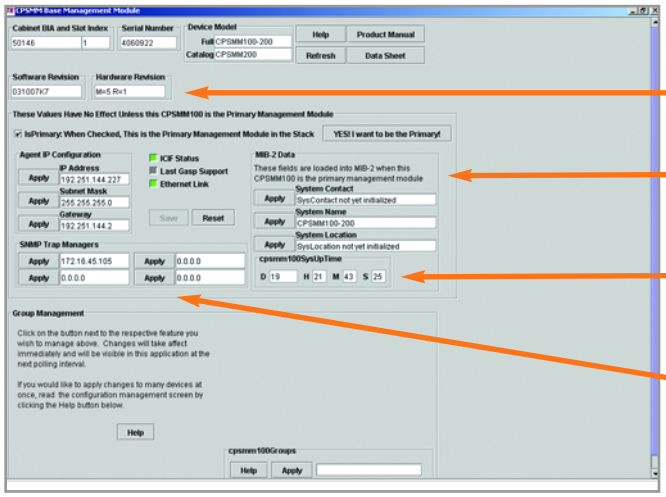
Links to product literature

Enable & disable various features such as Bandwidth Allocation; Loopback or Auto-Negotiation

Specific Group Control String can be assigned to the cards

Management Module Screen

Displays the interface for the primary management card.



Shows revision level of software & firmware

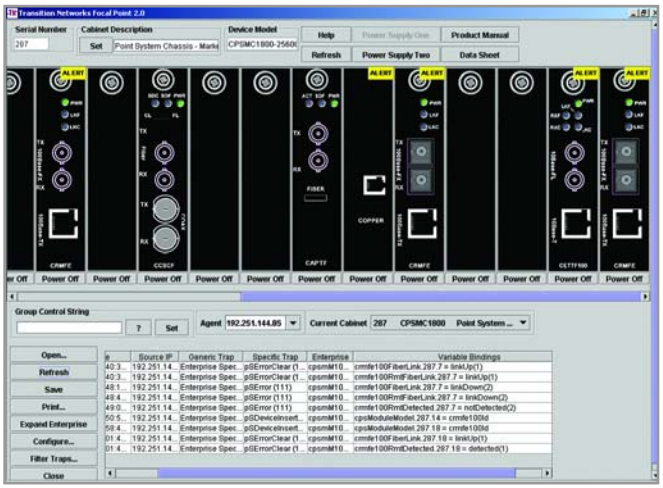
Management Module specific system contact, name, and location

Provides uptime for each Management Module

Administrator specified IP addresses to receive TN traps

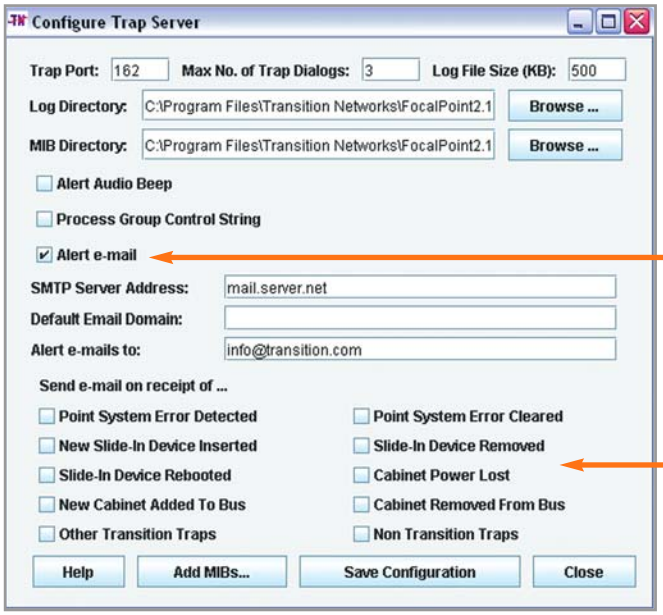
TrapViewer Screen

Displays traps received from Transition's as well as third party devices.



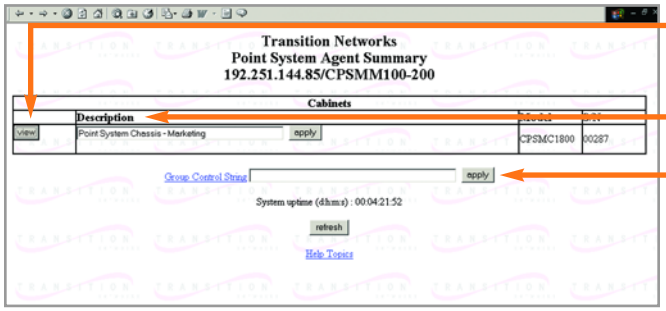
Traps Filters enable users to view only desired trap types (e.g. Link Down)

RMON statistics represented in graphical format and the database file.



Agent Summary (Web-based) Screen

Transition Networks's Point System™ products can be managed via the Internet. Web Based Management offers all of the same read/write functionality of Focal Point™, but allows the network manager to access their converters with any browser software.



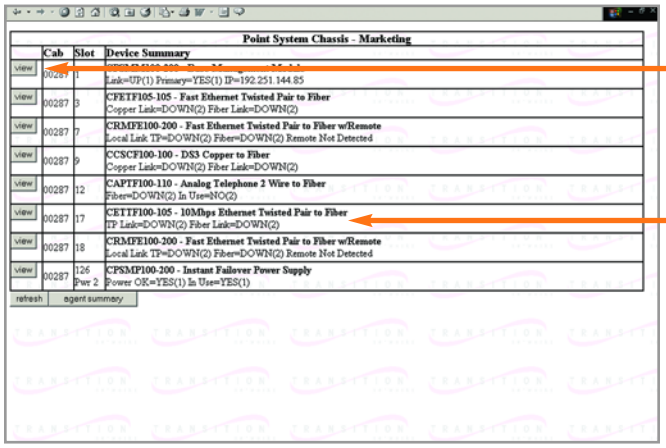
Click to view Cabinet Summary

User defined description

Search via user defined groups

Cabinet View (Web-based) Screen

Displays all of the cards in the selected chassis.

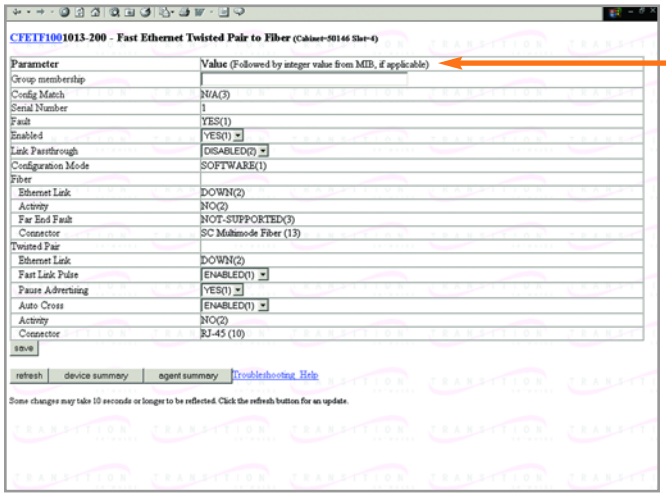


Click to view card

Summary of converter's critical info

Card View (Web-based) Screen

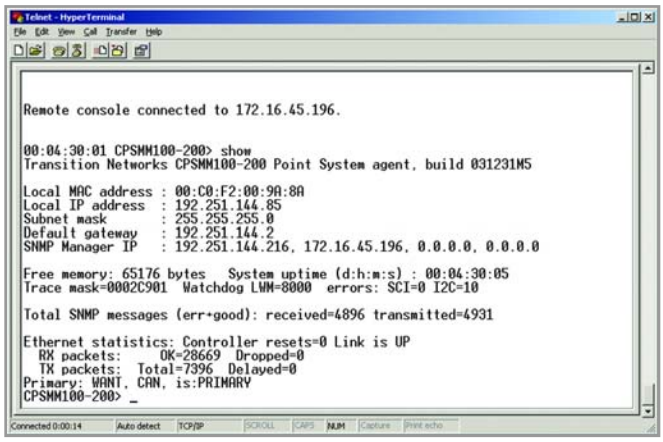
Allows user to view and change settings.



Assign to user defined group
(Group Control String; see page 25)

Command Line Interface management (CLI)

CLI offers the most comprehensive set of management features. CLI is used during the initial setup (set IPs etc.) and trouble shooting, but can also be used in day-to-day Point System™ management (converter management, firmware upgrades, management security features, etc.)



Advanced Management Security

Point System™ offers a comprehensive approach to SNMP management security. It was designed with several levels of access protection to ensure that network management is accessible only to those who are authorized.

Password (a.k.a. Community names)

Two levels of access privileges are password protected.

- Read access (monitor ONLY) - a Community Name with a particular set of privileges to monitor the network without the right to change any of its configuration
- Read/Write (View & make changes) - a Community Name with an extended set of privileges to monitor the network as well as actively change any of its configuration

Firewall

Transition Networks management agent contains an internal IP firewall. This built-in filter examines each incoming packet to determine whether to forward it to the management or to discard it. The decision is based on user-defined rules. These rules are entered in the Command Line Interface. Once the rule is entered the firewall matches packets based on source IP address, destination protocol, destination port, or some combination of the three. Each rule also contains a "drop" or "pass" action, making it possible to configure the filter with either a "default accept" or a "default deny" philosophy.

FILTERMAC

Filtermac can be used in conjunction with its firewall feature. The FILTERMAC allows the user to specify up to four trusted Ethernet Hardware addresses (i.e. MAC addresses) that are permitted to send IP packets to the Agent. Once this feature is used no other MAC addresses are permitted access to the management information.

SNMP Lock

SNMP messages originating from outside of the local subnet are ignored unless the Management Module has a Telnet session connected to the same IP address. This feature is designed to make it much more difficult for outside intruders to make changes to management settings via a method known as "IP Spoofing." In an IP Spoofing attack, the intruder configures an attacking computer to assume the identity of a trusted computer (NMS) in order to bypass firewall security measures. This deters intrusions by making the IP spoofing of SNMP datagrams much more difficult.

Lock/Unlock CLI

LOCK / UNLOCK - The LOCK command allows the CLI to be locked so that no commands can be entered.

(Unsolicited log messages are still displayed, and SNMPLOCK functionality is still active when the console is locked.) Once the console is locked, it remains locked to all users regardless of the access method until UNLOCK command is used.

Traps

The Agent sends Coldstart traps when it is rebooted and enterprise specific Error/Error Clear traps when Ethernet link goes down or up. Unexpected receipt of these traps could indicate that an attack is in progress.

Security Update

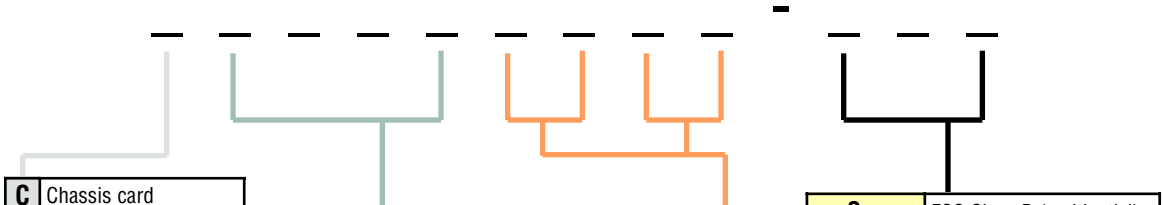
RIDS

Reactive Intrusion Detection System automatically bans any IP station sending questionable traffic that causes HTTP errors. This command can be combined with the FireWall (FWALL) for advanced security such as to protect an authorized station from ever being banned.

HTTP Port

This command allows the user to change the TCP port for the web server operation. Typically Port 80 is used for World Wide Web HTTP traffic, but this can be changed to provide protection from hackers probing the internet for vulnerable ports.

Point System™ Part Number Key



C	Chassis card
S	Stand-Alone converter

4TEF	Remotely Managed 4x T1, Ethernet & RS232 Mux
APTF	POTS 2-wire
BFTF	10/100 Bridging
BFFG	OAM/IP-Based Remotely Managed Bridging Media Converter
CSCF	DS3
DSFE	Fast Ethernet Device Server
FEPE	Power Over Fast Ethernet
EMTF	2/4-wire, Leased Line, E&M
EPOE	Power Over Ethernet
ETTF	10BASE-T to 10BASE-FL
FBRM	10/100BASE-TX to 100BASE-FX OAM/IP Based Remotely Managed
FEPE	Power Over Fast Ethernet
FETF	100BASE-TX to 100BASE-FX
FMFF	Single Mode to Multimode Fiber or Optical Line Converter
GETF	1000BASE-T to 1000BASE-SX/LX
GFEB	10/100/1000BASE-T to 1000BASE-SX/LX
ISTF	Industrial Stand-Alone Converter (10/100BASE-TX to 100BASE-FX)
ISTM	Industrial Stand-Alone Managed (10/100BASE-TX to 100BASE-FX)
MEFG	Remotely Managed IEEE 802.3ah 10/100/1000BASE-TX to 1000BASE-BX/SX/LX
POEB	Power Over Ethernet 10/100BASE-TX to 100BASE-FX
PSVT	High Speed Serial to Fiber
RMFE	Remotely Managed Fast Ethernet
RS2F	RS232 to Fiber
RS4F	RS422/485 to Fiber
SDTF	T1/E1
SEFE	10BASE-T to 10BASE-FL or 100BASE-TX to 100BASE-FX speed selectable
SETF	10/100BASE-TX to 10/100BASE-SX
VIDF	Analog CCTV Video: NTSC, PAL, SECAM

10	RJ-45
11	Multimode (ST)
12	Single Mode (ST)
13	Multimode (SC)
14	Single Mode (SC)
15	Single Mode (SC) Long Haul
16	Single Mode (SC) Xtra Long Haul
17	Single Mode (SC) Long Wave 1550
18	Multimode (MT-RJ)
19	Single Mode (LC)
20	Single BNC
22	Single Mode (ST) Long Haul
24	Extended Multimode (SC)
26	26-pin connector
27	Multimode (ST) Long Haul
29	Single Fiber (SC)
30	Dual BNC
31	DB-9 connector
32	Terminal Block connector
33	RJ-11
35	Single Mode (SC) Long Wave 1550 Extended
39	Multimode (LC)
40	SFP slot
41	5-position Terminal Block

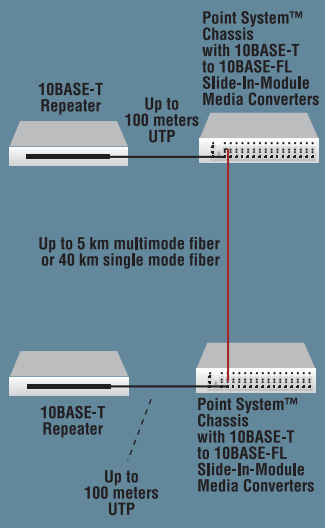
2xx	FCC Class B (residential)
1xx	FCC Class A (commercial)
x1x, x2x	Product Configurations
xx1	Revision Level

Ethernet Copper to Fiber Media Converter

AUTO CROSS · LINK PASS THROUGH · AUTO LINK RESTORE · REMOTE FIRMWARE UPGRADE · SINGLE FIBER

- Integrate mixed cabling environments in either switched or shared Ethernet networks.
- Connect legacy 10BASE-T devices to a fiber based cabling infrastructure.

Extend Network Distance & Connect Unlike Devices



Extend Network Distance

Two 10BASE-T to 10BASE-FL Media Converters used back-to-back extend the distance between two 10BASE-T devices up to 5 km (3.1 mi.) using multimode fiber or up to 40 km (24.9 mi.) using single mode fiber without a repeater.

Connect Unlike Devices

Connect your workgroup to a distant server or a central switch; or extend distances between like and unlike devices in either full or half-duplex modes.

Specifications

See pages 171 – 181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™ 10BASE-T; 10BASE-FL
4-position Switch	**Fiber Port:** Enables / disables network traffic on the fiber port; (Up = enabled) **Copper Port:** Enables / disables network traffic on the copper port; (Up = enabled) **AutoCross™:** Enables / disables AutoCross™ function; (Up = enabled) **Link Pass Through:** Enables / disables Link Pass Through function; (Up = enabled)
3-position Jumper	**Hardware:** Converter mode is determined by 4-position switch settings **Software:** Converter mode is determined by most recently saved on-board microprocessor settings.
Status LEDs	**PWR (Power):** On for normal operation; **LKF (Link Fiber):** Steady LED indicates good fiber link and normal operation; **RXF (Receive Fiber):** Flashing LED indicates data reception on fiber link; **LKC (Link Copper):** Steady LED indicates good copper link and normal operation; **RXC (Receive Copper):** Flashing LED indicates data reception on copper link
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	2.3 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	EN55022; EN55024; EN61000; CE Mark
Warranty	Lifetime

See Also:
- Ethernet Stand-Alone Media Converters
pages 74 – 75

CETTF10xx-x0x

Features (both Class A & B)

- Can be used with any Point System™ Chassis *(see pages 20 & 21)*
- AutoCross™ *(see page 14)*
- Link Pass Through *(see page 15)*
- Automatic Link Restoration *(see page 16)*
- Remote Firmware Upgrade *(see page 16)*

See pages 171–181 for complete fiber optic connector specs.

Ordering Info: Class A

CETTF1011-105
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 850nm MM (ST)
[2 km/1.2 mi.] Link Budget: 13.5 dB

CETTF1013-105
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 850nm MM (SC)
[2 km/1.2 mi.] Link Budget: 13.5 dB

CETTF1018-105
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 850nm MM (MT-RJ)
[2 km/1.2 mi.] Link Budget: 13.5 dB

CETTF1027-105
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 1300nm MM (ST)
[5 km/3.1 mi.] Link Budget: 13.5 dB

CETTF1012-105
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 1310nm SM (ST)
[20 km/12.4 mi.] Link Budget: 7.0 dB

CETTF1014-105
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 15.0 dB

CETTF1022-105
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 1310nm SM (ST)
[40 km/24.9 mi.] Link Budget: 19.0 dB

CETTF1015-105
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 1310nm SM (SC)
[40 km/24.9 mi.] Link Budget: 14.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

CETTF1029-105
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 1310nm TX / 1550nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CETTF1029-106
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 1550nm TX / 1310nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

Ordering Info: Class B

CETTF1011-200
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 850nm mm (ST)
[2 km/1.2 mi.] Link Budget: 13.5 dB

CETTF1013-200
10BASE-T (RJ-45)**[100 m/328 ft.]**
to 10BASE-FL 850nm MM (SC)
[2 km/1.2 mi.] Link Budget: 13.5 dB

CETTF1027-200
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 1300nm MM (ST)
[5 km/3.1 mi.] Link Budget: 13.5 dB

CETTF1012-200
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 1310nm SM (ST)
[20 km/12.4 mi.] Link Budget: 7.0 dB

CETTF1014-200
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 7.0 dB

CETTF1022-200
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 1310nm SM (ST)
[40 km/24.9 mi.] Link Budget: 19.0 dB

FCC & CISPR Class A devices comply with radiated emissions standards for commercial applications in the United States (FCC Class A) and Europe (CISPR Class A).

FCC & CISPR Class B devices comply with radiated emissions standards for residential applications in the United States (FCC Class B) and Europe (CISPR Class B).

Ethernet or Fast Ethernet 10BASE-T to 10BASE-FL or 100BASE-TX to 100BASE-FX

Speed Selectable Media Converter

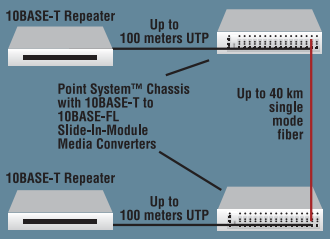
CSEFE10xx-10x

Table of Contents
Select Media Converter
Select Switch

- **Selectable speed setting:** The converter can be set to 10Mbps or 100Mbps. Both copper and fiber ports are automatically set to the same speed.
- **Provides easy migration path** from 10Mbps to 100Mbps networks
- **Converts copper to fiber** to assist with fiber integration into your copper network

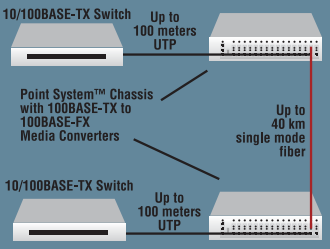
Transition Networks's speed selectable copper to fiber Media Converter allows you to extend the distance between copper based connections with the use of fiber optic cable. The ability to select the speed of converter allows for easy migration from a 10Mbps network today to a 100Mbps network in the future. This converter is a true layer 1 device as both the copper and fiber ports operate at the same speed setting (i.e. 100BASE-TX to 100BASE-FX). **For 10Mbps applications, these devices must be used in pairs.**

Extend Network Distance



Ethernet
Use the 10BASE-T to 10BASE-FL speed setting (back-to-back) to extend the distance between two 10BASE-T devices up to 40 km (24.9 mi.) using single mode fiber without a repeater.

Fast Ethernet
Use the 100BASE-TX to 100BASE-FX setting to extend the distance between any two 100BASE-TX devices up to 40 km (24.9 mi.) using single mode fiber. Or interface directly with a 100BASE-FX compliant port on any device to provide a 100BASE-TX port interface.



Features

- AutoCross™ *(see page 14)*
- Link Pass Through *(see page 15)*
- Automatic Link Restoration *(see page 16)*
- Remote Firmware Upgrade *(see page 16)*
- Supports single mode fiber

Management Features

- Report local converter status to chassis:
  - Copper/fiber link status
  - Hardware/Software mode
  - 10Mb or 100Mb speed setting
  - Link Pass Through on/off setting
- Write operation includes:
  - Enable/disable Link Pass Through
  - Set speed to 10Mb or 100Mb
- Can be used with any Point System™ Chassis *(see pages 20 & 21)*

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™
Switches	**Switch 1:** Link Pass Through on/off **Switch 2:** 10Mb or 100Mb operation
3-position Jumper	**Hardware:** Converter mode is determined by DIP switch settings **Software:** Converter mode is determined by most recently saved on-board microprocessor settings
Status LEDs	**PWR (Power):** Lit for normal operation **F-ACT (Fiber Activity):** Blinking = data reception on the fiber link **F-100 (Fiber Speed):** ON = link at 100Mb **F-10 (Fiber Speed):** ON = link at 10Mb **C-ACT (Copper Activity):** Blinking = data reception on the copper link **C-100 (Copper Speed):** ON = link at 100Mb **C-10 (Copper Speed):** ON = link at 10Mb
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	3.6 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	CISPR/EN55022 Class A; EN55024; EN60950 Class A; FCC Class A; CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CSEFE1012-100
10BASE-T or 100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL or 100BASE-FX 1310nm SM (ST) **[20 km/12.4 mi.] Link Budget: 17.0 dB**

CSEFE1014-100
10BASE-T or 100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL or 100BASE-FX 1310nm SM (SC) **[20 km/12.4 mi.] Link Budget: 17.0 dB**

CSEFE1022-100
10BASE-T or 100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL or 100BASE-FX 1310nm SM (ST) **[40 km/24.9 mi.] Link Budget: 26.0 dB**

CSEFE1015-100
10BASE-T or 100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL or 100BASE-FX 1310nm SM (SC) **[40 km/24.9 mi.] Link Budget: 26.0 dB**

Single Fiber Products
Recommended use in pairs (see page 17)

CSEFE1029-100
10BASE-T or 100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL or 100BASE-FX 1310nm TX / 1550nm RX single fiber SM (SC) **[20 km/12.4 mi.] Link Budget: 19.0 dB**

CSEFE1029-101
10BASE-T or 100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL or 100BASE-FX 1550nm TX / 1310nm RX single fiber SM (SC) **[20 km/12.4 mi.] Link Budget: 19.0 dB**

See Also:

- Ethernet or Fast Ethernet Speed Selectable Stand-Alone Media Converters page 80

Fast Ethernet Class A Media Converter

CFETF10xx-105

- Integrate fiber into a copper environment
- Provides a fiber interface when connected to devices with RJ-45 ports.

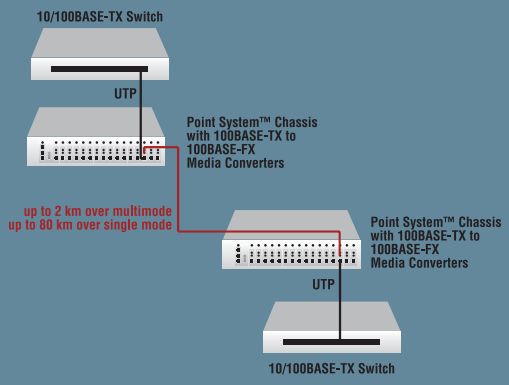
- Extend Network Distance:

Deploy fiber in a strategic and economical manner by using Fast Ethernet converters. Fast Ethernet converters can extend distances that copper cannot reach.

Features

- Round trip delay of only 40 bit times —far below the Class II rating of 92 bit times.
- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- Link Pass Through *(see page 15)*
- Automatic Link Restoration *(see page 16)*
- Remote Firmware Upgrade *(see page 16)*
- Can be used with any Point System™ Chassis *(see pages 20 & 21)*

Extend Network Distance



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™
3-position Jumper	**Hardware:** Converter mode is determined by 4-position switch settings. **Software:** Converter mode is determined by most recently saved on-board microprocessor settings.
4-position Switch	**Auto-Negotiation (UP = enabled):** Allows detection of, and adaptation to, full-duplex or half-duplex mode in device attached to copper link. **Link Pass Through (UP = enabled):** Allows a fault EITHER on the copper OR on the fiber side of the media converter to stop signal and data transmission on the other side. **AutoCross™ (UP = enabled):** Allows straight-through twisted pair cable to be used for crossover connections.
Status LEDs	**Power:** Indicates that DC power is connected **TX (Link Copper):** ON indicates TP link; Blinking indicates TP receive; **FX (Link Fiber):** ON indicates fiber link; Blinking indicates Fiber receive
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	3.4 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	CE Mark, FCC Class A; CISPR Class A; VCCI Class 1
Warranty	Lifetime

Ordering Info [Class A]

See pages 171–181 for complete fiber optic connector specs.

CFETF1011-105
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CFETF1013-105
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CFETF1018-105
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm MM (MT-RJ)
[2 km/1.2 mi.] Link Budget: 14.5 dB

CFETF1014-105
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

CFETF1015-105
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

CFETF1016-105
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[60 km/37.3 mi.] Link Budget: 29.0 dB

CFETF1017-105
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1550nm SM (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB

FCC & CISPR Class A devices comply with radiated emissions standards for commercial applications in the United States (FCC Class A) and Europe (CISPR Class A).

FCC & CISPR Class B devices comply with radiated emissions standards for residential applications in the United States (FCC Class B) and Europe (CISPR Class B).

[See CFETF10xx-205 for Class B product.]

See Also:

- Fast Ethernet Stand-Alone Media Converters

pages 81 –82

Fast Ethernet Class B Media Converter

- Integrate fiber into copper based environments that require Class B rated products.
- Can be used with any Point System™ Chassis (*see pages. 20 & 21*)
- Should be used in the 18-slot Class B Point System™ Chassis if Class B ratings are required.

CFETF10xx-2xx

Features

- Round trip delay of only 40 bit times —far below the Class II rating of 92 bit times.
- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- Link Pass Through *(see page 15)*
- Far End Fault (FEF) Detection *(see page 14)*
- Automatic Link Restoration *(see page 16)*
- Pause *(see page 15)*
- Remote Firmware Upgrade *(see page 16)*

The following converter management features are available in conjunction with the Point System™:

Reporting Features

- Report converter status to management software:
  - TP & Fiber Link status
  - Hardware switch settings
  - Fault
  - TP cable length
- Write operation includes:
  - Power on/off device
  - Full or half-duplex
  - Pause enable/disable
  - LPT enable/disable
  - FEF enable/disable
  - AutoCross™ enable/disable

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™
Switches	**SW1:** Auto-Negotiation (UP = ON) **SW2:** Pause (UP = ON) **SW3:** Link Pass Through (UP = ON) **SW4:** Far End Fault (UP = ON)
Internal Jumpers	**AutoCross™ Jumper:** Enable/disable AutoCross™
Hardware/Software Jumper:	**Hardware:** Converter mode is determined by 4-position switch settings **Software:** Converter mode is determined by most recently saved on-board microprocessor settings.
Status LEDs	**PWR (Power):** On = connection to external power **LKF (Fiber Link):** On = Fiber Link **RXF (Fiber Receive):** Blinking = data reception on fiber link **RXC (Copper Receive):** Blinking = data reception on copper link **LKC (Copper Link):** On = Copper Link
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	3.4 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	CISPR/EN55022 Class A & B; FCC Class A & B; CE Mark
Warranty	Lifetime

See Also:

- Fast Ethernet Stand-Alone Media Converters

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Ordering Info [Class B]

See pages 171–181 for complete fiber optic connector specs.

CFETF1011-205
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CFETF1013-205
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CFETF1039-205
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm multimode (LC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CFETF1018-205
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm MM (MT-RJ)
[2 km/1.2 mi.] Link Budget: 14.5 dB

CFETF1014-205
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

CFETF1019-205
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (LC)
[20 km/12.4 mi.] Link Budget: 17.3 dB

CFETF1015-205
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

CFETF1016-205
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[60 km/37.3 mi.] Link Budget: 29.0 dB

CFETF1017-205
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1550nm SM (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

CFETF1029-205
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX1310nm TX / 1550nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CFETF1029-206
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CFETF1029-207
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

CFETF1029-208
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

CFETF1029-209
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC)
[60 km/37.3 mi.] Link Budget: 29.0 dB

CFETF1029-210
100BASE-TX (RJ-45) [100 m/328 ft.]
to 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC)
[60 km/37.3 mi.] Link Budget: 28.0 dB

CFETF1029-211
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC)
[80 km/49.7 mi.] Link Budget: 33.0 dB

CFETF1029-212
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC)
[80 km/49.7 mi.] Link Budget: 32.0 dB

Fast Ethernet 100BASE-TX to 100BASE-FX

with remote management & bandwidth allocation

Remotely Managed Fast Ethernet Media Converter

AUTO NEG | AUTO CROSS | LINK PASS THROUGH | FAR END FAULT | AUTO LINK RESTORE | PAUSE | REMOTE MGMT | LOOP BACK | BANDWIDTH ALLOCATION | REMOTE FIRMWARE UPGRADE

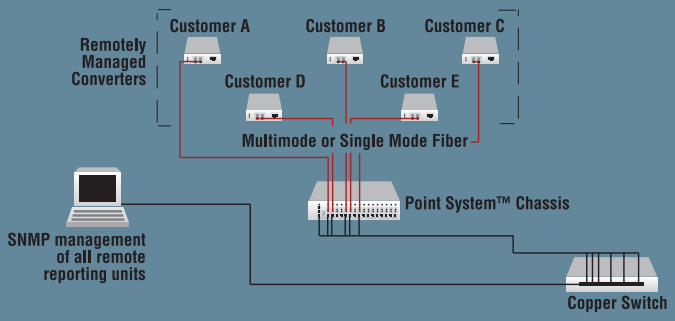
- **In-band management of stand alone** Fast Ethernet media converters
- **Remote Loopback** assists in diagnosing network problems
- Upstream and downstream **bandwidth control** allows service providers to offer an array of services

CRMFE10xx-20x

With the Remotely Managed Fast Ethernet Media Converter, service providers can now **monitor and manage the entire optical link from the Central Office (CO) to the Customer Premise Equipment (CPE)**. They also have the ability to **remotely change the bandwidth** offered to the customer in increments of 64KBps and choose the appropriate mode of connection straight from their Network Management Centers.

Converters should be used in pairs. Typical installation will include a chassis card installed in the Point System™ locally and a stand-alone converter (SRMFE) installed at the remote location.

Remotely Managed Fast Ethernet



Features

- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- Link Pass Through *(see page 15)*
- Far End Fault (FEF) *(see page 14)*
- Automatic Link Restoration *(see page 16)*
- Pause *(see page 15)*
- Remote Management *(see page 15)*
- Loopback *(see page 16)*
- Bandwidth Allocation *(see page 16)*
- Remote Firmware Upgrade *(see page 16)*
- Can be used with any Point System™ Chassis *(see pages 20 & 21)*

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™
3-position Jumpers	**Jumper (J2):** Enable/Disable AutoCross™ **Jumper (J6):** **Hardware:** Converter mode is determined by 4-position switch settings **Software:** Converter mode is determined by most recently saved on-board microprocessor settings.
4 position Switch	**Pos 1: Auto-Neg:** (ON) Advertises 100Mb/s full/half-duplex during auto-negotiation; (OFF) (Used primarily when connecting to hub) Operates at 100Mb/s in duplex mode of attached device. **Pos 2: PAUSE:** Applies only if Switch 1 is UP AND media converter is connected to Auto-Negotiating device(s) capable of Pause Control Frame propagation. (UP) ALLOWS negotiation of Pause Control Frame. (DOWN) Does NOT allow negotiation of Pause Control Frame. **Pos 3: Link Pass Through:** (UP) enabled; (DOWN) disabled **Pos 4: Far End Fault:** (UP) enabled; (DOWN) disabled
Status LEDs	Power LKF (Fiber Link)\ RXF (Fiber Receive) RXC (Copper Receive) LKC (Copper Link)
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	3.4 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	CISPR/EN55022 Class A & B + EN55024; FCC Class A & B; CE Mark
Warranty	Lifetime

Ordering Info

See pages 171 – 181 for complete fiber optic connector specs.

CRMFE1011-200
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm MM (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CRMFE1013-200
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm MM (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CRMFE1018-200
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm MM (MT-RJ)
[2 km/1.2 mi.] Link Budget: 14.5 dB

CRMFE1014-200
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

CRMFE1015-200
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

CRMFE1016-200
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[60 km/37.3 mi.] Link Budget: 29.0 dB

CRMFE1017-200
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1550nm SM (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB

CRMFE1035-200
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1550nm SM (SC)
[120 km/74.6 mi.] Link Budget: 36.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

CRMFE1029-200
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm TX / 1550nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CRMFE1029-201
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1550nm TX / 1310nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CRMFE1029-202
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm TX / 1550nm RX single fiber SM (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

CRMFE1029-203
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1550nm TX / 1310nm RX single fiber SM (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

See Also:

- Remotely Managed Fast Ethernet Stand-Alone Media Converters

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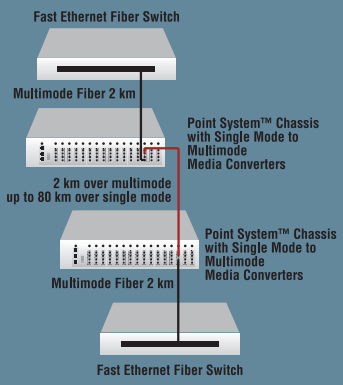
Single Mode to Multimode Media Converter

- Connect single mode fiber cable to devices with multimode ports.
- Protocol Transparency
- Can be used with any Point System™ Chassis *(see pages 20 & 21)*

Extend Network Distance



Convert multimode 100 – 155Mbps interfaces to single mode fiber on a port-by-port basis and extend ATM or Fast Ethernet over single mode fiber up to 80 km.

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™
3-position Jumper	**Hardware:** Software mode is disabled. **Software:** Converter mode is determined by most recently saved on-board microprocessor settings.
Status LEDs	**Power:** Steady green LED indicates connection to external AC power **LKS (Single mode Fiber Link):** Steady LED indicates single mode fiber link **LKM (Multimode Fiber Link):** Steady LED indicates multimode fiber link
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	3.5 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	UL Listed; C-UL Listed (Canada); CISPR/EN55022 Class A; EN55024; EN61000; FCC Class A; CE Mark
Warranty	Lifetime

See Also:

- Fast Ethernet or ATM/OC-3/SDH/SONET Stand-Alone Media Converters

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CFMFF1xxx-20x

Table of Contents
Select Media Converter
Select Switch

Features

- Link Pass Through *(see page 15)*
- Automatic Link Restoration *(see page 16)*
- Remote Firmware Upgrade *(see page 16)*
- Card Manageability:
  - MM/SM signal detect
  - Hardware/software mode
  - Fiber port enable/disable multimode or single mode

Ordering Info [Class B]

See pages 171–181 for complete fiber optic connector specs.

CFMFF1313-200
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
to 1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CFMFF1314-200
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
to 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

CFMFF1315-200
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
to 1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

CFMFF1316-200
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
to 1310nm single mode (SC)
[60 km/37.3 mi.] Link Budget: 29.0 dB

CFMFF1317-200
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
to 1550nm single mode (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB

CFMFF1414-200
1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB
to 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

CFMFF1415-200
1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB
to 1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

CFMFF1329-200
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
to 1310nm TX/1550nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CFMFF1329-201
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
to 1550nm TX/1310nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CFMFF1329-202
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
to 1310nm TX/1550nm RX single fiber SM (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

CFMFF1329-203
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
to 1550nm TX/1310nm RX single fiber SM (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

CFMFF1429-200
1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB
to 1310nm TX/1550nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CFMFF1429-201
1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB
to 1550nm TX/1310nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CFMFF1429-202
1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB
to 1310nm TX/1550nm RX single fiber SM (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

CFMFF1429-203
1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB
to 1550nm TX/1310nm RX single fiber SM (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

10/100BASE-SX Media Converter

- Lowest possible cost solution for fiber installation up to 60 meters (100BASE-SX).
- 10/100 on fiber is possible with 10/100BASE-SX.
- Ideal for building backbone and horizontal cabling applications where cost and 10/100 auto-negotiation are critical.

CSETF101x-205

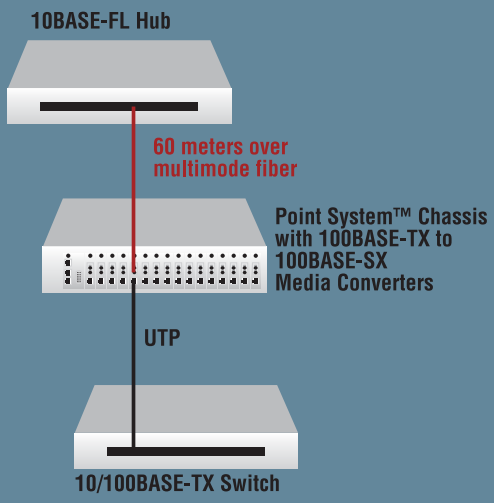
- Extend Network Distance

Used in pairs, this media converter can extend distances between two twisted pair switches or a switch and a server up to 60 meters over multimode fiber (100BASE-SX).

- Connect Remote Devices

Using a single 10/100BASE-SX media converter, a switch with a copper port can be connected to a switch or any other 10/100BASE-SX compliant device with an existing fiber interface.

Extend Network Distance



Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CSETF1011-205
10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 10/100BASE-SX 850nm multimode (ST) **[60 m/ 197 ft.]**

CSETF1013-205
10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 10/100BASE-SX 850nm multimode (SC) **[60 m/ 197 ft.]**

Features

- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- Link Pass Through *(see page 15)*
- Automatic Link Restoration *(see page 16)*
- Remote Firmware Upgrade *(see page 16)*
- Can be used with any Point System™ Chassis *(see pages 20 & 21)*

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™; compliant with pending TIA/EIA 785 specification
Status LEDs	PWR (Power) SX-ACT (Fiber Activity) SX-100 (Fiber Speed) SX-10 (Fiber Speed) TX-ACT (Copper Activity) TX-100 (Copper Speed) TX-10 (Copper Speed)
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	3.6 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	CISPR/EN55022 Class A & B; FCC Class A & B; CE Mark
Warranty	Lifetime

See Also:

- 10/100BASE-SX Stand-Alone Media Converters

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OAM/IP-Based Remotely Managed Media Converter

- Applications:
  - Ethernet in the First Mile (EFM)
  - Fiber to the Premise (FTTP), E-Line and E-LAN
  - Enterprise markets

CFBRM10xx-1xx

Table of Contents
Select Media Converter
Select Switch

Features

- MEF 9 & MEF 14 Carrier Ethernet Certification
- Two selectable remote management modes:
  - IP-Based remote management
  - In-Band OAM 802.3ah (remote device managed by local peer)
- SNMP v1, v2*
- AutoCross™ *(see page 14)*
- Auto-Negotiation *(see page 14)*
- Pause *(see page 15)*
- Transparent Link Pass Through *(see page 15)*
- Far-End-Fault *(see page 14)*
- Remote Loopback *(see page 16)*
- Non-Intrusive Echo
- IEEE 802.1p™ QOS packet classification with 4 egress queues
- Ipv4 IP TOS and DiffServ QOS classification, IPv6 Traffic class
- IEEE 802.1q™ VLAN, 4096 entries
- Static MAC, 64 entries
- Double VLAN tagging (QinQ)
- IEEE 802.1x™ Port based security
- RADIUS client
- RMON counters for each port
- Bandwidth allocation per port *(see page 16)*
- DMI Optical Management
- USB port for basic setup
- Cable diagnostic function for TP ports
- 8K MAC addresses
- Remote Firmware Upgrade *(see page 16)*

**Future firmware upgrade; Please contact Transition Networks for upgrade availability.*

See Also:

- OAM/IP-Based Remotely Managed Stand-Alone Media Converters
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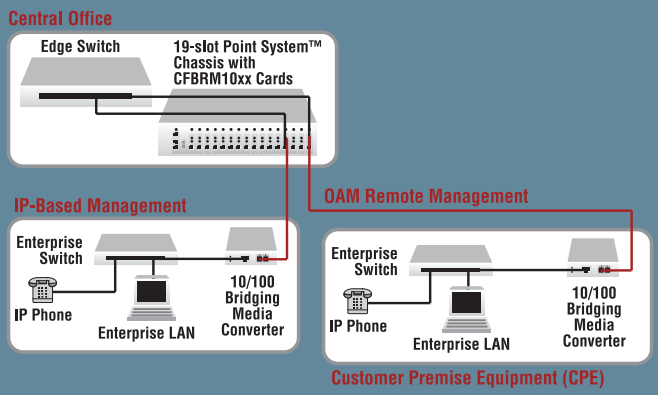
Remotely Manage 10/100 Converters



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™, IEEE Std. 802.3ah, IEEE Std. 802.1P, IEEE Std. 802.1Q, IEEE Std. 802.1X
Data Rate	**Copper:** 10/100 **Fiber:** 100 Mbps
Filtering Addresses	8K MAC Addresses
RAM Buffers	256K (2 Mb)
Max Frame Size	**802.3ac tagged:** 1628 bytes **untagged:** 1632 bytes
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	5.1 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	CISPR/EN55022 Class B, EN55024, EN61000, FCC Class B, CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CFBRM1011-100
CFBRM1011-110 (DMI model)
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-FX 1300nm MM (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CFBRM1013-100
CFBRM1013-110 (DMI model)
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-FX 1300nm MM (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CFBRM1014-100
CFBRM1014-110 (DMI model)
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-LX10 1310nm SM (SC)
[20 km/6.2 mi.] Link Budget: 16.0 dB

CFBRM1015-100
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-FX 1310nm SM (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

CFBRM1016-100
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-FX 1310nm SM (SC)
[60 km/37.3 mi.] Link Budget: 29.0 dB

CFBRM1017-100
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-FX 1550nm SM (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB

CFBRM1035-100
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-FX 1550nm SM (SC)
[120 km/74.6 mi.] Link Budget: 36.0 dB

CFBRM1040-100
10/100BASE-TX (RJ-45) **[100 m]**
to SFP slot (empty)

Single Fiber Products
Recommended use in pairs (see page 17)

CFBRM1029-100
CFBRM1029-110 (DMI model)
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-BX-U 1310nm TX/1550nm RX Bi-Di single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CFBRM1029-101
CFBRM1029-111 (DMI model)
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-BX-D 1550nm TX/1310nm RX Bi-Di SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

Note: all units feature USB port for local management application.

Single fiber options for 40 km, 60 km, 80 km and 120 km are available upon request. Please contact Transition Networks.

OAM/IP-Based Remotely Managed Media Converter

AUTO CROSS · AUTO NEG · PAUSE · TRANSPARENT LINK PASS THROUGH · FAR END FAULT · LOOP BACK · BANDWIDTH ALLOCATION · REMOTE FIRMWARE UPGRADE · SINGLE FIBER

- Applications:
  - Ethernet in the First Mile (EFM)
  - Fiber to the Premise (FTTP), E-Line and E-LAN
  - Enterprise markets

CFBRM13xx-1xx

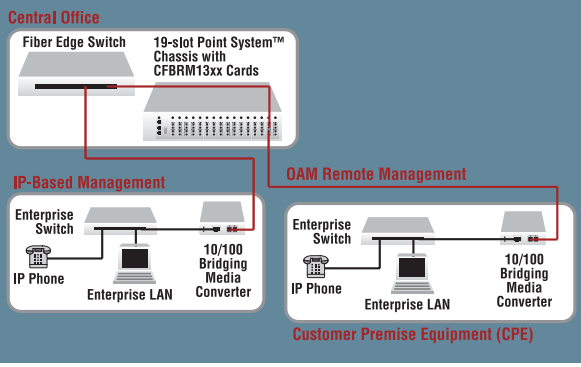
NEW

Features

- MEF 9 & MEF 14 Carrier Ethernet Certification
- Two selectable remote management modes:
  - IP-Based remote management
  - In-Band OAM 802.3ah (remote device managed by local peer)
- SNMP v1, v2*
- AutoCross™ *(see page 14)*
- Auto-Negotiation *(see page 14)*
- Pause *(see page 15)*
- Transparent Link Pass Through *(see page 15)*
- Far-End-Fault *(see page 14)*
- Remote Loopback *(see page 16)*
- IEEE 802.1p™ QOS packet classification with four egress queues
- Ipv4 IP TOS and DiffServ QOS classification, IPv6 Traffic class
- IEEE 802.1q™ VLAN, 4096 entries
- Static MAC, 64 entries
- Double VLAN tagging (QinQ)
- IEEE 802.1x™ Port based security
- RADIUS client
- RMON counters for each port
- Bandwidth allocation per port *(see page 16)*
- DMI Optical Management
- USB port for basic setup
- Cable diagnostic function for TP ports
- 8K MAC addresses
- Remote Firmware Upgrade *(see page 16)*

**Future firmware upgrade; Please contact Transition Networks for upgrade availability.*

Remotely Manage 100/1000 Converters



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™, IEEE Std. 802.3ah, IEEE Std. 802.1P, IEEE Std. 802.1Q, IEEE Std. 802.1X
Data Rate	**Fiber:** 100BASE-FX **Fiber 2:** 1000BASE-X
Filtering Addresses	8K MAC Addresses
RAM Buffers	256K (2 Mb)
Max Frame Size	802.3ac tagged: 1628 bytes untagged: 1632 bytes
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	5.1 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	CISPR/EN55022 Class B, EN55024, EN61000, FCC Class B, CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CFBRM1313-100
CFBRM1313-110 (DMI Options)
100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB
to 1000BASE-SX 850nm Ext. MM (SC)
[62.5/125µm fiber: 300 m/984 ft.] or
[50/125µm fiber: 550 m/1804 ft.]
Link Budget: 7.0 dB

CFBRM1314-100
CFBRM1314-110 (DMI Options)
100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB
to 1000BASE-LX10 1310nm SM (SC)
[20 km/6.2 mi.] Link Budget: 12.0 dB

CFBRM1315-100
CFBRM1315-110 (DMI Options)
100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB
to 1000BASE-LX 1310nm SM (SC)
[25 km/15.5 mi.] Link Budget: 19.0 dB

CFBRM1317-100
100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB
to 1000BASE-LX 1550nm SM (SC)
[65 km/40.4 mi.] Link Budget: 22.0 dB

CFBRM1335-100
100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB
to 1000BASE-LX 1550nm SM (SC)
[125 km/77.7 mi.]
Link Budget: 27.0 dB

Single Fiber Products
Recommended use in pairs

CFBRM1329-100
CFBRM1329-110 (DMI Options)
100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB
to 1000BASE-BX-U 1310nm TX / 1490nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 14.0 dB

CFBRM1329-101
CFBRM1329-111 (DMI Options)
100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB
to 1000BASE-BX-D 1490nm TX / 1310nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 14.0 dB

Single fiber options for 40 km, 60 km, 80 km and 120 km are available upon request. Please contact Transition Networks.

Note: All units feature USB port for local management application.

See Also:

- OAM/IP-Based Remotely Managed Stand-Alone Media Converters
  page 88-90

Fault-Tolerant Redundant Link Protector

AUTO CROSS AUTO NEG

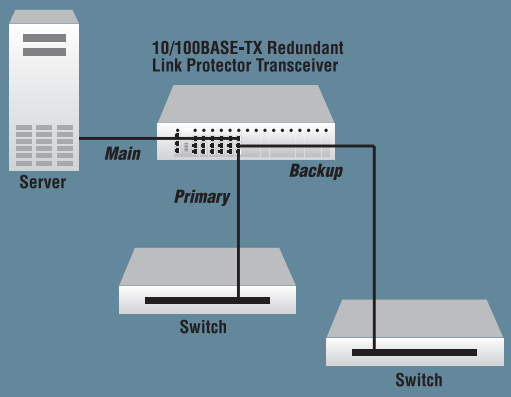
- Fault-tolerant redundant connections
- Easy to install and use
- Supports half and full-duplex transmission
- AutoCross™ on all 3 ports *(see page 14)*
- Auto-Negotiation *(see page 14)*
- IEEE 802.3 compliant
- Nine diagnostic LEDs
- Optional 3-port switch mode
- Can be used with any Point System™ Chassis

CBFTF1010-130

Features

The Redundant Link Protector is a 10/100 Ethernet fault-tolerant transceiver. It significantly reduces network downtime, adding a new level of redundancy to 10/100 Ethernet connections. It also provides a redundant path for critical 10/100 devices.In a 10/100 Ethernet network, a critical device such as a file server may be connected to the rest of the network through a hub or a switch. A common problem in this configuration is that the server is often connected to the network through a single cable. If the cable fails, then the server is disconnected from the rest of the network. Similarly, if a port of a hub or switch to which the server is connected fails, the server is disconnected from the network.

Fault-Tolerant Redundant Connections



Ordering Info

CBFTF1010-130
10/100BASE-TX Link Protector Transceiver
(3) 10/100BASE-TX (RJ-45)
[100 m]

The Redundant Transceiver has three ports: one for the critical (main) device, one for the default (primary) path for the critical device, and another (backup) for the backup path. It is a smart device that will not send any signal on a path that is not active. If the primary path loses its link, then the transceiver will immediately (in less than one microsecond) switch to the backup path.

When the primary path re-establishes its link, the Redundant Link Protector will automatically switch back to the primary path.

Optional functionality, controlled via a dip switch, allows the unit to move from the fault-tolerant mode to a 3-port switch mode.

The following management features are available when the converter is used in a managed Point System™ chassis:

- Read Management features:
  - Media Converter Power
  - Copper Link Status
  - Copper Port Speed
  - Duplex Mode
  - Hardware Switch Settings
- Write Management features:
  - Power on/off device
  - Enable Redundancy / 3-port Switch mode

Individual Port Control:

- Enable/disable Auto-Negotiation
- Force Full or Half Duplex
- Force 10Mbps or 100Mbps

Specifications

Standards	IEEE Std. 802.3
RJ-45 Connectors Type: 8-position, RJ-45 receptacle:	1: TX+ 5: NC (no connection) 2: TX- 6: RX- 3: RX+ 7: NC (no connection) 4: NC (no connection) 8: NC (no connection)
Dip Switches	**SW1:** Auto-Negotiation Enable/Disable **SW2:** 10/100Mbps **SW3:** Full/Half Duplex **SW4:** Redundancy/Switch
System LEDs	**Power (PWR):** Indicates the presence of POWER **Primary (PRI):** Indicates a link is established on the Primary port **Backup (BKP):** Indicates the link has moved over to the Backup port.
Per Port LEDs	**Lower Right:** Green indicates 100Mbps; Orange indicates 10Mbps; Flashing indicates Activity **Lower Left:** Green indicates full-duplex; Off half-duplex
Dimensions	**Width:** 0.86" [12 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	2.4 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	FCC Class A, EN55024, UL 60950, CE Mark
Warranty	Lifetime

See Also:

- 10/100 Redundant Link Protector Stand-Alone Media Converter
page 92

10/100 Bridging Media Converter

AUTO NEG | AUTO CROSS | LINK PASS THROUGH | FAR END FAULT | AUTO LINK RESTORE | REMOTE FIRMWARE UPGRADE | SOURCE ADDRESS CHANGE

- **Extend network distance up to 120 km:** Bridging media converters will provide conversion and integration solutions for half-duplex and full-duplex environments.
- Convert 10/100 on copper to straight 100 on fiber.
- Half or Full-Duplex on both ports

CBFTF10xx-10x

Features

- Fully manageable
- LED indications for all operation modes
- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- Link Pass Through *(see page 15)*
- Far End Fault (FEF) *(see page 14)*
- Automatic Link Restoration *(see page 16)*
- Remote Firmware Upgrade *(see page 16)*
- Source Address Change (SAC) *(see page 17)*
- Can be used with any Point System™ Chassis

Read Management Features

- Media Converter Power
- Copper & Fiber Link Status
- Copper Port Speed
- Hardware Switch Settings

Write Management Features

- Enable/disable Auto-negotiation on Copper
- Force 10Mb/s or 100Mb/s on Copper
- Force Full or Half-duplex on Copper or Fiber
- Select Advertised Modes (when Auto-Negotiation is Enabled)
- Enable/disable:
  - Pause
  - Source Address Change
  - Monitor Port (advanced filters available)
  - Link Pass Through
  - Far End Fault

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™
Data Rate	10Mbps; 100Mbps
Filtering Addresses	4K MAC addresses
Filtering & Forwarding Rate	14,880pps for Ethernet; 148,800 pps for Fast Ethernet
RAM Buffers	256KB
Max Packet Size	1536 bytes
Switches	**SW1 (TP):** Auto-Negotiation On/Off **SW2 (TP):** 10Mbps or 100Mbps with Auto-Negotiation Off **SW3 (TP):** Half or Full-duplex with Auto-Negotiation Off **SW4 (Fiber):** Half or Full-duplex **SW5:** AutoCross™ On/Off **SW6:** Link Pass Through On/Off
Status LEDs	PWR (Power) FD (Fiber Duplex) LACT (Fiber Link/Activity) Duplex/Link (Copper) Speed (Copper)
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	4.9 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	FCC Class A, VCCI Class 1, CISPR22/EN55022 Class A, EN55024, EN61000, CE Mark
Warranty	Lifetime

See Also:

- 10/100 Bridging Stand-Alone Media Converters
  pages 93 – 95

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CBFTF1011-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1300nm MM (ST)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

CBFTF1013-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

CBFTF1039-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1300nm MM (LC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

CBFTF1018-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1300nm MM (MT-RJ)
[2 km / 1.2 mi.] Link Budget: 14.5 dB

CBFTF1014-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

CBFTF1019-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1310nm SM (LC)
[20 km/12.4 mi.] Link Budget: 17.3 dB

CBFTF1015-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1310nm SM (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

CBFTF1016-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1310nm SM (SC)
[60 km/37.3 mi.] Link Budget: 29.0 dB

CBFTF1017-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1550nm SM (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB

CBFTF1035-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
100BASE-FX 1550nm SM (SC)
[120 km/74.6 mi.] Link Budget: 36.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

CBFTF1029-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1310nm TX/1550nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CBFTF1029-101
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1550nm TX / 1310nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CBFTF1029-102
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1310nm TX / 1550nm RX single fiber SM (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

CBFTF1029-103
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1550nm TX / 1310nm RX single fiber SM (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

10/100 Bridging Multiport Media Converter

- 10 or 100Mbps on all TP ports
- Half or full-duplex on all ports, including fiber

CBFTF10xx-1xx

Applications

- Extend network distance up to 120 KM

Bridging media converters will provide conversion and integration solutions for half-duplex and full-duplex environments.

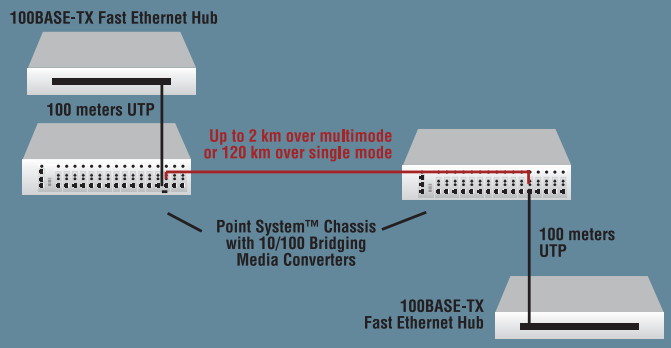
Features

- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- Far End Fault (FEF) *(see page 14)*
- Automatic Link Restoration *(see page 16)*
- Each port fully manageable
- Individual switches for both TP ports *(-110 only)*
- LED indications for all operation modes
- Port mirroring mode on TX ports
- Remote Firmware Upgrade *(see page 16)*
- Source Address Change (SAC) *(see page 17)*
- Fiber Redundancy Mode *(-140 only)*

When failure on primary fiber occurs it is detected by a converter; fiber two (secondary) is activated and becomes the primary link. The original fiber link (1) is put in the disabled state. It becomes secondary until the failure on primary Fiber occurs.

- Read Management features:
  - Media Converter Power
  - Fiber Link Status
  - Copper Link Status
  - Copper Port Speed
  - Hardware Switch Settings
- Write Management features:
  - Enable/disable Auto-negotiation on Copper
  - Force 10Mb/s or 100Mb/s on Copper
  - Force Full or Half-duplex on Copper
  - Force Full or Half-duplex on Fiber
  - Select Advertised Modes (When Auto-Negotiation is Enabled)
  - Enable/disable Pause
  - Enable/disable Source Address Change
  - Enable/disable Monitor Port (Advanced filters available)
  - Enable/disable Far End Fault

Extend Network Distance



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™
Data Rate	10Mbps; 100Mbps
Filtering Addresses	4K MAC addresses
Filtering & Forwarding Rate	14,880pps for Ethernet; 148,800 pps for Fast Ethernet
RAM Buffers	256KB
Max Packet Size	1536 bytes
Switches	**SW1 (TP1):** Auto-Negotiation On/Off **SW2 (TP1):** 10Mbps or 100Mbps with Auto-Negotiation Off **SW3 (TP1):** Half or Full-duplex with Auto-Negotiation Off **SW4 (Fiber1):** Half or Full-duplex **SW5:** AutoCross™ On/Off **SW6:** Fiber Redundancy On/Off (xBFTF10xx-14x only) **SW7 (TP2):** Auto-Negotiation On/Off **SW8 (TP2):** 10Mbps or 100Mbps with Auto-Negotiation Off **SW9 (TP2):** Half or Full-duplex with \Auto-Negotiation Off **SW10 (TP2):** Monitor On/Off
Status LEDs	PWR (Power) FD (Fiber Duplex) LACT (Fiber Link/Activity) Duplex/Link (Copper) Speed (Copper)
Dimensions	**CBFTF10xx-11x:** **Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm] **CBFTF10xx-12x & -14x:** **Width:** 1.72" [44 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	**CBFTF10xx-11x:** 4.9 watts **CBFTF10xx-12x & -14x:** 9.0 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	FCC Class A, VCCI Class 1, CISPR22/EN55022 Class A, EN55024, EN61000, CE Mark
Warranty	Lifetime

See Also:

- 10/100 Bridging Stand-Alone Media Converters
  pages 93 – 95

-110 models **can** be used with any Point System™ Chassis (see pages 20 & 21)

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CBFTF1011-110
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1300nm multimode (ST)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

CBFTF1013-110
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1300nm multimode (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

CBFTF1018-110
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1300nm multimode (MT-RJ)
[2 km / 1.2 mi.] Link Budget: 14.5 dB

CBFTF1014-110
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1310nm single mode (SC)
[20 km / 12.4 mi.] Link Budget: 16.0 dB

CBFTF1015-110
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1310nm single mode (SC)
[40 km / 24.9 mi.] Link Budget: 26.0 dB

CBFTF1016-110
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1310nm single mode (SC)
[60 km / 37.3 mi.] Link Budget: 29.0 dB

CBFTF1017-110
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1550nm single mode (SC)
[80 km / 49.7 mi.] Link Budget: 29.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

CBFTF1029-110
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC)
[20 km / 12.4 mi.] Link Budget: 19.0 dB

CBFTF1029-111
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km / 12.4 mi.] Link Budget: 19.0 dB

CBFTF1029-112
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km / 24.9 mi.] Link Budget: 25.0 dB

CBFTF1029-113
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km / 24.9 mi.] Link Budget: 25.0 dB

-120 models **cannot** be used with the 1-Slot Point System™ Chassis (see pages 20 & 21)

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CBFTF1011-120
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1300nm multimode (ST)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

CBFTF1013-120
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1300nm multimode (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

CBFTF1018-120
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1300nm multimode (MT-RJ)
[2 km / 1.2 mi.] Link Budget: 14.5 dB

CBFTF1014-120
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1310nm single mode (SC)
[20 km / 12.4 mi.] Link Budget: 16.0 dB

CBFTF1015-120
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1310nm single mode (SC)
[40 km / 24.9 mi.] Link Budget: 26.0 dB

CBFTF1016-120
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1310nm single mode (SC)
[60 km / 37.3 mi.] Link Budget: 29.0 dB

CBFTF1017-120
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1550nm single mode (SC)
[80 km / 49.7 mi.] Link Budget: 29.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

CBFTF1029-120
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC)
[20 km / 12.4 mi.] Link Budget: 19.0 dB

CBFTF1029-121
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km / 12.4 mi.] Link Budget: 19.0 dB

CBFTF1029-122
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km / 24.9 mi.] Link Budget: 25.0 dB

CBFTF1029-123
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km / 24.9 mi.] Link Budget: 25.0 dB

-140 models **cannot** be used with the 1-Slot Point System™ Chassis (see pages 20 & 21)

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CBFTF1011-140
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1300nm multimode (ST)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

CBFTF1013-140
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1300nm multimode (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

CBFTF1018-140
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1300nm multimode (MT-RJ)
[2 km / 1.2 mi.] Link Budget: 14.5 dB

CBFTF1014-140
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1310nm single mode (SC)
[20 km / 12.4 mi.] Link Budget: 16.0 dB

CBFTF1015-140
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1310nm single mode (SC)
[40 km / 24.9 mi.] Link Budget: 26.0 dB

CBFTF1016-140
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1310nm single mode (SC)
[60 km / 37.3 mi.] Link Budget: 29.0 dB

CBFTF1017-140
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1550nm single mode (SC)
[80 km / 49.7 mi.] Link Budget: 29.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

CBFTF1029-140
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC)
[20 km / 12.4 mi.] Link Budget: 19.0 dB

CBFTF1029-141
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km / 12.4 mi.] Link Budget: 19.0 dB

CBFTF1029-142
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km / 24.9 mi.] Link Budget: 25.0 dB

CBFTF1029-143
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km / 24.9 mi.] Link Budget: 25.0 dB

Value 10/100 Bridging 10/100BASE-TX to 100BASE-FX

Value 10/100 Bridging Media Converter

AUTO CROSS · AUTO = NEG · FAR END FAULT

- Low cost conversion of 10/100 copper to straight 100 on fiber
- Same quality & reliability as full-featured bridging converters

CBFTF10xx-15x

- Extend Network Distance

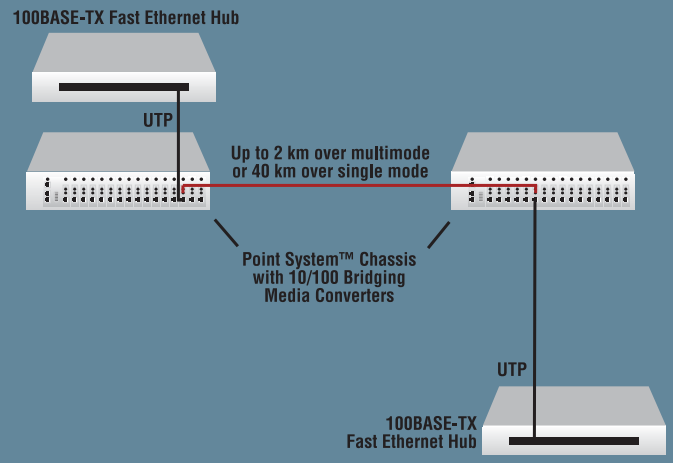
Extend network distance up to 40 KM.

Cost-effective managed bridging media converter. It provides conversion and basic integration for 10 or 100Mbps; half and full duplex environments.

Features

- AutoCross™ *(see page 14)*
- Auto-Negotiation *(see page 14)*
- 10Mbps or 100Mbps
- Half or full-duplex on all ports
- Far End Fault (FEF) Detection *(see page 14)*
- LED indications for all operation modes
- Read Management features:
  - Media Converter Power
  - Copper & Fiber Link Status
  - Copper Port Speed
  - Hardware Switch Settings
  - Serial Number
  - Chassis Slot Number
- Write Management features:
  - Enable/disable Auto-Negotiation on Copper
  - Force 10Mb/s or 100Mb/s on Copper
  - Force Full-duplex or Half-duplex on Copper or Fiber
  - Select Advertised Modes (when Auto-Negotiation is enabled)

Extend Network Distance



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™; EN55022 Class A; EN55024
Data rate	10Mbps; 100Mbps
Filtering Addresses	1K MAC addresses
Filtering & Forwarding Rate	14,880pps for Ethernet; 148,800 pps for Fast Ethernet
RAM Buffers	128KB
Switches	**SW1: TP1:** Enable/Disable Auto-Negotiation **SW2: TP1:** Force Half or Full duplex with Auto-Negotiation off **SW3: TP1:** Force 10Mbps or 100Mbps with Auto-Negotiation OFF **SW4: FBR:** Half or Full duplex
Jumpers	FEF enable/disable Hardware/software mode
Unit LED	**Power:** Green - ON: power applied to board
Copper LEDs	TLNK (Link/Activity) TDPX (Full Duplex/Collision) TSPD (Full speed)
Fiber LEDs	FLNK (Link/Activity) FDPX (Full Duplex/Collision)
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	4.1 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	FCC & CISPR Class A; EN55022; EN55024; EN60950; CSA Certified; CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CBFTF1011-155
(1) 10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to (1) 100BASE-FX 1300nm MM (ST) **[2 km/1.2 mi.] Link Budget: 11.0 dB**

CBFTF1013-155
(1) 10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to (1) 100BASE-FX 1300nm MM (SC) **[2 km/1.2 mi.] Link Budget: 11.0 dB**

CBFTF1018-155
(1) 10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to (1) 100BASE-FX 1300nm MM (MT-RJ) **[2 km/1.2 mi.] Link Budget: 14.5 dB**

CBFTF1014-155
(1) 10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to (1) 100BASE-FX 1310nm sM (SC) **[20 km/12.4 mi.] Link Budget: 16.0 dB**

CBFTF1015-155
(1) 10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to (1) 100BASE-FX 1310nm SM (SC) **[40 km/24.9 mi.] Link Budget: 26.0 dB**

Single Fiber Products
Recommended use in pairs (see page 17)

CBFTF1029-155
(1) 10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to (1) 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC) **[20 km/12.4 mi.] Link Budget: 19.0 dB**

CBFTF1029-156
(1) 10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to (1) 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC) **[20 km/12.4 mi.] Link Budget: 19.0 dB**

CBFTF1029-157
(1) 10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to (1) 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC) **[40 km/24.9 mi.] Link Budget: 25.0 dB**

CBFTF1029-158
(1) 10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to (1) 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC) **[40 km/24.9 mi.] Link Budget: 25.0 dB**

See Also:

- Just Convert-It™ 10/100 Bridging Stand-Alone Media Converters

pages 96

10/100/1000 Ethernet 10/100/1000BASE-T to 1000BASE-SX/LX

10/100/1000 Ethernet Media Converter

AUTO NEG | AUTO CROSS | LINK PASS THROUGH | AUTO LINK RESTORE | PAUSE | REMOTE FIRMWARE UPGRADE | SOURCE ADDRESS CHANGE

- Extend Network Distance

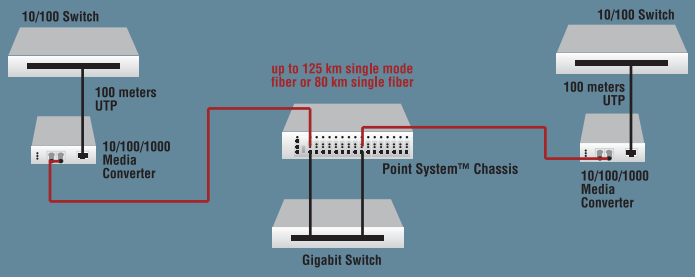
This solution offers a low-cost integration option for network managers who want to migrate from 10/100 networks to Gigabit Ethernet. Gigabit only switches can now be connected to 10/100 networks up to 125 km away over single mode fiber or up to 80 km over single fiber without the need to upgrade the 10/100 side; allowing network managers to add new equipment gradually.

In addition to the standard 220 meters with standard SX optics, Transition Networks also offers a proprietary solution that will allow users to transmit up to 2 km over multimode (62.5/125µm) fiber (xGFEB1024-100).

Note: CGFEB cards cannot be used in the 1-Slot Point System™ Chassis (see pages 20 & 21)

CGFEB10xx-10x

Extend Network Distance



Features

- Auto-Negotiation *(see page 14)*
- AutoCross™ on TX port *(see page 14)*
- Link Pass Through *(see page 15)*
- Automatic Link Restoration *(see page 16)*
- Pause *(see page 15)*
- IEEE 802.1P priority mapping
- Remote Firmware Upgrade *(see page 16)*
- Source Address Change (SAC) *(see page 17)*
- DMI, Digital diagnostics per SFF-8472

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3ab™, IEEE Std. 802.1P™, IEEE Std. 802.3™
Data Rate	**Copper:** 10/100/1000 Mbps **Fiber:** 1000 Mbps
Filtering Addresses	4K MAC Addresses
RAM Buffers	256K
Dip Switches	**Switch 1:** TX - Enable/Disable Auto-Negotiation **Switch 2:** TX - Force 10Mbs or 100Mbs with Autoneg. off **Switch 3:** TX - Force Half or Full duplex with Autoneg. off **Switch 4:** FBR - Enable/Disable Auto-Negotiation **Switch 5:** not used **Switch 6:** Enable/Disable LPT
Jumpers	**Jumper (ED):** Enable/Disable AutoCross™ **Jumper (HS):** **Hardware:** Converter mode is determined by 6-position switch settings **Software:** Converter mode is determined by most recently saved on-board microprocessor settings
Status LEDs	**TP (Duplex/Link/Activity):** Yellow: ON = Half-duplex Link; BLINK = Activity; Green: ON = Full-duplex Link; BLINK = Activity **TP (10Mbs/100Mbs/1000Mbs):** Off = 10Mbs; Yellow = 100Mbs; Green = 1000Mbs **DPX (Fiber Duplex):** Green: ON = Full; OFF = Half **LACT (Fiber Link/Activity):** Green: ON = Link; BLINK = Activity **PWR (Power):** Green: ON = Power applied to board
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	6.5 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	CISPR/EN55022 Class A, EN55024, EN61000, FCC Class A, CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CGFEB1013-100
10/100/ 1000BASE-T (RJ-45) **[100 m]**
to 1000BASE-SX 850nm multimode (SC)
[62.5/125µm: 220 m/722 ft.]
[50/125µm: 550 m/1804 ft.]
Link Budget: 7.0 dB

CGFEB1024-100
10/100/ 1000BASE-T (RJ-45) **[100 m]**
to 1000BASE-LX 1310nm Extended MM (62.5/125 µm fiber only) (SC)
[up to 2 km] Link Budget: 7.0 dB

CGFEB1014-100
10/100/ 1000BASE-T (RJ-45) **[100 m]**
to 1000BASE-LX 1310nm SM (SC)
[10 km/6.2 mi.] Link Budget: 7.0 dB

CGFEB1015-100
10/100/ 1000BASE-T (RJ-45) **[100 m]**
to 1000BASE-LX 1310nm SM (SC)
[25 km/15.5 mi.] Link Budget: 15.0 dB

CGFEB1017-100
10/100/ 1000BASE-T (RJ-45) **[100 m]**
to 1000BASE-LX 1550nm SM (SC)
[65 km/40.4 mi.] Link Budget: 20.0 dB

CGFEB1035-100
10/100/ 1000BASE-T (RJ-45) **[100 m]**
to 1000BASE-LX 1550nm SM (SC)
[125 km/77.7 mi.] Link Budget: 27.0 dB

CGFEB1040-100
10/100/ 1000BASE-T (RJ-45) **[100 m]**
to 1000BASE-X SFP Slot (empty)
See right for SFP modules.

Single Fiber Products
Recommended use in pairs (see page 17)

CGFEB1029-100
10/100/ 1000BASE-T (RJ-45) **[100 m]**
to 1000BASE-LX 1310nm TX / 1550nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 13.0 dB

CGFEB1029-101
10/100/ 1000BASE-T (RJ-45) **[100 m]**
to 1000BASE-LX 1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 13.0 dB

CGFEB1029-102
10/100/ 1000BASE-T (RJ-45) **[100 m]**
to 1000BASE-LX 1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 20.0 dB

CGFEB1029-103
10/100/ 1000BASE-T (RJ-45) **[100 m]**
to 1000BASE-LX 1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 20.0 dB

CGFEB1029-104
10/100/ 1000BASE-T (RJ-45) **[100 m]**
to 1000BASE-LX 1510nm TX / 1590nm RX single fiber single mode (SC)
[80 km/49.6 mi.] Link Budget: 24.0 dB

CGFEB1029-105
10/100/ 1000BASE-T (RJ-45) **[100 m]**
to 1000BASE-LX 1590nm TX / 1510nm RX single fiber single mode (SC)
[80 km/49.6 mi.] Link Budget: 24.0 dB

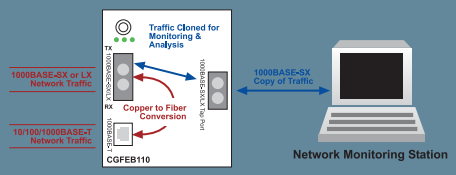
See pages 135 & 136 for Compatible SFP Modules.

10/100/1000 Ethernet 10/100/1000BASE-T to 1000BASE-SX/LX with built-in fiber tap

10/100/1000 Ethernet with built-in Fiber Tap

AUTO NEG | AUTO CROSS | LINK PASS THROUGH | AUTO LINK RESTORE | PAUSE | REMOTE FIRMWARE UPGRADE | SOURCE ADDRESS CHANGE

Convert 10/100/1000 Copper to Fiber & Monitor Critical Network Segments



Product size distorted for demonstration purposes.

CGFEB10xx-11x

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Select Media Converter
Select Switch

Features

- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- Link Pass Through *(see page 15)*
- Pause *(see page 15)*
- Automatic Link Restoration *(see page 16)*
- Remote Firmware Upgrade *(see page 16)*
- Source Address Change (SAC) *(see page 17)*
- 802.1P Priority Mapping
- 1000BASE-SX Tap Port
- Fiber tap clones traffic; offering complete access to network traffic at line rate.
- No latency associated with the fiber tap No dB loss on fiber. Active device does not compromise optical budget to monitor network performance.
- Users can view all fiber traffic including faults & timing errors.
- SNMP managed TX or RX monitoring
- *CGFEB cards cannot be used in the 1-slot Point System™ Chassis (see pages 20 & 21)*

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3ab™, IEEE Std. 802.1P™, IEEE Std. 802.3™
Data Rate	**Copper:** 10/100/1000 Mbps **Fiber:** 1000 Mbps
Filtering Addresses	4K MAC Addresses
RAM Buffers	256K
Dip Switches	**Switch 1:** TX - Enable/Disable Auto-Negotiation **Switch 2:** TX - Force 10Mbs or 100Mbs with Auto-Negotiation off **Switch 3:** TX - Force Half or Full duplex with Auto-Negotiation off **Switch 4:** FBR - Enable/Disable Auto-Negotiation **Switch 5:** not used **Switch 6:** Enable/Disable LPT
Jumpers	**Jumper (ED):** Enable/Disable AutoCross™ **Jumper (HS):** **Hardware:** Converter mode is determined by 6-position switch settings **Software:** Converter mode is determined by most recently saved on-board microprocessor settings
Status LEDs	TP (Duplex/Link/Activity) TP (10Mbs/100Mbs/1000Mbs) DPX (Fiber Duplex) LACT (Fiber Link/Activity) PWR (Power)
Dimensions	**Width:** 1.68" [43 mm] **Depth:** 4.91" [125 mm] **Height:** 3.42" [87 mm]
Power Consumption	6.5 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	CISPR/EN55022 Class A, EN55024, EN61000, FCC Class A, CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CGFEB1013-110
Port 1 10/100/ 1000BASE-T (RJ-45) **[100 m/328 ft.]**
Port 2 1000BASE-SX 850nm multimode (SC) **[220/550 m/722/1804 ft.]* Link Budget: 7.0 dB**
Port 3 1000BASE-SX 850nm multimode (SC) **[220/550 m/722/1804 ft.]* Link Budget: 7.0 dB**

CGFEB1024-110
Port 1 10/100/ 1000BASE-T (RJ-45) **[100 m/328 ft.]**
Port 2 1000BASE-SX 1310nm Extended multimode (62.5/125µm fiber only) (SC) **[up to 2 km] Link Budget: 7.0 dB**
Port 3 1000BASE-SX 850nm multimode (SC) **[220/550 m/722/1804 ft.]* Link Budget: 7.0 dB**

CGFEB1014-110
Port 1 10/100/ 1000BASE-T (RJ-45) **[100 m/328 ft.]**
Port 2 1000BASE-LX 1310nm single mode (SC) **[10 km / 6.2 mi.] Link Budget: 7.0 dB**
Port 3 1000BASE-SX 850nm multimode (SC) **[220/550 m/722/1804 ft.]* Link Budget: 7.0 dB**

CGFEB1015-110
Port 1 10/100/ 1000BASE-T (RJ-45) **[100 m/328 ft.]**
Port 2 1000BASE-LX 1310nm single mode (SC) **[25 km / 15.5 mi.] Link Budget: 15.0 dB**
Port 3 1000BASE-SX 850nm multimode (SC) **[220/550 m/722/1804 ft.]* Link Budget: 7.0 dB**

CGFEB1017-110
Port 1 10/100/ 1000BASE-T (RJ-45) **[100 m/328 ft.]**
Port 2 1000BASE-LX 1550nm single mode (SC) **[65 km / 40.4 mi.] Link Budget: 20.0 dB**
Port 3 1000BASE-SX 850nm multimode (SC) **[220/550 m/722/1804 ft.]* Link Budget: 7.0 dB**

Single Fiber Products
Recommended use in pairs (see page 17)

CGFEB1029-110
Port 1 10/100/ 1000BASE-T (RJ-45) **[100 m/328 ft.]**
Port 2 1000BASE-LX 1310nm TX / 1550nm RX single fiber single mode (SC) **[20 km / 12.4 mi.] Link Budget: 13.0 dB**
Port 3 1000BASE-SX 850nm multimode (SC) **[220/550 m/722/1804 ft.]* Link Budget: 7.0 dB**

CGFEB1029-111
Port 1 10/100/ 1000BASE-T (RJ-45) **[100 m/328 ft.]**
Port 2 1000BASE-LX 1550nm TX / 1310nm RX single fiber single mode (SC) **[20 km / 12.4 mi.] Link Budget: 13.0 dB**
Port 3 1000BASE-SX 850nm multimode (SC) **[220/550 m/722/1804 ft.]* Link Budget: 7.0 dB**

**62.5/125µm fiber: 220 m / 722 ft.; 50/125µm fiber: 550 m / 1804 ft.*

OAM/IP-Based Remotely Managed Media Converter

AUTO CROSS · AUTO NEG · PAUSE · TRANSPARENT LINK PASS THROUGH · FAR END FAULT · LOOP BACK · BANDWIDTH ALLOCATION · REMOTE FIRMWARE UPGRADE

- Applications:
  - Ethernet in the First Mile (EFM)
  - Fiber to the Premise (FTTP), E-Line and E-LAN
  - Enterprise markets

CBFFG10xx-1xx

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Select Media Converter
Select Switch

ethernet
fast ethernet
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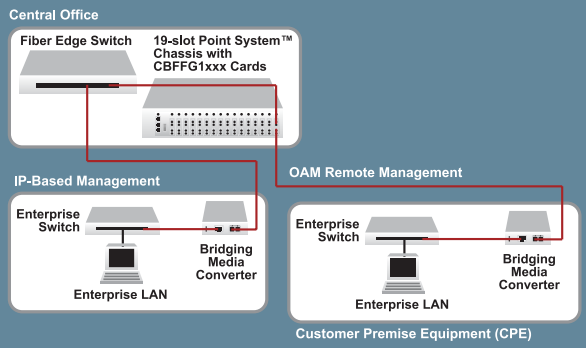
high speed serial
rs232
rs422/485
t1/e1
e&m, 2/4-wire
pots 2-wire
video

Features

- MEF 9 & MEF 14 Carrier Ethernet Certification
- Two selectable remote management modes:
  - IP-Based remote management
  - In-Band OAM 802.3ah (remote device managed by local peer)
- SNMP
- AutoCross™ *(see page 14)*
- Auto-Negotiation *(see page 14)*
- Pause *(see page 15)*
- Transparent Link Pass Through *(see page 15)*
- Far-End-Fault *(see page 14)*
- Remote Loopback *(see page 16)*
- Non-Intrusive Echo
- IEEE 802.1p™ QOS packet classification with 4 egress queues
- Ipv4 IP TOS and DiffServ QOS classification, IPv6 Traffic class
- IEEE 802.1q™ VLAN, 4096 entries
- Static MAC, 64 entries
- Double VLAN tagging (QinQ)
- VLAN Tunneling
- IEEE 802.1x™ Port based security
- RADIUS client
- RMON counters for each port
- Bandwidth allocation per port *(see page 16)*
- DMI Optical Management
- USB port for basic setup
- Cable diagnostic function for TP ports
- 8K MAC addresses
- Remote Firmware Upgrade *(see page 16)*

**Future firmware upgrade; Please contact Transition Networks for upgrade availability.*

Remotely Manage 10/100/1000 Converters



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™, IEEE Std. 802.3ah, IEEE Std. 802.1P, IEEE Std. 802.1Q, IEEE Std. 802.1X
Data Rate	**Copper:** 10/100/1000 **Fiber:** 1000 Mbps
Filtering Addresses	8K MAC Addresses
RAM Buffers	256K (2 Mb)
Max Frame Size	**802.3ac tagged:** 1628 bytes **untagged:** 1632 bytes
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	5.1 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	CISPR/EN55022 Class B, EN55024, EN61000, FCC Class B, CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CBFFG1013-100
CBFFG1013-110 (DMI Options)
10/100/1000B-T (RJ-45) **[100 m]**
to 1000BASE-SX 1300nm MM (ST)
[2 km/1.2 mi.] Link Budget: 7.0 dB

CBFFG1014-100
CBFFG1014-110 (DMI Options)
10/100/1000B-T (RJ-45) **[100 m]**
to 1000BASE-LX 1310nm SM (SC)
[10 km/6.2 mi.] Link Budget: 7.0 dB

CBFFG1015-100
CBFFG1015-110 (DMI Options)
10/100/1000B-T (RJ-45) **[100 m]**
to 1000BASE-LX 1310nm SM (SC)
[25 km/15.5 mi.] Link Budget: 15.0 dB

CBFFG1017-100
10/100/1000B-T (RJ-45) **[100 m]**
to 1000BASE-LX 1550nm SM (SC)
[65 km/40.4 mi.] Link Budget: 21.0 dB

CBFFG1035-100
10/100/1000B-T (RJ-45) **[100 m]**
to 1000BASE-LX 1550nm SM (SC)
[120 km/77.7 mi.] Link Budget: 27.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

CBFFG1029-100
CBFFG1029-110 (DMI Options)
10/100/1000B-T (RJ-45) **[100 m]**
to 1000BASE-BX-U 1310nm TX/1550nm RX Bi-Di SM (SC)
[20 km/12.4 mi.] Link Budget: 14.0 dB

CBFFG1029-101
CBFFG1029-111 (DMI Options)
10/100/1000B-T (RJ-45) **[100 m]**
to 1000BASE-BX-D 1550nm TX/1310nm RX Bi-Di SM (SC)
[20 km/12.4 mi.] Link Budget: 14.0 dB

CBFFG1029-102
10/100/1000B-T (RJ-45) **[100 m]**
to 1000BASE-LX 1310nm TX/1550nm RX Bi-Di SM (SC)
[40 km/24.8 mi.] Link Budget: 20.0 dB

CBFFG1029-103
10/100/1000B-T (RJ-45) **[100 m]**
to 1000BASE-LX 1550nm TX/1310nm RX Bi-Di SM (SC)
[40 km/24.8 mi.] Link Budget: 20.0 dB

Note: all units feature USB port for local management application.

See Also:

- 10/100/100 OAM/IP-Based Remotely Managed Stand-Alone Media Converters
  pages 101-102

1000BASE Bridging 1000BASE-X to 1000BASE-X

OAM/IP-Based Remotely Managed Media Converter

AUTO NEG | PAUSE | TRANSPARENT LINK PASS THROUGH | FAR END FAULT | LOOP BACK | BANDWIDTH ALLOCATION | REMOTE FIRMWARE UPGRADE | SINGLE FIBER

- Applications:
  - Ethernet in the First Mile (EFM)
  - Fiber to the Premise (FTTP), E-Line and E-LAN
  - Enterprise markets

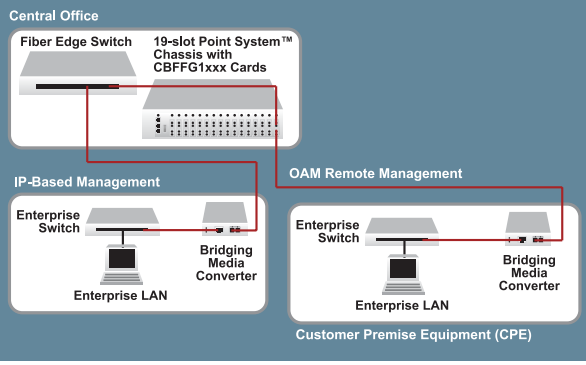
CBFFG13xx-1xx

Features

- MEF 9 & MEF 14 Carrier Ethernet Certification
- Two selectable remote management modes:
  - IP-Based remote management
  - In-Band OAM 802.3ah (remote device managed by local peer)
- SNMP v1, v2*
- Auto-Negotiation *(see page 14)*
- Pause *(see page 15)*
- Transparent Link Pass Through *(see page 15)*
- Far-End-Fault *(see page 14)*
- Remote Loopback *(see page 16)*
- IEEE 802.1p™ QOS packet classification with four egress queues
- Ipv4 IP TOS and DiffServ QOS classification, IPv6 Traffic class
- IEEE 802.1q™ VLAN, 4096 entries
- Static MAC, 64 entries
- Double VLAN tagging (QinQ)
- IEEE 802.1x™ Port based security
- RADIUS client
- RMON counters for each port
- Bandwidth allocation per port *(see page 16)*
- DMI Optical Management
- USB port for basic setup
- 8K MAC addresses
- Remote Firmware Upgrade *(see page 16)*

**Future firmware upgrade; Please contact Transition Networks for upgrade availability.*

Remotely Manage 1000BASE Converters



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™, IEEE Std. 802.3ah, IEEE Std. 802.1P, IEEE Std. 802.1Q, IEEE Std. 802.1X
Data Rate	**Fiber:** 1000BASE-X **Fiber 2:** 1000BASE-X
Filtering Addresses	8K MAC Addresses
RAM Buffers	256K (2 Mb)
Max Frame Size	802.3ac tagged: 1628 bytes untagged: 1632 bytes
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	5.1 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	CISPR/EN55022 Class B, EN55024, EN61000, FCC Class B, CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CBFFG1313-100
CBFFG1313-110 (DMI Options)
1000BASE-SX 850nm MM (SC)
[220 m/722 ft.] or [550 m/1804 ft.]*
to 1000BASE-SX 850nm MM (SC)
[220 m/722 ft.] or [550 m/1804 ft.]*

CBFFG1314-100
CBFFG1314-110 (DMI Options)
1000BASE-SX 850nm MM (SC)
[220 m/722 ft.] or [550 m/1804 ft.]*
to 1000BASE-LX10 1310nm SM (SC)
[10 km / 6.2 miles]

CBFFG1315-100
CBFFG1315-110 (DMI Options)
1000BASE-SX 850nm MM (SC)
[220 m/722 ft.] or [550 m/1804 ft.]*
to 1000BASE-LX 1310nm SM (SC)
[30 km / 18.6 miles]

CBFFG1317-100
1000BASE-SX 850nm MM (SC)
[220 m/722 ft.] or [550 m/1804 ft.]*
to 1000BASE-LX 1550nm SM (SC)
[65 km / 40.4 miles]

CBFFG1335-100
1000BASE-SX 850nm MM (SC)
[220 m/722 ft.] or [550 m/1804 ft.]*
to 1000BASE-LX 1550nm SM (SC)
[120 km / 74.6 miles]

CBFFG1340-100
1000BASE-SX 850nm MM (SC)
[220 m/722 ft.] or [550 m/1804 ft.]*
to 1000BASE-X SFP Slot (Empty)

Single Fiber Products
Recommended use in pairs (see page 17)

CBFFG1329-100
CBFFG1329-110 (DMI Options)
1000BASE-SX 850nm MM (SC)
[220 m/722 ft.] or [550 m/1804 ft.]*
to 1000BASE-BX-U 1310nm TX / 1490nm RX single fiber SM (SC)
[20 km / 12.4 miles]

CBFFG1329-101
CBFFG1329-111 (DMI Options)
1000BASE-SX 850nm MM (SC)
[220 m/722 ft.] or [550 m/1804 ft.]*
to 1000BASE-BX-D 1490nm TX / 1310nm RX single fiber SM (SC)
[20 km / 12.4 miles]

***[220 m/722 ft.: 62.5/125µm fiber]**
***[550 m/1804 ft.: 50/125µm fiber]**

See Also:

- 1000BASE Bridging, OAM/IP-Based Remotely Managed Stand-Alone Media Converters

pages 101-102

10/100/1000 802.3ah Bridging 10/100/1000BASE-T to 1000BASE-X

10/100/1000 802.3ah Bridging Media Converter

AUTO NEG | AUTO CROSS | TRANSPARENT LINK PASS THROUGH | AUTO LINK RESTORE | PAUSE | LOOP BACK | BANDWIDTH ALLOCATION | REMOTE FIRMWARE UPGRADE

Applications

- Ethernet in the First Mile (EFM)
- Fiber to the Premise (FTTP), E-Line and E-LAN
- Enterprise markets

Features

- IEEE 802.3ah™ compliant
- In-band OAM management (Operation, Administration & Maintenance)
- 10/100/1000Mbs Auto-Negotiation or forced mode operation on the TP interface *(see page 14)*
- Fiber Auto-Negotiation enable/disable to support legacy devices *(see page 14)*
- AutoCross™ *(see page 14)*
- Transparent Link Pass Through *(see page 15)*
- QoS Management
- 802.1Q VLAN Tagging
- Static VLANs
- Remote Link Loss detection & notification
- RMON Statistics
- Automatic Link Restoration *(see page 16)*
- Symmetric and Asymmetric Pause *(see page 15)*
- Remote Loopback assists in diagnosing network problems (per 802.3ah) *(see page 16)*
- Bandwidth allocation: Upstream and downstream in 64KB increments *(see page 16)*
- Remote Firmware Upgrade *(see page 16)*
- DMI management interface for optical monitoring of temperatures and power on -110 models.

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™; IEEE Std. 802.3ah™; IEEE Std. 802.1P; IEEE Std. 802.1Q
Data Rate	**Copper:** 10/100/1000 Mbps **Fiber:** 1000 Mbps
Filtering Addresses	4K MAC Addresses
RAM Buffers	256K (2 Mb)
Status LEDs	TP (Duplex/Link/Activity) TP (10Mbs/100Mbs/1000Mbs) DPX (Fiber Duplex) LACT (Fiber Link/Activity) PWR (Power)
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	5.1 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	CISPR/EN55022 Class A, EN55024, EN61000, FCC Class A, CE Mark
Warranty	Lifetime

Note: CMEFG cards cannot be used in the 1-Slot Point System™ Chassis *(see pages 20 & 21)*

See Also:
10/100/1000 802.3ah Bridging Stand-Alone Media Converters
page 103

CMEFG10xx-1xx

ethernet
fast ethernet
10/100 bridging
100/1000 bridging
10/100/1000 gigabit ethernet
atm/oc-x
ds3-t3/e3
high speed serial
rs232
rs422/485
t1/e1
e&m, 2/4-wire
pots 2-wire
video

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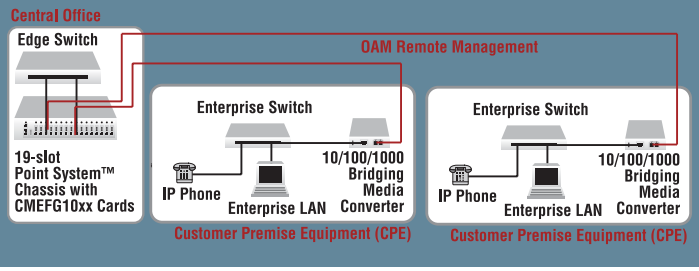
Select Media Converter
Select Switch

Remotely Manage 10/100/1000 Converters



Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CMEFG1013-100: Link Budget: 7.0 dB
CMEFG1013-110 (with DMI mgmt.)
Link Budget: 8.5 dB
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-SX 850nm multimode (SC)
[62.5/125 µm: 220 m/722 ft.]
[50/125 µm: 550 m/1804 ft.]

CMEFG1039-100
CMEFG1039-110 (with DMI mgmt.)
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-SX SFP Bundle: 850nm multimode (LC)
[62.5/125 µm: 220 m/722 ft.]
Link Budget: 7.5 dB
[50/125 µm: 550 m/1804 ft.]
Link Budget: 7.5 dB

CMEFG1019-100
CMEFG1019-110 (with DMI mgmt.)
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-LX SFP Bundle: 1310nm single mode (LC)
[10 km/6.2 mi.] Link Budget: 11.5 dB

CMEFG1014-100: Link Budget: 7.0 dB
CMEFG1014-110 (with DMI mgmt.)
Link Budget: 12.0 dB
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-LX-10 1310nm SM (SC)
[10 km/6.2 mi.]

CMEFG1015-100: Link Budget: 15.0 dB
CMEFG1015-110 (with DMI mgmt.)
Link Budget: 19.0 dB
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-LX 1310nm SM (SC)
[30 km/18.6 mi.]

CMEFG1017-100
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-LX 1550nm SM (SC)
[65 km/40.4 mi.] Link Budget: 21.0 dB

CMEFG1035-100
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-LX 1550nm SM (SC)
[120 km/74.6 mi.] Link Budget: 27.0 dB

CMEFG1040-100
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-X SFP Slot (empty)
See page 135-136 for SFP modules.

Single Fiber Products
Recommended use in pairs (see page 17)

CMEFG1029-100: Link Budget: 14.0 dB
CMEFG1029-110 (with DMI mgmt.)
Link Budget: 11.0 dB
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-BX-U 1310nm TX / 1490nm RX single fiber single mode (SC)
[20 km/12.4 mi.]

CMEFG1029-101: Link Budget: 14.0 dB
CMEFG1029-111 (with DMI mgmt.)
Link Budget: 11.0 dB
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-BX-D 1490nm TX / 1310nm RX single fiber single mode (SC)
[20 km/12.4 mi.]

CMEFG1029-102
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-BX-U 1310nm TX / 1490nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 20.0 dB

CMEFG1029-103
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-BX-D 1490nm TX / 1310nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 20.0 dB

Single fiber options for 40 km, 60 km, 80 km and 120 km are available upon request. Please contact Transition Networks.

Gigabit Ethernet Media Converter

AUTO NEG · TRANSPARENT LINK PASS THROUGH · AUTO LINK RESTORE · PAUSE · REMOTE FIRMWARE UPGRADE

Migrate to Gigabit Ethernet in a cost-effective manner.
Used in conjunction with lower cost 1000BASE-T switches, companies can take advantage of the high bandwidth Gigabit Ethernet offers without all of the higher costs.

Transition Networks's 1000BASE-T to SX/LX converters allow users to extend the bandwidth to those users outside the reach of the 1000BASE-T standard **(up to 125 km)**.

CGETF10xx-11x

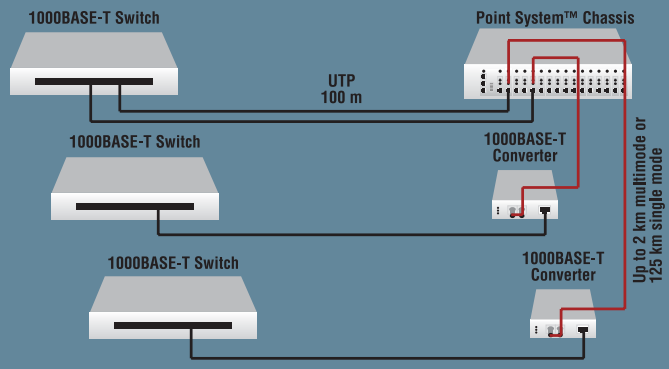
Features

- Copper & Fiber Auto-Negotiation *(see page 14)*
- Transparent Link Pass Through *(see page 15)*
- Automatic Link Restoration *(see page 16)*
- Remote Fault Detect *(see page 17)*
- Loopback *(see page 16)*
- Pause *(see page 15)*
- Remote Firmware Upgrade *(see page 16)*
- DMI - Diagnostic Monitoring Interface *supported on CGETF1040-110 when an SFP supporting DMI is used.*

DMI models have four functions:
- Transmit Power
- Receive Power
- Transmit bias current
- Temperature

Within each function, the device will send a trap *(i.e. error)* whenever a high or low warning event or a high or low alarm event occurs *(for a total of 16 traps)*.

Migrate to Gigabit Ethernet



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3ab™ and IEEE Std. 802.3™
6-position Switch	**SW1:** Remote Fiber Fault Detect (Down=Enabled) **SW2:** Symmetric Pause **SW3:** Asymmetric Pause **SW4:** Transparent Link Pass Through (UP=Enabled) **SW5:** Fiber Auto-Negotiation (Down=Enabled) **SW6:** Loopback (Down=Enabled)
3-position Jumper	**Hardware:** Converter mode is determined by 6-position switch settings **Software:** Converter mode is determined by most recently saved on-board microprocessor settings.
Status LEDs	**PWR (Power):** ON=connection to external AC power **LKF (Fiber Link):** ON=fiber connection **RXC (Copper Receive):** Flashing=Receiving data on copper link; ON=Copper Link connection **Duplex:** ON=Copper Link connection
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	5.4 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	CISPR/EN55022 Class A + EN55024; FCC Class A; CE Mark
Warranty	Lifetime

See Also:

Gigabit Ethernet
Stand-Alone Media Converters
page 104

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CGETF1013-110
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-SX 850nm multimode (SC)
[62.5/125µm fiber: 220 m/722 ft.]
Link Budget: 7.0 dB
[50/125µm fiber: 550 m / 1804 ft.]
Link Budget: 7.0 dB

CGETF1039-110
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-SX 850nm multimode (LC) via SFP
[62.5/125µm fiber: 220 m/722 ft.]
Link Budget: 8.0 dB
[50/125µm fiber: 550 m / 1804 ft.]
Link Budget: 8.0 dB

CGETF1024-110
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1310nm Extended MM (62.5/125µm fiber only) (SC)
[2 km/1.2 mi.] Link Budget: 7.0 dB

CGETF1014-110
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1310nm SM (SC)
[10 km/6.2 mi.] Link Budget: 7.0 dB

CGETF1015-110
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1310nm SM (SC)
[25 km/15.5 mi.] Link Budget: 15.0 dB

CGETF1017-110
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1550nm SM (SC)
[65 km/40.4 mi.] Link Budget: 21.0 dB

CGETF1035-110
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1550nm SM (SC)
[125 km/77.7 mi.] Link Budget: 27.0 dB

CGETF1040-110
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-X SFP Slot (empty)

Single Fiber Products
Recommended use in pairs

CGETF1029-110
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1310nm TX / 1550nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 13.0 dB

CGETF1029-111
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 13.0 dB

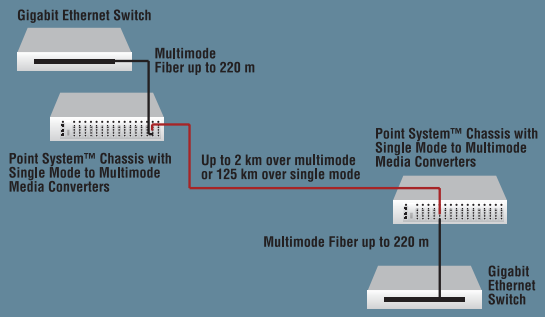
CGETF1029-112
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 20.0 dB

CGETF1029-113
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 20.0 dB

Gigabit Ethernet/Fibre Channel Optical Mode Converter

Used individually or in pairs, this media converter can extend Gigabit Ethernet over single mode fiber **up to 125 km**. Convert 1000BASE-SX ports on a Gigabit Ethernet switch to 1000BASE-LX on a port-by-port basis. Ideal for campus area networks or other applications requiring the distance advantages of single mode fiber.

Extend Network Distance



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™
3-position Jumper	**Hardware:** Software mode is disabled. **Software:** Converter mode is determined by most recently saved on-board microprocessor settings.
Status LEDs	**PWR (Power):** Steady green LED indicates connection to external AC power **LKS (Single mode fiber link):** Steady LED indicates single mode fiber link **LKM (Multimode fiber link):** Steady LED indicates multimode fiber link
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	3.5 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	UL LIsted; C-UL Listed (Canada); CISPR/EN55022 Class A & B + EN55024; FCC Class A & B; CE Mark
Warranty	Lifetime

See Also:

- Gigabit Ethernet Stand-Alone Media Converters page 106

CFMFF1xxx-22x

ethernet
fast ethernet
10/100 bridging
100/1000 bridging
10/100/1000
gigabit ethernet
atm/oc-x
ds3-t3/e3
high speed serial
rs232
rs422/485
t1/e1
e&m, 2/4-wire
pots 2-wire
video

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Select Media Converter
Select Switch

Features

- Link Pass Through *(page 15)*
- Automatic Link Restoration *(see page 16)*
- Protocol Transparency
- Extended Multimode SX capability *(up to 2 km 62.5/125µm fiber)*
- Remote Firmware Upgrade *(see page 16)*
- Card manageability:
  - Multimode signal detect
  - Hardware/software mode
  - Fiber port enable/disable multimode
  - Fiber port enable/disable single mode
- Can be used with any Point System™ Chassis

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CFMFF1313-220
1000BASE-SX 850nm multimode (SC)
[62.5/125µm fiber: 220 m / 722 ft.]
[50/125µm fiber: 550 m / 1804 ft.]
Link Budget 7.0 dB
to 1000BASE-SX 850nm multimode (SC)
[62.5/125µm fiber: 220 m / 722 ft.]
[50/125µm fiber: 550 m / 1804 ft.]
Link Budget 7.0 dB

CFMFF1324-220
1000BASE-SX 850nm multimode (SC)
[62.5/125µm fiber: 220 m / 722 ft.]
[50/125µm fiber: 550 m / 1804 ft.]
Link Budget 7.0 dB
to 1000BASE-LX 1310nm Extended MM (62.5/125µm fiber only) (SC)
[up to 2 km] Link Budget: 7.0 dB

CFMFF1424-220
1000BASE-LX 1310nm SM (SC)
[10 km/6.2 mi.] Link Budget: 7.0 dB
to 1000BASE-LX 1310nm Extended MM (62.5/125µm fiber only) (SC)
[up to 2 km] Link Budget: 7.0 dB

CFMFF1314-220
1000BASE-SX 850nm multimode (SC)
[62.5/125µm fiber: 220 m / 722 ft.]
[50/125µm fiber: 550 m / 1804 ft.]
Link Budget: 7.0 dB
to 1000BASE-LX 1310nm SM (SC)
[10 km/6.2 mi.] Link Budget: 7.0 dB

CFMFF1414-220
1000BASE-LX 1310nm SM (SC)
[10 km/6.2 mi.] Link Budget: 7.0 dB
to 1000BASE-LX 1310nm SM (SC)
[10 km/6.2 mi.] Link Budget: 7.0 dB

CFMFF1315-220
1000BASE-SX 850nm multimode (SC)
[62.5/125µm fiber: 220 m / 722 ft.]
[50/125µm fiber: 550 m / 1804 ft.]
Link Budget: 7.0 dB
to 1000BASE-LX 1310nm SM (SC)
[25 km/15.5 mi.] Link Budget: 15.0 dB

CFMFF1317-220
1000BASE-SX 850nm multimode (SC)
[62.5/125µm fiber: 220 m / 722 ft.]
[50/125µm fiber: 550 m / 1804 ft.]
Link Budget: 7.0 dB
to 1000BASE-LX 1310nm SM (SC)
[65 km/40.4 mi.] Link Budget: 20.0 dB

CFMFF1335-220
1000BASE-SX 850nm multimode (SC)
[62.5/125µm fiber: 220 m / 722 ft.]
[50/125µm fiber: 550 m / 1804 ft.]
Link Budget: 7.0 dB
to 1000BASE-LX 1550nm SM (SC)
[125 km/77.7 mi.] Link Budget: 27.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

CFMFF1329-220
1000BASE-SX 850nm multimode (SC)
[62.5/125µm fiber: 220 m / 722 ft.]
[50/125µm fiber: 550 m / 1804 ft.]
Link Budget: 7.0 dB
to 1000BASE-LX 1310nm TX / 1550nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 13.0 dB

CFMFF1329-221
1000BASE-SX 850nm multimode (SC)
[62.5/125µm fiber: 220 m / 722 ft.]
[50/125µm fiber: 550 m / 1804 ft.]
Link Budget: 7.0 dB
to 1000BASE-LX 1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 13.0 dB

CFMFF1329-222
1000BASE-SX 850nm multimode (SC)
[62.5/125µm fiber: 220 m / 722 ft.]
[50/125µm fiber: 550 m / 1804 ft.]
Link Budget: 7.0 dB
to 1000BASE-LX 1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 20.0 dB

CFMFF1329-223
1000BASE-SX 850nm multimode (SC)
[62.5/125µm fiber: 220 m / 722 ft.]
[50/125µm fiber: 550 m / 1804 ft.]
Link Budget: 7.0 dB
to 1000BASE-LX 1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 20.0 dB

Gigabit Ethernet 1000BASE-SX to 1000BASE-LX with signal retiming /regeneration

Gigabit Media Converter with Signal Retiming & Regeneration

AUTO NEG · LINK PASS THROUGH · AUTO LINK RESTORE · PAUSE · REMOTE FIRMWARE UPGRADE

- Transition Networks's Gigabit Ethernet optical mode converters now include signal retiming, regeneration and re-amplification to maintain signal integrity and allow for maximum network distance without signal degradation.
- Distances of hundreds of kilometers are possible when cascading two or more devices in the same link.
- Can be used with any Point System™ Chassis *(pages 20 & 21)*

Convert 1000BASE-SX ports over to 1000BASE-LX on a port-by-port basis. Used individually or in pairs, this media converter can extend Gigabit Ethernet over single mode fiber up to 125 km. Or cascade two or more converters in a link to achieve even greater distances.

Features

- Auto-Negotiation *(see page 14)*
- Link Pass Through *(see page 15)*
- Automatic Link Restoration *(see page 16)*
- Pause *(see page 15)*
- Remote Firmware Upgrade *(see page 16)*
- Extended multimode SX capability *(up to 2 km 62.5/125µm fiber)*

Management Features

- Report local converter status to chassis management software:
  - Converter power status
  - Hardware/Software mode status
  - Single Mode and Multimode link status
  - Auto-Negotiation, Link Pass Through and Pause settings.
- Write operation includes:
  - Power on/off converter
  - Enable/disable Single Mode port
  - Enable/disable Multimode port
  - Enable/disable Auto-Negotiation
  - Enable/disable Link Pass Through
  - Select Pause Advertisement(s)

Specifications

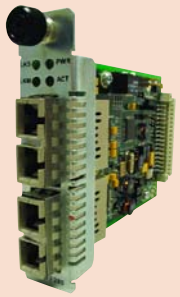
See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™
Status LEDs	**PWR (Power):** Lit for normal operation **LKS (Single Mode Fiber Link):** ON = Fiber Link **LKM (Multimode Fiber Link):** ON = Fiber Link **ACT (Activity):** Blinking = data reception on either fiber link
Switches	**Switch 1:** Fiber Auto-Negotiation on/off **Switch 2:** Link Pass Through on/off **Switch 3&4:** Pause configuration determined by combined setting
3-position Jumper	**Hardware:** Converter mode is determined by DIP switch settings **Software:** Converter mode is determined by most recently saved on-board microprocessor settings
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	3.5 watts
Environment	0 – 50°C operating; 5% – 95% humidity non-condensing; 0 – 10,000 ft. altitude
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	EN55024; CISPR22/EN55022 Class A; FCC Class A; CE Mark
Warranty	Lifetime

See Also:

- Gigabit Ethernet Optical Mode Stand-Alone Media Converters page 107

CFMFF13xx-28x



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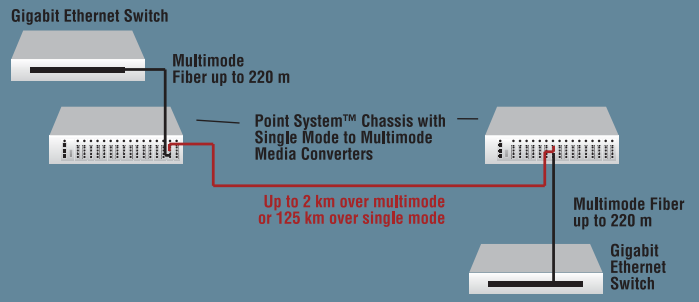
Select Media Converter
Select Switch

Extend Network Distance



Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CFMFF1324-280
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.0 dB
to 1000BASE-LX 1310nm Extended MM (SC) (62.5/125µm fiber only)
[up to 2 km] Link Budget: 7.0 dB

CFMFF1314-280
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.0 dB
to 1000BASE-LX 1310nm SM (SC)
[10 km/6.2 mi.] Link Budget: 33.0 dB

CFMFF1414-280
1000BASE-LX 1310nm SM (SC)
[10 km/6.2 mi.] Link Budget: 7.0 dB
to 1000BASE-LX 1310nm SM (SC)
[10 km/6.2 mi.] Link Budget: 7.0 dB

CFMFF1315-280
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.0 dB
to 1000BASE-LX 1310nm SM (SC)
[25 km/15.5 mi.] Link Budget: 15.0 dB

CFMFF1317-280
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.0 dB
to 1000BASE-LX 1550nm SM (SC)
[65 km/40.4 mi.] Link Budget: 21.0 dB

CFMFF1335-280
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.0 dB
to 1000BASE-LX 1550nm SM (SC)
[125 km/77.7 mi.] Link Budget: 27.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

CFMFF1329-280
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.0 dB
to 1000BASE-LX 1310nm TX / 1550nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 13.0 dB

CFMFF1329-281
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.0 dB
to 1000BASE-LX 1550nm TX / 1310nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 13.0 dB

CFMFF1329-282
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.0 dB
to 1000BASE-LX 1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 20.0 dB

CFMFF1329-283
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.0 dB
to 1000BASE-LX 1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 20.0 dB

CFMFF1329-286
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.0 dB
to 1000BASE-LX 1510nm TX / 1590nm RX single fiber single mode (SC)
[80 km/49.6 mi.] Link Budget: 24.0 dB

CFMFF1329-287
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.0 dB
to 1000BASE-LX 1590nm TX / 1510nm RX single fiber single mode (SC)
[80 km/49.6 mi.] Link Budget: 24.0 dB

**[62.5/125µm fiber: 220 m / 722 ft.];*
**[50/125µm fiber: 550 m / 1804 ft.]*

Gigabit Ethernet Mode Conditioning Cable

Gigabit Ethernet Media Converter Accessory

Corporate, industrial or education campuses can now utilize the multimode infrastructure already in place. Users can now upgrade their networks to Gigabit speeds in the most economical manner.

1000MCC-1

- Extend Gigabit Ethernet over multimode cable up to 500 meters*

when used in conjunction with xFMFF1314-220, xGETF1014-110 or xGFEB1014-100. It can also extend the distance up to 2 km* when used in conjunction with xFMFF1315-220, xGFEB1015-100 or xGETF1015-110.

- Low cost alternative to recabling

IEEE-802.3z compliant Gigabit Mode Conditioning cable allows network managers to upgrade their multimode backbone to gigabit speeds without costly recabling.

The Mode Conditioning Cable eliminates the effects of Differential Mode Delay (DMD) by providing an offset launch of the single mode core, into the 62.5 or 50 µm multimode core.

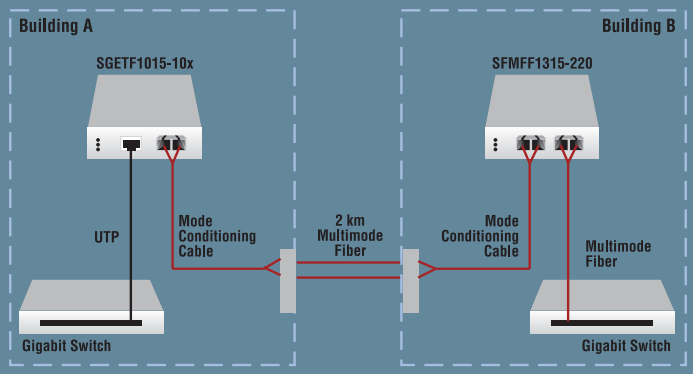
Alternative solution to Gigabit products with "24" connector designation for distances up to 2 km on multimode fiber.

**Distances not guaranteed. Distance extension is largely dependent on quality of fiber and connectors.*

Specifications

Standards	IEEE Std. 802.3z™
Connectors	SC
Warranty	Lifetime

Low Cost Alternative to Recabling



Ordering Info

1000MCC-1
Mode Conditioning Cable 62.5/50µm (1 meter cable length); SC connectors

To be used in conjunction with any of the following converters:

CFMFF1314-220 (see page 53)
1000BASE-SX 850nm multimode (SC)
[62.5/125µm fiber: 220 m / 722 ft.]
[50/125µm fiber: 550 m / 1804 ft.]
to 1000BASE-LX 1310nm SM (SC)
[500 m/1640 ft.]

SFMFF1314-220 (see page 106)
1000BASE-SX 850nm multimode (SC)
[62.5/125µm fiber: 220 m / 722 ft.]
[50/125µm fiber: 550 m / 1804 ft.]
to 1000BASE-LX 1310nm SM (SC)
[500 m/1640 ft.]

CFMFF1315-220 (see page 53)
1000BASE-SX 850nm multimode (SC)
[62.5/125µm fiber: 220 m / 722 ft.]
[50/125µm fiber: 550 m / 1804 ft.]
to 1000BASE-LX 1310nm SM (SC)
[2 km / 1.2 mi.]

SFMFF1315-220 (see page 106)
1000BASE-SX 850nm multimode (SC)
[62.5/125µm fiber: 220 m / 722 ft.]
[50/125µm fiber: 550 m / 1804 ft.]
to 1000BASE-LX 1310nm SM (SC)
[2 km / 1.2 mi.]

CGETF1014-110 (see page 52)
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1310nm SM (SC)
[500 m/1640 ft.]

SGETF1014-110 (see page 104)
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1310nm SM (SC)
[500 m/1640 ft.]

CGETF1015-110 (see page 52)
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1310nm SM (SC)
[2 km / 1.2 mi.]

SGETF1015-110 (see page104)
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1310nm SM (SC)
[2 km / 1.2 mi.]

CGFEB1014-100 (see page 47)
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1310nm SM (SC)
[500 m/1640 ft.]

SGFEB1014-100 (see page 100)
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1310nm SM (SC)
[500 m/1640 ft.]

CGFEB1015-100 (see page 47)
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1310nm SM (SC)
[2 km / 1.2 mi.]

SGFEB1015-100 (see page 100)
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1310nm SM (SC)
[2 km / 1.2 mi.]

1000MCC-1LC
Mode Conditioning Cable 62.5/50µm (1 meter cable length); SC to LC connectors

To be used in conjunction with any of the following converters:

TN-SFP-LX1 (see page 135)
(model with DMI)
1000BASE-LX 1310nm (LC) SM
[500 m/1640 ft.]
Link Budget: 11.5 dB

TN-SFP-LX3 (see page 135)
1000BASE-LX 1310nm (LC) SM
[2 km / 1.2 mi.]
Link Budget: 19.0 dB

Connect Single Mode connector from the cable to TX port of an LX converter.

Distances not guaranteed. Distance extension is largely dependent on quality of fiber and connectors.

Optical Line Converter with SFP slots

Small Form Factor Pluggable Conversion

- Universal platform to accommodate any optical conversion options available via SFP interfaces.
- (2) SFP Slots for SFP interfaces
- Protocol Transparency

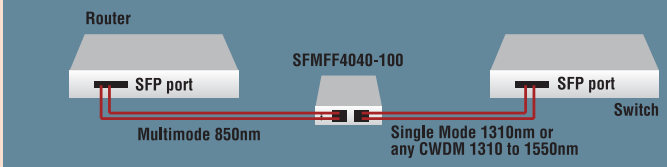
CFMFF4040-100

These converters offer an excellent upgrade path for networks. Today's Fast Ethernet applications can be upgraded to Gigabit speeds tomorrow with a simple SFP swap. The converter remains installed, managed and fully operational at any of these speeds.

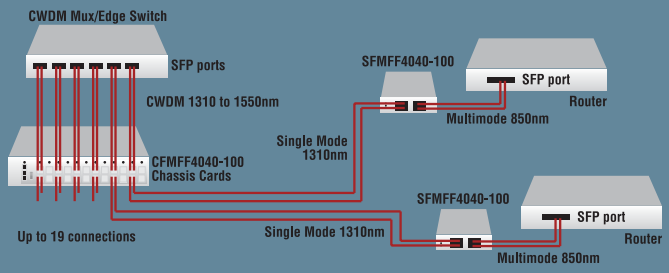
Two SFP module slots allow for seamless connectivity between different wavelengths or fiber modes for speeds up to 2.5Gbps. Protocol independence allows for use in broad range of applications including Fast and Gigabit Ethernet, FDDI, ESCON, SONET OC-3, OC-12, OC-24 and Fibre Channel.

Digital diagnostics provide vital information about the state of your optical connection.

Enterprise Application



Service Provider Application



Features

- CWDM and DWDM SFP-ready platform allowing for cost-effective transponder functionality.
- Link Pass Through *(see page 15)*
- DMI, Digital diagnostics per SFF-8472
- Preconfigured bundles with SFP modules installed.
- Automatic Link Restoration *(see page 16)*
- Remote Firmware Upgrade *(see page 16)*
- Can be used with any Point System™ Chassis *(see pages 20 & 21)*
- Optical Intrusion Detection

Monitor the physical layer of optical networks for signal strength degradation. The user can specify the threshold for sudden signal strength deterioration. Such a change often indicates a physical intrusion or fiber damage.

Specifications

Standards	Multi-Source Agreement (MSA); Small Form Factor Pluggable (SFP) Status
LEDs	**LK1:** Link on Port 1 **LK2:** Link on Port 2 **PWR:** Power
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	2 watts with TN-SFP-xx modules installed
Environment	See chassis specifications
Regulatory Compliance	FCC Class A; EN55024 (CISPR 22) Class A; ICES-003; CISPRB; CE Mark
Warranty	Lifetime

Ordering Info

CFMFF4040-100
SFP Slot (empty) to SFP Slot (empty)

See Pages 135 & 136 for Compatible SFP Modules.

See Also:

- Stand-Alone Optical Line Converters page 109

Single Mode to Multimode Media Converter

- Connect single mode fiber cable to devices with multimode ports
- Protocol Transparency
- Can be used with any Point System™ Chassis *(see pages 20 & 21)*

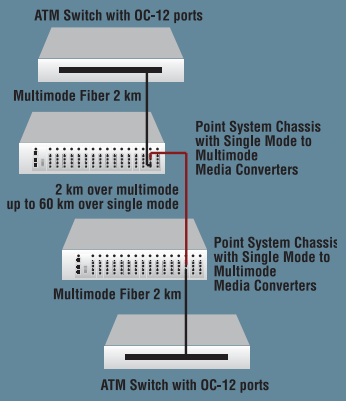
CFMFF1xxx-21x

Features

- OC-12 over SONET/SDH or ATM
- Link Pass Through *(see page 15)*
- Automatic Link Restoration *(see page 16)*
- Remote Firmware Upgrade *(see page 16)*
- Card manageability:
  - Multimode/Single Mode signal detect
  - Hardware/software mode
  - Fiber port enable/disable multimode
  - Fiber port enable/disable single mode

Extend Network Distance

Convert multimode 622 Mbps interfaces to single mode fiber on a port-by-port basis and extend ATM or SONET over single mode fiber up to 60 km.



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™
3-position Jumper	**Hardware:** Software mode disabled. **Software:** Converter mode is determined by most recently saved on-board microprocessor settings.
Status LEDs	**PWR (Power):** Steady green LED indicates connection to external AC power **LKS (Single mode fiber link):** Steady LED indicates single mode fiber link **LKM (Multimode fiber link):** Steady LED indicates multimode fiber link
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	3.5 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	UL Listed; C-UL Listed (Canada); CISPR/EN55022 Class A; FCC Class A; CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CFMFF1314-210
622 Mbps fiber optic 1300nm MM (SC) **[2 km/1.2 mi.] Link Budget: 12.0 dB**
to 622 Mbps fiber optic 1310nm single mode (SC) **[15 km/9.3 mi.] Link Budget: 11.0 dB**

CFMFF1316-210
622 Mbps fiber optic 1300nm MM (SC) **[2 km/1.2 mi.] Link Budget: 12.0 dB**
to 622 Mbps fiber optic 1310nm SM (SC) **[40 km/24.9 mi.] Link Budget: 25.0 dB**

CFMFF1317-210
622 Mbps fiber optic 1300nm MM (SC) **[2 km/1.2 mi.] Link Budget: 7.0 dB**
to 622 Mbps fiber optic 1550nm SM (SC) **[60 km/37.3 mi.] Link Budget: 25.0 dB**

Single Fiber Products
Recommended use in pairs (see page 17)

CFMFF1329-210
622 Mbps fiber optic 1300nm MM (SC) **[2 km/1.2 mi.] Link Budget: 7.0 dB**
to 622 Mbps 1310nm TX / 1550nm RX single fiber single mode (SC) **[20 km/12.4 mi.] Link Budget: 14.0 dB**

CFMFF1329-211
622 Mbps fiber optic 1300nm MM (SC) **[2 km/1.2 mi.] Link Budget: 7.0 dB**
to 622 Mbps 1550nm TX / 1310nm RX single fiber single mode (SC) **[20 km/12.4 mi.] Link Budget: 14.0 dB**

CFMFF1329-212
622 Mbps fiber optic 1300nm MM (SC) **[2 km/1.2 mi.] Link Budget: 7.0 dB**
to 622 Mbps 1310nm TX / 1550nm RX single fiber single mode (SC) **[40 km/24.9 mi.] Link Budget: 23.0 dB**

CFMFF1329-213
622 Mbps fiber optic 1300nm MM (SC) **[2 km/1.2 mi.] Link Budget: 7.0 dB**
to 622 Mbps 1550nm TX / 1310nm RX single fiber single mode (SC) **[40 km/24.9 mi.] Link Budget: 22.0 dB**

CFMFF1429-210
622 Mbps fiber optic 1310nm SM (SC) **[15 km/9.3 mi.] Link Budget: 13.0 dB**
to 622 Mbps 1310nm TX / 1550nm RX single fiber single mode (SC) **[20 km/12.4 mi.] Link Budget: 14.0 dB**

CFMFF1429-211
622 Mbps fiber optic 1310nm SM (SC) **[15 km/9.3 mi.] Link Budget: 13.0 dB**
to 622 Mbps 1550nm TX / 1310nm RX single fiber single mode (SC) **[20 km/12.4 mi.] Link Budget: 14.0 dB**

CFMFF1429-212
622 Mbps fiber optic 1310nm SM (SC) **[15 km/9.3 mi.] Link Budget: 13.0 dB**
to 622 Mbps 1310nm TX / 1550nm RX single fiber single mode (SC) **[40 km/24.9 mi.] Link Budget: 23.0 dB**

CFMFF1429-213
622 Mbps fiber optic 1310nm SM (SC) **[15 km/9.3 mi.] Link Budget: 13.0 dB**
to 622 Mbps 1550nm TX / 1310nm RX single fiber single mode (SC) **[40 km/24.9 mi.] Link Budget: 22.0 dB**

See Also:

- OC12 ATM/SONET/SDH Stand-Alone Media Converters page 111

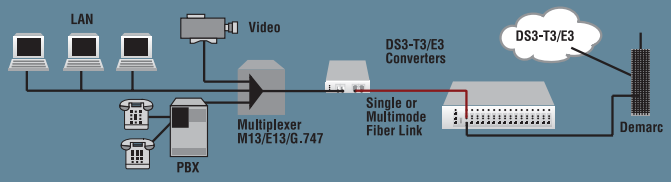
DS3-T3/E3 Coax to Fiber Media Converter

CCSCF30xx-10x

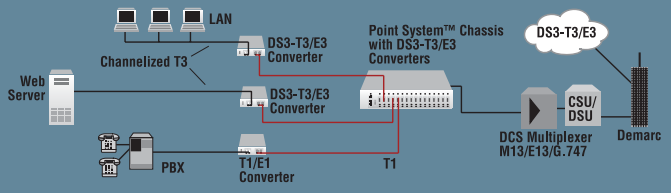
- Extend a DS3 or E3 over fiber

The DS3-T3/E3 copper to fiber media converter will provide a solution for those users that desire to extend the point of presence of their DS3 or E3 Connection or use it to connect remote locations via T3/E3.

Integrate Voice & Data on Fiber Network



Upgrade from Multiple T1



Features

- AIS (Alarm Indication Signal) All 1's or Blue detected on both ports. (unframed)
- AIS generated in both directions selectable Blue or 1's.
- Digital Loopback on fiber & copper ports
- Coax Line build out for operation less than 255 feet or 255 feet to 1000 feet.
- Switch selectable DS3/T3 or E3 rate
- Remote Firmware Upgrade *(see page 16)*
- LED indications for all operation modes
- Supports fractional/channelized DS3/E3
- Reporting features:
  - Report converter status to chassis management software:
  - Coax & Fiber Link status
  - Line Build out
  - DS3/T3/E3 mode
  - Hardware/Software mode
  - Coax & Fiber AIS
  - Local Coax & Fiber Loopback
- Write operation includes:
  - Coax Loopback
  - Fiber Loopback

See Also:

DS3-T3/E3
Stand-Alone Media Converters
page 112

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	ANSI, ITU-TS, AT&T, ETSI, G.703, G.921 and G.956
Switches	**SW1:** DS3/E3 selector: On for E3 **SW2:** Coax Line build out: On for less than 255 feet of cable **SW3:** AIS (unframed) transmit: On for transmit AIS if receive loss of carrier **SW4:** AIS Blue/AIS All 1's: On for Blue alarm **Front Switch:** Right/Left – loop-back fiber/copper, Center – Normal
Jumpers	**Jumper (J3):** Hardware/Software mode **Jumper (J11):** Connect output coax port to chassis ground (per G.703) **Jumper (J12):** Connect input coax port to chassis ground (per G.703)
Status LEDs	**Power:** On for normal operation **SDC copper:** Green – Link is up; Green Flashing – Coax is in loop-back mode; Yellow – AIS (unframed) detected. **SDC Fiber:** Green – Link is up; Green Flashing – Fiber is in loop-back mode; Yellow – AIS (unframed) detected.
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	6.0 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	CISPR/EN55022 Class A; FCC Class A; CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CCSCF3011-100
(2) Coax (BNC)
to 1300nm multimode (ST)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

CCSCF3013-100
(2) Coax (BNC)
to 1300nm multimode (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

CCSCF3018-100
(2) Coax (BNC)
to 1300nm multimode (MT-RJ)
[2 km / 1.2 mi.] Link Budget: 14.5 dB

CCSCF3014-100
(2) Coax (BNC)
to 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

CCSCF3015-100
(2) Coax (BNC)
to 1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

CCSCF3016-100
(2) Coax (BNC)
to 1310nm single mode (SC)
[60 km/37.3 mi.] Link Budget: 29.0 dB

CCSCF3017-100
(2) Coax (BNC)
to 1550nm single mode (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

CCSCF3029-100
(2) Coax (BNC)
to 1310nm TX / 1550nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CCSCF3029-101
(2) Coax (BNC)
to 1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CCSCF3029-102
(2) Coax (BNC)
to 1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

CCSCF3029-103
(2) Coax (BNC)
to 1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

Remotely Managed High Speed Serial Media Converter

- Connect High Speed Serial signals on copper to fiber
- Supports multiple protocols through the use of a universal 26-pin serial interface connector.
- Extend the point of presence of a copper V.35 / X.21 / RS449 / RS530 / RS232 connection at data rates up to 10 Mbps.

CPSVT26xx-10x

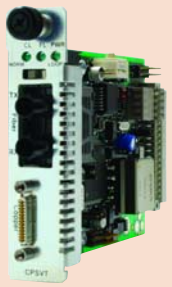


Table of Contents
Select Media Converter
Select Switch

ethernet
fast ethernet
10/100 bridging
100/1000 bridging
10/100/1000
gigabit ethernet
atm / oc-x
ds3-t3/e3
high speed serial
rs232
rs422/485
t1/e1
e&m, 2/4-wire
pots 2-wire
video

Features

- Supports remote management of a stand-alone converter
- Copper & Fiber Loopback (*see page 16*)
- LED indications for Fiber Link, Loopback & Data
- Ability to use a combination of any copper interface

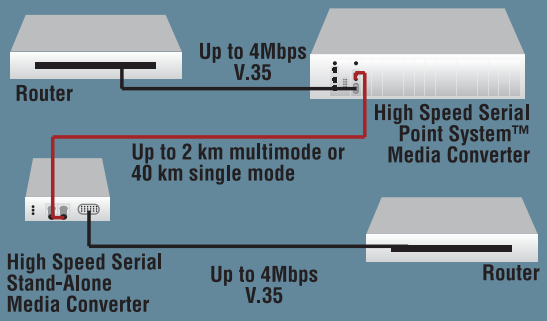
(RS449 to V.35, RS530 to X.21, DTE-DTE, DTE-DCE, DCE-DCE, etc.)
All interfaces converted at the physical level.

- Synchronous or asynchronous capability
- Remote Firmware Upgrade (*see page 16*)

Management Features

- Report converter status to chassis management software
  - Local Fiber Link status
  - Local/Remote Hardware/Software mode
  - Local/Remote Speed select
  - Local/Remote Loopback
  - Local/Remote Cable type reporting, near end
  - Local/Remote Clock polarity setting
- Write operation includes:
  - Local or Remote Loopback
  - Local or Remote Speed Select

Extend Distance Between Routers



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	ITU-T; ISO-2593
Data Rate	1.2 Kb/s to 10 Mb/s
Switches Side panel, external **DCE speed switch**, sixteen position: • 0 – TT = Receive CLK • 1 – 56 Kbps • 2 – 64 Kbps • 3 – 112 Kbps • 4 – 128 Kbps • 5 – 256 Kbps • 6 – 384 Kbps • 7 – 512 Kbps • 8 – 768 Kbps • 9 – 1.024 Mbps • A – 1.544 Mbps • B – 2.048 Mbps • C – 3.072 Mbps • D – 4.096 Mbps • E – 6.144 Mbps • F – Asynchronous Mode Speeds can also be set on DCE converters locally or remotely via software. Front Panel, **Loop-back Selector Switch**: Right Position: Loop Fiber Back & Loop Copper Back Left Position: Normal Operation	
Jumpers	**Jumper (J4):** Hardware/Software mode **Jumper (J6): RX Clock Polarity:** Set to sample the receive data on the *rising* or *falling* edge of the receive clock. **Jumper (J7): TX Clock Polarity:** Set to sample the transmit data on the *rising* or *falling* edge of the receive clock.
Status LEDs	**Smart Serial Link:** Green - Link is up; Green Flashing - In loop-back mode; **Fiber:** Green - Link is up; Green Flashing - In loop-back mode; **Power:** Green - ON power applied to board
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	5.0 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	CISPR/EN55022, EN55024, EN60950 Class A; FCC Class A; CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CPSVT2611-100
26-pin
to 1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CPSVT2613-100
26-pin
to 1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CPSVT2614-100
26-pin
to 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

CPSVT2629-100
26-pin
to 1310nm TX / 1550nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CPSVT2629-101
26-pin
to 1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CPSVT2629-102
26-pin
to 1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

CPSVT2629-103
26-pin
to 1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

Cable Assemblies
[cable length: 3 meters / 10 feet]

21DCE-3
DB-15 (FT) (26-pin) to (DCE) [3 m/10 ft.]

21DTE-3
DB-15 (MT) (26-pin) to (DTE) [3 m/10 ft.]

232DCE-3
DB-25 (FT) (26-pin) to (DCE) [3 m/10 ft.]

232DTE-3
DB-25 (MT) (26-pin) to(DTE) [3 m/10 ft.]

35DCE-3
V.35 (FT) (26-pin) to (DCE) [3 m/10 ft.]

35DTE-3
V.35 (MT) (26-pin) to (DTE) [3 m/10 ft.]

449DCE-3
DB-37 (FT) (26-pin) to (DCE) [3 m/10 ft.]

449DTE-3
DB-37 (MT) (26-pin) to (DTE) [3 m/10 ft.]

530DCE-3
DB-25 (FT) (26-pin) to (DCE) [3 m/10 ft.]

530DTE-3
DB-25 (MT) (26-pin) to (DTE) [3 m/10 ft.]

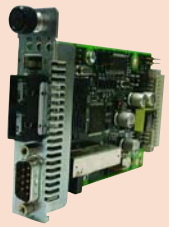
Copper Distances	
Standard	Range*
RS232/V.24	15 meters
RS449/V.36	1.2 km
V.35	600 meters
X.21	1.2 km
RS530	1.2 km

*For reference only. Contact Transition Networks for detailed range information.

Remotely Managed RS232 Media Converter

- Ideal for campus or business environments where remote devices can be networked in a point-to-point configuration and distances are greater than the 15 meter limitation of conventional copper serial cables.

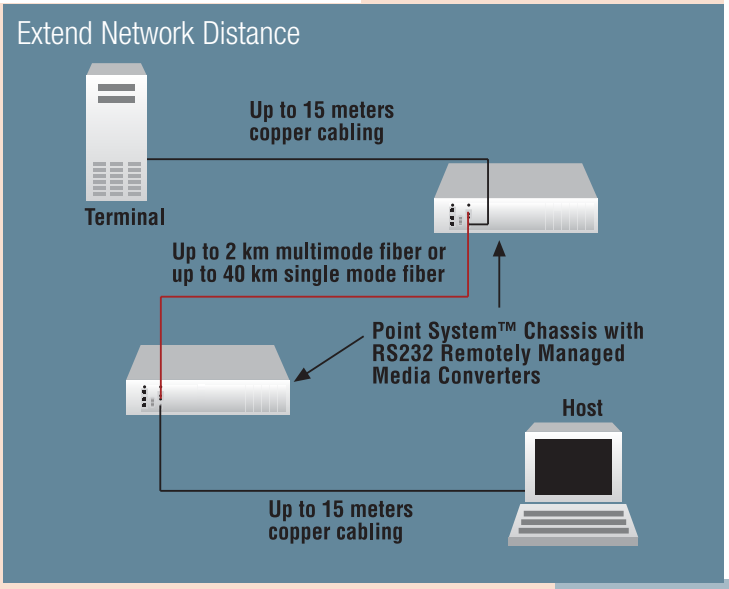
CRS2F311x-100



Extend Network Distance

Link a remote terminal to a host computer: Connect multiple devices, such as security scanners, POS devices, remote terminals and building access/alarming systems to a host computer.

Transition Networks's serial RS232 to Fiber Media Converter allows you to extend the distance between serial connections with the use of fiber optic cable. This full-featured converter transmits the full complement of RS232 flow control/handshaking signals optically and supports full or half-duplex asynchronous data transmission at speeds up to 115Kb/s.



Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CRS2F3111-100
DB-9 [15 m/49 ft.]
to 1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CRS2F3113-100
DB-9 [15 m/49 ft.]
to 1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CRS2F3114-100
DB-9 [15 m/49 ft.]
to 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

CRS2F3115-100
DB-9 [15 m/49 ft.]
to 1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

The diagnostic features included on this converter make installation easy and intuitive. A DTE/DCE switch eliminates the frustration over selecting the appropriate cable. A Loopback switch allows for complete diagnostic testing prior to system turn-up or during troubleshooting. Unit and Port LEDs allow for quick status information of the converter.

Features

- Read/write access to remote stand-alone unit
- Local or Remote Loopback on copper and fiber *(see page 16)*
- DTE/DCE switch for easy installation with straight-through cabling
- Full/Half-duplex asynchronous transmission at speeds up to 115Kb/s
- Supports the following flow control signaling:

1. DCD - Data Carrier Detect
2. RXD - Receive Data
3. TXD - Transmit Data
4. DTR - Data Terminal Ready
5. SG - Signal Ground
6. DSR - Data Set Ready
7. RTS - Request To Send
8. CTS - Clear To Send

- Remote Firmware Upgrade *(see page 16)*

Management Features

- Report converter status to chassis management software:
  - Local Fiber Link status
  - Local/Remote Hardware/Software mode
  - Local/Remote Loopback
  - Local/Remote DTE/DCE mode
  - Local/Remote link status
- Write operation includes:
  - Local Loopback
  - Remote Loopback
- Can be used with any Point System™ Chassis *(see pages 20 & 21)*

See Also:

- RS232 Stand-Alone Media Converters
  pages 114 – 115

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	EIA/TIA-574, EIA/TIA RS-232E
Data Rate	115 Kb/s
Switches	**DTE/DCE:** Select appropriate position **Loop-back:** Norm = normal operation; Loop = Fiber and copper loop-back
Status LEDs	**P (Power):** Lit for normal operation **RX:** Steady = Copper Link; Flashing = Rx Data **FL:** Steady = Fiber Link; Flashing = Loop back mode
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	5.0 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	CISPR22/EN55022 Class A + EN55024; EN60950 Class A; FCC Class A; CE Mark
Warranty	Lifetime

RS422/485 Copper to Fiber Media Converter

REMOTE FIRMWARE UPGRADE

- Ideal for campus or business environments where remote devices can be networked in either a point-to-point or point to multi-point configuration.

CRS4F3x1x-100

Link a remote terminal to a host computer. Connect multiple devices, such as security scanners, POS devices, remote terminals and building access/alarming systems to a host computer.

Transition Networks's serial RS-422/485 to Fiber Media Converter allows you to extend the distance between serial connections with the use of fiber optic cable. This full-featured converter operates in 2-wire mode for RS-422 and either 2-wire or 4-wire mode for RS-485 and supports full or half-duplex data transmission at speeds up to 1.25 Mb/s.

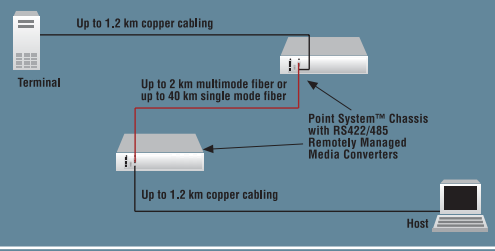
Features

- RS422 or RS485 operation
- 2-wire or 4-wire in operation in RS-485 mode
- Full/Half-duplex transmission at speeds up to 1.25 Mb/s
- Remote Firmware Upgrade *(see page 16)*
- Can be used with any Point System™ Chassis *(see pages 20 & 21)*

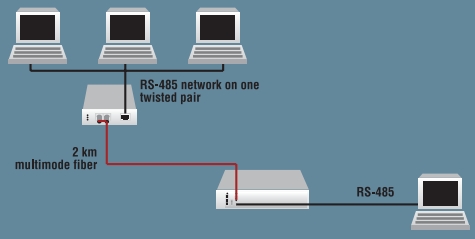
Management Features

- Report converter status to chassis management software:
  - Local Fiber Link status
  - Receive data activity on the copper link
  - Local Switch settings
    - 130 ohm resistor on Rx
    - 130 ohm resistor on Tx
    - 1k ohm "pull down"
    - 1k ohm "pull up"
    - 2-wire / 4-wire operation
    - RS-485 / RS-422 operation

Extend Network Distance



Connect Multiple Devices



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	EIA/TIA RS-422, EIA/TIA RS-485
Switches	**SW1:** 130 ohm resistor Rx (Down = enable) **SW2:** 130 ohm resistor Tx (Down = enable) **SW3:** 1k ohm "pull-down" (Down = enable) **SW4:** 1k ohm "pull-up" (Down = enable) **SW5:** 2-wire / 4-wire (Down = 4-wire) **SW6:** RS-485 / RS-422 (Down = RS-422)
Status LEDs	**PWR:** Power: Lit for normal operation **RXC:** Steady = Data Rx on copper link; Flashing = Rx Data at low speed **RXF:** Steady = Fiber Link
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	5.0 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	CISPR22/EN55022; EN55024; EN60950 Class A; FCC Class A; CE Mark; UL 1950
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CRS4F3111-100
DB-9 [1.2 km/0.7 mi.]
to 1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CRS4F3113-100
DB-9 [1.2 km/0.7 mi.]
to 1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CRS4F3114-100
DB-9 [1.2 km/0.7 mi.]
to 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

CRS4F3115-100
DB-9 [1.2 km/0.7 mi.]
to 1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

CRS4F3211-100
Terminal Block [1.2 km/0.7 mi.]
to 1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CRS4F3213-100
Terminal Block [1.2 km/0.7 mi.]
to 1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CRS4F3214-100
Terminal Block [1.2 km/0.7 mi.]
to 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

CRS4F3215-100
Terminal Block [1.2 km/0.7 mi.]
to 1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

See Also:

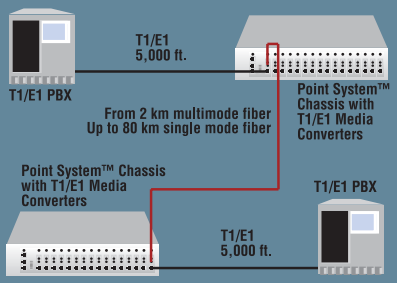
RS422/485
Stand-Alone Media Converters
page 116

Remotely Managed T1/E1 Media Converter

- The Remotely Managed T1/E1 copper to fiber media converter will provide a solution for users who desire to extend their T1 or E1 circuits over fiber and remotely manage them “in-band” from admin locations.

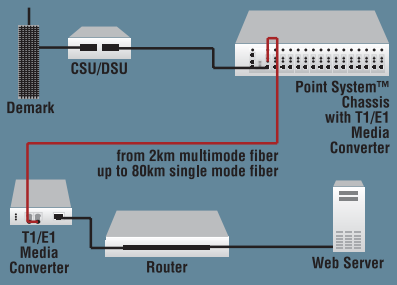
CSDTFx0xx-1xx

Provide Campus Interconnects



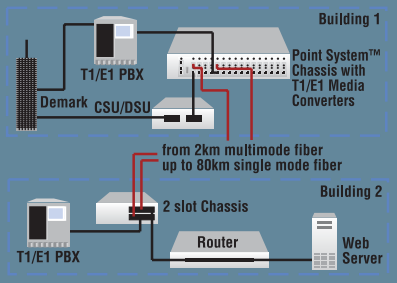
With the exception of Ethernet, T1/E1 is one of the most common campus/ metropolitan area networking interconnects. A copper to fiber conversion on the premise side of the T1/E1 makes it easier to integrate voice traffic, frame relay or IP type traffic on your fiber network.

Remote Management



Stand-alone can be managed remotely when used with a managed chassis.

Extend T1 Networks



Extend T1 to other buildings in a campus or MAN from 2 km to 80 km for voice or data applications.

Features

- Remote in-band management *(see page 15)*
- Local or Remote Loopbacks on copper or fiber in software mode *(see page 16)*
- Loopback switch facilitates local installation
- Converts the copper ports on T1/E1 devices, such as a PBX or T1/E1 Router, to multimode or single mode fiber
- Switch selectable RJ-48 connectors for T1 or E1
- Jitter attenuators optimize Bit Error Rate (BER) performance
- Network debug procedures make BER testing more convenient
- Built-in troubleshooting with the addition of a selectable TAOS (Transmit All Ones) switch on the fiber and copper interfaces allows the network engineer to test all T1/E1 equipment on that network segment and ensure the network link
- Dry Relay Contacts enable the media converter to be tied into a separate alarm circuit commonly found in a T1/E1 twisted pair environment. Contacts will be activated on loss of power or loss of fiber link.
- Remote Firmware Upgrade *(see page 16)*
- LED provides Alarm Indication Signal (AIS)
- Can be used with fractional T1/E1 circuits

Point System™ Management Features

- Report local or remote converter status
  - Copper & Fiber Link status
  - Hardware switch settings: LBO, AIS Copper, AIS Fiber, HW/SW
  - AIS detected Copper & Fiber
  - Model Number
  - Copper & Fiber Connector
- Local or remote command operations include:
  - Loopback Copper & Fiber
  - AIS transmitted on Fiber on loss of Copper link
  - AIS Transmitted on Copper on loss of Fiber link
  - Boot-load firmware

See next page for Ordering Info

See Also:

- T1/E1
  Stand-Alone Media Converters
  pages 117 – 118

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CSDTF1011-105
Twisted Pair (RJ-48) **[1.5 km/0.9 mi.]**
to 850nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 13.5 dB

CSDTF1013-105
Twisted Pair (RJ-48) **[1.5 km/0.9 mi.]**
to 850nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 13.5 dB

CSDTF1018-105
Twisted Pair (RJ-48) **[1.5 km/0.9 mi.]**
to 1300nm multimode (MT-RJ)
[2 km/1.2 mi.] Link Budget: 14.5 dB

CSDTF1027-105
Twisted Pair (RJ-48) **[1.5 km/0.9 mi.]**
to 1300nm multimode (ST)
[5 km / 3.1 mi.] Link Budget: 13.5 dB

CSDTF1012-105
Twisted Pair (RJ-48) **[1.5 km/0.9 mi.]**
1310nm single mode (ST)
[8 km / 5 mi.] Link Budget: 7.0 dB

CSDTF1022-105
Twisted Pair (RJ-48) **[1.5 km/0.9 mi.]**
to 1310nm single mode (ST)
[15 km / 9.3 mi.] Link Budget: 10.0 dB

CSDTF1014-105
Twisted Pair (RJ-48) **[1.5 km/0.9 mi.]**
to 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

CSDTF1015-105
Twisted Pair (RJ-48) **[1.5 km/0.9 mi.]**
to 1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 30.0 dB

CSDTF1016-105
Twisted Pair (RJ-48) **[1.5 km/0.9 mi.]**
to 1310nm single mode (SC)
[60 km/37.3 mi.] Link Budget: 33.0 dB

CSDTF1017-105
Twisted Pair (RJ-48) **[1.5 km/0.9 mi.]**
to 1550nm single mode (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

CSDTF1029-105
Twisted Pair (RJ-48) **[1.5 km/0.9 mi.]**
to 1310nm TX / 1550nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CSDTF1029-106
Twisted Pair (RJ-48) **[1.5 km/0.9 mi.]**
to 1550nm TX / 1310nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CSDTF1029-107
Twisted Pair (RJ-48) **[1.5 km/0.9 mi.]**
to 1310nm TX / 1550nm RX single fiber SM (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

CSDTF1029-108
Twisted Pair (RJ-48) **[1.5 km/0.9 mi.]**
to 1550nm TX / 1310nm RX single fiber SM (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

CSDTF3011-115
(2) Coax (BNC) **[100 m / 328 ft.]**
850nm multimode (ST)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

CSDTF3013-115
(2) Coax (BNC) **[100 m / 328 ft.]**
850nm multimode (SC)
[2 km / 1.2 mi.] Link Budget: 13.5 dB

CSDTF3018-115
(2) Coax (BNC) **[100 m / 328 ft.]**
1300nm multimode (MT-RJ)
[2 km / 1.2 mi.] Link Budget: 14.5 dB

CSDTF3027-115
(2) Coax (BNC) **[100 m / 328 ft.]**
1300nm multimode (ST)
[5 km / 3.1 mi.] Link Budget: 13.5 dB

CSDTF3012-115
(2) Coax (BNC) **[100 m / 328 ft.]**
1310nm single mode (ST)
[8 km / 5 mi.] Link Budget: 7.0 dB

CSDTF3022-115
(2) Coax (BNC) **[100 m / 328 ft.]**
1310nm single mode (ST)
[15 km / 9.3 mi.] Link Budget: 10.0 dB

CSDTF3014-115
(2) Coax (BNC) **[100 m / 328 ft.]**
1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

CSDTF3015-115
(2) Coax (BNC) **[100 m / 328 ft.]**
1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 30.0 dB

CSDTF3016-115
(2) Coax (BNC) **[100 m / 328 ft.]**
to 1310nm single mode (SC)
[60 km/37.3 mi.] Link Budget: 33.0 dB

CSDTF3017-115
(2) Coax (BNC) **[100 m / 328 ft.]**
to 1550nm single mode (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

CSDTF3029-115
(2) Coax (BNC) **[100 m / 328 ft.]**
to 1310nm TX / 1550nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CSDTF3029-116
(2) Coax (BNC) **[100 m / 328 ft.]**
to 1550nm TX / 1310nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CSDTF3029-117
(2) Coax (BNC) **[100 m / 328 ft.]**
to 1310nm TX / 1550nm RX single fiber SM (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

CSDTF3029-118
(2) Coax (BNC) **[100 m / 328 ft.]**
to 1550nm TX / 1310nm RX single fiber SM (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	ITU-T, ANSI, AT&T, ETSI
Switches	**SW1: 1, 2, 3:** Line Build out for short haul/DB in Long Haul (see table) Short Haul mode: **SW1:** Pos 4 not used **SW2 - 1:** Transmit all ones into copper on loss of fiber link (Up = Disabled) **SW2 - 2:** Transmit all ones (AIS) into fiber on loss of copper link (Up = Disabled) **SW2 - 3:** Long Haul/Short Haul (Up = Short Haul) **SW2 - 4:** T1/E1 selection (Up = T1)
3-position Jumper	**Hardware:** Converter mode is determined by 4-position switch settings **Software:** Converter mode is determined by most recently saved on-board microprocessor settings.
Status LEDs	**PWR (Power):** Steady green LED indicates connection to external AC power **SDC (Signal Detect/Copper):** On indicates twisted pair link is up **SDF (Signal Detect/Fiber):** On indicates fiber link is up
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0v [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	6.0 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	CISPR/EN55022 Class A; FCC Class A; CE Mark
Warranty	Lifetime

4x T1/E1/J1 Copper to Fiber Transport Mux

AUTO LINK RESTORE · REMOTE MGMT · LOOP BACK · REMOTE FIRMWARE UPGRADE

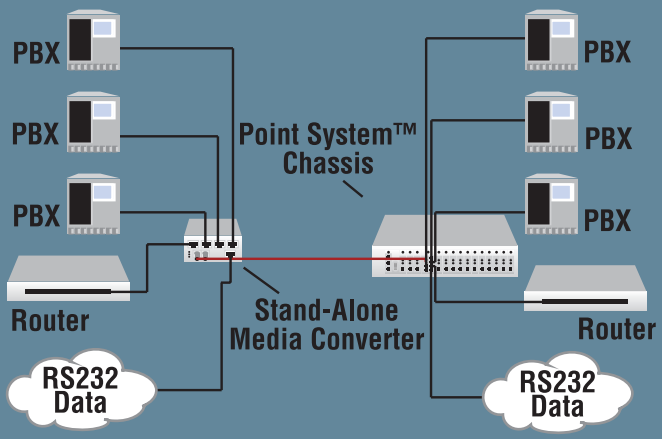
- Low cost transport capability:
(4) T1/E1/J1 and (1) RS232 data channel line
- Target applications of the converter include: FTTx, such as Fiber-to-the-Business, Fiber-to-the-Building, Fiber-to-the-MDU and Fiber-to-the-Home.

C4TEF10xx-10x

The product provides physical layer status monitoring and alarm classification functions for Telecom operators to **manage their fiber optic network and reduce operation and maintenance costs**.

Copper connections are compatible with G.703 and AMI/B8ZS/HDB3; while the optical connection will run at 155Mbps. A hardware-based solution guarantees the constant bit rate of TDM transport without requiring traffic management.

Application



Features

- Automatic Link Restoration *(see page 16)*
- Remote Management *(see page 15)*
- Local and Remote Loopback *(see page 16)*
- AIS/TAOS
- LEDs for each data port
- DIP switches for line code, line length, local loopback or remote loopback
- T1/E1/J1 mode settings
- Dry Relay Contacts on each TDM port
- Mirror Port (SNMP selectable)
- Local (AUX) Management Interface (RS232 connector)
- Switch selection for Data or Management mode on RS232
- Access to complete status information on local and remote device
- Access to local and remote configuration
- Switch or SNMP selected Baud rate operation
- Remote Firmware Upgrade *(see page 16)*

SNMP Management Features

- Report local converter status:
  - Fiber Link Status
  - Copper Link Status for each T1/E1
  - Hardware switch settings: LBO, AIS on C/F, HW/SW, speed
  - AIS detected Fiber & Copper
  - Model Number
  - Copper & Fiber Connectors
- Local command operations include:
  - Loopback Fiber & T1/E1 per channel
  - AIS TX on fiber on loss of copper link & AIS TX on copper on loss of fiber link
  - Serial connection speed and parity (Software Mode)
  - T1/E1 Mirror Port Modes (Port Trapping)
  - Boot-load firmware upgrades
- Remote converter status:
  - Fiber Link status
  - Copper Link Status for each T1/E1
  - Hardware switch settings: LBO, AIS on C/F, HW/SW, speed
  - AIS detected Fiber & Copper
  - Model Number
  - Copper & Fiber Connectors
- Remote Commands:
  - Loopback Fiber & T1/E1 per channel
  - Serial connection speed and parity (Software Mode)
  - AIS TX on fiber on loss of copper link & AIS TX on copper on loss of fiber link

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	AMI/B8ZS/HDB3; G.703 Telecordia TR-NWT-001089: FCC Part 68, UL1459; ITU-T, ANSI, AT&T, ETSI; TBR 12; PD 7024: 1994 (NTR 4)
Switches	Numerous switch settings for line coding, line buildout, loopback (per port), AIS setting, data/mgmt RS-232 and RS-232 port speed and parity
Jumper	**Hardware:** Converter mode is determined by DIP switch settings **Software:** Converter mode is controlled by the most recently saved, on-board microprocessor settings.
Dimensions	**Width:** 1.72" [44 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	6.0 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	FCC Class A; VCCI Class A; EN 55022 (CISPR 22) Class A; ICES-003
Warranty	Lifetime

Note: C4TEF cards cannot be used with the 1-Slot Point System™ Chassis (pages 20 & 21)

See Also:

- 4x T1 Transport Mux Stand-Alone Media Converters

page 119

Ordering Info

See pages 171–181 for complete fiber optic connector specs.
Note: RS-232 cable included with each card (6-pin DIN to DB-9)

C4TEF1011-100
1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

C4TEF1013-100
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

C4TEF1014-100
1310nm single mode (SC)
[20 km/12.4 mi.]
Link Budget: 16.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

C4TEF1015-100
1310nm single mode (SC)
[40 km/24.9 mi.]
Link Budget: 26.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

C4TEF1016-100
1310nm single mode (SC)
[60 km/37.3 mi.]
Link Budget: 29.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

C4TEF1017-100
1550nm single mode (SC)
[80 km/49.7 mi.]
Link Budget: 29.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

C4TEF1035-100
1550nm single mode (SC)
[120 km/74.6 mi.]
Link Budget: 36.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

Single Fiber Products
Recommended use in pairs (see page 17)

C4TEF1029-100
1310nm TX/1550nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

C4TEF1029-101
1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

C4TEF1029-102
1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

C4TEF1029-103
1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

4x T1/E1/J1 + 10/100 Ethernet Copper to Fiber Transport Mux

4x T1/E1/J1 + 10/100 Ethernet Transport Mux

AUTO NEG | AUTO CROSS | TRANSPARENT LINK PASS THROUGH | AUTO LINK RESTORE | PAUSE | REMOTE MGMT | LOOP BACK | REMOTE FIRMWARE UPGRADE

- Low cost transport capability: (4) T1/E1/J1; (1) Ethernet and (1) RS232 data channel line
- Target applications include: FTTx, such as Fiber-to-the-Business, Fiber-to-the-Building, Fiber-to-the-MDU and Fiber-to-the-Home.

- Copper connections compatible with G.703, AMI/B8ZS/HDB3, 10/100BASE-TX, and RS232 channel; while the optical connection runs at 155Mbps.
- **TDM traffic is not mapped to Ethernet.** A hardware-based solution guarantees the constant bit rate of TDM transport without requiring traffic management. Provides physical layer status monitoring and alarm classification functions for Telecom operators to **manage their fiber optic network and reduce operation and maintenance costs**.

Features

- Auto-Negotiation for 10/100BASE-TX *(page 14)*
- AutoCross™ (auto MDI/MDI-X) *(page 14)*
- Transparent Link Pass Through for Ethernet *(page 15)*
- Automatic Link Restoration *(page 16)*
- Pause (Flow Control) *(see page 15)*
- Remote Management *(see page 15)*
- Local and Remote Loopback *(page 16)*
- Remote Fiber Loss Signaling
- AIS/TAOS
- LEDs for each data port
- DIP switches for line code, line length, local loopback or remote loopback
- T1/E1/J1 mode settings
- Dry Relay Contacts on each TDM port
- Local (AUX) Management Interface (RS232 connector)
- Switch selection for Data or Management mode on RS232 interface
- Access to complete status information on local and remote device
- Access to local and remote configuration
- Switch or SNMP selected Baud rate operation
- 802.1Q VLAN Management
- Remote Firmware Upgrade *(see page 16)*

SNMP Management Features

- Report local converter status:
  - Fiber Link Status
  - Copper Link Status for each T1/E1
  - Hardware switch settings: LBO, AIS on C/F, HW/SW, speed
  - AIS detected Fiber & Copper
  - Model Number
  - Copper & Fiber Connectors
- Local command operations include:
  - Loopback Fiber & T1/E1 per channel
  - AIS TX on fiber on loss of copper link & AIS TX on copper on loss of fiber link
  - Serial connection speed and parity (Software Mode)
  - T1/E1 Mirror Port Modes
  - Boot-load firmware upgrades
  - Ethernet settings:
    - Auto-Negotiation Enable/Disable
    - Force speeds and modes on 10/100TX
- Remote converter status:
  - Fiber Link status
  - Copper Link status for each T1/E1
  - Hardware switch settings: LBO, AIS on C/F, HW/SW, speed
  - AIS detected Fiber & Copper
  - Model Number
  - Copper & Fiber Connectors
- Remote Commands:
  - Loopback Fiber & T1/E1 per channel
  - Serial connection speed and parity (Software Mode)
  - AIS TX on fiber on loss of copper link & AIS TX on copper on loss of fiber link
  - T1/E1 Monitor Modes
  - Ethernet settings (Software Mode):
    - Force speeds and modes on 10/100TX
    - Enable/Disable: Auto-Negotiation; Link Pass Through; Flow Control; & AutoCross™

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™ 2003; Telecordia TR-NWT-001089: FCC Part 68, UL1459; ITU-T, ANSI, AT&T, ETSI; TBR 12; PD 7024: 1994 (NTR 4); AMI/B8ZS/HD83; G.703
Switches	Numerous switch settings for line coding, line buildout, loopback (per port), AIS setting, data/mgmt RS-232, RS-232 port speed and parity; Ethernet port settings: Auto-Negotiation, Force speed/duplex and enable Transparent Link Pass Through
Jumper	**Hardware:** Converter mode is determined by DIP switch settings **Software:** Converter mode is controlled by the most recently saved, on-board microprocessor settings.
Dimensions	**Width:** 1.72" [44 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	6.0 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	FCC Class A; VCCI Class A; EN 55022 (CISPR 22) Class A; ICES-003
Warranty	Lifetime

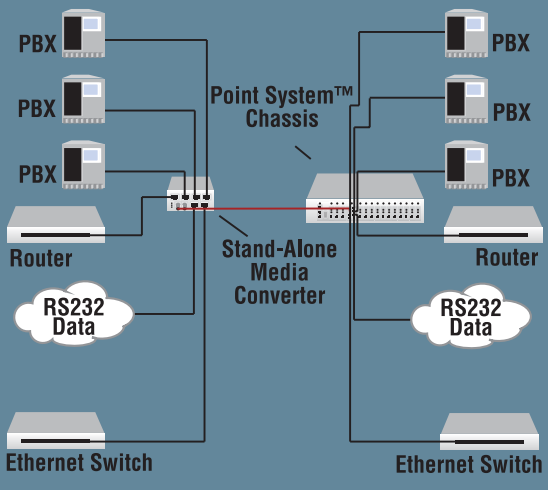
Call us at 800-526-9267 or 952-941-7600

C4TEF10xx-11x

Table of Contents
Select Media Converter
Select Switch

ethernet
fast ethernet
10/100 bridging
100/1000 bridging
10/100/1000
gigabit ethernet
atm / oc-x
ds3-t3/e3
high speed serial
rs232
rs422 / 485
t1 / e1
e&m, 2/4-wire
pots 2-wire
video

Application



Ordering Info

See pages 171–181 for complete fiber optic connector specs.
Note: RS-232 cable included with each card (6-pin DIN to DB-9)

C4TEF1011-110
1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

C4TEF1013-110
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

C4TEF1014-110
1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

C4TEF1015-110
1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

C4TEF1016-110
1310nm single mode (SC)
[60 km/37.3 mi.] Link Budget: 29.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

C4TEF1017-110
1550nm single mode (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

C4TEF1035-110
1550nm single mode (SC)
[120 km/74.6 mi.] Link Budget: 36.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

Single Fiber Products
Recommended use in pairs (see page 17)

C4TEF1029-110
1310nm TX/1550nm RX single fiber SM (SC) **[20 km/12.4 mi.] LB: 19.0 dB**
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

C4TEF1029-111
1550nm TX/1310nm RX single fiber SM (SC) **[20 km/12.4 mi.] LB: 19.0 dB**
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

C4TEF1029-112
1310nm TX/1550nm RX single fiber SM (SC) **[40 km/24.9 mi.] LB: 25.0 dB**
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

C4TEF1029-113
1550nm TX/1310nm RX single fiber SM (SC) **[40 km/24.9 mi.] LB: 25.0 dB**
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

Note: C4TEF cards cannot be used with the 1-Slot Point System™ Chassis (pages 20 & 21)

2/4-wire, Leased Line, E&M Media Converter

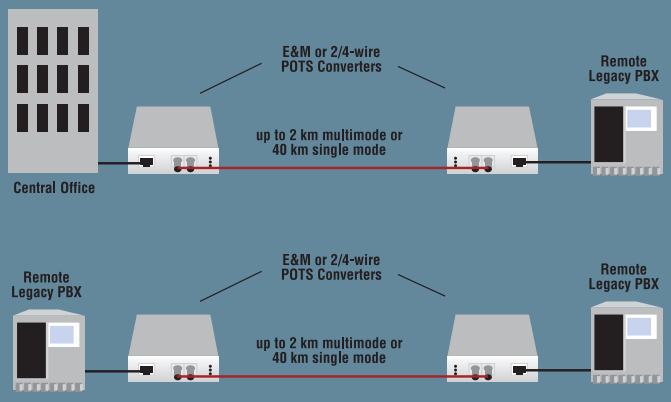
REMOTE FIRMWARE UPGRADE

CEMTF10xx-10x

The Transition E&M or 2/4-wire phone line converter is intended to connect central-office voice grade signals to distant legacy PBX equipment utilizing E&M signaling.

The E&M control circuits enable the audio transmission and provide a contact closure at the distant end. The electrical interface is provided through an RJ-45 female connector. Supports 2 or 4 wire voice path and E&M signaling types I, II, III, IV and V. Settings can be changed via internal jumpers.

Voice Grade Signal to Fiber



Features

- Supports E&M signaling types I, II, III, IV and V
- Signaling types selectable via internal jumpers
- Supports 2/4 wire voice path
- The electrical interface is provided through a RJ-45 female connector
- Remote Firmware Upgrade *(see page 16)*

Note: CEMTF cards cannot be used with the 1-Slot Point System Chassis™ (pages 20 & 21)

Specifications

See pages 171–181 for complete fiber optic connector specs.

Analog Port Standards Compliance	TIA/EIA 464B,ANSI T1.409-1996, ANSI TR.5
Standards Compliance	FCC Part 68; EIA/TIA-464-B
E&M Signaling Types	I, II, III, IV and V by option Jumpers
Voice frequency	300Hz – 3KHz
E&M Analog copper port	RJ-45
Max. Loop Length	2000 ohms
Status LEDs	LED colors are Green **SDF (Fiber Link):** On indicates fiber link up; **ACT (Active):** On indicates Local unit Off Hook; **PWR (Power):** On indicates power is on
Dimensions	**Width:** 2.9" [74 mm] **Depth:** 4.8" [122 mm] **Height:** 1.4" [36 mm]
Power Consumption	7 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Emissions Compliance	FCC Class A; VCCI Class A; EN 55022 (CISPR 22) Class A; ICES 003
Safety Compliance	CISPR A; CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CEMTF1011-100
Twisted Pair (RJ-45) **[5 km 3.1 mi.]**
to 1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CEMTF1013-100
Twisted Pair (RJ-45) **[5 km 3.1 mi.]**
to 1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CEMTF1014-100
Twisted Pair (RJ-45) **[5 km 3.1 mi.]**
to 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

CEMTF1015-100
Twisted Pair (RJ-45) **[5 km 3.1 mi.]**
to 1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

CEMTF1029-100
Twisted Pair (RJ-45) **[5 km 3.1 mi.]**
to 1310nm TX / 1550nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CEMTF1029-101
Twisted Pair (RJ-45) **[5 km 3.1 mi.]**
to 1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

CEMTF1029-102
Twisted Pair (RJ-45) **[5 km 3.1 mi.]**
to 1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

CEMTF1029-103
Twisted Pair (RJ-45) **[5 km 3.1 mi.]**
to 1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

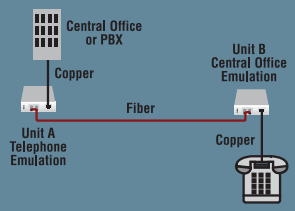
POTS 2-wire Copper to Fiber Media Converter

REMOTE FIRMWARE UPGRADE

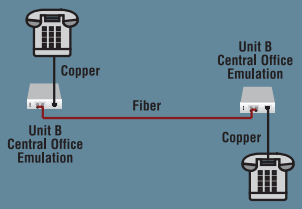
CAPTF33xx-1xx

Connect central-office voice grade signals to distant Plain Old Telephone equipment (POTS) utilizing standard telephone signaling. Two units are required to implement an end to end system. Unit A connects to a telephone line or PBX and has the ability to detect ringing voltages and to act as a telephone (LINE SIDE FXS). Unit B is the reciprocal unit and has the ability to act as a Central Office and connects to a telephone device (CUSTOMER SIDE FXO).

Loop Extender / Isolator



Automatic Ring Down



Features

- Audio transmission
- Caller ID
- Automatic Ring Down
- Dual or single fiber options
- SNMP Management
- Ringing at the distant end
- Electrical interface is provided through an RJ-11 female connector
- Remote Firmware Upgrade *(see page 16)*

Note: CAPTF cards cannot be used with the 1-Slot Point System Chassis™ (pages 20 & 21)

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	FCC Part 68, TBR21
Analog Port (Telephone Emulation or FXS)	**Connector:** RJ-11 **Impedance:** 600 ohms **REN:** 0.48 **Loop Current:** 20 to 100 ma. **Insertion Loss:** 0.0 +/-1.0 dB at 1000 Hz when both ports are terminated at 600 ohms
Analog Port (Central Office Emulation or FXO)	**Impedance:** 600 ohms **Battery Source:** 48 VDC +/- 5V **Ringing Supply:** 90Vp-p **Ring Frequency:** 15 – 30 Hz. (Reproduces frequency detected by side A) **Ring Cadence:** Reproduces cadence detected by side A **Insertion Loss:** 1.0 +/- 1.0 dB @ 1000 Hz when both ports are terminated at 600 ohms
Voice Frequency	300Hz – 3KHz
Switches/Option Jumpers	Automatic Ring Down / Normal
Status LEDs	LED colors are Green **SDF (Fiber Link):** On indicates fiber link up; **ACT (In Use):** On indicates unit in use; Flashing indicates ringing; **PWR (Power):** On indicates power is on
Dimensions	**Width:** 2.9" [74 mm] **Depth:** 4.8" [122 mm] **Height:** 1.4" [36 mm]
Power Consumption	7 watts
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Emissions Compliance	FCC Class A; VCCI Class A; EN 55022 (CISPR 22) Class A; ICES 003
Safety Compliance	CISPR A; CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

Line Side FXS: CAPTF3311-100
Customer Side FXO: CAPTF3311-110
Twisted Pair (RJ-11) **[5 km / 3.1 mi.]**
to 1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

Line Side FXS: CAPTF3313-100
Customer Side FXO: CAPTF3313-110
Twisted Pair (RJ-11) **[5 km / 3.1 mi.]**
to 1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

Line Side FXS: CAPTF3314-100
Customer Side FXO: CAPTF3314-110
Twisted Pair (RJ-11) **[5 km / 3.1 mi.]**
to 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

Line Side FXS:
CAPTF3315-100 Link Budget: 7.0 dB
Customer Side FXO:
CAPTF3315-110 Link Budget: 26.0 dB
Twisted Pair (RJ-11) **[5 km / 3.1 mi.]**
to 1310nm single mode (SC)
[40 km/24.9 mi.]

Single Fiber Products
Recommended use in pairs (see page 17)

Line Side FXS: CAPTF3329-100
Customer Side FXO: CAPTF3329-110
Twisted Pair (RJ-11) **[5 km / 3.1 mi.]**
to 1310nm TX/1550nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

Line Side FXS: CAPTF3329-101
Customer Side FXO: CAPTF3329-111
Twisted Pair (RJ-11) **[5 km / 3.1 mi.]**
to 1550nm TX/1310nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

Line Side FXS: CAPTF3329-102
Customer Side FXO: CAPTF3329-112
Twisted Pair (RJ-11) **[5 km / 3.1 mi.]**
to 1310nm TX/1550nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

Line Side FXS: CAPTF3329-103
Customer Side FXO: CAPTF33129-113
Twisted Pair (RJ-11) **[5 km / 3.1 mi.]**
to 1550nm TX/1310nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

Note: Single Fiber products should be paired by application:

Loop Extender/Isolator Application
Line Side FXS: CAPTF3329-100
Customer Side FXO: CAPTF3329-111

Automatic Ring Down Application
Line Side FXS: CAPTF3329-102
Customer Side FXO: CAPTF3329-103

See Also:

- POTS 2-wire Stand-Alone Media Converters page 121

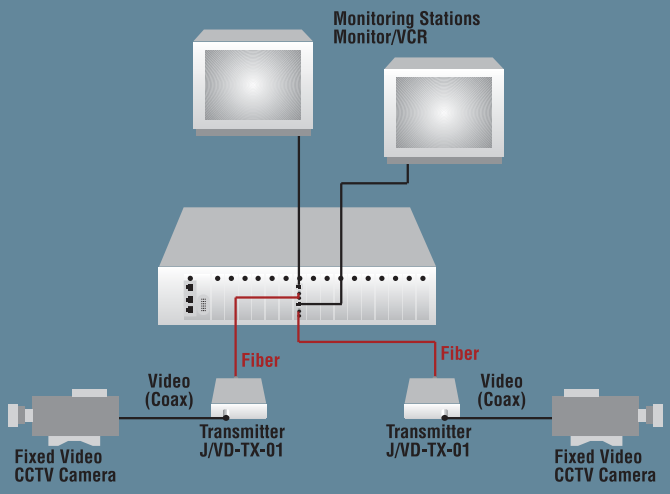
Analog CCTV Video Copper to Fiber Media Converter

CVIDF20xx-15x

Transition Networks's Point System™ Chassis Video Media Receiver, when paired with our camera-mounted transmitter J/VD-TX-01, enables the transport of analog CCTV video over fiber infrastructure for extended reach video surveillance or security installations. And with Transition's unique **Extended Fiber Receive Mode**, the RX sensitivity can be adjusted to accommodate even greater fiber link distances.

The chassis card is available in either a single video channel or the dual video channel configuration, allowing for density flexibility that can be tailored to your application. All video conversion is performed in real time and the **Automatic Gain Control** feature automatically adjusts the video contrast and brightness to maintain the quality and integrity of the original video stream.

Connect uni-directional analog video devices over fiber



Features

- AM Modulation
- NTSC, PAL, SECAM compatibility
- Compatible with all video CCTV equipment
- Real Time Full Color Video
- Automatic Gain Control
- Link Pass Through *(see page 15)*
- Video Specification:
  - Input Video: .5 to 2-volt pk-pk (75 ohms)
  - Bandwidth: 5 Hz – 10 MHz
  - Differential Gain: < 5 %
  - Differential Phase: < 5°
  - Tilt: < 1%
  - Signal/Noise Ratio: 60dB
- Extended Fiber Receive Mode
- Single or Dual Video Channel configurations

Specifications

Video Formats	NTSC, PAL, SECAM
Optical Specs	**Multimode:** 850nm 6.0 dB Link Budget or 11.0 dB Link Budget **Single Mode:** 1310nm 10.0 dB Link Budget or 15.0 dB Link Budget
Status LEDs	**PWR (Power):** ON = power connected **RX1:** ON=Fiber Video feed in Channel 1 **RX2:** ON = Fiber Video feed in Channel 2 (dual only)
Jumpers	**JP1:** Normal/Extended Mode (Circuit 1) **JP5:** Normal/Extended Mode (Circuit 2)
Dimensions	**Width:** 0.86" [22 mm] **Depth:** 5.0" [127 mm] **Height:** 3.4" [86 mm]
Power Consumption	2 watts (single card) 3 watts (dual card)
Environment	See chassis specifications
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	FCC Class A, EN55022 Class A, EN55024, CE Mark
Warranty	Lifetime

Ordering Info

CVIDF2011-150: Video Receiver (single)
BNC (75 ohm)
to Multimode (ST)
[1 km / 0.6 mi.] (normal mode)
[2 km / 1.2 mi.] (extended mode)

CVIDF2011-155: Video Receiver (dual)
(2) BNC (75 ohm)
to (2) Multimode (ST)
[1 km / 0.6 mi.] (normal mode)
[2 km / 1.2 mi.] (extended mode)

CVIDF2013-150: Video Receiver (single)
BNC (75 ohm)
to Multimode (SC)
[1 km / 0.6 mi.] (normal mode)
[2 km / 1.2 mi.] (extended mode)

CVIDF2013-155: Video Receiver (dual)
(2) BNC (75 ohm)
to (2) Multimode (SC)
[1 km / 0.6 mi.] (normal mode)
[2 km / 1.2 mi.] (extended mode)

CVIDF2012-150: Video Receiver (single)
BNC (75 ohm)
to Single Mode (ST)
[10 km / 6.2 mi.] (normal mode)
[20 km / 12.4 mi.] (extended mode)

CVIDF2012-155: Video Receiver (dual)
(2) BNC (75 ohm)
to (2) Single Mode (ST)
[10 km / 6.2 mi.] (normal mode)
[20 km / 12.4 mi.] (extended mode)

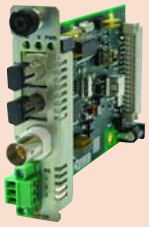
See Also:

Analog CCTV Video
Stand-Alone Media Converters
page 122

Analog CCTV Video + Data Receiver

CVIDF201x-110

NEW

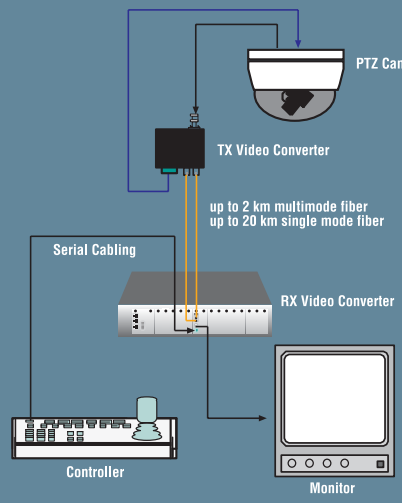


Transition Networks's Point System™ Chassis Analog Video + Data Receiver, when paired with our camera-mounted transmitter **SVIDF201x-100**, enables the transport of analog CCTV video and PTZ serial data over fiber infrastructure for extended reach video surveillance or security installations. And with Transition's unique **Extended Fiber Receive Mode**, the RX sensitivity can be adjusted to accommodate even greater fiber link distances.

The RX chassis cards receive the video signal on fiber and convert it back to an analog composite video stream and output the video on coaxial cable to the monitor. In addition, the RX card receives the data stream from the PTZ controller and transmits it over the fiber cable to the other end of the link.

All conversion is performed in real time. Automatic gain control maintains the desired quality of the video stream's contrast and brightness for extended distances. No field adjustments are necessary.

Connect uni-directional analog video devices over fiber



Features

- AM Modulation
- NTSC, PAL, SECAM compatibility
- Supports RS-232, RS-422 or RS485 data transmission for PTZ camera functionality
- Automatic Gain Control
- Real Time Full Color Video
- Transparent to Data Encoding/Compatible with Major CCTV Camera Manufacturers
- Video Specification:
  - Input Video: 0.5 to 2-volt pk-pk (75 ohms)
  - Receiver: 9 – 16 VAC/DC
  - Differential Gain: < 5 %
  - Differential Phase: < 5°
  - Tilt: < 1%
  - Signal/Noise Ratio: 60dB

Specifications

Video Formats	NTSC, PAL, SECAM
Data Formats	RS-232, RS-422, RS-485
Data Rate	**Serial:** 115 kb/s
Jumpers	**JP1:** Enable/Disable Automatic Gain Control **JP2:** Normal/Extended Mode **JP3:** Hardware/Software Mode
Status LEDs	**PWR (Power)**: ON = Power connected **V (video)**: ON = video signal present **D (data)**: ON = data transmitted
Dimensions	**Width**: 0.86" [22 mm] **Depth**: 5.0" [127 mm] **Height**: 3.4" [86 mm]
Power Consumption	3 watts
Environment	See chassis specifications
Altitude	0 – 10,000 feet
Operating Humidity	5% – 95% non-condensing
Shipping Weight	1 lb. [0.45 kg]
Compliance	CISPR/EN55022 Class A + EN55024; EN60950 Class A; FCC Class A; CE Mark
Warranty	Lifetime

Ordering Info

Video Receiver (monitor/controller side)

CVIDF2011-110
BNC (75 ohm) **[228 m/750 ft.]**
to 850nm Multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CVIDF2013-110
BNC (75 ohm) **[228 m/750 ft.]**
to 850nm Multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

CVIDF2012-110
BNC (75 ohm) **[228 m/750 ft.]**
to 1310nm Single Mode (ST)
[20 km/12.4 mi.] Link Budget: 15.0 dB

See Also:

Analog CCTV Video + Data Stand-Alone Media Converters
page 123

Mounting Options

12-slot Media Converter Rack

Features

Flexible Design for Small, Growing Networks

Simplify your media converter installation with Transition Networks's Media Converter Rack. This rack-mountable unit supports up to 12 Transition Networks's stand-alone media converters. The unique enclosure design makes multiple connections and consolidates them into a single device; making network connections easier and more efficient.

Convenience

Allows you to mount one or more stand-alone units in a convenient enclosure with a single power supply.

Flexibility

Remove one or more converters as needed and use them as stand-alone media converters.

Cost

Easily rackmount Transition Networks media converters that you already own, or buy stand-alone today and rack mount in the future.

Space Saving Design

The device is powered by a single internal universal power supply; eliminating the need for multiple power connections. The unit saves space in the wiring closet and reduces the number of power cords required. The stand-alone media converters can also be removed and powered externally in different situations as your network needs change.

Reduce Network Downtime

Once installed, the media converter units are hot-swappable to avoid network downtime.

E-MCR-04(x)

Specifications

Dimensions	Width: 17.0" [432 mm] Depth: 15.0" [381 mm] Height: 5.0" [127 mm]
Power Supply	Universal, internal power supply; AC85 – 264V, 47 – 63 Hz.
Environment	0 – 50°C, 10% – 90% humidity (non-condensing), 0 – 10,000 feet
Shipping Weight	12 lbs. [5.2 kg]
Regulatory Compliance	UL Listed; C-UL Listed (Canada); CISPR/EN55022 Class A; FCC Class A; CE Mark
Warranty	Lifetime

Ordering Info

E-MCR-04
12-slot Media Converter Rack

E-MCR-04(T)
12-slot Media Converter Rack (Tall)
(for use with the CPSMC0100-200 Single-Slot chassis)

Wall Mount Brackets

Wall Mount Brackets are small simple "L-shaped" tabs that allow a single Transition Networks media converter to be mounted anywhere needed. The brackets are sold in pairs and are available in several sizes and types to match the different sized media converters and space requirements.

Specifications

Shipping Weight	1 lb. [0.45 kg]
Warranty	Lifetime

WMBL; WMBP; WMBS

WMBV; WMBD

Ordering Info

WMBD
5.0" [127 mm] DIN Rail Mount Bracket
Fits all Stand-Alone Converters; Single or Dual Slot Point System™ Chassis

WMBD-E
4.3" [109 mm] DIN Rail Mount Bracket (Extended)
Fits all Stand-Alone Converters with piggyback power supply attached

WMBD-F
3.3" [84 mm] DIN Rail Mount Bracket (flat)
Fits all Stand-Alone Converters
3.25" [82 mm] wide

WMBD-FS
3.1" [79 mm] DIN Rail Mount Bracket (flat, small)
Fits Stand-Alone Converters 3.0" [76 mm] wide

WMBJ-V
2.75" [70 mm] Wall mount bracket kit for Analog Video products including:
J/VD-TX-01xx
J/VD-MRX-01xx
SVIDF201x-100

WMBL
4.0" [102 mm]
Fits Stand-Alone Converters size 4.7" [119 mm]

WMBP
5.0" [127 mm]
Fits Single or Dual Slot Point System™ Chassis

WMBS
3.2" [81 mm]
Fits Stand-Alone Converters size 3.9" [99 mm]

WMBV
5.0" [127 mm]
Vertical Mount
Fits all Stand-Alone Converters;
Single or Dual Slot Point System™ Chassis

WMBV-E
4.7" [119 mm]
Extended Vertical Mount Fits all Stand-Alone Converters with piggyback power supply attached

Mounting Options

4-slot Media Converter Shelf

- Rack mount up to 4 stand-alone media converters in one convenient un-powered shelf.

RMS19-SA4-01

NEW

Features

- **Space Saving** Save rack space in low density deployments: 19-inch rack mount, 1RU high.
- **Flexible** Mix and match up to 4 Transition Networks stand-alone media converters (excluding double-high models).
- **Non-power design** Don't pay for power supplies twice. This low cost design allows the use of the power supplies that ship with the media converter.
- **Power Cord Tie-Downs** Eliminates the accidental disconnection of power supplies from the media converters.
- **Converter Mounting Brackets** Securely mounts the converters to the shelf.

Specifications

Dimensions	Width: 17.0" [432 mm] Depth: 6.0" [152 mm] Height: 1.75" [44 mm]
Shipping Weight	3 lbs. [1.35 kg]
Warranty	Lifetime

Ordering Info

RMS19-SA4-01
4-slot Media Converter Shelf

mounting options

ethernet
fast ethernet
10/100 bridging
10/100/1000
gigabit ethernet
atm/oc-x
ds3-t3/e3
high speed serial
rs232
rs422/485
t1/e1
pots 2-wire
video
industrial

Wide Input External Power Supplies

SPS-1872-xx

Piggy-Back Power Supply Attached to Converter

Piggy-Back Power Supply and Converter

Stand-Alone Power Supply

Transition Networks's wide input external power supplies allow you to provide a wide range of input voltages to power your stand-alone converters and chassis. Input voltages of 18 – 60VDC and 24 – 30VMRS allow for installation of any of Transition's stand-alone media converters in most industrial, telecom and commercial applications, as well as HVAC and building control environments.

Multiple form factors allow flexibility to meet your application. The stand-alone form factor can be used with all Transition stand-alone media converters as well as the single-slot and dual-slot Point System™ Chassis. The piggy back form factor allows the power supply to attach directly to the converter and eliminate the power cable commonly found between the power supply and the converter. Once the piggy back supply is attached to the converter, the combined assembly is much easier to wall mount or attach to DIN-rail environments than using a separate supply.

Specifications

Input Voltage	18 – 60VDC; 24 – 30VMRS
Isolation Voltage	(Dielectric withstand) Meets IEC 950 for one minute 1500 VAC: Output/Input 1500 VAC: Input/Safety GND 1500 VAC: Output/CASE
Output Voltage	12.6 VDC
Output Current	1.0A
Load Regulation	±5% at 10% load to full rated load
Over Load Protection (OLP)	When the average power rating exceeds 125% – 150% of maximum power, output voltages reduced to a safe dissipation level; protects against short circuit of any output.
No Load Protection	No damage to power supply when operating at no load
Transient Protection	No voltage spike at power-on, power-off, or power failure
Power Distribution	+12.6VDC at 1.0A maximum
Power Consumption	6 watts max. @ 18VDC input, 12.6VDC output
Efficiency	70% (typical)
Noise and Ripple	±40mV peak-to-peak of output voltage (typical)
MTBF	Greater than 60,000 hours with typical load operating at 20°C temperature (calculated according to MIL-HDBK-217E)
Regulatory Compliance	UL Listed EN60950; CISPR/EN55022 Class A; FCC Class A; CE Mark; EN55024
Dimensions	**SPS-1872-SA:** Width: 3.9" [99 mm] Depth: 3.1" [79 mm] Height: 1.0" [25 mm] **SPS-1872-CC:** Width: 4.6" [117 mm] Depth: 3.1" [79 mm] Height: 1.0" [25 mm] **SPS-1872-PS:** Width: 4.6" [117 mm] Depth: 3.4" [86 mm] Height: 1.0" [25 mm] **SPS-1872-DPS:** Width: 4.6" [117 mm] Depth: 3.4" [86 mm] Height: 1.8" [46 mm]
Shipping Weight	1 lb. [0.45 kg]
Environment	**Operating:** 0 – 50°C **Storage:** -20 – +85°C **Humidity:** 5 – 95% non-condensing **Altitude:** 0 – 10,000 ft.
Warranty	Lifetime

Ordering Info

SPS-1872-CC
Piggy-Back
For use with: Non-Point System™ stand-alone media converters 3.0" wide (E-TBT-FRL-05; E-100BTX-FX-05; etc.)

SPS-1872-DPS
Piggy-Back
For use with: Double High Point System™ stand-alone media converters (SBFTF10xx-140 and SBFTF10xx-120)

SPS-1872-PS
Piggy-Back
For use with: Point System™ stand-alone media converters 3.25" wide (SBFTF1011-100; SGETF1013-100, etc.)

SPS-1872-SA
Stand-Alone
For use with: All stand-alone media converters; Single-Slot Point System™ Chassis; Dual-Slot Point System™ Chassis

Just Convert-IT™

The Just Convert-IT™ line of media converters is a low-cost, no-frills model, which offers the same quality and reliability as our full-featured product line.

Transition Networks's Just Convert-IT™ Line has several offerings:

When to use Just Convert-IT™ media converters:

- Network management is NOT an issue
- Cost is a critical factor
- Mid to low density applications
- Minimal features are required

Ethernet: Convert 10BASE-T to 10BASE-FL

Simply upgrade twisted pair networks to fiber and end the problems of difficult installations associated with traditional converters. Use Transitions 10BASE-T to 10BASE-FL model to connect legacy networking equipment, such as a printer that does not support a fiber optic connection, to an Ethernet fiber optic backbone.

Ethernet: Convert 10BASE-T to 10BASE2

Convert a coaxial segment into a twisted pair segment. Provides one BNC 10BASE2 compliant port and one RJ-45 twisted pair connector.

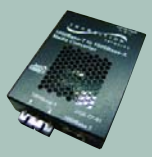
Fast Ethernet: Convert 100BASE-TX to 100BASE-FX

Connect copper to fiber in a Fast Ethernet environment. Available for single mode and multimode fiber.

10/100 Bridging: Convert 10/100BASE-TX to 10/100BASE-FX

Connect a half-duplex device, such as a hub, to fiber. Available for single mode and multimode fiber.

Gigabit: Convert 1000BASE-T to 1000BASE-SX/LX



Connect copper to fiber in a Gigabit Ethernet environment. Available for single mode and multimode fiber.

RS232: Convert Copper to Fiber

Extend the distance between serial connections with the use of fiber optic cable.

Analog CCTV Video: NTSC, PAL, SECAM

Connect uni-directional analog video devices over fiber,

Power over Ethernet: Convert Copper to Fiber

Power over Cat5 to remotely located devices.

Ordering Info

Ethernet (pages 76 & 77)

J/E-CF-02
10BASE-T to 10BASE-FL MM (ST) **[2 km/ 1.2 miles]**

J/E-CF-02(SC)
10BASE-T to 10BASE-FL MM (SC) **[2 km/ 1.2 miles]**

J/E-CF-02(SM)
10BASE-T to 10BASE-FL SM (ST) **[20 km/12.4 miles]**

J/E-CX-TBT-02
10BASE-T to 10BASE2 (BNC) **[185 m / 607 ft.]**

Fast Ethernet (page 83)

J/FE-CF-03
100BASE-TX to 100BASE-FX MM (ST) **[2 km/ 1.2 miles]**

J/FE-CF-03(SC)
100BASE-TX to 100BASE-FX MM (SC) **[2 km/ 1.2 miles]**

J/FE-CF-03(SM)
100BASE-TX to 100BASE-FX SM (SC) **[20 km/12.4 miles]**

J/FE-CF-03(LH)
100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1310nm single mode (SC) **[40 km/24.9 mi.] Link Budget: 26.0 dB**

J/FE-CF-03(100)
100BASE-TX to 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC) **[20 km/12.4 miles]**

J/FE-CF-03(101)
100BASE-TX to 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC) **[20 km/12.4 miles]**

10/100 Bridging (page 96)

J/E-PSW-FX-02
10/100BASE-TX to 100BASE-FX MM (ST) **[2 km/ 1.2 miles]**

J/E-PSW-FX-02(SC)
10/100BASE-TX to 100BASE-FX MM (SC) **[2 km/ 1.2 miles]**

J/E-PSW-FX-02(SM)
10/100BASE-TX to 100BASE-FX SM (SC) **[20 km/12.4 miles]**

J/E-PSW-FX-02(100)
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC) **[20 km/12.4 mi.] LB: 19.0 dB**

J/E-PSW-FX-02(101)
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC) **[20 km/12.4 mi.] LB: 19.0 dB**

Gigabit Ethernet (page 105)

J/GE-CF-01(SX)
1000BASE-T to 1000BASE-SX MM (SC) **[62.5/125µm: 220 m / 722 ft.] [50/125µm: 550 m / 1804 ft.]**

J/GE-CF-01(LX1)
1000BASE-T to 1000BASE-LX SM (SC) **[10 km/6.2 miles]**

Gigabit Ethernet (continued)

J/GE-CF-01(LX2)
1000BASE-T to 1000BASE-LX SM (SC) **[25 km/15.5 miles]**

J/GE-CF-01(LX6)
1000BASE-T to 1000BASE-LX SM (SC) **[65 km/40.4 miles]**

J/GE-CF-01(LX101)
1000BASE-T to 1000BASE-LX 1550nm TX / 1310nm RX single fiber single mode (SC) **[20 km/12.4 miles]**

RS232 (page 115)

J/RS232-CF-01
(DB-9) (female) **[15 m/49 ft.]** to MM (ST) **[2 km/1.2 miles]**

J/RS232-CF-01(SC)
(DB-9) (female) **[15 m/49 ft.]** to MM (SC) **[2 km/1.2 miles]**

J/RS232-TF-01
(DB-9) (male) **[15 m/49 ft.]** to MM (ST) **[2 km/1.2 miles]**

J/RS232-TF-01(SC)
(DB-9) (male) **[15 m/49 ft.]** to MM (SC) **[2 km/1.2 miles]**

Power over Ethernet (page 98)

J/POE-CF-01
10/100BASE-TX to 100BASE-FX MM (ST) **[2 km/1.2 miles]**

J/POE-CF-01(SC)
10/100BASE-TX to 100BASE-FX MM (SC) **[2 km/1.2 miles]**

J/POE-CF-01(SM)
10/100BASE-TX to 100BASE-FX SM (SC) **[20 km/12.4 miles]**

Analog Video (page 122)

J/VD-TX-01: Video Transmitter
BNC (75 ohm) to Multimode (ST) **[1 km/ 0.6 miles]**

J/VD-RX-01: Video Receiver
BNC (75 ohm) to Multimode (ST) **[1 km/ 0.6 miles]**

J/VD-MRX-01: Miniature Video Receiver
BNC (75 ohm) to Multimode (ST) **[1 km/ 0.6 miles]**

J/VD-TX-01(SC): Video Transmitter
BNC (75 ohm) to Multimode (SC) **[1 km/ 0.6 miles]**

J/VD-RX-01(SC): Video Receiver
BNC (75 ohm) to Multimode (SC) **[1 km/ 0.6 miles]**

J/VD-MRX-01(SC): Miniature Video Receiver
BNC (75 ohm) to Multimode (SC) **[1 km/ 0.6 miles]**

J/VD-TX-01(SM): Video Transmitter
BNC (75 ohm) to Single Mode (ST) **[10 km/ 6.2 miles]**

J/VD-RX-01(SM): Video Receiver
BNC (75 ohm) to Single Mode (ST) **[10 km/ 6.2 miles]**

J/VD-MRX-01(SM): Miniature Video Receiver
BNC (75 ohm) to Single Mode (ST) **[10 km/ 6.2 miles]**

Ethernet 10BASE-T to 10BASE-FL

Ethernet Copper to Fiber Media Converter

- Integrate mixed cabling environments using either switched or shared Ethernet.

E-TBT-FRL-05(xx)

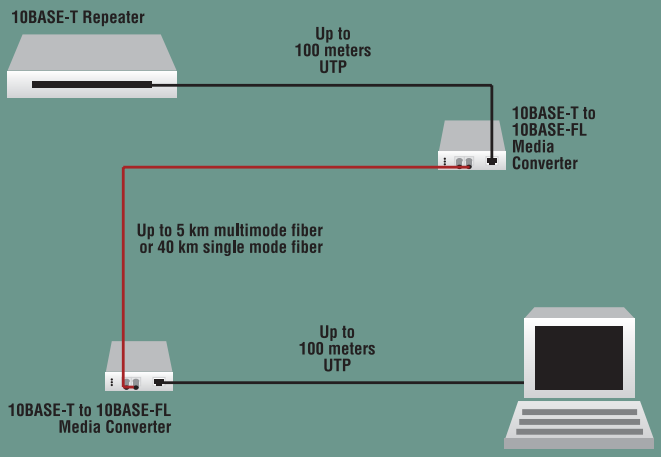
Extend Network Distance

Two 10BASE-T to 10BASE-FL Media Converters used back-to-back extend the distance between two 10BASE-T devices up to 5 km (3.1 mi.) using multimode fiber or up to 40 km (24.9 mi.) using single mode fiber without a repeater.

Connect Unlike Devices

Connect your workgroup to a distant server or a central switch; or extend distances between like and unlike devices in either full or half-duplex modes.

Extend Network Distance & Connect Unlike Devices



Features

- AutoCross™ *(see page 14)*
- Link Pass Through *(see page 15)*
- Automatic Link Restoration *(see page 16)*

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™ 10BASE-T, 10BASE-FL
Switch	**S1:** Enables/disables Link Pass Through
Status LEDs	**PWR (Power):** ON = connection to external AC power **Link:** ON = unit is receiving link pulses from a compliant device **RX (Receive):** ON = packets are being received
Dimensions	**Width:** 3.0" [76 mm] **Depth:** 3.9" [99 mm] **Height:** 1.0" [25 mm]
Power	External AC/DC required; 12VDC, 0.5A, unregulated, standard
Environment	0 – 50°C; 5% – 95% humidity non-condensing; 0 – 10,000 ft. altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply:** UL Listed, C-UL Listed (Canada)
Regulatory Compliance	FCC Class A, CISPR22/EN55022 Class A, EN55024, EN61000, CE Mark
Warranty	Lifetime

Ordering Info

See pages 171-181 for complete fiber optic connector specs.

E-TBT-FRL-05
10BASE-T (RJ-45) **[100 m/328 ft.]**
10BASE-FL 850nm multimode (ST)
[2 km/ 1.2 mi.] Link Budget: 13.5 dB

E-TBT-FRL-05(SC)
10BASE-T (RJ-45) **[100 m/328 ft.]**
10BASE-FL 850nm multimode (SC)
[2 km/ 1.2 mi.] Link Budget: 13.5 dB

E-TBT-FRL-05(MT)
10BASE-T (RJ-45) **[100 m/328 ft.]**
10BASE-FL 850nm MM (MT-RJ)
[2 km/ 1.2 mi.] Link Budget: 13.5 dB

E-TBT-FRL-05(L)
10BASE-T (RJ-45) **[100 m/328 ft.]**
10BASE-FL 1300nm MM (ST)
[5 km/ 3.1 mi.] Link Budget: 13.5 dB

E-TBT-FRL-05(SM)
10BASE-T (RJ-45) **[100 m/328 ft.]**
10BASE-FL 1310nm SM (ST)
[20 km/12.4 mi.] Link Budget: 7.0 dB

E-TBT-FRL-05(XC)
10BASE-T (RJ-45) **[100 m/328 ft.]**
10BASE-FL 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 7.0 dB

E-TBT-FRL-05(LH)
10BASE-T (RJ-45) **[100 m/328 ft.]**
10BASE-FL 1310nm single mode (ST)
[40 k/24.9 mi.] Link Budget: 10.0 dB

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-CC *(see page 72)*
Piggy Back Power Supply

SPS-1872-SA *(see page 72)*
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBD-FS *(see page 70)*
DIN Rail Bracket (flat, small) 3.1" [79 mm]

WMBS *(see page 70)*
Wall Mount Bracket 3.2" [81 mm]

WMBV *(see page 70)*
Vertical Wall Mount Bracket 5.0" [127 mm]

See Also:

- Ethernet 10BASE-T to 10BASE-FL Point System™ Slide-In-Module Media Converters

page 33

Ethernet 10BASE-T to 10BASE-FL Extended Temperature

Ethernet Copper to Fiber Media Converter

E-TBT-FRL-05(xxHT)

- Extended Temperature Capable: Designed to operate in environments where ambient temperatures can rise as high as 70°C (158°F).

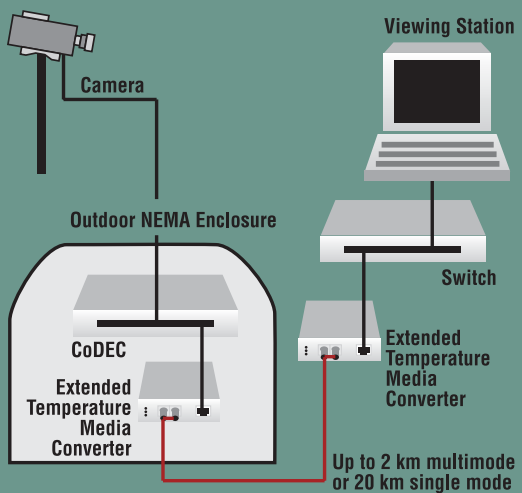
mounting options
ethernet
fast ethernet
10/100 bridging
10/100/1000
gigabit ethernet
atm/oc-x
ds3-t3/e3
high speed serial
rs232
rs422/485
t1/e1
pots 2-wire
video
industrial

Table of Contents
Select Media Converter
Select Switch

Connect remote devices such as IP based surveillance cameras or signaling equipment in a non-climate controlled enclosure. Deliver 10Mbps data access in residential or commercial environments inside a non-climate controlled pedestal enclosure.

This converter can also be deployed in industrial environments where excessive heat may be a concern. (Note that this device is rated to meet "temperature" requirements of industrial environments only.)

Extended Temperature Applications (to 70°C)



Features

- AutoCross™ *(see page 14)*
- Link Pass Through *(see page 15)*
- Automatic Link Restoration *(see page 16)*

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™ 10BASE-T; 10BASE-FL
Switch	**S1:** Enables/disables Link Pass Through
Status LEDs	**Power:** On for normal operation; **Link:** Steady LED indicates unit is receiving link pulses from a compliant device; **Receive:** Flashing or lit LED indicates packets are being received
Dimensions	**Width:** 3.0" [76 mm] **Depth:** 3.9" [99 mm] **Height:** 1.0" [25 mm]
Power	External AC/DC required; 9V DC. 1.0A; unregulated; standard
Environment	-25° C to +70° C; 5% – 95% humidity non-condensing; 0 – 10,000 ft. altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply:** UL Listed and CSA certified
Regulatory Compliance	CISPR22/EN55022 Class A; FCC Class; CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

E-TBT-FRL-05(HT)
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 850nm multimode (ST)
[2 km/ 1.2 mi.] Link Budget: 13.5 dB

E-TBT-FRL-05(SCHT)
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 850nm multimode (SC)
[2 km/ 1.2 mi.] Link Budget: 13.5 dB

E-TBT-FRL-05(SMHT)
10BASE-T (RJ-45) **[100 m/328 ft.]**
10BASE-FL 1310nm single mode (ST)
[20 km/12.4 mi.] Link Budget: 23.0 dB

E-TBT-FRL-05(XCHT)
10BASE-T (RJ-45) **[100 m/328 ft.]**
10BASE-FL 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 14.0 dB

E-TBT-FRL-05(XLHT)
10BASE-T (RJ-45) **[100 m/328 ft.]**
10BASE-FL 1310nm single mode (SC)
[50 km/31.1 mi.] Link Budget: 33.0 dB

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-CC *(see page 72)*
Piggy Back Power Supply

SPS-1872-SA *(see page 72)*
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBD-FS *(see page 70)*
DIN Rail Bracket (flat, small) 3.1" [79 mm]

WMBS *(see page 70)*
Wall Mount Bracket 3.2" [81 mm]

WMBV *(see page 70)*
Vertical Wall Mount Bracket 5.0" [127 mm]

Ethernet Just Convert-IT™ 10BASE-T to 10BASE2

Twisted Pair to Coax Media Converter

- Connect legacy coax devices to a 10BASE-T network.

J/E-CX-TBT-02

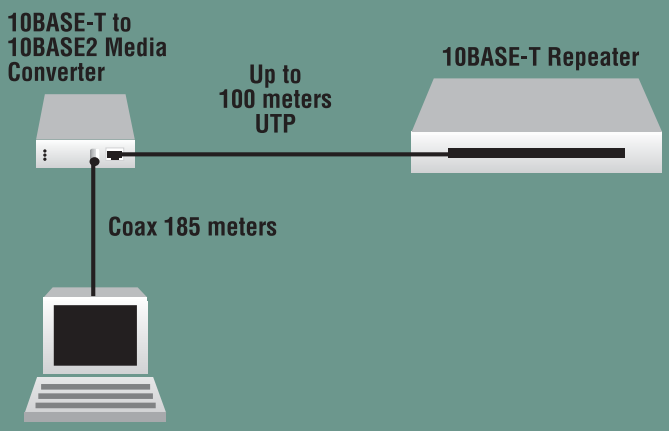
Table of Contents
Select Media Converter
Select Switch

Features

- **Protects your equipment** investment by allowing you to upgrade—not replace—your current network.
- Provides one RJ-45 twisted pair connector and one BNC 10BASE2 compliant port.
- **Supports up to 24 devices** daisy-chained on one coax segment per twisted pair segment.
- **MDI/MDI-X selection switch** allows converter to be connected to either a workstation/NIC or hub, switches and routers without changing the cable type.
- **BNC T-connector included** for daisy chain applications.

Note: not rack-mountable

Connect Legacy Equipment



Ordering Info

J/E-CX-TBT-02
10BASE-T (RJ-45)
[100 m/328 ft.]
to 10BASE2 (BNC)
[185 m / 607 ft.]

Specifications

Standards	IEEE Std. 802.3™ 10BASE-T, 10BASE2
Switches	**MDI/MDI-X:** Selects correct RJ-45 port setting
Status LEDs	**PWR (Power):** ON = Connected to external power **BNC/ACT (BNC Activity):** Flashing = 10BASE2 data traffic **TP/ACT (TP Activity):** ON = 10BASE-T link connection; Flashing = 10BASE-T data traffic **COL (Collision):** Flashing = Collision present
Dimensions	**Width:** 2.75" [71 mm] **Depth:** 3.7" [94 mm] **Height:** 1.0" [25 mm]
Power	External AC/DC: 5V DC, 1.0 A
Environment	0 – 50°C, 5% – 90% humidity non-condensing, 0 – 10,000 ft. altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply:** UL Listed and CSA certified
Regulatory Compliance	CISPR22/EN55022 Class A, FCC Class A, CE Mark
Warranty	Lifetime

Ethernet Just Convert-IT™ 10BASE-T to 10BASE-FL

Ethernet Copper to Fiber Media Converter

- Connect Legacy Equipment:
Connect an existing 10BASE-T segment or device to an Ethernet fiber optic backbone.

J/E-CF-02(xx)

mounting options
ethernet
fast ethernet
10/100 bridging
10/100/1000
gigabit ethernet
atm/oc-x
ds3-t3/e3
high speed serial
rs232
rs422/485
t1/e1
pots 2-wire
video
industrial

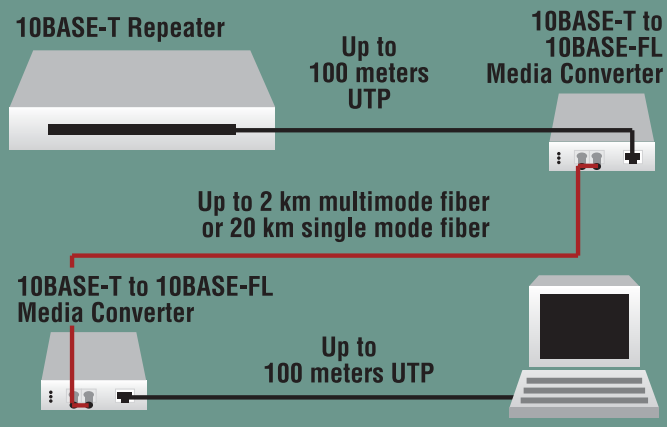
Table of Contents
Select Media Converter
Select Switch

The "Just Convert-It™" 10BASE-T to 10BASE-FL Media Converter is an inexpensive, no frills way to extend the distance between Ethernet connections with the use of fiber optic cable, while maintaining the same quality and reliability found on Transition's full-featured line of products.

Features

- Unit and Port LEDs allow for quick status information
- Cost-effective way to extend distance
- Automatic Link Restoration *(see page 16)*
- Can be rack-mounted in the E-MCR-04

Connect Legacy Equipment



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™ 10BASE-T; 10BASE-FL
Status LEDs	**Power:** On for normal operation; **Copper:** Steady = Link; Flashing = Rx Data **Fiber:** Steady = Link; Flashing = Rx Data
Dimensions	**Width:** 3.0" [76 mm] **Depth:** 3.9" [99 mm] **Height:** 1.0" [25 mm]
Power	External AC/DC; 12VDC, 0.5 A min
Power Consumption	2.8 watts
Environment	0 – 50° C; 5% – 95% humidity non-condensing; 0 – 10,000 ft. altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply:** UL listed and CSA certified
Regulatory Compliance	CISPR22/EN55022; EN55024; EN60950 Class A; FCC Class A; CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

J/E-CF-02
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 850nm MM (ST)
[2 km/ 1.2 mi.] Link Budget: 13.5 dB

J/E-CF-02(SC)
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 850nm MM (SC)
[2 km/ 1.2 mi.] Link Budget: 16.5 dB

J/E-CF-02(SM)
10BASE-T (RJ-45) **[100 m/328 ft.]**
10BASE-FL 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 7.0 dB

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-CC *(see page 72)*
Piggy Back Power Supply

SPS-1872-SA *(see page 72)*
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBD-FS *(see page 70)*
DIN Rail Bracket (flat, small) 3.1" [79 mm]

WMBS *(see page 70)*
Wall Mount Bracket 3.2" [81 mm]

WMBV *(see page 70)*
Vertical Wall Mount Bracket 5.0" [127 mm]

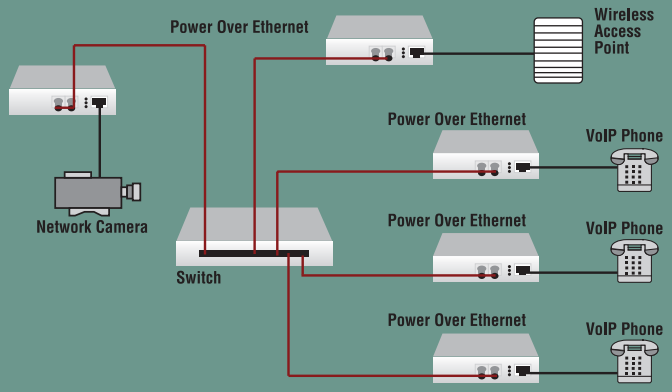
Power over Ethernet Copper to Fiber PSE Media Converter

AUTO NEG | LINK PASS THROUGH | AUTO LINK RESTORE

SEPOE101x-150

Enables enterprises to power network devices directly over the existing CAT5 data connection. The Power over Ethernet (POE) converter emulates IEEE 802.3af™ Power Sourcing Equipment (PSE), and is compatible with Powered Devices (PD) that comply with the IEEE 802.3af™ standard. The Power over Ethernet (POE) converter will detect the presence of a device that needs power and inject the applicable current into the data cable.

Power over Cat5 to Remotely Located Devices



Attractive solution for delivering power over CAT5 to powered devices such as access points, Voice over IP (VoIP) products, access servers, outdoor routers, and internet kiosks.

Allows for use of fiber switches with POE solution on remote end.

Features

- 48VDC input power supply
- -48VDC output per port
- 12W max load
- Overload protection
- PD Auto-sensing
- Enable/Disable power MDI
- Auto-Negotiation *(see page 14)*
- Link Pass Through *(see page 15)*
- Automatic Link Restoration *(see page 16)*

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™
Switches	**Switch 1:** MDI Power: UP = Enable; DOWN = Disable **Switch 2:** MDI Link Pass Through: UP = Enable; DOWN = Disable
Status LEDs	**Power:** Lit for normal operation **MDI Fault:** ON = over-current detected **MDI ON:** ON = MDI port supplying power **TP Link:** ON = Link on copper port **Fiber Link:** ON = Link on fiber port **TP ACT:** Flashing = data activity on copper link **Fiber Act:** Flashing = data activity on fiber link
Dimensions	**Width:** 7.3" [185 mm] **Depth:** 4.4" [112 mm] **Height:** 1.2" [30 mm]
Power Consumption	45 watts max.
Power Output	16.8 watts max.
Power	48 VDC +/- 5% @ 1 A maximum
Operating Temperature	0 – 50° C [32° – 122°F]
Storage Temperature	-25° – 85° C [-13° – 185°F]
Environment	5 – 95% humidity non-condensing; altitude 0 – 10,000 ft.
Shipping Weight	2 lbs. [0.90 kg]
Regulatory Compliance	UL Listed; CISPR22/EN55022 Class A; EN 55024 Class A; CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

SEPOE1011-150
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 850nm multimode (ST)
[2 km/ 1.2 mi.] Link Budget: 13.5 dB

SEPOE1013-150
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 850nm multimode (SC)
[2 km/ 1.2 mi.] Link Budget: 13.5 dB

Optional Accessories

(sold separately)

Mounting Options:

WMBL ***(see page 70)***
Wall Mount Bracket 4.0" [102 mm]

WMBD-P
DIN Rail Mount Bracket POE

Ethernet/Token Ring/Continuous Duty Cycle Single Mode to Multimode

Single Mode to Multimode Media Converter

- Protocol Transparency:

500Kbps – 30Mbps speed range in continuous duty cycle

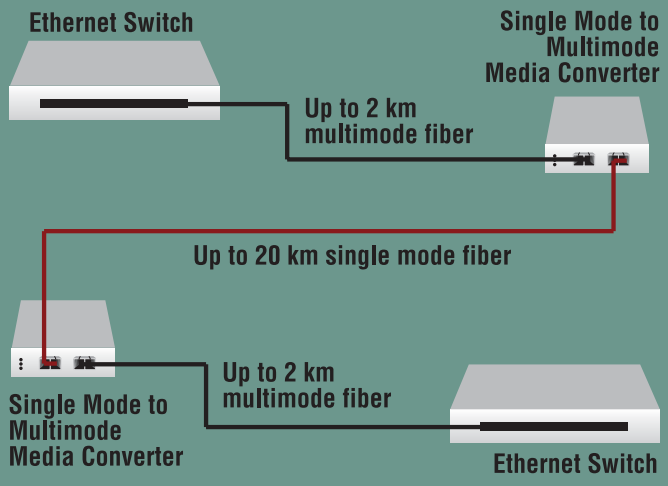
F-SM-MM-05

- Extend Network Distance

Ethernet or Token Ring Networks: Connect distant networks or devices up to 20 km in an existing single mode network.

Save money by purchasing Ethernet devices with lower cost multimode fiber interfaces and use converters to introduce single mode fiber only where you need it.

Extend Network Distance



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.5j
Status LEDs	**Power:** Lit for normal operation **Link:** (Left) Lit for MM link **Link:** (Right) Lit for SM link
Dimensions	**Width:** 3.0" [76 mm] **Depth:** 4.7" [119 mm] **Height:** 1.0" [25 mm]
Power	External AC/DC required; 12V DC. 0.5A; unregulated; standard
Power Consumption	3.1 watts
Environment	Operating temperature 0° – 50° C; 5% – 90% humidity non-condensing; 0 – 10,000 ft. altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply:** UL Listed and CSA certified
Regulatory Compliance	CISPR/EN55022 Class A; EN55024; EN61000; FCC Class A; CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

F-SM-MM-05
850nm multimode (ST)
[2 km/ 1.2 mi.] Link Budget: 13.5 dB
to 1310nm single mode (ST)
[20 km/12.4 mi.] Link Budget: 7.0 dB

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-CC *(see page 72)*
Piggy Back Power Supply

SPS-1872-SA *(see page 72)*
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBD-FS *(see page 70)*
DIN Rail Bracket (flat, small) 3.1" [79 mm]

WMBL *(see page 70)*
Wall Mount Bracket 4.0" [102 mm]

WMBV *(see page 70)*
Vertical Wall Mount Bracket 5.0" [127 mm]

Ethernet or Fast Ethernet 10BASE-T to 10BASE-FL or 100BASE-TX to 100BASE-FX

Speed Selectable Media Converter

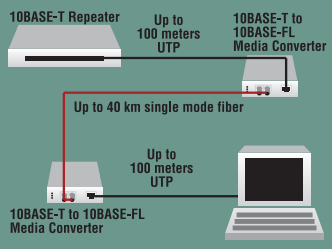
SSEFE10xx-10x

Table of Contents
Select Media Converter
Select Switch

Selectable speed setting:
The converter can be set to 10Mbps or 100Mbps. Both copper and fiber ports are automatically set to the same speed.

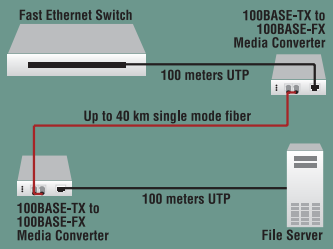
Transition Networks's speed selectable copper to fiber Media Converter allows you to extend the distance between copper based connections with the use of fiber optic cable. The ability to select the speed of converter allows for easy migration from a 10Mbps network today to a 100Mbps network in the future. This converter is a true layer 1 device as both the copper and fiber ports operate at the same speed setting (i.e. 100BASE-TX to 100BASE-FX). For 10Mbps applications, these devices must be used in pairs.

Extend Network Distance



Ethernet
Use the 10BASE-T to 10BASE-FL speed setting (back-to-back) to extend the distance between two 10BASE-T devices up to 40 km (24.9 mi.) using single mode fiber without a repeater.

Fast Ethernet
Use the 100BASE-TX to 100BASE-FX setting to extend the distance between any two 100BASE-TX devices up to 40 km (24.9 mi.) using single mode fiber. Or interface directly with a 100BASE-FX compliant port on any device to provide a 100BASE-TX port interface.



Features

- AutoCross™ *(see page 14)*
- Link Pass Through *(see page 15)*
- Automatic Link Restoration *(see page 16)*

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™
Switches	**Switch 1:** Link Pass Through on/off **Switch 2:** 10Mb or 100Mb operation
Status LEDs	**PWR (Power):** Lit for normal operation **F-ACT (Fiber Activity):** Blinking = data reception on the fiber link **F-100 (Fiber Speed):** ON = link at 100Mb **F-10 (Fiber Speed):** ON = link at 10Mb **C-ACT (Copper Activity):** Blinking = data reception on the copper link **C-100 (Copper Speed):** ON = link at 100Mb **C-10 (Copper Speed):** ON = link at 10Mb
Dimensions	**Width:** 3.25" [82 mm] **Depth:** 4.8" [122 mm] **Height:** 1.0" [25 mm]
Power Consumption	3.6 watts
Power	External AC/DC required; 12VDC, 0.5A; unregulated; standard (provided)
Environment	0 – 50°C operating; 5% – 95% humidity non-condensing; 0 – 10,000 ft. altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply:** UL Listed; C-UL Listed (Canada)
Regulatory Compliance	CISPR/EN55022 Class A; EN55024; EN60950 Class A; FCC Class A; CE Mark
Warranty	Lifetime

Ordering Info

See pages 171-181 for complete fiber optic connector specs.

SSEFE1012-100
10BASE-T or 100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL or 100BASE-FX 1310nm SM (ST) **[20 km/12.4 mi.] Link Budget: 17.0 dB**

SSEFE1014-100
10BASE-T or 100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 10BASE or 100BASE 1310nm SM (SC) **[20 km/12.4 mi.] Link Budget: 17.0 dB**

SSEFE1015-100
10BASE-T or 100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 10BASE or 100BASE 1310nm SM (SC) **[40 km/24.9 mi.] Link Budget: 26.0 dB**

SSEFE1022-100
10BASE-T or 100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 10BASE or 100BASE 1310nm SM (ST) **[40 km/24.9 mi.] Link Budget: 26.0 dB**

Single Fiber Products
Recommended use in pairs (see page 17)

SSEFE1029-100
10BASE-T or 100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL or 100BASE-FX 1310nm TX / 1550nm RX single fiber SM (SC) **[20 km/12.4 mi.] Link Budget: 19.0 dB**

SSEFE1029-101
10BASE-T or 100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL or 100BASE-FX 1550nm TX / 1310nm RX single fiber SM (SC) **[20 km/12.4 mi.] Link Budget: 19.0 dB**

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-PS *(see page 72)*
Piggy Back Power Supply

SPS-1872-SA *(see page 72)*
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBD-E *(see page 70)*
DIN Rail Bracket (Extended) 4.3" [109 mm]

WMBD-F *(see page 70)*
DIN Rail Bracket (flat) 3.3" [84 mm]

WMBL *(see page 70)*
Wall Mount Bracket 4.0" [102 mm]

WMBV *(see page 70)*
Vertical Wall Mount Bracket 5.0" [127 mm]

WMBV-E *(see page 70)*
Extended Vertical Mount 4.7" [119 mm]

See Also:

- Ethernet or Fast Ethernet Speed Selectable Point System™ Slide-In-Module Media Converters

page 34

Fast Ethernet 100BASE-TX to 100BASE-FX

Fast Ethernet Media Converter

- Extend Network Distance
Used in pairs, this media converter can extend distances between two twisted pair switches or a switch and a server up to 2 km over multimode fiber or up to 120 km over single mode fiber.

- Connect Remote Devices
Using one media converter, a switch with a copper port can be connected to a switch with an existing fiber interface.

E-100BTX-FX-05(xxxx)

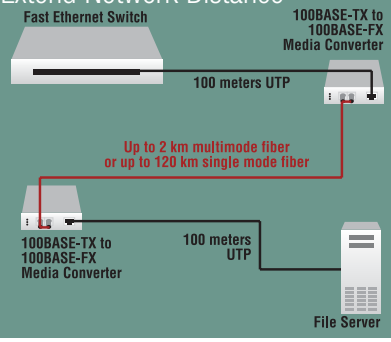
single fiber model

Features

- Operates under heavy traffic loads without excess heat, so there is no need for a failure-prone internal fan.
- Round trip delay of only 40 bit times —far below the Class II rating of 92 bit times
- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- Link Pass Through *(see page 15)*
- Far End Fault (FEF) *(see page 14)*
- Automatic Link Restoration *(see page 16)*
- Pause *(see page 15)*

The converters will automatically re-establish link when connected to two 10/100 auto-negotiating switches if link is lost. With other manufacturers' converters the user must intervene to re-establish link.

Extend Network Distance



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™ 100BASE-FX, 100BASE-TX
Switches	**SW1:** Auto-Negotiation On/Off **SW2:** Pause TX On/Off **SW3:** Link Pass Through On/Off **SW4:** Far End Fault On/Off
Jumpers	**Jumper Block 1:** AutoCross™ enable
Status LEDs	Power SDF or LKF (Link Fiber) SDC or LKC (Link Copper) RXF (Receive Fiber) RXC (Receive Copper)
Dimensions	**Width:** 3.0" [76 mm] **Depth:** 4.7" [119 mm] **Height:** 1.0" [25 mm]
Power	External AC/DC required: 12 VDC, 0.5 A, unregulated, standard
Environment	0 – 50°C, 5% – 95% humidity non-condensing, 0 – 10,000 feet altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply:** UL Listed and CSA certified
Regulatory Compliance	FCC Class A, EN55024, EN55022 Class A, EN61000, CE Mark
Warranty	Lifetime

See Also:

- Fast Ethernet 100BASE-TX to 100BASE-FX Point System™ Slide-In-Module Media Converters

page 35 & 36

Visit our website at www.transition.com

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

E-100BTX-FX-05
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm MM (ST)
[2 km/ 1.2 mi.] Link Budget: 11.0 dB

E-100BTX-FX-05(SC)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm multimode (SC)
[2 km/ 1.2 mi.] Link Budget: 11.0 dB

E-100BTX-FX-05(LC)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm multimode (LC)
[2 km/ 1.2 mi.] Link Budget: 11.0 dB

E-100BTX-FX-05(MT)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm MM (MT-RJ)
[2 km/ 1.2 mi.] Link Budget: 14.5 dB

E-100BTX-FX-05(SM)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

E-100BTX-FX-05(SMLC)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (LC)
[20 km/12.4 mi.] Link Budget: 17.3 dB

E-100BTX-FX-05(LH)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

E-100BTX-FX-05(XL)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[60 km/37.3 mi.] Link Budget: 29.0 dB

E-100BTX-FX-05(LW)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1550nm SM (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB

E-100BTX-FX-05(XLW)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1550nm SM (SC)
[120 km/74.6 mi.] Link Budget: 36.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

E-100BTX-FX-05(100)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm TX / 1550nm RX
single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

E-100BTX-FX-05(101)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1550nm TX / 1310nm RX
single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

E-100BTX-FX-05(102)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm TX / 1550nm RX
single fiber single mode (SC)
[40 km/ 24.9 mi.] Link Budget: 25.0 dB

E-100BTX-FX-05(103)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1550nm TX / 1310nm RX
single fiber single mode (SC)
[40 km/ 24.9 mi.] Link Budget: 25.0 dB

E-100BTX-FX-05(104)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm TX / 1550nm RX
single fiber single mode (SC)
[60 km/37.3 mi.] Link Budget: 16.0 dB

E-100BTX-FX-05(105)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1550nm TX / 1310nm RX
single fiber single mode (SC)
[60 km/37.3 mi.] Link Budget: 26.0 dB

E-100BTX-FX-05(106)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm TX / 1550nm RX
single fiber single mode (SC)
[80 km/49.7 mi.] Link Budget: 33.0 dB

E-100BTX-FX-05(107)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1550nm TX / 1310nm RX
single fiber single mode (SC)
[80 km/49.7 mi.] Link Budget: 32.0 dB

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-CC *(see page 72)*
Piggy Back Power Supply

SPS-1872-SA *(see page 72)*
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBD-FS *(see page 70)*
DIN Rail Bracket (flat, small) 3.1" [79 mm]

WMBL *(see page 70)*
Wall Mount Bracket 4.0" [102 mm]

WMBV *(see page 70)*
Vertical Wall Mount Bracket 5.0" [127 mm]

Fast Ethernet 100BASE-TX to 100BASE-FX Extended Temperature

Fast Ethernet Media Converter

AUTO NEG | AUTO CROSS | LINK PASS THROUGH | FAR END FAULT | AUTO LINK RESTORE | PAUSE

- Extended Temperature Capable:

Designed to operate in environments where ambient temperatures can rise as high as 65°C (149°F).

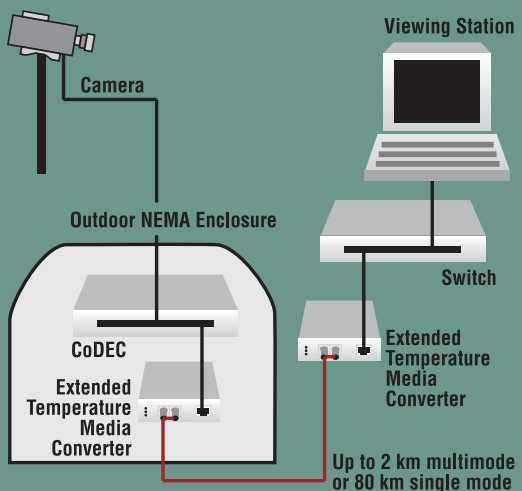
E-100BTX-FX-05(xxHT)

Table of Contents
Select Media Converter
Select Switch

Connect remote devices such as IP based surveillance cameras or signaling equipment in a non-climate controlled enclosure. Deliver 100Mbps data access in residential or commercial environments inside a non-climate controlled pedestal enclosure.

This converter can also be deployed in industrial environments where excessive heat may be a concern. (Note that this device is rated to meet "temperature" requirements of industrial environments only.)

Extended Temperature Applications (to 65°C)



Features

- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- Link Pass Through *(see page 15)*
- Far End Fault Detection *(see page 14)*
- Automatic Link Restoration *(see page 16)*
- Pause *(see page 15)*

Specifications

See pages 171-181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™ 100BASE-FX; 100BASE-TX
Jumpers	Jumper Block 1: AutoCross™ enable
Switches	SW1: Auto-Negotiation On/Off SW2: Pause TX On/Off SW3: LPT On/Off SW4: FEF On/Off
Status LEDs	**Power:** Lit for normal operation **SDF (Signal Detect Fiber):** Lit for fiber link **SDC (Signal Detect Copper):** Lit for copper link **RXF (Receive Fiber):** Flashing = RX data **RXC (Receive Copper):** Flashing = RX data
Dimensions	**Width:** 3.0" [76 mm] **Depth:** 4.7" [119 mm] **Height:** 1.0" [25 mm]
Power	External AC/DC required; 9V DC. 1.0A; unregulated; standard
Environment	-25° C to +65° C; 5% – 95% humidity non-condensing; 0 – 10,000 feet altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply:** UL Listed and CSA certified
Regulatory Compliance	FCC Class A; EN55024; EN55022 Class A; EN61000; CE Mark
Warranty	Lifetime

Ordering Info

See pages 171-181 for complete fiber optic connector specs.

E-100BTX-FX-05(HT)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm multimode (ST)
[2 km/ 1.2 mi.] Link Budget: 11.0 dB

E-100BTX-FX-05(SCHT)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm multimode (SC)
[2 km/ 1.2 mi.] Link Budget: 11.0 dB

E-100BTX-FX-05(SMHT)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

E-100BTX-FX-05(LHHT)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

E-100BTX-FX-05(XLHT)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[60 km/37.3 mi.] Link Budget: 33.0 dB

E-100BTX-FX-05(LWHT)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1550nm SM (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-CC *(see page 72)*
Piggy Back Power Supply

SPS-1872-SA *(see page 72)*
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBD-FS *(see page 70)*
DIN Rail Bracket (flat, small) 3.1" [79 mm]

WMBL *(see page 70)*
Wall Mount Bracket 4.0" [102 mm]

WMBV *(see page 70)*
Vertical Wall Mount Bracket 5.0" [127 mm]

Fast Ethernet Just Convert-IT™ 100BASE-TX to 100BASE-FX

Fast Ethernet Media Converter

AUTO NEG | AUTO CROSS | AUTO LINK RESTORE | SINGLE FIBER

J/FE-CF-03(xx)

mounting options
ethernet
fast ethernet
10/100 bridging
10/100/1000
gigabit ethernet
atm/oc-x
ds3-t3/e3
high speed serial
rs232
rs422/485
t1/e1
pots 2-wire
video
industrial

Table of Contents
Select Media Converter
Select Switch

Extend Network Distance

in Full-Duplex Networks: Used in pairs, this media converter can extend distances between two twisted pair switches or a switch and a server up to 2 km over multimode fiber or up to 20 km over single mode fiber.

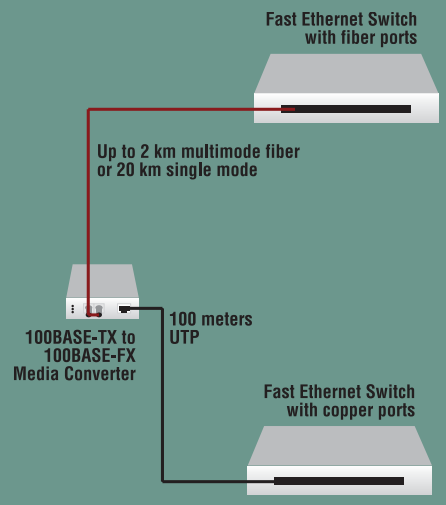
Connect Remote Devices

Using a single 100BASE-TX to FX media converter, a switch with a copper port can be connected to a switch or any other 100BASE compliant device with an existing fiber interface.

Features

- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- Automatic Link Restoration *(see page 16)*
- Interoperable with other 100BASE-TX/FX NICs, hubs or switches
- Provides LEDs for easy network monitoring
- Rack-mountable in the E-MCR-04

Extend Network Distance



Specifications

Standards	IEEE Std. 802.3u™ 100BASE-TX and 100BASE-FX
Switches	**SW1:** Auto-Negotiation On/Off **SW2:** Full/Half Duplex
Status LEDs	**Power** **Copper:** Link & Receive **Fiber:** Link & Receive
Dimensions	**Width:** 3.0" [76 mm] **Depth:** 3.93" [100 mm] **Height:** 0.98" [25 mm]
Power	External AC/DC required; +12VDC, 0.5A
Environment	0 – 60° C; 5% – 95% humidity non-condensing; 0 – 10,000 feet altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply:** UL Listed and CSA certified
Regulatory Compliance	CISPR/EN55022 Class A + EN55204; FCC Class A; CE Mark
Warranty	Lifetime

Ordering Info

J/FE-CF-03
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm multimode (ST)
[2 km/ 1.2 mi.] Link Budget: 11.0 dB

J/FE-CF-03(SC)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm multimode (SC)
[2 km/ 1.2 mi.] Link Budget: 11.0 dB

J/FE-CF-03(SM)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

J/FE-CF-03(LH)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

J/FE-CF-03(100)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
100BASE-FX 1310nm TX / 1550nm RX
single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

J/FE-CF-03(101)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
100BASE-FX 1550nm TX / 1310nm RX
single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-CC ***(see page 72)***
Piggy Back Power Supply

SPS-1872-SA ***(see page 72)***
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 ***(see page 70)***
12-slot Media Converter Rack

RMS19-SA4-01 ***(see page 71)***
4-slot Media Converter Shelf

WMBD ***(see page 70)***
DIN Rail Bracket 5.0" [127 mm]

WMBD-FS ***(see page 70)***
DIN Rail Bracket (flat, small) 3.1" [79 mm]

WMBS ***(see page 70)***
Wall Mount Bracket 3.2" [81 mm]

Remotely Managed Fast Ethernet Media Converter

AUTO NEG | AUTO CROSS | LINK PASS THROUGH | FAR END FAULT | AUTO LINK RESTORE | PAUSE | REMOTE MGMT | LOOP BACK | BANDWIDTH ALLOCATION

- **In-band management of stand alone** Fast Ethernet media converters
- **Remote Loopback** assists in diagnosing network problems
- Upstream and downstream **bandwidth control** allows service providers to offer an array of services

SRMFE10xx-20x

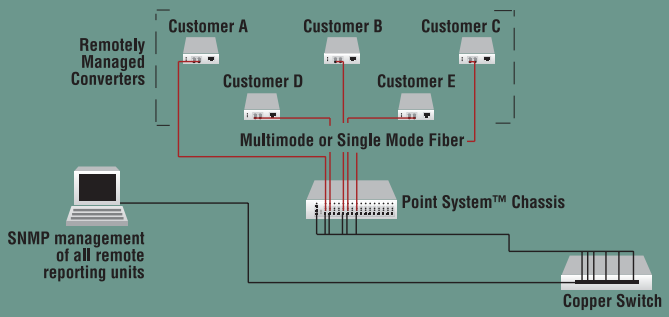
Table of Contents
Select Media Converter
Select Switch

With the Remotely Managed Fast Ethernet Media Converter, service providers can now monitor and manage the entire optical link from the Central Office (CO) to the Customer Premise Equipment (CPE).

When used in conjunction with a managed Point System™ Chassis card, (CRMFE10xx-200), this stand-alone unit can be managed remotely. This Fast Ethernet media converter provides a fully-managed conversion between 100BASE-TX and 100BASE-FX signals at Customer Premises.

Converters should be used in pairs. Typical installation will include a chassis card installed in the Point System™ locally and a stand-alone converter (SRMFE) installed at the remote location.

Remotely Managed Fast Ethernet



Features

- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- Link Pass Through *(see page 15)*
- Far End Fault (FEF) *(see page 14)*
- Automatic Link Restoration *(see page 16)*
- Pause *(see page 15)*
- Loopback *(see page 16)*
- Remote Management

See Also:

- Fast Ethernet Remotely Managed Point System™ Slide-In-Module Media Converters

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Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™
3-position Jumper	**Jumper J2:** Enable/disable AutoCross™ **Jumper J6:** **Hardware:** Converter mode determined by 4-position switch settings **Software:** Converter mode determined by most recently saved on-board microprocessor settings.
4 position Switch **Pos 1** Enable/disable twisted pair auto-negotiation **Pos 2** Enable/disable twisted pair pause **Pos 3** (UP) Enables Link Pass Through. (DOWN) Disables Link Pass Through **Pos 4** (UP) Enables Far End Fault (DOWN) Disables Far End Fault.	
Status LEDs	**Power** **LKF (Fiber Link)** **RXF (Fiber Receive)** **RXC (Copper Receive)** **LKC (Copper Link)**
Dimensions	**Width:** 3.25" [83 mm] **Depth:** 4.8" [122 mm] **Height:** 1.0" [25 mm]
Power Consumption	4 watts
Power	External AC/DC required; 12V DC 0.5A; unregulated; standard
Environment	0 – 50° C; 5% – 95% humidity non-condensing; 0 – 10,000 feet altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply:** UL Listed and CSA certified
Regulatory Compliance	CISPR/EN55022 Class A & B + EN55024; FCC Class A & B; CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

SRMFE1011-200
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm multimode (ST)
[2 km/ 1.2 mi.] Link Budget: 11.0 dB

SRMFE1013-200
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm multimode (SC)
[2 km/ 1.2 mi.] Link Budget: 11.0 dB

SRMFE1018-200
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm MM (MT-RJ)
[2 km/ 1.2 mi.] Link Budget: 14.5 dB

SRMFE1014-200
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

SRMFE1015-200
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

SRMFE1016-200
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[60 km/37.3 mi.] Link Budget: 29.0 dB

SRMFE1017-200
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1550nm SM (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

SRMFE1029-200
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

SRMFE1029-201
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

SRMFE1029-202
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

SRMFE1029-203
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-PS or SPS-1872-SA *(see page 72)*

Mounting Options:

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

WMBD or WMBL *(see page 70)*
Wall Mount Brackets

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

Fast Ethernet or ATM/SONET Single Mode to Multimode

Single Mode to Multimode Media Converter

- Link Pass Through (*see page 15*)
- Automatic Link Restoration (*see page 16*)

F-SM-MM-02 & SFMFF1xxx-20x

Table of Contents
Select Media Converter
Select Switch

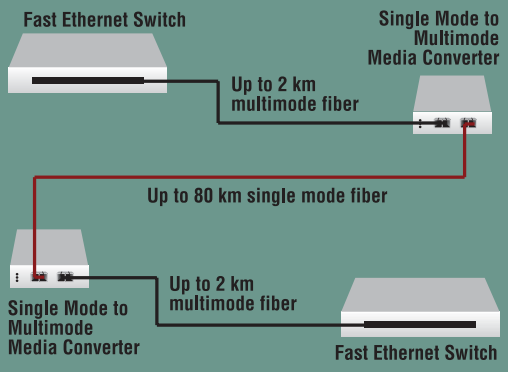
mounting options
ethernet
fast ethernet
10/100 bridging
10/100/1000
gigabit ethernet
atm/oc-x
ds3-t3/e3
high speed serial
rs232
rs422/485
t1/e1
pots 2-wire
video
industrial

- Extend Network Distance

Extend distances up to 80 km with these network protocols that use 1300nm wavelength for fiber optic transmission. In fact, distances can be extended in any networking protocol between 100Mbps and 155Mbps.

Save money by purchasing Fast Ethernet devices with lower cost multimode fiber interfaces and use converters to introduce single mode fiber only where you need it.

Extend Network Distance



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3
Status LEDs	**PWR:** Steady green LED indicates connection to external AC power **LKM or Link (Left):** Lit for MM Link **LKS or Link (Right):** Lit for SM Link
Dimensions	**Width:** 3.0" [76 mm] **Depth:** 4.7" [119 mm] **Height:** 1.0" [25 mm]
Power	External AC/DC required; 12V DC. 0.5A; unregulated; standard
Environment	0 – 50° C; 5% – 90% humidity non-condensing; 0 – 10,000 feet altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply:** UL Listed and CSA certified
Regulatory Compliance	CISPR/EN55022 Class A; EN55024; EN61000; FCC Class A; CE Mark
Warranty	Lifetime

See Also:

- Fast Ethernet or ATM/OC-3/SDH/SONET Point System™ Slide-In-Module Media Converters

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Ordering Info

See pages 171–181 for complete fiber optic connector specs.

SFMFF1313-200
1300nm multimode (SC)
[2 km/ 1.2 mi.] Link Budget: 11.0 dB
to 1300nm multimode (SC)
[2 km/ 1.2 mi.] Link Budget: 11.0 dB

F-SM-MM-02
1300nm multimode (SC)
[2 km/ 1.2 mi.] Link Budget: 11.0 dB
to 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

SFMFF1415-200
1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB
to 1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

F-SM-MM-02(LH)
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
to 1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

F-SM-MM-02(XL)
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
to 1310nm single mode (SC)
[60 km/37.3 mi.] Link Budget: 29.0 dB

SFMFF1417-200
1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB
to 1550nm single mode (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB

F-SM-MM-02(LW)
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
to 1550nm single mode (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

SFMFF1329-200
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
to 1310nm TX/1550nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

SFMFF1329-201
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

SFMFF1329-202
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

SFMFF1329-203
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

SFMFF1329-204
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
1310nm TX / 1550nm RX single fiber single mode (SC)
[60 km/37.3 mi.] Link Budget: 28.0 dB

SFMFF1329-205
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
1550nm TX / 1310nm RX single fiber single mode (SC)
[60 km/37.3 mi.] Link Budget: 27.0 dB

SFMFF1429-200
1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB
1310nm TX / 1550nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

SFMFF1429-201
1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB
to 1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

SFMFF1429-202
1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB
to 1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

SFMFF1429-203
1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB
to 1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

Optional Accessories

(sold separately)

F-SM-MM-02:

SPS-1872-CC *(see page 72)*
Wide Input (18 – 72VDC) Piggy Back Power Supply

WMBD-FS *(see page 70)*
DIN Rail Bracket (flat, small) 3.1" [79 mm]

SFMFF1x29-20x:

SPS-1872-PS *(see page 72)*
Wide Input (18 – 72VDC) Piggy Back Power Supply

WMBD-F *(see page 70)*
DIN Rail Bracket (flat) 3.3" [84 mm]

F-SM-MM-02 or SFMFF1x29-20x:

SPS-1872-SA *(see page 72)*
Wide Input (18 – 72VDC) Stand-Alone Power Supply

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBL *(see page 70)*
Wall Mount Bracket 4.0" [102 mm]

WMBV *(see page 70)*
Vertical Wall Mount Bracket 5.0" [127 mm]

Power Over Ethernet 100BASE-TX to 100BASE-FX

Power over Ethernet PSE Media Converter

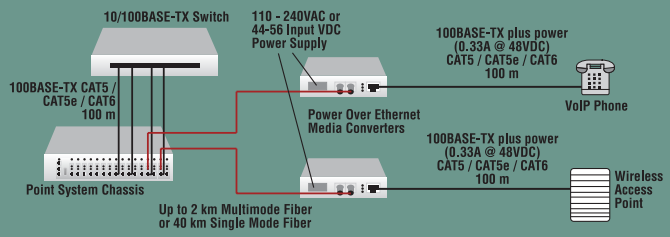
AUTO NEG · AUTO CROSS · LINK PASS THROUGH · FAR END FAULT · AUTO LINK RESTORE · PAUSE

- Enables enterprises to provide power to network devices over the existing CAT5 data connection.
- Combine data received over a fiber optic link with -48VDC power; providing power to Data Terminal Equipment (DTE) Power Devices (PD) over unshielded twisted pair cable

SFEPE101x-1x0

Table of Contents
Select Media Converter
Select Switch

Power over Cat5 to Remotely Located Devices



Transition's AC or DC powered PoE media converters are Power Sourcing Equipment (PSE) and are fully compatible with Powered Devices (PD) that comply with the IEEE802.3af™: 2003 standard. The converters also include a PD signature sensing and power monitoring features per the IEEE 802.3af standard.

SFEPE10xx-1xx products can operate in two modes: IEEE 802.3af mode as well as "legacy mode". In the IEEE 802.3af mode the POE is fully compatible with devices that comply with the IEEE802.3af standard. The POE converter is also capable of inserting power on either the spare pairs or data pairs of the MDI.

In the "legacy mode" POE can be configured for reverse polarity, 12 VDC, 24 VDC, or 48 VDC power insertion; as well as for other non-IEEE802.3af compatible PDs.

Different voltages & modes are switch selectable.

Features

- Internal AC or DC power supply
- IEEE802.3af Power Over Ethernet Compatible Mode
- Legacy Mode (Non IEEE802.3af)
- 12, 24, or 48 VDC PSE Output Voltage with Reverse Polarity Selection
- Signal Pair and Spare Pair Power Insertion
- Over-Current Protection
- Under-Current Detection
- Minimum Load Sensing
- Fault Protection Input
- Exceeds IEEE802.3af ripple requirements on PSE MDI power leads
- Max 16.8 Watts Power output capacity at legacy 48 VDC
- PSE MDI Power Enable/Disable
- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- Link Pass Through *(see page 15)*
- Far End Fault (FEF) *(see page 14)*
- Automatic Link Restoration *(see page 16)*
- Pause *(see page 15)*

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards		IEEE Std. 802.3™; IEEE Std. 802.3af
Switches	**1&2:**	Set voltage output on twisted pair
	3:	IEEE 802.3af mode / Legacy mode
	4:	Voltage polarity
	5:	MDI power on signal pairs / spare pairs
	6:	Enable / disable Auto-negotiation
	7:	Enable / disable Pause
	8:	Enable / disable Link Pass Through
	9:	Enable / disable Far End Fault
	10:	Enable / disable AutoCross™
Status LEDs		**PWR (power):** Lit for normal operation **MDI Fault:** ON = over-current detected **MDI ON:** ON = MDI port supplying power **TX Link:** ON = Link on copper port **TX Act:** Flashing = data activity on copper link **FX Link:** ON = Link on fiber port **FX Act:** Flashing = data activity on fiber link
Dimensions		**Width:** 7.3" [185 mm] **Depth:** 4.4" [112 mm] **Height:** 1.2" [30 mm]
Power		**Models SFEPE10xx-100:** 90 – 250VAC Internal (Power Cord Supplied) **Models SFEPE10xx-110:** 18 – 60VDC; 24 – 48VAC Internal (Power Cord Supplied)
Power Consumption		45W Max
Operating Temperature		0 – 50° C [32° – 122°F]
Storage Temperature		-25° – 85° C [-13° – 185°F]
Environment		5 – 95% humidity non-condensing; altitude 0 – 10,000 ft.
Shipping Weight		2 lbs. [0.90 kg]
Regulatory Compliance		EN55022:1994+A1:1996+A2:1997 Class A; FCC Part 15 Subpart B; UL 1950
Warranty		Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

SFEPE1011-100: AC Powered PSE
SFEPE1011-110: DC Powered PSE
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SFEPE1013-100: AC Powered PSE
SFEPE1013-110: DC Powered PSE
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SFEPE1014-100: AC Powered PSE
SFEPE1014-110: DC Powered PSE
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

Optional Accessories

(sold separately)

Mounting Options:

WMBD-P
DIN Rail Mount Bracket POE

WMBL ***(see page 70)***
Wall Mount Bracket 4.0" [102 mm]

10/100BASE-SX Media Converter

- Lowest possible cost solution for fiber installation up to 60 meters (100BASE-SX)
- Ideal for building backbone and horizontal cabling applications where cost and 10/100 auto-negotiation are critical.

SSETF101x-205

Extend Network Distance

Used in pairs, this media converter can extend distances between two twisted pair switches or a switch and a server up to 60 meters over multimode fiber (100BASE-SX).

Connect Remote Devices

Using a single 10/100BASE-SX media converter, a switch with a copper port can be connected to a switch or any other 10/100BASE-SX compliant device with an existing fiber interface.

Features

- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- Link Pass Through *(see page 15)*
- Efficient and Reliable

The 10/100 SX Media Converter operates easily under heavy traffic loads without generating excess heat; meaning a failure-prone internal fan is unnecessary.

- Automatic Link Restoration *(see page 16)*

See Also:

- 10/100SX Point System™ Slide-In-Module Media Converters

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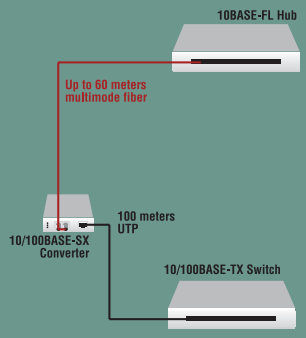
Extend Network Distance



Specifications

Operation	Operates as TIA SP4360A Type I, II device
Standards	IEEE Std. 802.3™; 100BASE-TX, 10BASE-FL, Draft TIA 100BASE-SX-SP-4360A
Recommended Optic Cable	62.5/125 µm multimode fiber; 50/125 µm multimode fiber
Optional Optic Cable	100/140 µm multimode fiber; 85/125 µm multimode fiber
Status LEDs	**PWR (Power):** ON = Connection to the external AC or DC power **SX-ACT (Fiber Activity):** Flashing = Data reception on the fiber link **SX-100 (Fiber Speed):** ON = Fiber link at 100 Mb/s **SX-10 (Fiber Speed):** ON = Fiber link at 10 Mb/s **TX-ACT (Copper Activity):** Flashing = Data reception on the copper link **TX-100 (Copper Speed):** ON = Copper link at 100 Mb/s **TX-10 (Copper Speed):** ON = Copper link at 10 Mb/s
Dimensions	**Width:** 3.25" [82 mm] **Depth:** 4.8" [122 mm] **Height:** 1.0" [25 mm]
Power	External AC/DC required; 12V DC. 0.5A; unregulated; standard
Environment	0 – 50° C; 5% – 90% humidity non-condensing; 0 – 10,000 feet altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply:** UL listed and CSA certified
Regulatory Compliance	FCC Class A, CISPR/EN55022 Class A, CE Mark
Warranty	Lifetime

Ordering Info

SSETF1011-205
10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
10/100BASE-SX 850nm multimode (ST) **[60 m/ 197 ft.]**

SSETF1013-205
10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
10/100BASE-SX 850nm multimode (SC) **[60 m/ 197 ft.]**

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-PS *(see page 72)*
Piggy Back Power Supply

SPS-1872-SA *(see page 72)*
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBD-E *(see page 70)*
DIN Rail Bracket (extended) 4.3" [109 mm]

WMBD-F *(see page 70)*
DIN Rail Bracket (flat) 3.3" [84 mm]

WMBL *(see page 70)*
Wall Mount Bracket 4.0" [102 mm]

WMBV *(see page 70)*
Vertical Wall Mount Bracket 5.0" [127 mm]

WMBV-E *(see page 70)*
Vertical Wall Mount Bracket (extended) 4.7" [119 mm]

OAM/IP-Based Remotely Managed 10/100BASE-TX to 100BASE-X

Table of Contents
Select Media Converter
Select Switch

OAM/IP-Based Remotely Managed Media Converter

- Applications:
  - Ethernet in the First Mile (EFM)
  - Fiber to the Premise (FTTP), E-Line and E-LAN
  - Enterprise markets

SFBRM10xx-1xx

Features

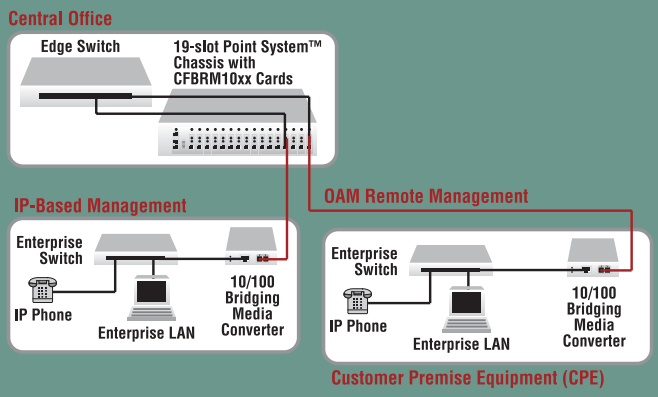
- MEF 9 & MEF 14 Carrier Ethernet Certification
- Two selectable remote management modes:
  - IP-Based remote management
  - In-Band OAM 802.3ah (remote device managed by local peer)
- SNMP v1, v2*
- AutoCross™ *(see page 14)*
- Auto-Negotiation *(see page 14)*
- Pause *(see page 15)*
- Transparent Link Pass Through *(see page 15)*
- Far-End-Fault *(see page 14)*
- Remote Loopback *(see page 16)*
- Non-Intrusive Echo
- IEEE 802.1p™ QOS packet classification with 4 egress queues
- Ipv4 IP TOS and DiffServ QOS classification, IPv6 Traffic class
- IEEE 802.1q™ VLAN, 4096 entries
- Static MAC, 64 entries
- Double VLAN tagging (QinQ)
- IEEE 802.1x™ Port based security
- RADIUS client
- RMON counters for each port
- Bandwidth allocation per port *(see page 16)*
- DMI Optical Management
- USB port for basic setup
- Cable diagnostic function for TP ports
- 8K MAC addresses
- Remote Firmware Upgrade *(see page 16)*

**Future firmware upgrade; Please contact Transition Networks for upgrade availability.*

See Also:

- 10/100 OAM / IP-Based Point System™ Slide-In-Module Media Converters
  pages 40-41

Remotely Manage 10/100 Converters



Specifications

See pages 171-181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™, IEEE Std. 802.3ah, IEEE Std. 802.1P, IEEE Std. 802.1Q, IEEE Std. 802.1X
Data Rate	**Copper:** 10/100 **Fiber:** 100 Mbps
Filtering Addresses	8K MAC Addresses
RAM Buffers	256K (2 Mbps)
Max Frame Size	**802.3ac tagged:** 1628 bytes **untagged:** 1632 bytes
Dimensions	**Width:** 3.25" [82 mm] **Depth:** 4.8" [122 mm] **Height:** 1.0" [25 mm]
Environment	0 – 50°C; 5% – 95% humidity non-condensing; 0 – 10,000 ft. altitude
Power	Input: 100-240 VAC, 1A Output: 12VDC, 1.25A
Shipping Weight	2 lbs. [0.90 kg]
Regulatory Compliance	CISPR/EN55022 Class B, EN55024, EN61000, FCC Class B, CE Mark
Warranty	Lifetime

Ordering Info

See pages 171-181 for complete fiber optic connector specs.

SFBRM1011-100
SFBRM1011-110 (DMI model)
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-FX 1300nm MM (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SFBRM1013-100
SFBRM1013-110 (DMI model)
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-FX 1300nm MM (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SFBRM1014-100
SFBRM1014-110 (DMI model)
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-LX10 1310nm SM (SC)
[20 km/6.2 mi.] Link Budget: 16.0 dB

SFBRM1015-100
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-FX 1310nm SM (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

SFBRM1016-100
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-FX 1310nm SM (SC)
[60 km/37.3 mi.] Link Budget: 29.0 dB

SFBRM1017-100
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-FX 1550nm SM (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB

SFBRM1035-100
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-FX 1550nm SM (SC)
[120 km/74.6 mi.] Link Budget: 36.0 dB

SFBRM1040-100
10/100BASE-TX (RJ-45) **[100 m]**
to SFP slot (empty)

Single Fiber Products
Recommended use in pairs (see page 17)

SFBRM1029-100
SFBRM1029-110 (DMI model)
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-BX-U 1310nm TX/1550nm RX Bi-Di single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

SFBRM1029-101
SFBRM1029-111 (DMI model)
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-BX-D 1550nm TX/1310nm RX Bi-Di SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

Note: all units feature USB port for local management application.

OAM/IP-Based Remotely Managed 10/100BASE-TX to 100BASE-X

OAM/IP-Based Remotely Managed Media Converter For Indoor and Protected Outdoor Applications

- Indoor/Protected Outdoor Applications (-40°C – 65°C)
  - Ethernet in the First Mile (EFM)
  - Fiber to the Premise (FTTP), E-Line and E-LAN
  - Enterprise markets

SFBRM10xx-18x

mounting options
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fast ethernet
10/100 bridging
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ds3-t3/e3
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t1/e1
pots 2-wire
video
industrial

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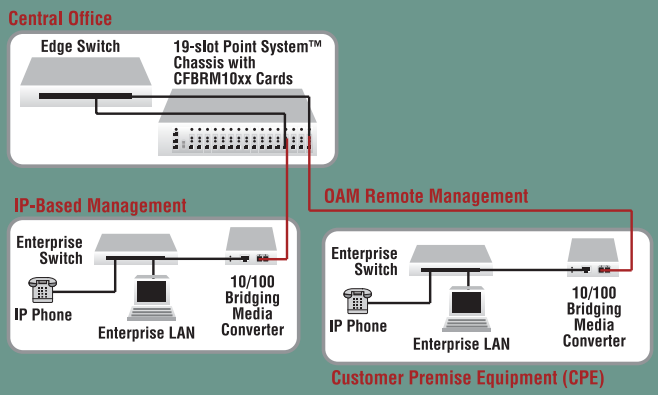
- MEF 9 & MEF 14 Carrier Ethernet Certification
- Two selectable remote management modes:
  - IP-Based remote management
  - In-Band OAM 802.3ah (remote device managed by local peer)
- SNMP v1, v2*
- AutoCross™ *(see page 14)*
- Auto-Negotiation *(see page 14)*
- Pause *(see page 15)*
- Transparent Link Pass Through *(see page 15)*
- Far-End-Fault *(see page 14)*
- Remote Loopback *(see page 16)*
- IEEE 802.1p™ QOS packet classification with 4 egress queues
- Ipv4 IP TOS and DiffServ QOS classification, IPv6 Traffic class
- IEEE 802.1q™ VLAN, 4096 entries
- Static MAC, 64 entries
- Double VLAN tagging (QinQ)
- IEEE 802.1x™ Port based security
- RADIUS client
- RMON counters for each port
- Bandwidth allocation per port *(see page 16)*
- DMI Optical Management
- USB port for basic setup
- Cable diagnostic function for TP ports
- 8K MAC addresses
- Remote Firmware Upgrade *(see page 16)*

**Future firmware upgrade; Please contact Transition Networks for upgrade availability.*

See Also:

- 10/100 OAM / IP-Based Point System™ Slide-In-Module Media Converters
  pages 40 - 41

Remotely Manage 10/100 Converters



Specifications

See pages 171-181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™, IEEE Std. 802.3ah, IEEE Std. 802.1P, IEEE Std. 802.1Q, IEEE Std. 802.1X
Data Rate	**Copper:** 10/100 **Fiber:** 100 Mbps
Filtering Addresses	8K MAC Addresses
RAM Buffers	256K (2 Mb)
Max Frame Size	**802.3ac tagged:** 1628 bytes **untagged:** 1632 bytes
Dimensions	**Width:** 3.25" [82 mm] **Depth:** 4.8" [122 mm] **Height:** 1.0" [25 mm]
Environment	-40 – 65°C; 5% – 95% humidity non-condensing; 0 – 10,000 ft. altitude
Power	Input: 100-240 VAC, 1A Output: 12VDC, 1.25A
Shipping Weight	2 lbs. [0.90 kg]
Regulatory Compliance	CISPR/EN55022 Class B, EN55024, EN61000, FCC Class B, CE Mark
Warranty	Lifetime

Ordering Info

See pages 171-181 for complete fiber optic connector specs.

SFBRM1011-180
SFBRM1011-190 (DMI model)
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-FX 1300nm MM (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SFBRM1013-180
SFBRM1013-190 (DMI model)
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-FX 1300nm MM (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SFBRM1014-180
SFBRM1014-190 (DMI model)
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-LX10 1310nm SM (SC)
[20 km/6.2 mi.] Link Budget: 16.0 dB

SFBRM1015-180
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-FX 1310nm SM (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

SFBRM1016-180
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-FX 1310nm SM (SC)
[60 km/37.3 mi.] Link Budget: 29.0 dB

SFBRM1017-180
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-FX 1550nm SM (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB

SFBRM1035-180
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-FX 1550nm SM (SC)
[120 km/74.6 mi.] Link Budget: 36.0 dB

SFBRM1040-180
10/100BASE-TX (RJ-45) **[100 m]**
to SFP slot (empty)

Single Fiber Products
Recommended use in pairs (see page 17)

SFBRM1029-180
SFBRM1029-190 (DMI model)
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-BX-U 1310nm TX/1550nm RX Bi-Di single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

SFBRM1029-181
SFBRM1029-191 (DMI model)
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-BX-D 1550nm TX/1310nm RX Bi-Di SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

SFBRM1029-182
10/100BASE-TX (RJ-45) **[100 m]**
to 100BASE-FX 1310nm TX/1550nm RX Bi-Di SM (SC)
[40 km/24.8 mi.] Link Budget: 25.0 dB

SFBRM1029-183
10/100BASE-TX (RJ-45) **[100 m/]**
to 100BASE-FX 1550nm TX/1310nm RX Bi-Di SM (SC)
[40 km/24.8 mi.] Link Budget: 25.0 dB

Note: all units feature USB port for local management application.

OAM/IP-Based Remotely Managed Media Converter

- Applications:
  - Ethernet in the First Mile (EFM)
  - Fiber to the Premise (FTTP), E-Line and E-LAN
  - Enterprise markets

SFBRM13xx-1xx

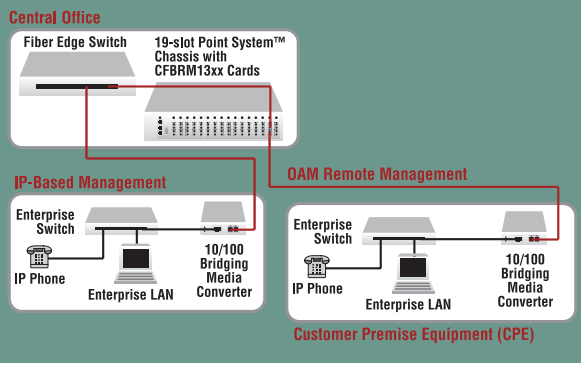
NEW

Features

- MEF 9 & MEF 14 Carrier Ethernet Certification
- Two selectable remote management modes:
  - IP-Based remote management
  - In-Band OAM 802.3ah (remote device managed by local peer)
- SNMP v1, v2*
- AutoCross™ *(see page 14)*
- Auto-Negotiation *(see page 14)*
- Pause *(see page 15)*
- Transparent Link Pass Through *(see page 15)*
- Far-End-Fault *(see page 14)*
- Remote Loopback *(see page 16)*
- IEEE 802.1p™ QOS packet classification with four egress queues
- Ipv4 IP TOS and DiffServ QOS classification, IPv6 Traffic class
- IEEE 802.1q™ VLAN, 4096 entries
- Static MAC, 64 entries
- Double VLAN tagging (QinQ)
- IEEE 802.1x™ Port based security
- RADIUS client
- RMON counters for each port
- Bandwidth allocation per port *(see page 16)*
- DMI Optical Management
- USB port for basic setup
- Cable diagnostic function for TP ports
- 8K MAC addresses
- Remote Firmware Upgrade *(see page 16)*

**Future firmware upgrade; Please contact Transition Networks for upgrade availability.*

Remotely Manage 1000BASE Converters



Specifications

See pages 171-181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™, IEEE Std. 802.3ah, IEEE Std. 802.1P, IEEE Std. 802.1Q, IEEE Std. 802.1X
Data Rate	**Fiber:** 100BASE-FX **Fiber 2:** 1000BASE-X
Filtering Addresses	8K MAC Addresses
RAM Buffers	256K (2 Mb)
Max Frame Size	802.3ac tagged: 1628 bytes untagged: 1632 bytes
Dimensions	**Width:** 3.25" [82 mm] **Depth:** 4.8" [122 mm] **Height:** 1.0" [25 mm]
Environment	0 – 50°C; 5% – 95% humidity non-condensing; 0 – 10,000 ft. altitude
Power	Input: 100-240 VAC, 1A Output: 12VDC, 1.25A
Shipping Weight	2 lbs. [0.90 kg]
Regulatory Compliance	CISPR/EN55022 Class B, EN55024, EN61000, FCC Class B, CE Mark
Warranty	Lifetime

See Also:

- 10/100 OAM / IP-Based Point System™ Slide-In-Module Media Converters
  pages 40-41

Ordering Info

See pages 171-181 for complete fiber optic connector specs.

SFBRM1313-100
SFBRM1313-110 (DMI Options)
100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB
to 1000BASE-SX 850nm Ext. MM (SC)
[62.5/125µm fiber: 300 m/984 ft.] or [50/125µm fiber: 550 m/1804 ft.] Link Budget: 7.0 dB

SFBRM1314-100
SFBRM1314-110 (DMI Options)
100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB
to 1000BASE-LX10 1310nm SM (SC)
[20 km/6.2 mi.] Link Budget: 12.0 dB

SFBRM1315-100
SFBRM1315-110 (DMI Options)
100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB
to 1000BASE-LX 1310nm SM (SC)
[25 km/15.5 mi.] Link Budget: 19.0 dB

SFBRM1317-100
100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB
to 1000BASE-LX 1550nm SM (SC)
[65 km/40.4 mi.] Link Budget: 22.0 dB

SFBRM1335-100
100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB
to 1000BASE-LX 1550nm SM (SC)
[125 km/77.7 mi.] Link Budget: 27.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

SFBRM1329-100
SFBRM1329-110 (DMI Options)
100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB
to 1000BASE-BX-U 1310nm TX / 1490nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 14.0 dB

SFBRM1329-101
SFBRM1329-111 (DMI Options)
100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB
to 1000BASE-BX-D 1490nm TX / 1310nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 14.0 dB

SFBRM1329-102
100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB
to 1000BASE-BX-U 1310nm TX / 1490nm RX SM (SC)
[40 km/24.9 mi.] Link Budget: 20.0 dB

SFBRM1329-103
100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB
to 1000BASE-BX-D 1490nm TX / 1310nm RX SM (SC)
[40 km/24.9 mi.] Link Budget: 20.0 dB

10/100BASE-TX Redundant Port Selector

Fault-Tolerant Redundant Media Converter

AUTO CROSS AUTO NEG

MIL-FT240TX

Features

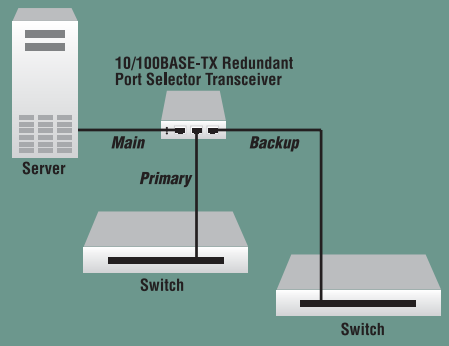
- Fault-tolerant redundant connections
- Easy to install and use
- Supports half and full-duplex transmission
- AutoCross™ on all 3 ports *(see page 14)*
- Auto-Negotiation *(see page 14)*
- IEEE 802.3 compliant
- Nine diagnostic LEDs
- Power supply available for international applications

The MILAN by Transition FT240TX Redundant Port Selector is a 10/100 Ethernet fault-tolerant transceiver. It significantly reduces network downtime, adding a new level of redundancy to 10/100 Ethernet connections. It also provides a redundant path for critical 10/100 devices.In a 10/100 Ethernet network, a critical device such as a file server may be connected to the rest of the network through a hub or a switch. A common problem in this configuration is that the server is often connected to the network through a single cable. If the cable fails, then the server is disconnected from the rest of the network. Similarly, if a port of a hub or switch to which the server is connected fails, the server is disconnected from the network.

The FT240TX Redundant Transceiver has three ports: one for the critical (main) device, one for the default (primary) path for the critical device, and another (backup) for the backup path. It is a smart device that will not send any signal on a path that is not active. If the primary path loses its link, then the FT240TX will immediately (in less than one microsecond) switch to the backup path.

When the primary path re-establishes its link, the FT240 Redundant Port Selector will automatically switch back to the primary path.

Fault-Tolerant Redundant Connections



Specifications

Standards	IEEE Std. 802.3
RJ-45 Connectors Type: 8-position, RJ-45 receptacle: 1: TX+ 5: NC (no connection) 2: TX- 6: RX- 3: RX+ 7: NC (no connection) 4: NC (no connection) 8: NC (no connection)	
Dip Switches	**SW1:** Auto-Negotiation Enable/Disable **SW2:** 10/100Mbps **SW3:** Full/Half Duplex **SW4:** non-functioning
System LEDs	**Power (PWR):** Indicates the presence of POWER **Primary (PRI):** Indicates a link is established on the Primary port **Backup (BKP):** Indicates the link has moved over to the Backup port.
Per Port LEDs	**Lower Right:** Green indicates 100Mbps; Orange indicates 10Mbps; Flashing indicates Activity **Lower Left:** Green indicates full-duplex; Off half-duplex
Dimensions	**Width:** 3.25" [82 mm] **Depth:** 4.8" [122 mm] **Height:** 1.0" [25 mm]
Power	**Domestic** Input: 120 VAC @ 60 Hz. Output: 12 VDC, 0.5 Amp **International** Input: 100 – 240 VAC @ 50 Hz. Output: 12 VDC, 1.25 Amp
Operating temperature	0 – 50°C (32°F – 122°F)
Storage temperature	-15°C – 65°C (-5°F – 149°F)
Relative humidity	5% – 95%
Altitude	0 – 10,000 ft.
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply:** UL Listed & CSA Certified
Regulatory Compliance	FCC Class A, EN55024, UL 60950, CE Mark
Warranty	Comprehensive 5 years

Ordering Info

MIL-FT240TX
10/100BASE-TX Port Selector Transceiver

(3) 10/100BASE-TX (RJ-45)
[100 m]

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-PS ***(see page 72)***
Piggy Back Power Supply

SPS-1872-SA ***(see page 72)***
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 ***(see page 70)***
12-slot Media Converter Rack

RMS19-SA4-01 ***(see page 71)***
4-slot Media Converter Shelf

WMBD ***(see page 70)***
DIN Rail Bracket 5.0" [127 mm]

WMBD-E ***(see page 70)***
DIN Rail Bracket (extended) 4.3" [109 mm]

WMBD-F ***(see page 70)***
DIN Rail Bracket (flat) 3.3" [84 mm]

WMBL ***(see page 70)***
Wall Mount Bracket 4.0" [102 mm]

WMBV ***(see page 70)***
Vertical Wall Mount Bracket 5.0" [127 mm]

WMBV-E ***(see page 70)***
Vertical Wall Mount Bracket (extended) 4.7" [119 mm]

10/100BASE-TX Redundant Link Protector

Fault-Tolerant Redundant Link Protector

AUTO CROSS AUTO NEG

- Fault-tolerant redundant connections
- Easy to install and use
- Supports half and full-duplex transmission
- AutoCross™ on all 3 ports *(see page 14)*
- Auto-Negotiation *(see page 14)*
- IEEE 802.3 compliant
- Nine diagnostic LEDs
- Optional 3-port switch mode

SBFTF1010-130

Features

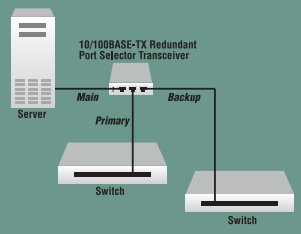
The Redundant Link Protector is a 10/100 Ethernet fault-tolerant transceiver. It significantly reduces network downtime, adding a new level of redundancy to 10/100 Ethernet connections. It also provides a redundant path for critical 10/100 devices.In a 10/100 Ethernet network, a critical device such as a file server may be connected to the rest of the network through a hub or a switch. A common problem in this configuration is that the server is often connected to the network through a single cable. If the cable fails, then the server is disconnected from the rest of the network. Similarly, if a port of a hub or switch to which the server is connected fails, the server is disconnected from the network.

The Redundant Transceiver has three ports: one for the critical (main) device, one for the default (primary) path for the critical device, and another (backup) for the backup path. It is a smart device that will not send any signal on a path that is not active. If the primary path loses its link, then the transceiver will immediately (in less than one microsecond) switch to the backup path.

When the primary path re-establishes its link, the Redundant Link Protector will automatically switch back to the primary path.

Optional functionality, controlled via a dip switch, allows the unit to move from the fault-tolerant mode to a 3-port switch mode.

Fault-Tolerant Redundant Connections



Specifications

Standards	IEEE Std. 802.3
RJ-45 Connectors Type: 8-position, RJ-45 receptacle: 1: TX+ 5: NC (no connection) 2: TX- 6: RX- 3: RX+ 7: NC (no connection) 4: NC (no connection) 8: NC (no connection)	
Dip Switches	**SW1:** Auto-Negotiation Enable/Disable **SW2:** 10/100Mbps **SW3:** Full/Half Duplex **SW4:** Redundancy/Switch
System LEDs	**Power (PWR):** Indicates the presence of POWER **Primary (PRI):** Indicates a link is established on the Primary port **Backup (BKP):** Indicates the link has moved over to the Backup port.
Per Port LEDs	**Lower Right:** Green indicates 100Mbps; Orange indicates 10Mbps; Flashing indicates Activity **Lower Left:** Green indicates full-duplex; Off half-duplex
Dimensions	**Width:** 3.25" [82 mm] **Depth:** 4.8" [122 mm] **Height:** 1.0" [25 mm]
Power	**Domestic** Input: 120 VAC @ 60 Hz. Output: 12 VDC, 0.5 Amp **International** Input: 100 – 240 VAC @ 50 Hz. Output: 12 VDC, 1.25 Amp
Operating temperature	0 – 50°C (32°F – 122°F)
Storage temperature	-15°C – 65°C (-5°F – 149°F)
Relative humidity	5% – 95%
Altitude	0 – 10,000 ft.
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply:** UL Listed & CSA Certified
Regulatory Compliance	FCC Class A, EN55024, UL 60950, CE Mark
Warranty	Lifetime

Ordering Info

SBFTF1010-130
10/100BASE-TX Link Protector Transceiver

(3) 10/100BASE-TX (RJ-45) **[100 m]**

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-PS *(see page 72)*
Piggy Back Power Supply

SPS-1872-SA *(see page 72)*
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBD-F *(see page 70)*
DIN Rail Bracket (flat) 3.3" [84 mm]

WMBL *(see page 70)*
Wall Mount Bracket 4.0" [102 mm]

WMBV *(see page 70)*
Vertical Wall Mount Bracket 5.0" [127 mm]

See Also:

- 10/100 Redundant Link Protector Point System™ Slide-In-Module Media Converters

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10/100 Bridging 10/100BASE-TX to 100BASE-FX

10/100 Bridging Media Converter

- Extend network distance up to 120 KM
  Bridging media converters will provide conversion and integration solutions for half and full-duplex environments.
- 10Mbps or 100Mbps on all TP ports
- Half or full-duplex on all ports including fiber

SBFTF10xx-10x

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high speed serial
rs232
rs422/485
t1/e1
pots 2-wire
video
industrial

Features

- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- Link Pass Through *(see page 15)*
- Far End Fault (FEF) Detection *(see page 14)*
- Each port fully manageable
- Automatic Link Restoration *(see page 16)*

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™
Data Rate	10Mbps; 100Mbps
Filtering Addresses	4K MAC addresses
Filtering & Forwarding Rate	14,880pps for Ethernet; 148,800pps for Fast Ethernet
RAM Buffers	256KB
Switches	**SW1 (TP):** Auto-Negotiation On/Off **SW2 (TP):** 10Mbps or 100Mbps with Auto-Negotiation Off **SW3 (TP):** Half or Full-duplex with Auto-Negotiation Off **SW4 (Fiber):** Half or Full-duplex **SW5:** AutoCross™ On/Off **SW6:** Link Pass Through On/Off
Status LEDs	**PWR (Power):** On = connection to external power **FD (Fiber Duplex):** On = Full-duplex; Off = Half-duplex **LACT (Fiber Link/Activity):** On = Link; Blinking = Activity **Duplex/Link (Copper):** On (Yellow) = Half-duplex Link; Blinking (Yellow) = Half-duplex Activity; On (Green) = Full-duplex Link; Blinking (Green) = Full-duplex Activity **Speed (Copper):** Yellow = 10 Mbps; Green = 100 Mbps
Dimensions	**Width:** 3.25" [82 mm] **Depth:** 4.8" [122 mm] **Height:** 1.0" [25 mm]
Power	External AC/DC; 12VDC, 0.8A min
Environment	0 – 50°C; 5% – 90% humidity non-condensing; 0 – 10,000 feet altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply:** UL Listed
Regulatory Compliance	FCC Class A, VCCI Class 1, CISPR22/EN55022 Class A, EN55024, EN61000, CE Mark
Warranty	Lifetime

See Also:

- 10/100 Bridging Point System™ Slide-In-Module Media Converters
  page 43 - 46

Ordering Info [Class B]

See pages 171–181 for complete fiber optic connector specs.

SBFTF1011-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1300nm MM (ST)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

SBFTF1013-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

SBFTF1039-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1300nm MM (LC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

SBFTF1018-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1300nm MM (MT-RJ)
[2 km / 1.2 mi.] Link Budget: 14.5 dB

SBFTF1014-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

SBFTF1019-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1310nm SM (LC)
[20 km/12.4 mi.] Link Budget: 17.3 dB

SBFTF1015-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1310nm SM (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

SBFTF1016-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1310nm SM (SC)
[60 km/37.3 mi.] Link Budget: 29.0 dB

SBFTF1017-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1550nm SM (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB

SBFTF1035-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1550nm SM (SC)
[120 km/74.6 mi.] Link Budget: 36.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

SBFTF1029-100
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1310nm TX/1550nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

SBFTF1029-101
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1550nm TX / 1310nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

SBFTF1029-102
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1310nm TX / 1550nm RX single fiber SM (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

SBFTF1029-103
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1550nm TX / 1310nm RX single fiber SM (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

SBFTF1029-104
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1310nm TX / 1550nm RX single fiber SM (SC)
[60 km/37.3 mi.] Link Budget: 28.0 dB

SBFTF1029-105
10/100BASE-TX (RJ-45)
[100 m / 328 ft.]
to 100BASE-FX 1550nm TX / 1310nm RX single fiber SM (SC)
[60 km/37.3 mi.] Link Budget: 27.0 dB

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-PS *(see page 72)*
Piggy Back Power Supply

SPS-1872-SA *(see page 72)*
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBD-F *(see page 70)*
DIN Rail Bracket (flat) 3.3" [84 mm]

WMBL *(see page 70)*
Wall Mount Bracket 4.0" [102 mm]

WMBV *(see page 70)*
Vertical Wall Mount Bracket 5.0" [127 mm]

10/100 Bridging 10/100BASE-TX to 100BASE-FX Multiport

Table of Contents
Select Media Converter
Select Switch

10/100 Bridging Multiport Media Converter

AUTO NEG | AUTO CROSS | FAR END FAULT | AUTO LINK RESTORE | SOURCE ADDRESS CHANGE

SBFTF10xx-1xx

- Extend network distance up to 120 km

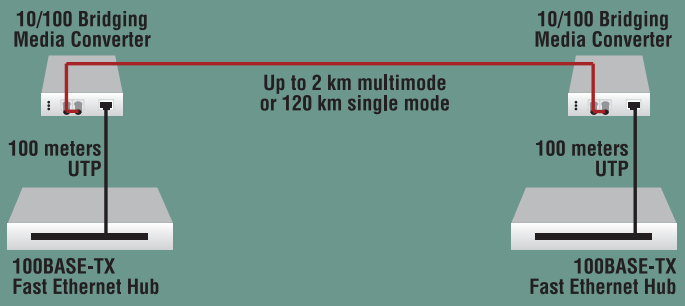
Bridging media converters will provide conversion and integration solutions for half-duplex and full-duplex environments.

Features

- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- 10Mbps or 100Mbps on all TP ports
- Half or full-duplex on all ports including fiber
- Far End Fault (FEF) Detection *(see page 14)*
- Each port fully manageable
- Individual switches for both TP ports *(-110 only)*
- LED indications for all operation modes
- Automatic Link Restoration *(see page 16)*
- Source Address Change (SAC) *(see page 17)*
- Fiber Redundancy Mode *(-140 only)*

When failure on primary fiber occurs it is detected by a converter; fiber two (secondary) is activated and becomes the primary link. The original fiber link (1) is put in the disabled state. It becomes secondary until the failure on primary fiber occurs.

Extend Network Distance



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™
Data Rate	10Mbps; 100Mbps
Filtering Addresses	4K MAC addresses
Filtering & Forwarding Rate	14,880pps for Ethernet; 148,800pps for Fast Ethernet
RAM Buffers	256KB
Switches	**SW1 (TP1):** Auto-Negotiation On/Off **SW2 (TP1):** 10Mbps or 100Mbps with Auto-Negotiation Off **SW3 (TP1):** Half or Full-duplex with Auto-Negotiation Off **SW4 (Fiber1):** Half or Full-duplex **SW5:** AutoCross™ On/Off **SW6:** Fiber Redundancy On/Off (xBFTF10xx-14x only) **SW7 (TP2):** Auto-Negotiation On/Off **SW8 (TP2):** 10Mbps or 100Mbps with Auto-Negotiation Off **SW9 (TP2):** Half or Full-duplex with Auto-Negotiation Off **SW10 (TP2):** Monitor On/Off
Status LEDs	PWR (Power) FD (Fiber Duplex) LACT (Fiber Link/Activity) Duplex/Link (Copper) Speed (Copper)
Dimensions	**SBFTF10xx-11x:** Width: 3.25" [82 mm] Depth: 4.8" [122 mm] Height: 1.0" [25 mm] **SBFTF10xx-12x & -14x:** Width: 3.25" [82 mm] Depth: 4.8" [122 mm] Height: 2.0" [50 mm]
Power	External AC/DC; 12VDC, 0.8A min
Environment	0 – 50°C; 5% – 90% humidity non-condensing; 0 – 10,000 feet altitude
Shipping Weight	3 lbs. [1.35 kg]
Safety Compliance	**Wall Mount Power Supply:** UL Listed
Regulatory Compliance	FCC Class A, VCCI Class 1, CISPR22/EN55022 Class A, EN55024, EN61000, CE Mark
Warranty	Lifetime

See Also:

- 10/100 Bridging Point System™ Slide-In-Module Media Converters

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Ordering Info

See pages 171–181 for complete fiber optic connector specs.

SBFTF1011-110
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1300nm multimode (ST)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

SBFTF1013-110
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1300nm multimode (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

SBFTF1018-110
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1300nm multimode (MT-RJ)
[2 km / 1.2 mi.] Link Budget: 14.5 dB

SBFTF1014-110
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1310nm single mode (SC)
[20 km / 12.4 mi.] Link Budget: 16.0 dB

SBFTF1015-110
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1310nm single mode (SC)
[40 km / 24.9 mi.] Link Budget: 26.0 dB

SBFTF1016-110
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1310nm single mode (SC)
[60 km / 37.3 mi.] Link Budget: 29.0 dB

SBFTF1017-110
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1550nm single mode (SC)
[80 km / 49.7 mi.] Link Budget: 29.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

SBFTF1029-110
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC)
[20 km / 12.4 mi.] Link Budget: 19.0 dB

SBFTF1029-111
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km / 12.4 mi.] Link Budget: 19.0 dB

SBFTF1029-112
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km / 24.9 mi.] Link Budget: 25.0 dB

SBFTF1029-113
(2) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km / 24.9 mi.] Link Budget: 25.0 dB

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-PS ***(see page 72)***
Piggy Back Power Supply

SPS-1872-SA ***(see page 72)***
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 ***(see page 70)***
12-slot Media Converter Rack

RMS19-SA4-01 ***(see page 71)***
4-slot Media Converter Shelf

WMBD ***(see page 70)***
DIN Rail Bracket 5.0" [127 mm]

WMBD-F ***(see page 70)***
DIN Rail Bracket (flat) 3.3" [84 mm]

WMBL ***(see page 70)***
Wall Mount Bracket 4.0" [102 mm]

WMBV ***(see page 70)***
Vertical Wall Mount Bracket 5.0" [127 mm]

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

SBFTF1011-120
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1300nm multimode (ST)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

SBFTF1013-120
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1300nm multimode (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

SBFTF1018-120
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1300nm multimode (MT-RJ)
[2 km / 1.2 mi.] Link Budget: 14.5 dB

SBFTF1014-120
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1310nm single mode (SC)
[20 km / 12.4 mi.] Link Budget: 16.0 dB

SBFTF1015-120
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1310nm single mode (SC)
[40 km / 24.9 mi.] Link Budget: 26.0 dB

SBFTF1016-120
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1310nm single mode (SC)
[60 km / 37.3 mi.] Link Budget: 29.0 dB

SBFTF1017-120
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1550nm single mode (SC)
[80 km / 49.7 mi.] Link Budget: 29.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

SBFTF1029-120
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC)
[20 km / 12.4 mi.] Link Budget: 19.0 dB

SBFTF1029-121
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km / 12.4 mi.] Link Budget: 19.0 dB

SBFTF1029-122
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km / 24.9 mi.] Link Budget: 25.0 dB

SBFTF1029-123
(5) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (1) 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km / 24.9 mi.] Link Budget: 25.0 dB

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-DPS ***(see page 72)***
Piggy Back Power Supply

SPS-1872-SA ***(see page 72)***
Stand-Alone Power Supply

Mounting Options:

WMBD ***(see page 70)***
DIN Rail Bracket 5.0" [127 mm]

WMBD-F ***(see page 70)***
DIN Rail Bracket (flat) 3.3" [84 mm]

WMBL ***(see page 70)***
Wall Mount Bracket 4.0" [102 mm]

WMBV ***(see page 70)***
Vertical Wall Mount Bracket 5.0" [127 mm]

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

SBFTF1011-140
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1300nm multimode (ST)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

SBFTF1013-140
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1300nm multimode (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

SBFTF1018-140
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1300nm multimode (MT-RJ)
[2 km / 1.2 mi.] Link Budget: 14.5 dB

SBFTF1014-140
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1310nm single mode (SC)
[20 km / 12.4 mi.] Link Budget: 16.0 dB

SBFTF1015-140
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1310nm single mode (SC)
[40 km / 24.9 mi.] Link Budget: 26.0 dB

SBFTF1016-140
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1310nm single mode (SC)
[60 km / 37.3 mi.] Link Budget: 29.0 dB

SBFTF1017-140
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1550nm single mode (SC)
[80 km / 49.7 mi.] Link Budget: 29.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

SBFTF1029-140
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC)
[20 km / 12.4 mi.] Link Budget: 19.0 dB

SBFTF1029-141
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km / 12.4 mi.] Link Budget: 19.0 dB

SBFTF1029-142
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km / 24.9 mi.] Link Budget: 25.0 dB

SBFTF1029-143
(4) 10/100BASE-TX (RJ-45) [100 m / 328 ft.]
to (2) 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km / 24.9 mi.] Link Budget: 25.0 dB

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-DPS ***(see page 72)***
Piggy Back Power Supply

SPS-1872-SA ***(see page 72)***
Stand-Alone Power Supply

Mounting Options:

WMBD ***(see page 70)***
DIN Rail Bracket 5.0" [127 mm]

WMBD-F ***(see page 70)***
DIN Rail Bracket (flat) 3.3" [84 mm]

WMBL ***(see page 70)***
Wall Mount Bracket 4.0" [102 mm]

WMBV ***(see page 70)***
Vertical Wall Mount Bracket 5.0" [127 mm]

10/100 Bridging Just Convert-IT™ 10/100BASE-TX to 100BASE-FX

10/100 Bridging Media Converter

- Unit & Port LEDs allow for quick status information
- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- Ability to force 10Mbps or 100Mbps (TP port) and full or half-duplex on both copper and fiber.
- Automatic Link Restoration *(see page 16)*

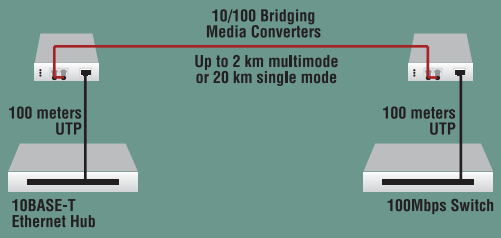
J/E-PSW-FX-02(xx)

Table of Contents
Select Media Converter
Select Switch

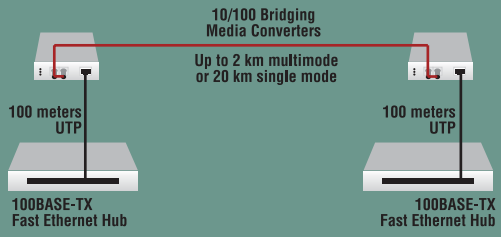
The "Just Convert-It™" Bridging Media Converter is an inexpensive, no frills way to extend the distance between connections with different speeds or duplex using fiber optic cable, while maintaining the same quality and reliability found on Transition's full-featured line of products.

10/100 Bridging

Connect Legacy Networking Equipment
Connect an existing 10Mbps device to 100Mbps devices.



Eliminate Collision Domains
Connect two half-duplex hubs with a full-duplex connection over fiber containing no collisions.



Specifications

Standards	IEEE Std. 802.3™, IEEE Std. 802.3ab™
Switches	**SW1:** Auto-Negotiation (UP = enable) **SW2:** Full/Half Duplex (Copper) (UP = full-duplex) **SW3:** Force Speed (Copper) (UP = 100Mbps) **SW4:** Full/Half Duplex (Fiber) (UP = full-duplex)
Dimensions	**Width:** 3.0" [76 mm] **Depth:** 3.9" [100 mm] **Height:** 1.0" [25 mm]
Status LEDs	**PWR:** Lit for normal operation **LNK Act (fiber):** Steady = Link; Flashing = Rx Data **FD (fiber duplex):** On = Full duplex **LNK Act (copper):** Steady = Link; Flashing = Rx Data **FD (copper duplex):** On = Full duplex **100 (copper speed):** On = 100Mbps
Power	External AC/DC required; +12VDC, 0.5 A min
Power Consumption	2.5 watts
Environment	0 – 50° C operating; 5% – 95% humidity non-condensing; 0 – 10,000 feet altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply:** UL Listed, C-UL Listed (Canada)
Regulatory Compliance	FCC Class A, CISPR22/EN55022 Class A, EN55024, CE Mark
Warranty	Lifetime

Ordering Info

J/E-PSW-FX-02
10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

J/E-PSW-FX-02(SC)
10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

J/E-PSW-FX-02(SM)
10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

J/E-PSW-FX-02(100)
10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm TX / 1550nm RX
single fiber single mode (SC)
[20 km/12.4 mi.] LB: 19.0 dB

J/E-PSW-FX-02(101)
10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1550nm TX / 1310nm RX
single fiber single mode (SC)
[20 km/12.4 mi.] LB: 19.0 dB

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-CC *(see page 72)*
Piggy Back Power Supply

SPS-1872-SA *(see page 72)*
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBD-FS *(see page 70)*
DIN Rail Bracket (flat, small) 3.1" [79 mm]

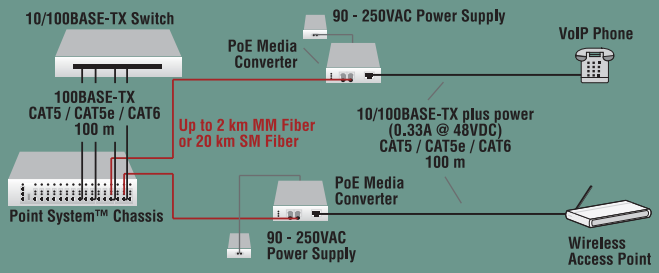
WMBS *(see page 70)*
Wall Mount Bracket 3.2" [81 mm]

Power over Ethernet PSE Media Converter

AUTO NEG | AUTO CROSS | LINK PASS THROUGH | FAR END FAULT | AUTO LINK RESTORE

SPOEB10xx-100

Power over Cat5 to Remotely Located Devices



Enables enterprises to provide power to network devices over the existing CAT5 data connection.

Transition's AC powered PoE media converters combine data received over a fiber optic link with -48VDC power; providing power to Data Terminal Equipment (DTE) Power Devices (PD) over unshielded twisted pair cable. The PoE converters are Power Sourcing Equipment (PSE) and are fully compatible with Powered Devices (PD) that comply with the IEEE802.3af™: 2003 standard. The converters also include a PD signature sensing and power monitoring features per the IEEE 802.3af standard. Other features include Over-Current Protection, Under-Current Detection and Fault Protection Input.

This feature enhanced model offers the ability to enable/disable many of the features as well as force port capabilities (see switch section under specifications to the right).

In addition, with the PSE/LPT switch enabled, a loss of Fiber RX will disable PSE power output on the UTP port for 2 seconds to allow remote device to re-initialize.

The PoE converter is fully compatible with devices that comply with the IEEE802.3af standard. The PoE converter is capable of inserting power on data pairs of the MDI.

Features

- External AC power supply
- IEEE802.3af Power Over Ethernet Compatible
- 48 VDC PSE Output Voltage
- Signal Pair Power Insertion
- PD Detection Signature
- Over-Current Protection & Under-Current Detection
- Powered Device Reset
- Switch selectable features and port settings
- Minimum Load Sensing
- Fault Protection Input
- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- Link Pass Through *(see page 15)*
- Far End Fault (FEF) *(see page 14)*
- Automatic Link Restoration *(see page 16)*

Specifications

Standards	IEEE Std. 802.3™, IEEE Std. 802.3af
Switches	**SW1:** Auto-Negotiation On/Off **SW2:** Speed TP: Force 10Mbps or 100Mbps (SW1 off) **SW3:** Duplex TP: Force Half or Full Duplex (SW1 off) **SW4:** Duplex Fiber: Half or Full Duplex **SW5:** AutoCross™ On/Off **SW6:** PSE On/Off **SW7:** PSE/LPT on/off **SW8:** Unused
Dimensions	**Width:** 3.25" [82 mm] **Depth:** 4.8" [120 mm] **Height:** 1.0" [25 mm]
Power	90 – 250VAC external power supply
Power Consumption	20W max.
Operating Temperature	0 – 40°C [32° – 104°F]
Storage Temperature	-25° to +85°C [-13° to +185°F]
Environment	5% – 95% humidity non-condensing; 0 – 10,000 ft. altitude
Shipping Weight	2 lbs. [0.90 kg]
Compliance	EN55022:1994+A1:1996+A2:1997 Class A; FCC Part 15 Subpart B; UL 1950
Warranty	Lifetime

Ordering Info

SPOEB1011-100
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1300nm multimode (ST) **[2 km/1.2 mi.] Link Budget: 11.0 dB**

SPOEB1013-100
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1300nm multimode (SC) **[2 km/1.2 mi.] Link Budget: 11.0 dB**

SPOEB1014-100
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1310nm SM (SC) **[20 km/12.4 mi.] Link Budget: 16.0 dB**

SPOEB1015-100
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1310nm SM (SC) **[40 km/24.9 mi.] Link Budget: 26.0 dB**

SPOEB1016-100
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1310nm SM (SC) **[60 km/37.3 mi.] Link Budget: 29.0 dB**

SPOEB1017-100
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1550nm SM (SC) **[80 km/49.7 mi.] Link Budget: 29.0 dB**

SPOEB1035-100
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1310nm SM (SC) **[120 km/74.6 mi.] LB: 36.0 dB**

Single Fiber Products
Recommended use in pairs (see page 17)

SPOEB1029-100
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC) **[20 km/12.4 mi.] LB: 19.0 dB**

SPOEB1029-101
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC) **[20 km/12.4 mi.] LB: 19.0 dB**

Optional Accessories

(sold separately)

Mounting Options:

WMBD or WMBL ***(see page 70)***
Wall Mount Brackets

RMS19-SA4-01 ***(see page 71)***
4-slot Media Converter Shelf

Power Over Ethernet Just Convert-IT™ 10/100BASE-TX to 100BASE-FX

Power over Ethernet PSE Media Converter

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Select Media Converter
Select Switch

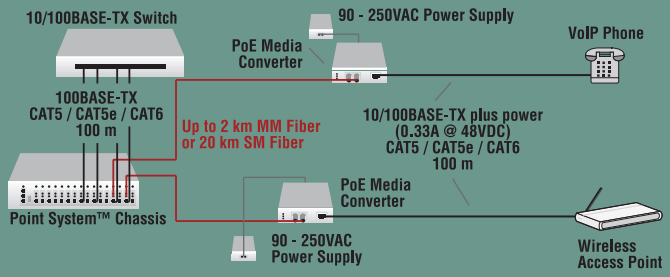
J/POE-CF-01(xx)

Enables enterprises to provide power to network devices over the existing CAT5 data connection.

Transition's AC powered PoE media converters combine data received over a fiber optic link with -48VDC power; providing power to Data Terminal Equipment (DTE) Power Devices (PD) over unshielded twisted pair cable. The PoE converters are Power Sourcing Equipment (PSE) and are fully compatible with Powered Devices (PD) that comply with the IEEE802.3af™: 2003 standard. The converters also include a PD signature sensing and power monitoring features per the IEEE 802.3af standard. Other features include Over-Current Protection, Under-Current Detection and Fault Protection Input.

The PoE converter is fully compatible with devices that comply with the IEEE802.3af standard. The PoE converter is capable of inserting power on data pairs of the MDI.

Power over Cat5 to Remotely Located Devices



Features

- External AC power supply
- IEEE802.3af Power Over Ethernet Compatible
- 48 VDC PSE Output Voltage
- Signal Pair Power Insertion
- PD Detection Signature
- Over-Current Protection
- Under-Current Detection
- Minimum Load Sensing
- Fault Protection Input
- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- Link Pass Through *(see page 15)*
- Far End Fault (FEF) *(see page 14)*
- Automatic Link Restoration *(see page 16)*

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™, IEEE Std. 802.3af
Max Packet Size	1522 bytes
MAC Addresses	2K
Status LEDs	**PWR:** Lit for normal operation **LACT (Fiber):** ON = Link; Blinking = Activity **DPX (Fiber):** ON = Full-duplex; OFF = Half-duplex; Blinking = collision **LACT (TP):** ON = Link; Blinking = Activity **SPD (TP):** ON = 100Mb/s; Off = 10Mb/s **DPX (TP):** ON = Full-duplex; OFF = Half-duplex; Blinking = Collision **ON (TP):** ON = PSE power being delivered **ERR (TP):** ON (solid) = main power over/under voltage; Blink 1/second: no signature detected; Blink 2/second: overload while applying power; Blink 3/second: short circuit detected; Blink 4/second: multiple problems detected
Dimensions	**Width:** 3.25" [82 mm] **Depth:** 4.8" [120 mm] **Height:** 1.0" [25 mm]
Power	External AC/DC required; 48V DC, 0.67A
Power Consumption	20W max.
Power Output	16.8W max.
Operating Temperature	0 – 40°C [32° – 104°F]
Storage Temperature	-25° to +85°C [-13° to +185°F]
Environment	5% – 95% humidity non-condensing; 0 – 10,000 ft. altitude
Shipping Weight	2 lbs. [0.90 kg]
Regulatory Compliance	EN55022:1994+A1:1996+A2:1997 Class A; FCC Part 15 Subpart B; UL 1950
Safety Compliance	**Wall Mount Power Supply:** UL Listed & CSA certified
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

J/POE-CF-01
10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

J/POE-CF-01(SC)
10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

J/POE-CF-01(SM)
[2 km/1.2 miles] Link Budget:
to 100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

Optional Accessories

(sold separately)

Mounting Options:

WMBD *(see page 70)*
DIN Rail Mount Bracket 5.0" [127 mm]

WMBL *(see page 70)*
Wall Mount Bracket 4.0" [102 mm]

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

10/100 Bridging 10/100BASE-TX to 100BASE-FX

Mini 10/100 Bridging Media Converter

AUTO NEG | AUTO CROSS | FAR END FAULT | LINK PASS THROUGH | AUTO LINK RESTORE

Mx/E-PSW-FX-01(xx)

mounting options
ethernet
fast ethernet
10/100 bridging
10/100/1000
gigabit ethernet
atm/oc-x
ds3-t3/e3
high speed serial
rs232
rs422/485
t1/e1
pots 2-wire
video
industrial

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Select Media Converter
Select Switch

Connect Legacy Networking Equipment

Connect an existing 10Mbps device to 100Mbps devices.

Eliminate Collision Domains

Separate Collision Domains while linking two half-duplex hubs with a collision free full-duplex connection over fiber.

The Mini Media Converters provide a cost-effective method for integrating fiber optic cabling into a 10/100 UTP environment. With its miniature size, the Mini offers a space saving alternative while it converts copper to fiber with the smallest footprint available in the industry.

Powering Options

Depending upon the unit, this plug-and-play media converter offers three methods for powering the unit. All Mini's can be powered with the included power adapter, while other options include powering through a USB port or though an 802.3af Power over Ethernet enabled RJ-45 port.* Two power options can be used simultaneously, providing the security of redundant power supplies. The Mini is available with either ST or SC fiber interfaces and is available for either multimode or single mode fiber.

**MP/E-PSW-FX-01(xx) supporting the IEEE 802.3af Power over Ethernet standard allows this converter to be a Powered Device (PD) and draw its power from Power Sourcing Equipment (PSE) that is also compliant with the IEEE 802.3af standard.*

Features

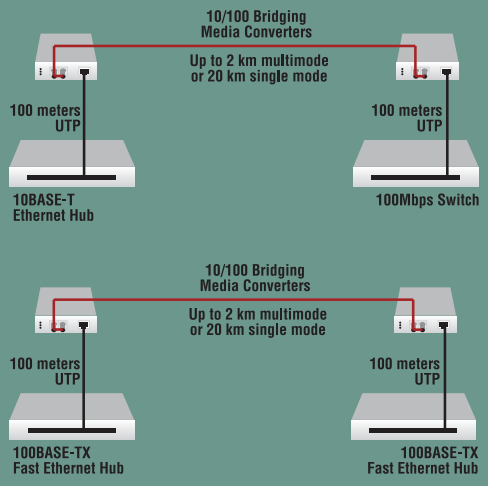
- Unit and Port LEDs allow for quick status information
- Auto-Negotiation *(see page 14)*
- Fixed Full-Duplex on fiber
- AutoCross™ *(see page 14)*
- Fixed Link Pass Through on POE and USB powered units *(see page 15)*
- Automatic Link Restoration *(see page 16)*
- Far End Fault on all three versions *(see page 14)*
- Powering Options: Standard power adapter; POE enabled RJ-45; or USB port

M/E-PSW-FX-01(xx) features:
- Auto-Negotiation
- AutoCross™
- Far End Fault

MP/E-PSW-FX-01(xx) features:
- Auto-Negotiation
- AutoCross™
- Link Pass Through
- Far End Fault
- POE PD

MU/E-PSW-FX-01(xx) features:
- Auto-Negotiation
- AutoCross™
- Link Pass Through
- Far End Fault

Connect Legacy Devices & Eliminate Collision Domains



Specifications

Standards	IEEE Std. 802.3™, 802.3af
Status LEDs	**PWR (Power):** (below RJ-45) ON = Link; Flashing = Activity **FX-Link/Act (Fiber Link/Activity):** (Upper Left on RJ-45) ON = Link; Flashing = Activity **TX-Link/Act (Copper Link/Activity):** (Upper Right on RJ-45) ON = Link; Flashing = Activity
Dimensions	**Width:** 1.8" [46 mm] **Depth:** 3.3" [85 mm] **Height:** 0.85" [22 mm]
Power Consumption	2.6 watts
Power Sources	Unit accepts 5VDC to 50VDC Wall Mount AC adapter: 12VCD 400mA USB connector: 5VDC TP connector IEEE802.3af PD device: 36 to 57 VDC
Operating Temp	0°C to 50°C (32°F to 122°F)
Storage Temp	-15°C to 65°C (-5°F to 149°F)
Humidity	5% – 95% humidity non-condensing
Altitude	0 – 10,000 ft. altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	Wall Mount Power Supply: UL Listed, C-UL Listed (Canada)
Regulatory Compliance	FCC Class A, CISPR22/EN55022 Class A, EN55024, CE Mark
Warranty	Lifetime

Ordering Info

Standard Power Adapter:

M/E-PSW-FX-01
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1300nm multimode (ST) **[2 km/1.2 mi.] Link Budget: 11.0 dB**

M/E-PSW-FX-01(SC)
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1300nm multimode (SC) **[2 km/1.2 mi.] Link Budget: 11.0 dB**

M/E-PSW-FX-01(SM)
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1310nm SM (SC) **[20 km/12.4 mi.] Link Budget: 16.0 dB**

M/E-PSW-FX-01(100)
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC) **[20 km/12.4 mi.] LB: 19.0 dB**

M/E-PSW-FX-01(101)
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC) **[20 km/12.4 mi.] LB: 19.0 dB**

Standard Power Adapter and POE enabled RJ-45 option (PD):

MP/E-PSW-FX-01
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1300nm multimode (ST) **[2 km/1.2 mi.] Link Budget: 11.0 dB**

MP/E-PSW-FX-01(SC)
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1300nm multimode (SC) **[2 km/1.2 mi.] Link Budget: 11.0 dB**

MP/E-PSW-FX-01(SM)
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1310nm SM (SC) **[20 km/12.4 mi.] Link Budget: 16.0 dB**

Standard Power Adapter and USB powered option:

MU/E-PSW-FX-01
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1300nm multimode (ST) **[2 km/1.2 mi.] Link Budget: 11.0 dB**

MU/E-PSW-FX-01(SC)
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1300nm multimode (SC) **[2 km/1.2 mi.] Link Budget: 11.0 dB**

MU/E-PSW-FX-01(SM)
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1310nm SM (SC) **[20 km/12.4 mi.] Link Budget: 16.0 dB**

MU/E-PSW-FX-01(100)
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1310nm TX / 1550nm RX single fiber single mode (SC) **[20 km/12.4 mi.] LB: 19.0 dB**

MU/E-PSW-FX-01(101)
10/100BASE-TX (RJ-45) **[100 m/328 ft.]** to 100BASE-FX 1550nm TX / 1310nm RX single fiber single mode (SC) **[20 km/12.4 mi.] LB: 19.0 dB**

10/100/1000 Ethernet Media Converter

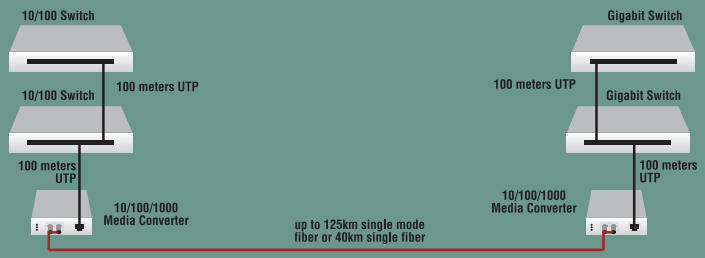
AUTO NEG | AUTO CROSS | LINK PASS THROUGH | AUTO LINK RESTORE | PAUSE

Extend Network Distance

This media converter offers a low-cost integration option for network managers who want to migrate from 10/100 networks to Gigabit Ethernet. Gigabit only switches can now be connected to 10/100 networks **up to 125 km** away over single mode fiber or up to 40 km over single fiber without the need to upgrade the 10/100 side; allowing network managers to add new equipment gradually.

In addition to the standard 220 meters with standard SX optics, Transition Networks also offers a proprietary solution that will allow users to transmit up to 2 km over multimode (62.5/125µm) fiber (xGFEB1024-100).

Extend Network Distance



SGFEB10xx-10x

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Select Media Converter
Select Switch

Features

- Auto-Negotiation *(see page 14)*
- Switch-selectable speeds on copper when Auto-Negotiation is off
- AutoCross™ on TX port *(see page 14)*
- Link Pass Through *(see page 15)*
- Automatic Link Restoration *(see page 16)*
- Pause *(see page 15)*
- Remote Fiber Fault Detection

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3ab & IEEE Std. 802.3™
Data Rate	**Copper:** 10/100/1000 Mbps **Fiber:** 1000 Mbps
Max. Packet Size	1536 bytes
RAM Buffers	256K
Filtering Addresses	4K MAC Addresses
Dip Switches	**Switch 1:** TX - AutoNeg Enable/Disable **Switch 2:** TX - Force 10Mbs or 100Mbs with AutoNeg off **Switch 3:** TX - Force Half or Full duplex with AutoNeg off **Switch 4:** FBR - AutoNeg Enable/Disable **Switch 5:** not used **Switch 6:** LPT Enable/Disable
Jumpers	**Jumper (ED):** Enable/Disable AutoCross™
Status LEDs	**TP (Duplex/Link/Activity):** Yellow: ON = Half-Duplex Link; BLINK = Activity Green: ON = Full-Duplex Link; BLINK = Activity **TP (10Mbs/100Mbs/1000Mbs):** Off = 10Mbs; Yellow = 100Mbs; Green = 1000Mbs **PWR (Power):** Green: ON = Power applied to board **LACT (Fiber Link/Activity):** Green: ON = Link; BLINK = Activity **DPX (Fiber Duplex):** Green: ON = Full; OFF = Half
Dimensions	**Width:** 3.25" [82 mm] **Depth:** 4.8" [122 mm] **Height:** 1.0" [25 mm]
Power	External AC/DC required: 12V DC, 1.25 A, unregulated, standard
Power Consumption	8 watts
Environment	0 – 50°C operating, 5% – 95% humidity non-condensing, 0 – 10,000 feet altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply:** UL listed & CSA certified
Regulatory Compliance	FCC Class A, CISPR/EN55022 Class A, EN55024, ICES-003, CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

SGFEB1013-100
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-SX 850nm multimode (SC)
[62.5/125µm fiber: 220 m/722 ft.]
Link Budget: 7.0 dB
[50/125µm fiber: 550 m/1804 ft.]
Link Budget: 7.0 dB

SGFEB1024-100
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-SX 1310nm Extended MM (62.5/125 µm fiber only) (SC)
[up to 2 km] Link Budget: 7.0 dB

SGFEB1014-100
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-LX 1310nm SM (SC)
[10 km/6.2 mi.] Link Budget: 7.0 dB

SGFEB1015-100
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-LX 1310nm SM (SC)
[25 km/15.5 mi.] Link Budget: 15.0 dB

SGFEB1017-100
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-LX 1550nm SM (SC)
[65 km/40.4 mi.] Link Budget: 20.0 dB

SGFEB1035-100
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-LX 1550nm SM (SC)
[125 km/77.7 mi.] Link Budget: 27.0 dB

SGFEB1040-100
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-X SFP Slot (empty)
See right for SFP Modules.

Single Fiber Products
Recommended use in pairs (see page 17)

SGFEB1029-100
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-LX 1310nm TX / 1550nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 13.0 dB

SGFEB1029-101
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-LX 1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 13.0 dB

SGFEB1029-102
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-LX 1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 20.0 dB

SGFEB1029-103
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-LX 1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 20.0 dB

See Pages 135 & 136 for Compatible SFP Modules.

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:
SPS-1872-PS or SPS-1872-SA ***(see page 72)***

Mounting Options:

E-MCR-04 ***(see page 70)***
12-slot Media Converter Rack

WMBD ***(see page 70)***
DIN Rail Mount Bracket 5.0" [127 mm]

WMBL ***(see page 70)***
Wall Mount Bracket 4.0" [102 mm]

RMS19-SA4-01 ***(see page 71)***
4-slot Media Converter Shelf

OAM/IP Remotely Managed 10/100/1000BASE-T to 1000BASE-X

Remotely Managed 10/100/1000 Converters

- Applications:
  - Ethernet in the First Mile (EFM)
  - Fiber to the Premise (FTTP), E-Line and E-LAN
  - Enterprise markets

SBFFG10xx-1xx

mounting options
ethernet
fast ethernet
10/100 bridging
10/100/1000
gigabit ethernet
atm/oc-x
ds3-t3/e3
high speed serial
rs232
rs422/485
t1/e1
pots 2-wire
video
industrial

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Select Media Converter
Select Switch

Features

- MEF 9 & MEF 14 Carrier Ethernet Certification
- Two selectable remote management modes:
  - IP-Based remote management
  - In-Band OAM 802.3ah (remote device managed by local peer)
- SNMP
- AutoCross™ *(see page 14)*
- Auto-Negotiation *(see page 14)*
- Pause *(see page 15)*
- Transparent Link Pass Through *(see page 15)*
- Far-End-Fault *(see page 14)*
- Remote Loopback *(see page 16)*
- Non-Intrusive Echo
- IEEE 802.1p™ QOS packet classification with 4 egress queues
- Ipv4 IP TOS and DiffServ QOS classification, IPv6 Traffic class
- IEEE 802.1q™ VLAN, 4096 entries
- Static MAC, 64 entries
- Double VLAN tagging (QinQ)
- VLAN Tunneling
- IEEE 802.1x™ Port based security
- RADIUS client
- RMON counters for each port
- Bandwidth allocation per port *(see page 16)*
- DMI Optical Management
- USB port for basic setup
- Cable diagnostic function for TP ports
- 8K MAC addresses
- Remote Firmware Upgrade *(see page 16)*

**Future firmware upgrade; Please contact Transition Networks for upgrade availability.*

See Also:

- OAM/IP-Based Remotely Managed Point System™ Slide-In-Module Media Converters

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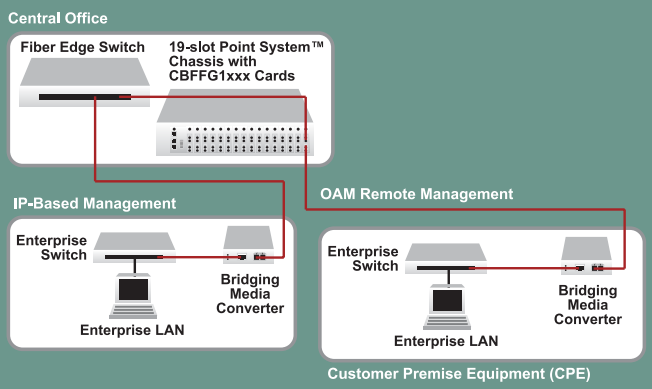
Remotely Manage 10/100/1000 Converters



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™, IEEE Std. 802.3ah, IEEE Std. 802.1P, IEEE Std. 802.1Q, IEEE Std. 802.1X
Data Rate	**Copper:** 10/100/1000 **Fiber:** 1000 Mbps
Filtering Addresses	8K MAC Addresses
RAM Buffers	256K (2 Mb)
Max Frame Size	**802.3ac tagged:** 1628 bytes **untagged:** 1632 bytes
Dimensions	**Width:** 3.25" [82 mm] **Depth:** 4.8" [122 mm] **Height:** 1.0" [25 mm]
Environment	0 – 50°C; 5% – 95% humidity non-condensing; 0 – 10,000 ft. altitude
Power	Input: 100-240 VAC, 1A Output: 12VDC, 1.25A
Shipping Weight	2 lbs. [0.90 kg]
Regulatory Compliance	CISPR/EN55022 Class B, EN55024, EN61000, FCC Class B, CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

SBFFG1013-100
10/100/1000B-T (RJ-45) **[100 m]**
to 1000BASE-SX 1300nm MM (ST)
[2 km/1.2 mi.] Link Budget: 7.0 dB

SBFFG1014-100
10/100/1000B-T (RJ-45) **[100 m]**
to 1000BASE-LX 1310nm SM (SC)
[10 km/6.2 mi.] Link Budget: 7.0 dB

SBFFG1015-100
10/100/1000B-T (RJ-45) **[100 m]**
to 1000BASE-LX 1310nm SM (SC)
[25 km/15.5 mi.] Link Budget: 15.0 dB

SBFFG1017-100
10/100/1000B-T (RJ-45) **[100 m]**
to 1000BASE-X 1550nm SM (SC)
[65 km/40.4 mi.] Link Budget: 21.0 dB

SBFFG1035-100
10/100/1000B-T (RJ-45) **[100 m]**
to 1000BASE-X 1550nm SM (SC)
[120 km/77.7 mi.] Link Budget: 27.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

SBFFG1029-100
10/100/1000B-T (RJ-45) **[100 m]**
to 1000BASE-BX-U 1310nm TX/1550nm RX Bi-Di SM (SC)
[20 km/12.4 mi.] Link Budget: 14.0 dB

SBFFG1029-101
10/100/1000B-T (RJ-45) **[100 m]**
to 1000BASE-BX-D 1550nm TX/1310nm RX Bi-Di SM (SC)
[20 km/12.4 mi.] Link Budget: 14.0 dB

SBFFG1029-102
10/100/1000B-T (RJ-45) **[100 m]**
to 1000BASE-LX 1310nm TX/1550nm RX Bi-Di SM (SC)
[40 km/24.8 mi.] Link Budget: 20.0 dB

SBFFG1029-103
10/100/1000B-T (RJ-45) **[100 m]**
to 1000BASE-LX 1550nm TX/1310nm RX Bi-Di SM (SC)
[40 km/24.8 mi.] Link Budget: 20.0 dB

Note: all units feature USB port for local management application.

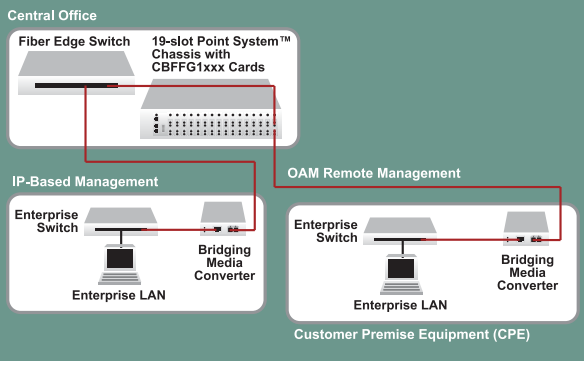
OAM/IP-Based Remotely Managed Media Converter

AUTO NEG | PAUSE | TRANSPARENT LINK PASS THROUGH | FAR END FAULT | LOOP BACK | BANDWIDTH ALLOCATION | REMOTE FIRMWARE UPGRADE | SINGLE FIBER

- Applications:
  - Ideal for Demarcation Services in FTTx
  - Ethernet in the First Mile (EFM)
  - Fiber to the Premise (FTTP), E-Line and E-LAN
  - Enterprise markets

SBFFG13xx-1xx

Remotely Manage 1000BASE Converters



Features

- MEF 9 & MEF 14 Carrier Ethernet Certification
- Two selectable remote management modes:
  - IP-Based remote management
  - In-Band OAM 802.3ah (remote device managed by local peer)
- SNMP v1, v2*
- Auto-Negotiation *(see page 14)*
- Pause *(see page 15)*
- Transparent Link Pass Through *(see page 15)*
- Far-End-Fault *(see page 14)*
- Remote Loopback *(see page 16)*
- IEEE 802.1p™ QOS packet classification with four egress queues
- Ipv4 IP TOS and DiffServ QOS classification, IPv6 Traffic class
- IEEE 802.1q™ VLAN, 4096 entries
- Static MAC, 64 entries
- Double VLAN tagging (QinQ)
- IEEE 802.1x™ Port based security
- RADIUS client
- RMON counters for each port
- Bandwidth allocation per port *(see page 16)*
- DMI Optical Management on -110 models
- USB port for basic setup
- 8K MAC addresses
- Remote Firmware Upgrade *(see page 16)*

**Future firmware upgrade; Please contact Transition Networks for upgrade availability.*

Specifications

See pages 171-181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™, IEEE Std. 802.3ah, IEEE Std. 802.1P, IEEE Std. 802.1Q, IEEE Std. 802.1X
Data Rate	**Fiber:** 1000BASE-X **Fiber 2:** 1000BASE-X
Filtering Addresses	8K MAC Addresses
RAM Buffers	256K (2 Mb)
Max Frame Size	802.3ac tagged: 1628 bytes untagged: 1632 bytes
Dimensions	**Width:** 3.25" [82 mm] **Depth:** 4.8" [122 mm] **Height:** 1.0" [25 mm]
Environment	0 – 50°C; 5% – 95% humidity non-condensing; 0 – 10,000 ft. altitude
Power	Input: 100-240 VAC, 1A Output: 12VDC, 1.25A
Shipping Weight	2 lbs. [0.90 kg]
Regulatory Compliance	CISPR/EN55022 Class B, EN55024, EN61000, FCC Class B, CE Mark
Warranty	Lifetime

See Also:

- OAM/IP-Based Remotely Managed Point System™ Slide-In-Module Media Converters
  pages 49 - 50

Ordering Info

See pages 171-181 for complete fiber optic connector specs.

SBFFG1313-100
SBFFG1313-110 (DMI Options)
1000BASE-SX 850nm MM (SC)
[220 m/722 ft.] or [550 m/1804 ft.]*
to 1000BASE-SX 850nm MM (SC)
[220 m/722 ft.] or [550 m/1804 ft.]*

SBFFG1314-100
SBFFG1314-110 (DMI Options)
1000BASE-SX 850nm MM (SC)
[220 m/722 ft.] or [550 m/1804 ft.]*
to 1000BASE-LX10 1310nm SM (SC)
[10 km / 6.2 miles]

SBFFG1315-100
SBFFG1315-110 (DMI Options)
1000BASE-SX 850nm MM (SC)
[220 m/722 ft.] or [550 m/1804 ft.]*
to 1000BASE-LX 1310nm SM (SC)
[30 km / 18.6 miles]

SBFFG1317-100
1000BASE-SX 850nm MM (SC)
[220 m/722 ft.] or [550 m/1804 ft.]*
to 1000BASE-LX 1550nm SM (SC)
[65 km / 40.4 miles]

SBFFG1335-100
1000BASE-SX 850nm MM (SC)
[220 m/722 ft.] or [550 m/1804 ft.]*
to 1000BASE-LX 1550nm SM (SC)
[120 km / 74.6 miles]

SBFFG3535-100
1000BASE-LX 1550nm SM (SC)
[120 km / 74.6 miles]
to 1000BASE-LX 1550nm SM (SC)
[120 km / 74.6 miles]

SBFFG1340-100
1000BASE-SX 850nm MM (SC)
[220 m/722 ft.] or [550 m/1804 ft.]*
to 1000BASE-X SFP Slot (Empty)

Single Fiber Products
Recommended use in pairs (see page 17)

SBFFG1329-100
SBFFG1329-110 (DMI Options)
1000BASE-SX 850nm MM (SC)
[220 m/722 ft.] or [550 m/1804 ft.]*
to 1000BASE-BX-U 1310nm TX / 1490nm RX single fiber SM (SC)
[20 km / 12.4 miles]

SBFFG1329-101
SBFFG1329-111 (DMI Options)
1000BASE-SX 850nm MM (SC)
[220 m/722 ft.] or [550 m/1804 ft.]*
to 1000BASE-BX-D 1490nm TX / 1310nm RX single fiber SM (SC)
[20 km / 12.4 miles]

***[220 m/722 ft.: 62.5/125µm fiber]**
***[550 m/1804 ft.: 50/125µm fiber]**

10/100/1000 802.3ah Bridging Media Converter

AUTO NEG | AUTO CROSS | TRANSPARENT LINK PASS THROUGH | AUTO LINK RESTORE | PAUSE | REMOTE MGMT | LOOP BACK | BANDWIDTH ALLOCATION | REMOTE FIRMWARE UPGRADE

Applications

- Ethernet in the First Mile (EFM)
- Fiber to the Premise (FTTP), E-Line and E-LAN
- Enterprise markets

Features

- IEEE 802.3ah™ compliant
- In-band OAM management (Operation, Administration & Maintenance)
- 10/100/1000Mbs Auto-Negotiation or forced mode operation on the TP interface *(see page 14)*
- Fiber Auto-Negotiation enable/disable to support legacy devices *(see page 14)*
- AutoCross™ *(see page 14)*
- Transparent Link Pass Through *(see page 15)*
- QoS Management
- 802.1Q VLAN Tagging
- Static VLANs
- Remote Link Loss detection & notification
- RMON Statistics
- Automatic Link Restoration *(see page 16)*
- Symmetric and Asymmetric Pause *(see page 15)*
- Remote Loopback assists in diagnosing network problems (per 802.3ah) *(see page 16)*
- Bandwidth allocation: Upstream and downstream in 64KB increments *(see page 16)*
- Remote Firmware Upgrade *(see page 16)*
- DMI management interface for optical monitoring of temperatures and power on -110 models.
- Basic management including Discovery & Loopback; available when connected to third party 802.3ah compliant fiber switch.

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™; IEEE Std. 802.3ah™; IEEE Std. 802.1P; IEEE Std. 802.1Q
Data Rate	**Copper:** 10/100/1000 Mbps **Fiber:** 1000 Mbps
Filtering Addresses	4K MAC Addresses
RAM Buffers	256K (2 Mbps)
Status LEDs	**TP (Duplex/Link/Activity)**: Yellow: ON = Half-Duplex Link; BLINK = Activity Green: ON = Full-Duplex Link; BLINK = Activity **TP (10Mbs/100Mbs/1000Mbs)**: Off = 10Mbs; Yellow = 100Mbs; Green = 1000Mbs **PWR (Power):** Green: ON = Power applied to board **LACT (Fiber Link/Activity)**: Green: ON = Link; BLINK = Activity **FD (Fiber Duplex):** Green: ON = Full; OFF = Half
Dimensions	**Width**: 3.25" [82 mm] **Depth**: 4.8" [122 mm] **Height**: 1.0" [25 mm]
Power	External AC/DC required: 12V DC, 1.25A, unregulated, standard
Power Consumption	5.1 watts
Environment	0 – 50°C operating, 5% – 95% humidity non-condensing, 0 – 10,000 ft. altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply**: UL and C-UL listed (Canada)
Regulatory Compliance	FCC Class A, CISPR/EN55022 Class A, EN55024, EN61000, CE Mark
Warranty	Lifetime

SMEFG10xx-1xx

mounting options
ethernet
fast ethernet
10/100 bridging
10/100/1000
gigabit ethernet
atm/oc-x
ds3-t3/e3
high speed serial
rs232
rs422/485
t1/e1
pots 2-wire
video
industrial

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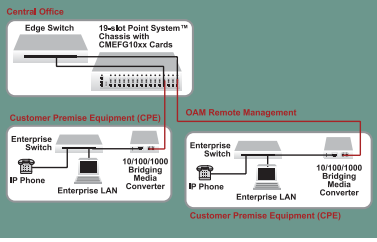
Select Media Converter
Select Switch

Remotely Manage 10/100/1000 Converters



Must be used with the Point System™ Chassis Card CMEFG10xx-1xx for full management capability including Bandwidth Provisioning, Digital Diagnostics & remote firmware upgrades.

Ordering Info

See pages 171–181 for complete fiber optic connector specs.
Note: All stand-alone models also have a DB-9 serial interface to management

SMEFG1013-100: Link Budget: 7.0 dB
SMEFG1013-110 (with DMI mgmt.)
Link Budget: 8.5 dB
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-SX 850nm multimode (SC)
[62.5/125 µm: 220 m/722 ft.]
[50/125 µm: 550 m/1804 ft.]

SMEFG1039-100
SMEFG1039-110 (with DMI mgmt.)
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-SX SFP Bundle: 850nm multimode (LC)
[62.5/125 µm: 220 m/722 ft.]
Link Budget: 7.5 dB
[50/125 µm: 550 m/1804 ft.]
Link Budget: 7.5 dB

SMEFG1019-100
SMEFG1019-110 (with DMI mgmt.)
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-LX SFP Bundle: 1310nm single mode (LC)
[10 km/6.2 mi.] Link Budget: 11.5 dB

SMEFG1014-100: Link Budget: 7.0 dB
SMEFG1014-110 (with DMI mgmt.)
Link Budget: 12.0 dB
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-LX-10 1310nm SM (SC)
[10 km/6.2 mi.]

SMEFG1015-100: Link Budget: 15.0 dB
SMEFG1015-110 (with DMI mgmt.)
Link Budget: 19.0 dB
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-LX 1310nm SM (SC)
[30 km/18.6 mi.]

SMEFG1017-100
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-LX 1550nm SM (SC)
[65 km/40.4 mi.] Link Budget: 21.0 dB

SMEFG1035-100
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-LX 1550nm SM (SC)
[120 km/74.6 mi.] Link Budget: 27.0 dB

SMEFG1040-100
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-X SFP Slot (empty)
See page 121 for SFP modules.

Single Fiber Products
Recommended use in pairs (see page 17)

SMEFG1029-100: Link Budget: 14.0 dB
SMEFG1029-110 (with DMI mgmt.)
Link Budget: 11.0 dB
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-BX-U 1310nm TX / 1490nm RX single fiber single mode (SC)
[20 km/12.4 mi.]

SMEFG1029-101: Link Budget: 14.0 dB
SMEFG1029-111 (with DMI mgmt.)
Link Budget: 11.0 dB
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-BX-D 1490nm TX / 1310nm RX single fiber single mode (SC)
[20 km/12.4 mi.]

SMEFG1029-102
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-BX-U 1310nm TX / 1490nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 20.0 dB

SMEFG1029-103
10/100/1000BASE-T (RJ-45)
[100 m/328 ft.]
to 1000BASE-BX-D 1490nm TX / 1310nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 20.0 dB

Single fiber options for 40 km, 60 km, 80 km and 120 km are available upon request. Please contact Transition Networks.

Gigabit Ethernet 1000BASE-T to 1000BASE-SX/LX

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Select Media Converter
Select Switch

Gigabit Ethernet Media Converter

AUTO NEG · TRANSPARENT LINK PASS THROUGH · AUTO LINK RESTORE · PAUSE

- Migrate to Gigabit Ethernet in a cost-effective manner.

Used in conjunction with lower cost 1000BASE-T switches, companies can take advantage of the high bandwidth Gigabit Ethernet offers without all of the higher costs.

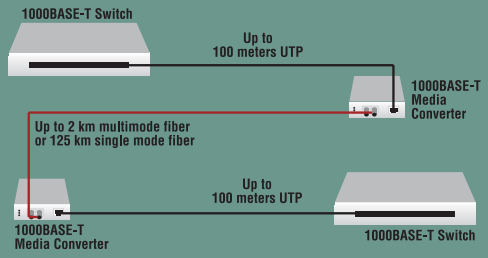
Transition Networks's 1000BASE-T to SX/LX converters allow users to extend the bandwidth to those users outside the reach of the 1000BASE-T standard **(up to 125 km)**.

SGETF10xx-110

Features

- Copper & Fiber Auto-Negotiation *(see page 14)*
- Transparent Link Pass Through *(see page 15)*
- Automatic Link Restoration *(see page 16)*
- Pause *(see page 15)*
- Remote Fault Detect *(see page 17)*

Migrate to Gigabit Ethernet



Specifications

Standards	IEEE Std. 802.3ab™ and IEEE Std. 802.3™
6-position Switch	**SW1:** Remote Fiber Fault Detect (Down=Enabled) **SW2:** Symmetric Pause **SW3:** Asymmetric Pause **SW4:** Transparent Link Pass Through (UP=Enabled) **SW5:** Fiber Auto-Negotiation (Down=Enabled) **SW6:** Loopback (Down=Enabled)
Status LEDs	**PWR** (Power): Steady green LED indicates connection to external AC power **RXF** (Fiber receive): Flashing LED indicates reception of data on fiber link **LKF** (Fiber link): Steady LED indicates fiber link connection **RXC** (Copper receive): Flashing LED indicates reception of data on copper link **LKC** (Copper link): Steady LED indicates copper link connection
Dimensions	**Width**: 3.25" [82 mm] **Depth**: 4.8" [122 mm] **Height**: 1.0" [25 mm]
Power	External AC/DC required; 12V DC, 1.5A; unregulated; standard
Environment	0 – 50° C operating; 5% – 95% humidity non-condensing; 0 – 10,000 feet altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply**: UL Listed, C-UL Listed (Canada)
Regulatory Compliance	FCC Class A, CISPR22/EN55022 Class A, EN55024, EN61000, CE Mark
Warranty	Lifetime

See Also:

- Point System™ Slide-In-Module Gigabit Ethernet Media Converters

page 52

Ordering Info

SGETF1013-110
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-SX 850nm MM (SC)
[62.5/125µm fiber: 220 m/722 ft.]
Link Budget: 7.0 dB
[50/125µm fiber: 550 m / 1804 ft.]
Link Budget: 7.0 dB

SGETF1024-110
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-SX 1300nm Extended MM (62.5/125 µm fiber only) (SC)
[2 km /1.2 miles] Link Budget: 7.0 dB

SGETF1039-110
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-SX 850nm MM (LC) (via TN-SFP-SX)
[62.5/125µm fiber: 220 m/722 ft.]
Link Budget: 8.0 dB
[50/125µm fiber: 550 m / 1804 ft.]
Link Budget: 8.0 dB

SGETF1014-110
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1310nm SM (SC)
[10 km/6.2 mi.] Link Budget: 7.0 dB

SGETF1015-110
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1310nm SM (SC)
[25 km/15.5 mi.] Link Budget: 15.0 dB

SGETF1017-110
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1550nm SM (SC)
[65 km/40.4 mi.] Link Budget: 20.0 dB

SGETF1035-110
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1550nm SM (SC)
[125 km/77.7 mi.] Link Budget: 27.0 dB

SGETF1040-110
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to SFP slot (empty)

Single Fiber Products
Recommended use in pairs (see next pages)

SGETF1029-110
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1310nm TX / 1550nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 13.0 dB

SGETF1029-111
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1550nm TX / 1310nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 13.0 dB

SGETF1029-112
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1310nm TX / 1550nm RX single fiber SM (SC)
[40 km/24.9 mi.] Link Budget: 20.0 dB

SGETF1029-113
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1550nm TX / 1310nm RX single fiber SM (SC)
[40 km/24.9 mi.] Link Budget: 20.0 dB

SGETF1029-116
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1510nm TX / 1590nm RX single fiber SM (SC)
[80 km/49.6 mi.] Link Budget: 24.0 dB

SGETF1029-117
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1590nm TX / 1510nm RX single fiber SM (SC)
[80 km/49.6 mi.] Link Budget: 24.0 dB

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-PS *(see page 72)*
Piggy Back Power Supply

SPS-1872-SA *(see page 72)*
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBD-F *(see page 70)*
DIN Rail Bracket (flat, small) 3.1" [79 mm]

WMBL *(see page 70)*
Wall Mount Bracket 4.0" [102 mm]

WMBV *(see page 70)*
Vertical Wall Mount Bracket 5.0" [127 mm]

Gigabit Ethernet Just Convert-IT™ 1000BASE-T to 1000BASE-SX/LX

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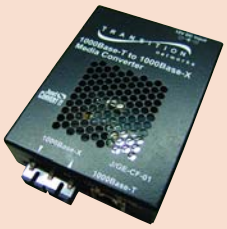
Select Media Converter
Select Switch

Gigabit Ethernet Media Converter

AUTO NEG · AUTO CROSS · AUTO LINK RESTORE

J/GE-CF-01(xxx)



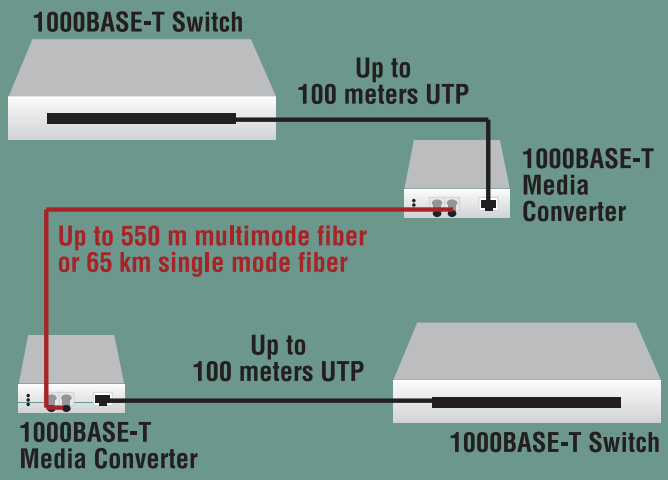
Convert 1000BASE-T ports over to 1000BASE-SX/LX on a port-by-port basis. Used individually or in pairs, this media converter can extend Gigabit Ethernet up to 2 km over multimode fiber or up to 65 km over single mode fiber.

The Just Convert-It™ 1000BASE-T to 1000BASE-SX/LX Media converter is an inexpensive, no frills way to extend the distance between Gigabit Ethernet connections with the use of fiber optic cable, while maintaining the same quality and reliability found on Transition's full-featured line of products.

Features

- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- Automatic Link Restoration *(see page 16)*

Extend Network Distance



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™ 2000
Status LEDs	**PWR (Power)**: Lit for normal operation **FLNK (Fiber Link)**: ON = fiber link **LACT (Link/Activity)**: ON = Copper link Flashing = Activity on copper link **DPX/COLL (Duplex/Collision)**: ON = Copper link Full-duplex OFF = Copper link Half-duplex; Flashing = Collisions on Half-duplex copper link
Dimensions	**Width**: 3.0" [76 mm] **Depth**: 4.0" [102 mm] **Height**: 1.0" [25 mm]
Power	External AC/DC included: 12 VDC, 0.4 A, unregulated
Power Consumption	3.2 watts
Environment	0 – 50°C operating, 5% – 95% humidity non-condensing, 0 – 10,000 feet altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply**: UL Listed and CSA certified
Regulatory Compliance	EN55024, CISPR22/EN55022 Class A, FCC Class A, CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

J/GE-CF-01(SX)
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-SX 850nm MM (SC)
220 m / 722 ft.] Link Budget: 7.0 dB
550 m / 1804 ft.] Link Budget: 7.0 dB

J/GE-CF-01(LX1)
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1310nm SM (SC)
[10 km/6.2 mi.] Link Budget: 10.5 dB

J/GE-CF-01(LX2)
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1310nm SM (SC)
[25 km/15.5 mi.] Link Budget: 15.0 dB

J/GE-CF-01(LX6)
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1550nm SM (SC)
[65 km/40.4 mi.] Link Budget: 21.0 dB

J/GE-CF-01(LX101)
1000BASE-T (RJ-45) **[100 m/328 ft.]**
to 1000BASE-LX 1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 13.0 dB

*62.5/125µm fiber: 220 m / 722 ft.
50/125µm fiber: 550 m / 1804 ft.

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-CC *(see page 72)*
Piggy Back Power Supply

SPS-1872-SA *(see page 72)*
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBD-FS *(see page 70)*
DIN Rail Bracket (flat, small) 3.1" [79 mm]

WMBS *(see page 70)*
Wall Mount Bracket 3.2" [81 mm]

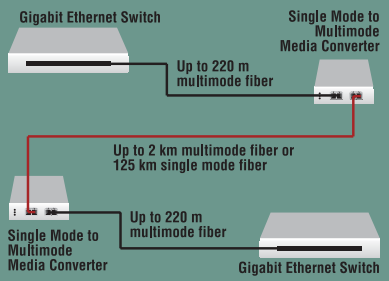
Table of Contents
Select Media Converter
Select Switch

Gigabit Ethernet/Fibre Channel Optical Mode Converter

- Link Pass Through (see *page 15)*
- Automatic Link Restoration (*see page 16)*
- Protocol Transparency
- Convert 1000BASE-SX ports on a Gigabit Ethernet switch to 1000BASE-LX on a port-by-port basis.
- Ideal for campus area networks or other applications requiring the distance advantages of single mode fiber.

SFMFF1xxx-22x

Extend Network Distance



Used individually or in pairs, this media converter can extend 1000Mbps Gigabit Ethernet or Fibre Channel signals over single mode fiber **up to 125 km**.

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3—2000™
Status LEDs	**PWR (Power)**: Steady green LED indicates connection to external AC power **LKS (Single mode fiber link)**: Steady LED indicates single mode fiber link **LKM (Multimode fiber link)**: Steady LED indicates multimode fiber link
Dimensions	**Width**: 3.25" [82 mm] **Depth**: 4.8" [120 mm] **Height**: 1.0" [25 mm]
Power	External AC/DC required; 12V DC, 0.5A; unregulated; standard
Environment	0 – 50° C operating; 5% – 90% humidity non-condensing; 0 – 10,000 feet altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply**: UL and C-UL Listed (Canada)
Regulatory Compliance	FCC & CISPR Class A & B; CE Mark
Warranty	Lifetime

See Also:

- Point System™ Slide-In-Module Gigabit Ethernet/Fibre Channel Media Converters page 53

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

SFMFF1313-220
1000BASE-SX 850nm multimode (SC) **[62.5/125µm fiber: 220 m / 722 ft.] [50/125µm fiber: 550 m / 1804 ft.] Link Budget 7.5 dB**
to 1000BASE-SX 850nm multimode (SC) **[62.5/125µm fiber: 220 m / 722 ft.] [50/125µm fiber: 550 m / 1804 ft.] Link Budget 7.5 dB**

SFMFF1324-220
1000BASE-SX 850nm multimode (SC) **[62.5/125µm fiber: 220 m / 722 ft.] [50/125µm fiber: 550 m / 1804 ft.] Link Budget 7.0 dB**
to 1000BASE-LX 1310nm Extended MM (62.5/125µm fiber only) (SC) **[up to 2 km] Link Budget: 7.0 dB**

SFMFF1424-220
1000BASE-LX 1310nm SM (SC) **[10 km/6.2 mi.] Link Budget: 7.0 dB**
to 1000BASE-LX 1310nm Extended MM (62.5/125µm fiber only) (SC) **[up to 2 km] Link Budget: 7.0 dB**

SFMFF1314-220
1000BASE-SX 850nm multimode (SC) **[62.5/125µm fiber: 220 m / 722 ft.] [50/125µm fiber: 550 m / 1804 ft.] Link Budget: 7.0 dB**
to 1000BASE-LX 1310nm SM (SC) **[10 km/6.2 mi.] Link Budget: 7.0 dB**

SFMFF1414-220
1000BASE-LX 1310nm SM (SC) **[10 km/6.2 mi.] Link Budget: 7.0 dB**
to 1000BASE-LX 1310nm SM (SC) **[10 km/6.2 mi.] Link Budget: 7.0 dB**

SFMFF1315-220
1000BASE-SX 850nm multimode (SC) **[62.5/125µm fiber: 220 m / 722 ft.] [50/125µm fiber: 550 m / 1804 ft.] Link Budget: 7.0 dB**
to 1000BASE-LX 1310nm SM (SC) **[25 km/15.5 mi.] Link Budget: 15.0 dB**

SFMFF1317-220
1000BASE-SX 850nm multimode (SC) **[62.5/125µm fiber: 220 m / 722 ft.] [50/125µm fiber: 550 m / 1804 ft.] Link Budget: 7.0 dB**
to 1000BASE-LX 1550nm SM (SC) **[65 km/40.4 mi.] Link Budget: 20.0 dB**

SFMFF1335-220
1000BASE-SX 850nm multimode (SC) **[62.5/125µm fiber: 220 m / 722 ft.] [50/125µm fiber: 550 m / 1804 ft.] Link Budget: 7.0 dB**
to 1000BASE-LX 1550nm SM (SC) **[125 km/77.7 mi.] Link Budget: 27.0 dB**

Single Fiber Products
Recommended use in pairs (see page 17)

SFMFF1329-220
1000BASE-SX 850nm multimode (SC) **[62.5/125µm fiber: 220 m / 722 ft.] [50/125µm fiber: 550 m / 1804 ft.] Link Budget: 7.0 dB**
to 1000BASE-LX 1310nm TX / 1550nm RX single fiber single mode (SC) **[20 km/12.4 mi.] Link Budget: 13.0 dB**

SFMFF1329-221
1000BASE-SX 850nm multimode (SC) **[62.5/125µm fiber: 220 m / 722 ft.] [50/125µm fiber: 550 m / 1804 ft.] Link Budget: 7.0 dB**
to 1000BASE-LX 1550nm TX / 1310nm RX single fiber single mode (SC) **[20 km/12.4 mi.] Link Budget: 13.0 dB**

SFMFF1329-222
1000BASE-SX 850nm multimode (SC) **[62.5/125µm fiber: 220 m / 722 ft.] [50/125µm fiber: 550 m / 1804 ft.] Link Budget: 7.0 dB**
to 1000BASE-LX 1310nm TX / 1550nm RX single fiber single mode (SC) **[40 km/24.9 mi.] Link Budget: 20.0 dB**

SFMFF1329-223
1000BASE-SX 850nm multimode (SC) **[62.5/125µm fiber: 220 m / 722 ft.] [50/125µm fiber: 550 m / 1804 ft.] Link Budget: 7.0 dB**
to 1000BASE-LX 1550nm TX / 1310nm RX single fiber single mode (SC) **[40 km/24.9 mi.] Link Budget: 20.0 dB**

*62.5/125µm fiber: 220 m / 722 ft.
50/125µm fiber: 550 m / 1804 ft.

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-PS *(see page 72)*
Piggy Back Power Supply

SPS-1872-SA *(see page 72)*
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBD-F *(see page 70)*
DIN Rail Bracket (flat) 3.3" [84 mm]

WMBL *(see page 70)*
Wall Mount Bracket 4.0" [102 mm]

WMBV *(see page 70)*
Vertical Wall Mount Bracket 5.0" [127 mm]

Gigabit Media Converter with Signal Retiming & Regeneration

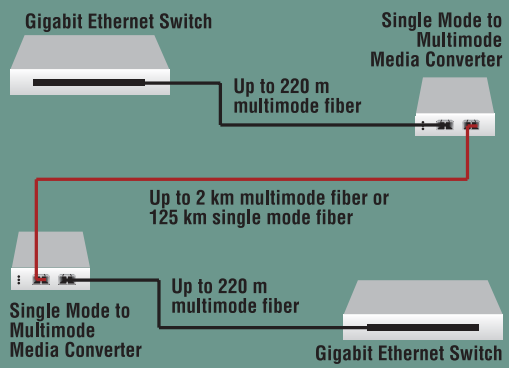
- Auto-Negotiation *(see page 14)*
- Link Pass Through *(see page 15)*
- Pause *(see page 15)*

SFMFF13xx-28x

Convert 1000BASE-SX ports over to 1000BASE-LX on a port-by-port basis. Used individually or in pairs, this media converter can extend Gigabit Ethernet over single mode fiber up to **125km**. Or cascade two or more converters in a link to achieve even greater distances.

Transition Networks' Gigabit Ethernet optical mode converters now include signal retiming, regeneration & re-amplification to maintain signal integrity and allow for maximum network distance without signal degradation. Distances of hundreds of kilometers are possible when cascading two or more devices in the same link.

Extend Network Distance



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™
Status LEDs	**PWR (Power)**: Lit for normal operation **LKS (Single Mode Fiber Link)**: ON = Fiber Link **LKM (Multimode Fiber Link)**: ON = Fiber Link **ACT (Activity)**: Blinking = data reception on either fiber link
Switches	**Switch 1**: Fiber Auto-Negotiation on/off **Switch 2**: Link Pass Through on/off **Switch 3&4**: Pause configuration determined by combined setting
Dimensions	**Width**: 3.25" [82 mm] **Depth**: 4.8" [120 mm] **Height**: 1.0" [25 mm]
Power	External AC/DC included; 12V DC, 0.5A; unregulated
Power Consumption	3.5 watts
Environment	0 – 50°C operating; 5% – 95% humidity non-condensing; 0 – 10,000 ft. altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply**: UL Listed and CSA certified
Regulatory Compliance	EN55024; CISPR22/EN55022 Class A; FCC Class A; CE Mark
Warranty	Lifetime

See Also:

- Point System™ Slide-In-Module Gigabit Ethernet Optical Mode Converters
page 54

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

SFMFF1324-280
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.0 dB
to 1000BASE-LX 1310nm Extended MM (SC) (62.5/125µm fiber only)
[up to 2 km] Link Budget: 7.0 dB

SFMFF1314-280
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.0 dB
to 1000BASE-LX 1310nm SM (SC)
[10 km/6.2 mi.] Link Budget: 7.0 dB

SFMFF1414-280
1000BASE-LX 1310nm SM (SC)
[10 km/6.2 mi.] Link Budget: 7.0 dB
to 1000BASE-LX 1310nm SM (SC)
[10 km/6.2 mi.] Link Budget: 7.0 dB

SFMFF1315-280
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.0 dB
to 1000BASE-LX 1310nm SM (SC)
[25 km/15.5 mi.] Link Budget: 15.0 dB

SFMFF1317-280
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.0 dB
to 1000BASE-LX 1550nm SM (SC)
[65 km/40.4 mi.] Link Budget: 21.0 dB

SFMFF1335-280
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.0 dB
to 1000BASE-LX 1550nm SM (SC)
[125 km/77.7 mi.] Link Budget: 27.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

SFMFF1329-280
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.5 dB
to 1000BASE-LX 1310nm TX / 1550nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 13.0 dB

SFMFF1329-281
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.0 dB
to 1000BASE-LX 1550nm TX / 1310nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 13.0 dB

SFMFF1329-282
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.0 dB
to 1000BASE-LX 1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 20.0 dB

SFMFF1329-283
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.0 dB
to 1000BASE-LX 1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 20.0 dB

SFMFF1329-286
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.0 dB
to 1000BASE-LX 1510nm TX / 1590nm RX single fiber single mode (SC)
[80 km/49.6 mi.] Link Budget: 24.0 dB

SFMFF1329-287
1000BASE-SX 850nm multimode (SC)
[220 m/722 ft.]* Link Budget: 7.0 dB
[550 m/1804 ft.]* Link Budget: 7.0 dB
to 1000BASE-LX 1590nm TX / 1510nm RX single fiber single mode (SC)
[80 km/49.6 mi.] Link Budget: 24.0 dB

*62.5/125µm fiber: 220 m / 722 ft.
50/125µm fiber: 550 m / 1804 ft.

Gigabit Ethernet Media Conversion 1000BASE-T to 1000BASE-SX

Table of Contents
Select Media Converter
Select Switch

Plug-n-Play Universal Module System

These new Gigabit Ethernet media conversion modules offer the highest density media converter solution on the market today and are the result of a co-development effort between Transition Networks and Corning Cabling Systems. Each electrical-to-optical (EO) module includes (12) 1000Base-T RJ-45 ports on the front and (2) 12-fiber MTP 1000Base-SX optical ports on the rear to extend transmission reach (up to 750m on 50/125um fiber) while drastically reducing bulky copper cabling. The modules compatibility with the Plug & Play™ Universal System, part of Corning's LANscape® Pretium™ Solution, offer virtually seamless integration into embedded fiber infrastructure.

CCH-MCMxx-xx-xxx

Features

- AutoCross™ *(see page 14)*
- Copper and Fiber Auto-Negotiation *(see page 16)*
- Automatic Link Restoration *(see page 16)*
- Link Pass Through *(see page 15)*
- Pause *(see page 15)*
- Hot-Swappable

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

CCH-MCM12-RJ-70S
(12) 1000BASE-T (RJ-45) to
(12) 1000BASE-SX
850nm Multimode MTP (2)
[50/125um fiber: 750 m/2460 ft.]
[62.5/125um fiber: 350 m/1148 ft.]
Link Budget: 8.5 dB

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std 802.3TM - 2005	
Status LEDs	**Port 1 (TP):**	ON green = TP Link ON orange = unit is operating over temperature range
	Port 2 (TP):	ON green = TP Link ON orange = No link but power is detected
	Port 4 (TP):	ON green = TP Link ON orange = Fan Fault
	Port 3, 5-12 (TP):	ON green = TP Link
	Port 1-12 (Fiber):	ON green = Fiber Link
Dimensions	**Width**: 1.4" [36 mm] **Depth**: 6.1" [155 mm] **Height**: 6.1" [155 mm]	
Power Consumption	17 watts, 1.41A @ 12VDC	
Maximum Packet Size	10KB	
MTBF	36,063 hours [MIL-217F2] 324,255 hours [Bellcore 7]	
Environment	0 – 40°C operating; -15°C – 65°C storage; 5-95% humidity non-condensing; 0-10,000 feet altitude	
Shipping Weight	2 lbs. [0.9 kg]	
Compliance	EN55024; CISPR22/EN55022 Class A; FCC Class A; CE Mark; UL60950	
Warranty	Lifetime	

Optical Line Converter with SFP Slots

Small Form Factor Pluggable Conversion

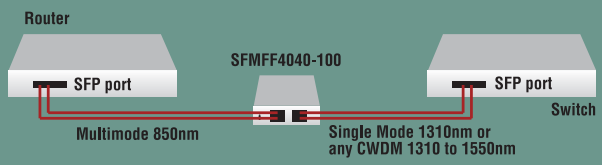
- Universal platform to accommodate any optical conversion options available via SFP interfaces.
- (2) SFP Slots for SFP interfaces
- Protocol Transparency

SFMFF4040-100

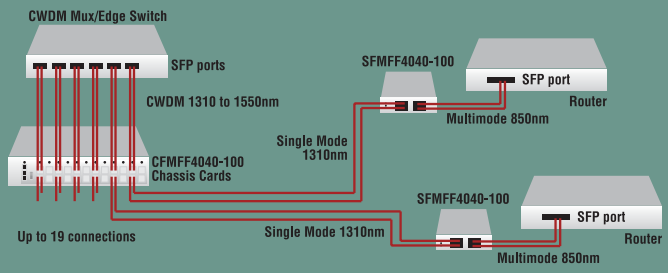
These converters offer an excellent upgrade path for networks. Today's Fast Ethernet applications can be upgraded to Gigabit speeds tomorrow with a simple SFP swap. The converter remains installed, managed and fully operational at any of these speeds.

Two SFP module slots allow for seamless connectivity between different wavelengths or fiber modes for speeds up to 1Gbps. Protocol independence allows for use in broad range of applications including Fast and Gigabit Ethernet, FDDI, ESCON, SONET OC-3, OC-12, OC-48 and Fibre Channel.

Enterprise Application



Service Provider Application



Ordering Info

SFMFF4040-100
SFP Slot (empty) to SFP Slot (empty)

See Pages 135 & 136 for Compatible SFP Modules.

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-PS or SPS-1872-SA *(see page 72)*

Mounting Options:

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

WMBD *(see page 70)*
DIN Rail Mount Bracket 5.0" [127 mm]

WMBL *(see page 70)*
Wall Mount Bracket 4.0" [102 mm]

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

Features

- CWDM and DWDM SFP-ready platform
- Link Pass Through *(see page 15)*
- Preconfigured bundles

with SFP modules installed.

- Automatic Link Restoration *(see page 16)*
- Optical Intrusion Detection

Monitor the physical layer of optical networks for signal strength degradation. The user can specify the threshold for sudden signal strength deterioration. Such a change often indicates a physical intrusion or fiber damage.

Specifications

Standards	Multi-Source Agreement (MSA), Small Form Factor Pluggable (SFP)
Status LEDs	**LK1:** Link on Port 1 **LK2:** Link on Port 2 **PWR:** Power
Dimensions	**Width:** 3.25" [83 mm] **Depth:** 4.8" [122 mm] **Height:** 1.0" [25 mm]
Power Consumption	2 watts with TN-SFP-xx modules installed
Power	External AC/DC required: 12 VDC 0.5A
Environment	**SFMFF4040-100 Board:** -10 – 60°C operating temp; See SFP Module temperature ratings; 5% to 95% humidity (non-condensing); 0 – 10,000 feet
Safety Compliance	Wall Mount Power Supply: UL listed and CSA certified
Regulatory Compliance	FCC Class A; EN55024 (CISPR 22) Class A; ICES-003; CISPRB; CE Mark
Warranty	Lifetime

See Also:

- Point System™ Slide-In-Module Optical Line Converters
page 56

STM-1/OC-3 Media Conversion STM Electrical to OC-3 Fiber

SFP-based Converter Module

Transition Networks SFP-based STM1E/OC-3 media converter module now makes the migration between electrical and optical STM-1 interfaces easier than ever. Offered as a master bundle with SFPs already installed, these media converters offer ultimate flexibility by providing protocol-independent, Multi-Source Agreement (MSA) compliant SFP slots allowing each slot to be used for either electrical or optical interfaces.

SSTM1EOxx

Features

- Link Pass Through *(see page 15)*
- Automatic Link Restoration *(see page 15)*
- Industry standard MSA compliant SFP ports
- STM-1Electrical interface at 155Mbps compatible with G.703, ES1, CMI encoded signal
- Jitter specification according ITU-T G.825 and ETSI EN 300 462-4-1
- Pre-configured master bundles with SFPs installed

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	ITU-T; G.825, G.703, ES1, CMI ETSI EN 300 462-4-1, SONET OC-3/SDH STM-1 (S-1.1) MSA Multi-Source Agreement SFP Small Form Factor Pluggable
Status LEDs	**PWR(Power)**: Lit for normal operation **LK1**: on = Link on Port 1 **LK2**: on = Link on Port 2
Dimensions	**Width**: 3.25" [83 mm] **Depth**: 4.8" [122 mm] **Height**: 1.0" [25 mm]
Power Consumption	2.0 watts with TN-SFP-xx modules installed
Power	External AC/DC required; 12 VDC; 0.5A included
Environment	-10 – 60°C operating Converter; 0 – 70°C operating TN-SFP-OCx; -40 – 85°C operating TN-SFP-STM1E; 5-95% humidity non-condensing; 0-10,000 feet altitude
Shipping Weight	1 lbs. [0.45 kg]
Safety Compliance	**Wall Mount Power Supply**: UL Listed and CSA certified
Regulatory Compliance	EN55024; CISPR22/EN55022 Class A; FCC Class A; CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

SSTM1EOM
(1) SFMFF4040-100 (media converter) with installed:
(1) TN-SFP-STM1E
STM-1E SFP (mini-BNC)
(1) TN-SFP-OC3M
OC-3 SFP 1300nm multimode LC
[2 km/1.2 mi.] Link Budget: 11.0 dB

SSTM1EOS
(1) SFMFF4040-100 (media converter) with installed:
(1) TN-SFP-STM1E
STM-1E SFP (mini-BNC)
(1) TN-SFP-OC3S
OC-3 SFP 1310nm single mode LC
[20 km/12.4 mi.] Link Budget: 17.0 dB

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:
SPS-1872-PS or SPS-1872-SA ***(see page 72)***

Mounting Options:

E-MCR-04 ***(see page 70)***
12-slot Media Converter Rack

WMBD ***(see page 70)***
DIN Rail Mount Bracket 5.0" [127 mm]

WMBL ***(see page 70)***
Wall Mount Bracket 4.0" [102 mm]

RMS19-SA4-01 ***(see page 71)***
4-slot Media Converter Shelf

OC12 ATM/Sonet/SDH Single Mode to Multimode Fiber

Single Mode to Multimode Media Converter

- Link Pass Through *(see page 15)*
- Automatic Link Restoration *(see page 16)*
- Protocol Transparency

F-SM-MM-06(xx) & SFMFF131x-21x

- Extend Network Distance

Convert multimode 622 Mbps interfaces to single mode fiber on a port-by-port basis and extend ATM or SONET over single mode fiber up to 60 km.

Use this converter to extend the reach of an ATM switch with a multimode port up to 60 km across single mode fiber.

Reduce the cost of an ATM/SONET deployment by purchasing ATM/SONET devices with lower cost multimode fiber interfaces and use a media converter to introduce single mode fiber ports only where you need them.

Extend Network Distance

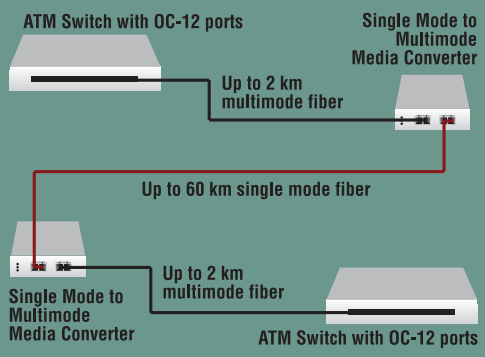


Table of Contents
Select Media Converter
Select Switch

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	ANSI T1.646, ITU G.957
Status LEDs	**Power**: Lit for normal operation **MMF**: Lit for active **SMF**: Lit for active
Dimensions	**Width**: 3.0" [76 mm] **Depth**: 4.7" [119 mm] **Height**: 1.0" [25 mm]
Power	External AC/DC required; 12V DC. .5A; unregulated; standard
Power Consumption	3.1 watts
Environment	0 – 50°C, 5% – 90% humidity (non-condensing), 0 – 10,000 feet
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply**: UL Listed and CSA certified
Regulatory Compliance	CE Mark **F-SM-MM-06**: CISPR/EN55022 Class A; FCC Class A **SFMFF131x-21x**: CISPR/EN55022 Class A&B; FCC Class A&B
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

F-SM-MM-06
622 Mbps fiber optic 1300nm MM (SC)
[2 km/1.2 miles] Link Budget: 7.0 dB
to 622 Mbps fiber optic 1310nm SM (SC)
[15 km/9.3 mi.] Link Budget: 13.0 dB

F-SM-MM-06(XL)
622 Mbps fiber optic 1300nm MM (SC)
[2 km/1.2 miles] Link Budget: 7.0 dB
to 622 Mbps fiber optic 1310nm SM (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

SFMFF1314-210
622 Mbps fiber optic 1300nm MM (SC)
[2 km/1.2 mi.] Link Budget: 7.0 dB
to 622 Mbps fiber optic 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 11.0 dB

SFMFF1316-210
622 Mbps fiber optic 1300nm MM (SC)
[2 km/1.2 mi.] Link Budget: 7.0 dB
to 622 Mbps fiber optic 1310nm SM (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

SFMFF1317-210
622 Mbps fiber optic 1300nm MM (SC)
[2 km/1.2 miles] Link Budget: 7.0 dB
to 622 Mbps 1550nm SM (SC)
[60 km/37.3 mi.] Link Budget: 25.0 dB

SFMFF1329-210
622 Mbps fiber optic 1300nm MM (SC)
[2 km/1.2 miles] Link Budget: 7.0 dB
to 622 Mbps 1310nm TX / 1550nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 14.0 dB

SFMFF1329-211
622 Mbps fiber optic 1300nm MM (SC)
[2 km/1.2 miles] Link Budget: 7.0 dB
to 622 Mbps 1550nm TX / 1310nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 14.0 dB

Optional Accessories

(sold separately)

F-SM-MM-06(xx) or SFMFF131x-21x:

SPS-1872-SA *(see page 72)*
Wide Input (18 – 72VDC) Stand-Alone Power Supply

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBL *(see page 70)*
Wall Mount Bracket 4.0" [102 mm]

WMBV *(see page 70)*
Vertical Wall Mount Bracket 5.0" [127 mm]

F-SM-MM-06(xx):

SPS-1872-CC *(see page 72)*
Wide Input (18 – 72VDC) Piggy Back Power Supply

WMBD-FS *(see page 70)*
DIN Rail Bracket (flat, small) 3.1" [79 mm]

SFMFF131x-21x:

SPS-1872-PS *(see page 72)*
Wide Input (18 – 72VDC) Piggy Back Power Supply

WMBD-F *(see page 70)*
DIN Rail Bracket (flat) 3.3" [109 mm]

See Also:

- OC12 ATM/SONET/SDH Point System™ Slide-In-Module Media Converters page 57

DS3-T3/E3 Coax to Fiber Media Converter

- Extend a DS3 or E3 over fiber

SCSCF30xx-10x

The DS3-T3/E3 copper to fiber media converter will provide a solution for those users that desire to extend the point of presence of their DS3 or E3 Connection or use it to connect remote locations via T3/E3.

Features

- AIS (Alarm Indication Signal) All 1's or Blue detected on both ports. (unframed)
- AIS generated in both directions selectable Blue or 1's.
- Digital Loopback on fiber & copper ports
- Coax Line build out for operation less than 255 feet or 255 feet to 1000 feet.
- Switch selectable DS3/T3 or E3 rate
- LED indications for all operation modes
- Supports fractional/channelized DS3/E3
- STS-1 optional

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-PS *(see page 72)*
Piggy Back Power Supply

SPS-1872-SA *(see page 72)*
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBD-F *(see page 70)*
DIN Rail Bracket (flat) 3.3" [84 mm]

WMBL *(see page 70)*
Wall Mount Bracket 4.0" [102 mm]

WMBV *(see page 70)*
Vertical Wall Mount Bracket 5.0" [127 mm]

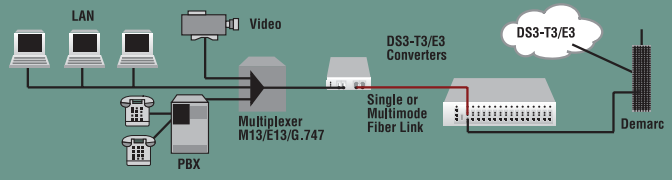
RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

See Also:

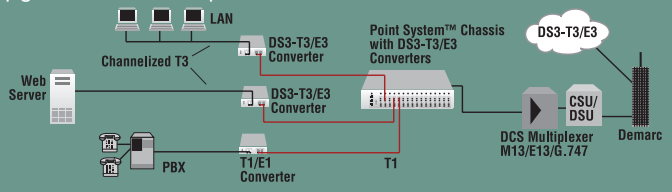
- DS3-T3/E3 Point System™ Slide-In-Module Media Converters

page 58

Integrate Voice & Data on Fiber Network



Upgrade from Multiple T1



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	ANSI, ITU-TS, AT&T, ETSI, G.703, G.921 and G.956
Switches	**SW1**: DS3/E3 selector: On for E3 **SW2**: Coax Line build out: On for less than 255 feet of cable **SW3**: AIS (unframed) transmit: On for transmit AIS if receive loss of carrier **SW4**: AIS Blue/AIS All 1's: On for Blue alarm **Front Switch**: Right/Left – loop-back fiber/copper, Center – Normal
Jumpers	**Jumper (J11):** Connect output coax port to chassis ground (per G.703) **Jumper (J12):** Connect input coax port to chassis ground (per G.703)
Status LEDs	**PWR (Power):** On for normal operation **SDC Copper**: Green – Link is up; Green Flashing – Coax is in loop-back mode; Yellow – AIS (unframed) detected. **SDF Fiber**: Green – Link is up; Green Flashing – Fiber is in loop-back mode; Yellow – AIS (unframed) detected.
Dimensions	**Width**: 3.25" [82 mm] **Depth**: 4.8" [122 mm] **Height**: 1.0" [25 mm]
Power Consumption	6 watts max.
Power	External AC/DC required; 12V DC, .8A; unregulated; standard
Environment	0 – 50°C, 5% – 90% humidity (non-condensing), 0 – 10,000 feet
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply**: UL Listed and CSA certified
Regulatory Compliance	CISPR/EN55022 Class A; FCC Class A; CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

SCSCF3011-100
(2) Coax (BNC)
to 1300nm multimode (ST)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

SCSCF3013-100
(2) Coax (BNC)
to 1300nm multimode (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

SCSCF3018-100
(2) Coax (BNC)
to 1300nm multimode (MT-RJ)
[2 km / 1.2 mi.] Link Budget: 14.5 dB

SCSCF3014-100
(2) Coax (BNC)
to 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

SCSCF3015-100
(2) Coax (BNC)
to 1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

SCSCF3016-100
(2) Coax (BNC)
to 1310nm single mode (SC)
[60 km/37.3 mi.] Link Budget: 29.0 dB

SCSCF3017-100
(2) Coax (BNC)
to 1550nm single mode (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

SCSCF3029-100
(2) Coax (BNC)
to 1310nm TX / 1550nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

SCSCF3029-101
(2) Coax (BNC)
to 1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

SCSCF3029-102
(2) Coax (BNC)
to 1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

SCSCF3029-103
(2) Coax (BNC)
to 1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

Remotely Managed High Speed Serial Media Converter

- Connect High Speed Serial signals on copper to fiber
- Supports multiple protocols through the use of a universal 26-pin serial interface connector.
- Extend the point of presence of a copper V.35 / X.21 / RS449 / RS530 / RS232 connection at data rates up to 10 Mbps.

SPSVT26xx-10x

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Select Media Converter
Select Switch

mounting options
ethernet
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10/100 bridging
10/100/1000
gigabit ethernet
atm/oc-x
ds3-t3/e3
high speed serial
rs232
rs422/485
t1/e1
pots 2-wire
video
industrial

Features

- In-band remote management when used in conjunction with Point System™ card
- Operational speeds up to 10Mbps
- Copper & Fiber Loopback
- Synchronous or asynchronous capability
- Selectable DCE speeds
- LED indications for Lock, Loopback & Data
- Use a combination of any copper interface: (RS449 to V.35, RS530 to X.21, DTE-DTE, DTE-DCE, DCE-DCE, etc.) All interfaces converted at the physical level.

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	ITU-T; ISO-2593
Data Rate	1.2Kb/s to 10Mb/s
Switches	**Side panel**, external DCE speed switch, sixteen position: • 0 – TT = Receive CLK • 1 – 56 Kbps • 2 – 64 Kbps • 3 – 112 Kbps • 4 – 128 Kbps • 5 – 256 Kbps • 6 – 384 Kbps • 7 – 512 Kbps • 8 – 768 Kbps • 9 – 1.024 Mbps • A – 1.544 Mbps • B – 2.048 Mbps • C – 3.072 Mbps • D – 4.096 Mbps • E – 6.144 Mbps • F – Asynchronous Mode Speeds can also be set on DCE converters locally or remotely via software. **Front Panel**, Loop-back Selector Switch: Right Position: Loop Fiber Back & Loop Copper Back Left Position: Normal Operation
Internal Jumpers	**Jumper (J4): Hardware:** The terminal timing switch controls the terminal timing function. The loop-back switch controls the loop-back function. **Software:** The terminal timing switch and the loop-back switch are disabled. These two functions are controlled by the most recently saved, on-board microprocessor settings. **Jumper (J6): RX Clock Polarity:** Set to sample the receive data on the *rising* or *falling* edge of the receive clock. **Jumper (J7): TX Clock Polarity:** Set to sample the transmit data on the *rising* or *falling* edge of the receive clock.
Status LEDs	The Copper LED uses a green LED **Smart Serial Link**: Green - Link is up; Green Flashing - In loop-back mode; **Fiber**: Green - Link is up; Green Flashing - In loop-back mode; **Power**: Green - ON power applied to board
Dimensions	**Width**: 3.25" [82 mm] **Depth**: 4.8" [120 mm] **Height**: 1.0" [25 mm]
Power Consumption	5.0 watts
Power	External AC/DC required; 12 VDC; 1A; regulated wall mount adapter via 2mm connector
Environment	0 – 50°C, 5% – 90% humidity (non-condensing), 0 – 10,000 feet
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply**: UL Listed and CSA certified
Regulatory Compliance	CISPR/EN55022, EN55024, EN60950 Class A; FCC Class A; CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

SPSVT2611-100
26-pin
to 1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SPSVT2613-100
26-pin
to 1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SPSVT2614-100
26-pin
to 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

SPSVT2615-100
26-pin
to 1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

SPSVT2629-100
26-pin
to 1310nm TX / 1550nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

SPSVT2629-101
26-pin
to 1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

SPSVT2629-102
26-pin
to 1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

SPSVT2629-103
26-pin
to 1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

Cable Assemblies
[cable length: 3 meters / 10 feet]

21DCE-3
DB-15 (FT) (26-pin) to (DCE) [3 m/10 ft.]

21DTE-3
DB-15 (MT) (26-pin) to (DTE) [3 m/10 ft.]

232DCE-3
DB-25 (FT) (26-pin) to (DCE) [3 m/10 ft.]

232DTE-3
DB-25 (MT) (26-pin) to(DTE) [3 m/10 ft.]

35DCE-3
V.35 (FT) (26-pin) to (DCE) [3 m/10 ft.]

35DTE-3
V.35 (MT) (26-pin) to (DTE) [3 m/10 ft.]

35DTE-3C
V.35 (MT) (26-pin) to (DTE) [3 m/10 ft.]

449DCE-3
DB-37 (FT) (26-pin) to (DCE) [3 m/10 ft.]

449DTE-3
DB-37 (MT) (26-pin) to (DTE) [3 m/10 ft.]

530DCE-3
DB-25 (FT) (26-pin) to (DCE) [3 m/10 ft.]

530DTE-3
DB-25 (MT) (26-pin) to (DTE) [3 m/10 ft.]

Copper Distances

Standard	Range*
RS232/V.24	15 meters
RS449/V.36	1.2 km
V.35	600 meters
X.21	1.2 km
RS530	1.2 km

*For reference only. Contact Transition Networks for detailed range information.

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-PS *(see page 72)*
Piggy Back Power Supply

SPS-1872-SA *(see page 72)*
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBD-F *(see page 70)*
DIN Rail Bracket (flat) 3.3" [84 mm]

WMBL *(see page 70)*
Wall Mount Bracket 4.0" [102 mm]

WMBV *(see page 70)*
Vertical Wall Mount Bracket 5.0" [127 mm]

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

RS232 Copper to Fiber with Remote Management

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Select Media Converter
Select Switch

Remotely Managed RS232 Media Converter

SRS2F311x-100

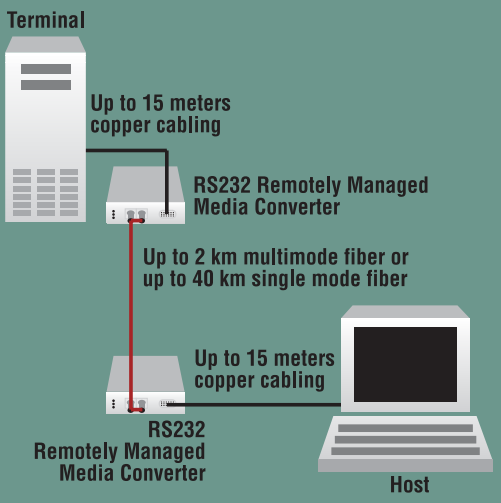
- Remote management
- Local or Remote Loopback on copper and fiber *(see page 16)*
- DTE/DCE switch for easy installation with straight-through cabling

Extend Network Distance

- Extend Network Distance

Link a remote terminal to a host computer: Connect multiple devices, such as security scanners, POS devices, remote terminals and building access/alarming systems to a host computer. Ideal for campus or business environments where remote devices can be networked in a point-to-point configuration where distances are greater than the 15 meter limitation of conventional copper serial cables.

Transition Networks' serial RS232 to Fiber Media Converter allows you to extend the distance between serial connections with the use of fiber optic cable. This full-featured converter transmits the full complement of RS232 flow control/handshaking signals optically and supports full or half-duplex asynchronous data transmission at speeds up to 115Kb/s.



The diagnostic features included on this converter make installation easy and intuitive. A DTE/DCE switch eliminates the frustration over selecting the appropriate cable. A loop-back switch allows for complete diagnostic testing prior to system turn-up or during troubleshooting. Unit and Port LEDs allow for quick status information of the converter.

In addition to status LEDs and switch settings for local management, these converters can also be managed from remote locations when used in conjunction with a managed Point System™ chassis.

Additional Features

- Full/Half-duplex asynchronous transmission at speeds up to 115Kb/s
- Supports the following flow control signaling:

1. DCD - Data Carrier Detect
2. RXD - Receive Data
3. TXD - Transmit Data
4. DTR - Data Terminal Ready
5. SG - Signal Ground
6. DSR - Data Set Ready
7. RTS - Request To Send
8. CTS - Clear To Send

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	EIA/TIA-574, EIA/TIA RS-232E
Data Rate	115 Kb/s
Switches	**DTE/DCE**: Select appropriate position **Loopback**: Norm = normal operation; Loop = Fiber and copper loop-back
Status LEDs	**P: (Power)**: Lit for normal operation **RX**: Steady = Copper Link; Flashing = Rx Data **FL**: Steady = Fiber Link; Flashing = Loop back mode
Dimensions	**Width**: 3.3" [84 mm] **Depth**: 4.8" [122 mm] **Height**: 1.2" [30 mm]
Power Consumption	5.0 watts
Power	External AC/DC; 12VDC, 0.5A min
Environment	0 – 50°C, 5% – 95% humidity (non-condensing), 0 – 10,000 feet
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply**: UL Listed and CSA certified
Regulatory Compliance	CISPR22/EN55022 Class A + EN55024; EN60950 Class A; FCC Class A; CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

SRS2F3111-100
DB-9 [15 m/49 ft.]
to 1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SRS2F3113-100
DB-9 [15 m/49 ft.]
to 1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SRS2F3114-100
DB-9 [15 m/49 ft.]
to 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

SRS2F3115-100
DB-9 [15 m/49 ft.]
to 1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-PS *(see page 72)*
Piggy Back Power Supply

SPS-1872-SA *(see page 72)*
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBD-F *(see page 70)*
DIN Rail Bracket (flat) 3.3" [84 mm]

WMBL *(see page 70)*
Wall Mount Bracket 4.0" [102 mm]

WMBV *(see page 70)*
Vertical Wall Mount Bracket 5.0" [127 mm]

See Also:

- Point System™ Slide-In-Module RS232 Media Converters

page 60

RS232 Just Convert-IT™ Copper to Fiber

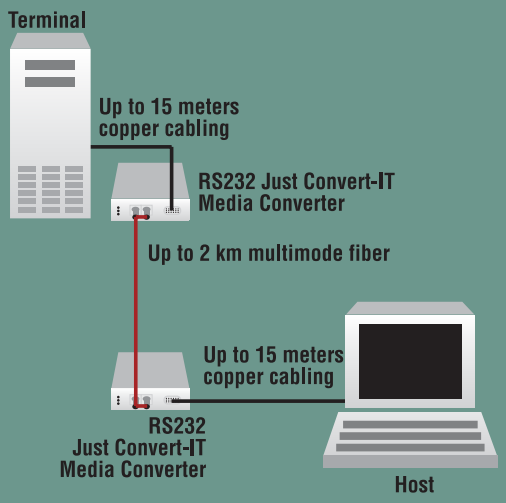
RS232 Copper to Fiber Media Converter

J/RS232-xF-01(xx)

Link a remote terminal to a host computer: Connect multiple devices, such as security scanners, POS devices, remote terminals and building access/alarming systems to a host computer. Ideal for campus or business environments where remote devices can be networked in a point-to-point configuration where distances are greater than the 15 meter limitation of conventional copper serial cables.

Transition Networks's "Just Convert-IT™" serial RS-232 to Fiber Media Converter is an inexpensive, no frills way to extend the distance between serial connections with the use of fiber optic cable. This converter supports full or half-duplex data transmission at speeds up to 120Kb/s. Unit and Port LEDs allow for quick status information on the converter.

Extend Network Distance



Features

- Offered with either a male or female connector
- Full/Half-duplex transmission at speeds up to 120Kb/s
- Fiber LED lights to show link with or without data transmission

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	EIA/TIA-574, EIA/TIA RS-232E
Status LEDs	**PWR**: Lit for normal operation **RX**: Steady = Link; Flashing = Rx Data **FL**: Steady = Fiber Link
Dimensions	**Width**: 3.0" [76 mm] **Depth**: 3.9" [100 mm] **Height**: 1.0" [25 mm]
Power Consumption	3.0 watts
Power	External AC/DC; 12VDC, 0.5A min
Environment	0 – 50°C, 5% – 95% humidity (non-condensing), 0 – 10,000 feet
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply**: UL Listed and CSA certified
Regulatory Compliance	CISPR22/EN55022 Class A + EN55024; EN60950 Class A; FCC Class A; CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

J/RS232-CF-01
DB-9 (female) **[15 m/49 ft.]**
to 1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

J/RS232-CF-01(SC)
DB-9 (female) **[15 m/49 ft.]**
to 1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

J/RS232-TF-01
DB-9 (male) **[15 m/49 ft.]**
to 1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

J/RS232-TF-01(SC)
DB-9 (male) **[15 m/49 ft.]**
to 1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-PS ***(see page 72)***
Piggy Back Power Supply

SPS-1872-SA ***(see page 72)***
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 ***(see page 70)***
12-slot Media Converter Rack

RMS19-SA4-01 ***(see page 71)***
4-slot Media Converter Shelf

WMBD ***(see page 70)***
DIN Rail Bracket 5.0" [127 mm]

WMBD-FS ***(see page 70)***
DIN Rail Bracket (flat) 3.1" [79 mm]

WMBS ***(see page 70)***
Wall Mount Bracket 3.2" [81 mm]

RS422/485 Copper to Fiber

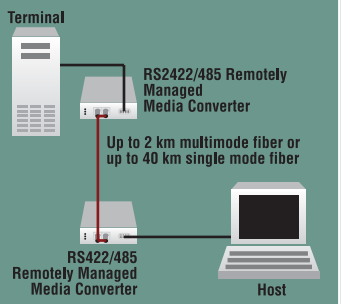
RS422/485 Copper to Fiber Media Converter

SRS4F3x1x-100

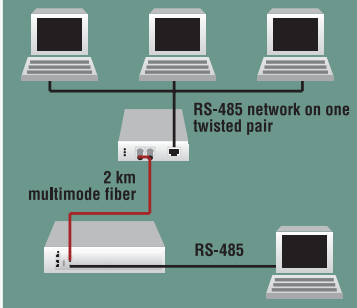
Link a remote terminal to a host computer: Connect multiple devices, such as security scanners, POS devices, remote terminals and building access/alarming systems to a host computer. Ideal for campus or business environments where remote devices can be networked in either a point-to-point or point to multi-point configuration.

Transition Networks's serial RS-422/485 to Fiber Media Converter allows you to extend the distance between serial connections with the use of fiber optic cable. This full-featured converter operates in 2-wire mode for RS-422 and either 2-wire or 4-wire mode for RS-485 and supports full or half-duplex data transmission at speeds up to 1.25 Mb/s.

Extend Network Distance



Connect Multiple Devices



Features

- RS422 or RS485 operation
- 2-wire or 4-wire in operation in RS-485 mode
- Full/Half-duplex transmission at speeds up to 1.25 Mb/s

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	EIA/TIA RS-422, EIA/TIA RS-485
Switches	**SW1**: 130 ohm resistor Rx (Down = enable) **SW2**: 130 ohm resistor Tx (Down = enable) **SW3**: 1k ohm "pull-down" (Down = enable) **SW4**: 1k ohm "pull-up" (Down = enable) **SW5**: 2-wire / 4-wire (Down = 4-wire) **SW6**: RS-485 / RS-422 (Down = RS-422)
Status LEDs	**PWR**: Power: Lit for normal operation **RXC**: Steady = Data Rx on copper link; Flashing = Rx Data at low speed **RXF**: Steady = Fiber Link
Dimensions	**Width**: 3.3" [84 mm] **Depth**: 4.8" [122 mm] **Height**: 0.90" [22 mm]
Power Consumption	5.0 watts
Power	External AC/DC; 12VDC, 0.5A min
Environment	0 – 50°C operating; 5 – 95% humidity non-condensing; 0 – 10,000 feet altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply**: UL Listed and CSA certified
Regulatory Compliance	CISPR22/EN55022; EN55024; EN60950 Class A; FCC Class A; CE Mark; UL 1950
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

SRS4F3111-100
DB-9 [1.2 km/0.7 mi.]
to 1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SRS4F3113-100
DB-9 [1.2 km/0.7 mi.]
to 1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SRS4F3114-100
DB-9 [1.2 km/0.7 mi.]
to 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

SRS4F3115-100
DB-9 [1.2 km/0.7 mi.]
to 1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

SRS4F3116-100
DB-9 [1.2 km/0.7 mi.]
to 1310nm single mode (SC)
[60 km/37.3 mi.] Link Budget: 29.0 dB

SRS4F3211-100
Terminal Block [1.2 km/0.7 mi.]
to 1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SRS4F3213-100
Terminal Block [1.2 km/0.7 mi.]
to 1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SRS4F3214-100
Terminal Block [1.2 km/0.7 mi.]
to 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

SRS4F3215-100
Terminal Block [1.2 km/0.7 mi.]
to 1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-PS *(see page 72)*
Piggy Back Power Supply

SPS-1872-SA *(see page 72)*
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBD-F *(see page 70)*
DIN Rail Bracket (flat) 3.3" [84 mm]

WMBL *(see page 70)*
Wall Mount Bracket 4.0" [102 mm]

WMBV *(see page 70)*
Vertical Wall Mount Bracket 5.0" [127 mm]

See Also:

- Point System™ Slide-In-Module RS422/485 Media Converters

page 61

T1/E1 Copper to Fiber with Remote In-Band Management

Remotely Managed T1/E1 Media Converter

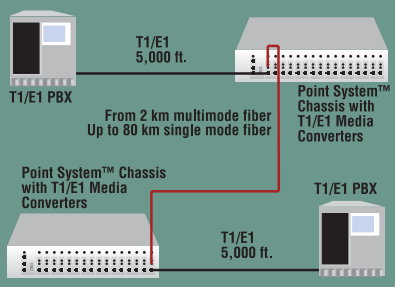
- **Remote management in a stand-alone device.** When used in conjunction with a managed Point System™ chassis, this stand-alone unit can be managed remotely.
- The Remotely Managed T1/E1 copper to fiber media converter will provide a solution for users who desire to extend their T1 or E1 circuits over fiber and remotely manage them "in-band" from admin locations.

SSDTFx0xx-1xx

Table of Contents
Select Media Converter
Select Switch

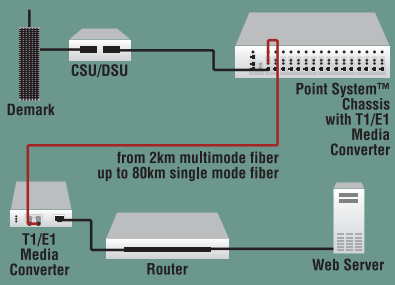
mounting options
ethernet
fast ethernet
10/100 bridging
10/100/1000
gigabit ethernet
atm/oc-x
ds3-t3/e3
high speed serial
rs232
rs422/485
t1/e1
pots 2-wire
video
industrial

Provide Campus Interconnects



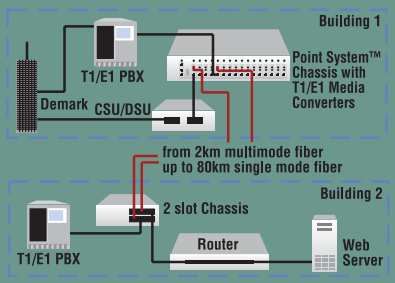
With the exception of Ethernet, T1/E1 is one of the most common campus/ metropolitan area networking interconnects. A copper to fiber conversion on the premise side of the T1/E1 makes it easier to integrate voice traffic, frame relay or IP type traffic on your fiber network.

Remote Management



Stand-alone can be managed remotely when used with a managed chassis.

Extend T1 Networks



Extend T1 to other buildings in a campus or MAN from 2 km to 80 km for voice or data applications.

Features

- Remote unit in-band management *(see page 15)*
- Local or Remote Loopbacks on copper or fiber in software mode *(see page 16)*
- Loopback switch facilitates local installation
- Converts the copper ports on T1/E1 devices, such as a PBX or T1/E1 Router, to multimode or single mode fiber
- Switch selectable RJ-48 connectors for T1 or E1
- Jitter attenuators optimize Bit Error Rate (BER) performance
- Network debug procedures make BER testing more convenient
- Built-in troubleshooting with the addition of a selectable TAOS (Transmit All Ones) switch on the fiber and copper interfaces allows the network engineer to test all T1/E1 equipment on that network segment and ensure the network link.
- Dry Relay Contacts enable the media converter to be tied into a separate alarm circuit commonly found in a T1/E1 twisted pair environment. Contacts will be activated on loss of power or loss of fiber link.
- LED provides Alarm Indication Signal (AIS)
- Can be used with fractional T1/E1 circuits
- Report converter status
  - Copper & Fiber Link status
  - Hardware switch settings: LBO, AIS Copper, AIS Fiber, HW/SW
  - AIS detected Copper & Fiber
  - Model Number
  - Copper & Fiber Connector
- Remote commands:
  - Loopback Copper & Fiber
  - AIS transmitted on Fiber on loss of Copper link
  - AIS Transmitted on Copper on loss of Fiber link

See next page for Ordering Info

See Also:

- T1/E1 Point System™ Slide-In-Module Media Converters

page 62-63

T1/E1 Copper to Fiber with Remote In-Band Management

Table of Contents
Select Media Converter
Select Switch

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	ITU-T, ANSI, AT&T, ETSI
Switches	**SW1**: 1, 2, 3: Line Build out for short haul/DB in Long Haul (see table) **Short Haul mode**: **SW1**: Pos 4 not used **SW2 - 1**: Transmit all ones into copper on loss of fiber link (Up = Disabled) **SW2 - 2**: Transmit all ones (AIS) into fiber on loss of copper link (Up = Disabled) **SW2 - 3**: Long Haul/Short Haul (Up = Short Haul) **SW2 - 4**: T1/E1 selection (Up = T1)
3-position Jumper	**Hardware**: Converter mode is determined by 4-position switch settings **Software**: Converter mode is determined by most recently saved on-board microprocessor settings.
Status LEDs	**PWR (Power)**: Steady green LED indicates connection to external AC power **SDC (Signal Detect/Copper)**: On indicates twisted pair link is up **SDF (Signal Detect/Fiber)**: On indicates fiber link is up
Dimensions	**Width**: 3.25" [82 mm] **Depth**: 4.8" [122 mm] **Height**: 1.0" [25 mm]
Power	External AC/DC provided; 12V DC; 0.5A; unregulated; standard; UL listed
Environment	0 – 50°C, 5% – 95% humidity (non-condensing), 0 – 10,000 feet
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply**: CSA certified
Regulatory Compliance	CISPR/EN55022 Class A; FCC Class A; CE Mark
Warranty	Lifetime

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-PS *(see page 72)*
Piggy Back Power Supply

SPS-1872-SA *(see page 72)*
Stand-Alone Power Supply

Mounting Options:

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBD-F *(see page 70)*
DIN Rail Bracket (flat) 3.3" [84 mm]

WMBL *(see page 70)*
Wall Mount Bracket 4.0" [102 mm]

WMBV *(see page 70)*
Vertical Wall Mount Bracket 5.0" [127 mm]

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

SSDTF1011-105
Twisted Pair (RJ-48) [1.5 km/0.9 mi.]
to 850nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 13.5 dB

SSDTF1013-105
Twisted Pair (RJ-48) [1.5 km/0.9 mi.]
to 850nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 13.5 dB

SSDTF1018-105
Twisted Pair (RJ-48) [1.5 km/0.9 mi.]
to 1300nm multimode (MT-RJ)
[2 km/1.2 mi.] Link Budget: 14.5 dB

SSDTF1027-105
Twisted Pair (RJ-48) [1.5 km/0.9 mi.]
to 1300nm multimode (ST)
[5 km / 3.1 mi.] Link Budget: 13.5 dB

SSDTF1012-105
Twisted Pair (RJ-48) [1.5 km/0.9 mi.]
1310nm single mode (ST)
[8 km / 5 mi.] Link Budget: 7.0 dB

SSDTF1022-105
Twisted Pair (RJ-48) [1.5 km/0.9 mi.]
to 1310nm single mode (ST)
[15 km / 9.3 mi.] Link Budget: 10.0 dB

SSDTF1014-105
Twisted Pair (RJ-48) [1.5 km/0.9 mi.]
to 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

SSDTF1015-105
Twisted Pair (RJ-48) [1.5 km/0.9 mi.]
to 1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 30.0 dB

SSDTF1016-105
Twisted Pair (RJ-48) [1.5 km/0.9 mi.]
to 1310nm single mode (SC)
[60 km/37.3 mi.] Link Budget: 33.0 dB

SSDTF1017-105
Twisted Pair (RJ-48) [1.5 km/0.9 mi.]
to 1550nm single mode (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

SSDTF1029-105
Twisted Pair (RJ-48) [1.5 km/0.9 mi.]
to 1310nm TX / 1550nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

SSDTF1029-106
Twisted Pair (RJ-48) [1.5 km/0.9 mi.]
to 1550nm TX / 1310nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

SSDTF1029-107
Twisted Pair (RJ-48) [1.5 km/0.9 mi.]
to 1310nm TX / 1550nm RX single fiber SM (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

SSDTF1029-108
Twisted Pair (RJ-48) [1.5 km/0.9 mi.]
to 1550nm TX / 1310nm RX single fiber SM (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

SSDTF3011-115
(2) Coax (BNC) **[100 m / 328 ft.]**
850nm multimode (ST)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

SSDTF3013-115
(2) Coax (BNC) **[100 m / 328 ft.]**
850nm multimode (SC)
[2 km / 1.2 mi.] Link Budget: 13.5 dB

SSDTF3018-115
(2) Coax (BNC) **[100 m / 328 ft.]**
1300nm multimode (MT-RJ)
[2 km / 1.2 mi.] Link Budget: 14.5 dB

SSDTF3027-115
(2) Coax (BNC) **[100 m / 328 ft.]**
1300nm multimode (ST)
[5 km / 3.1 mi.] Link Budget: 13.5 dB

SSDTF3012-115
(2) Coax (BNC) **[100 m / 328 ft.]**
1310nm single mode (ST)
[8 km / 5 mi.] Link Budget: 7.0 dB

SSDTF3022-115
(2) Coax (BNC) **[100 m / 328 ft.]**
1310nm single mode (ST)
[15 km / 9.3 mi.] Link Budget: 10.0 dB

SSDTF3014-115
(2) Coax (BNC) **[100 m / 328 ft.]**
1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

SSDTF3015-115
(2) Coax (BNC) **[100 m / 328 ft.]**
1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 30.0 dB

SSDTF3016-115
(2) Coax (BNC) **[100 m / 328 ft.]**
to 1310nm single mode (SC)
[60 km/37.3 mi.] Link Budget: 33.0 dB

SSDTF3017-115
(2) Coax (BNC) **[100 m / 328 ft.]**
to 1550nm single mode (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

SSDTF3029-115
(2) Coax (BNC) **[100 m / 328 ft.]**
to 1310nm TX / 1550nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

SSDTF3029-116
(2) Coax (BNC) **[100 m / 328 ft.]**
to 1550nm TX / 1310nm RX single fiber SM (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

SSDTF3029-117
(2) Coax (BNC) **[100 m / 328 ft.]**
to 1310nm TX / 1550nm RX single fiber SM (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

SSDTF3029-118
(2) Coax (BNC) **[100 m / 328 ft.]**
to 1550nm TX / 1310nm RX single fiber SM (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

4X T1/E1/J1 to Fiber Transport Mux

4x T1/E1/J1 Copper to Fiber Media Converter

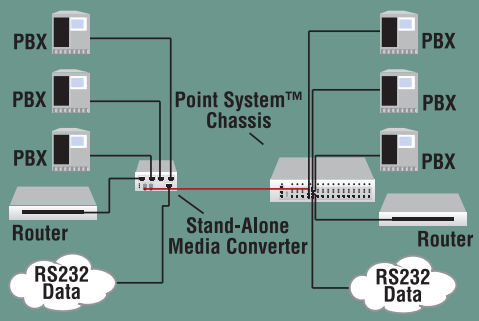
- Low cost transport capability: (4) T1/E1/J1 and (1) RS232 data channel line
- Target applications of the converter include: FTTx, such as Fiber-to-the-Business, Fiber-to-the-Building, Fiber-to-the-MDU and Fiber-to-the-Home.
- Automatic Link Restoration *(see page 16)*
- Remote Management *(see page 15)*

S4TEF10xx-10x

The product provides physical layer status monitoring and alarm classification functions for Telecom operators to **manage their fiber optic network and reduce operation and maintenance costs**.

Copper connections are compatible with G.703 and AMI/B8ZS/HDB3; while the optical connection will run at 155Mbps. A hardware-based solution guarantees the constant bit rate of TDM transport without requiring traffic management.

Application



Features

- Local and Remote Loopback *(see page 16)*
- AIS/TAOS
- LEDs for each data port
- DIP switches for line code, line length, local loopback or remote loopback
- T1/E1/J1 mode settings
- Dry Relay Contacts on each TDM port
- Local (AUX) Management Interface (RS232 connector)
- Switch selection for Data or Management mode on RS232 interface
- Access to complete status information on local and remote device
- Access to local and remote configuration
- Switch or SNMP selected Baud rate operation
- Remote Firmware Upgrade *(see page 16)*

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	AMI/B8ZS/HDB3; G.703 Telecordia TR-NWT-001089: FCC Part 68, UL1459; ITU-T, ANSI, AT&T, ETSI; TBR 12; PD 7024: 1994 (NTR 4)
Switches	Numerous switch settings for line coding, line buildout, loopback (per port), AIS setting, data/mgmt RS-232 and RS-232 port speed and parity
Dimensions	**Width**: 3.7" [94 mm] **Depth**: 4.7" [119 mm] **Height**: 1.8" [46 mm]
Power	External AC/DC provided; 12VDC, 1.25A; unregulated; standard; UL Listed
Power Consumption	6.0 watts
Operating Temperature	0 – 50°C
Storage Temperature	-40 to +85°C
Altitude	0 – 10,000 ft.
Operating Humidity	5% – 95% (non-condensing
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply**: UL listed and CSA certified
Regulatory Compliance	FCC Class A, VCCI Class A, CISPR/EN55022 Class A, ICES-003, CE Mark
Warranty	Lifetime

See Also:

- 4x T1 Transport Mux Point System™ Slide-In-Module Media Converters

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Ordering Info

See pages 171–181 for complete fiber optic connector specs.
Note: RS-232 cable included with each unit (6-pin DIN to DB-9)

S4TEF1011-100
1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

S4TEF1013-100
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

S4TEF1014-100
1310nm single mode (SC)
[20 km/12.4 mi.]
Link Budget: 16.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

S4TEF1015-100
1310nm single mode (SC)
[40 km/24.9 mi.]
Link Budget: 26.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

S4TEF1016-100
1310nm single mode (SC)
[60 km/37.3 mi.]
Link Budget: 29.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

S4TEF1017-100
1550nm single mode (SC)
[80 km/49.7 mi.]
Link Budget: 29.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

S4TEF1035-100
1550nm single mode (SC)
[120 km/74.6 mi.]
Link Budget: 36.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

Single Fiber Products
Recommended use in pairs (see page 17)

S4TEF1029-100
1310nm TX/1550nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

S4TEF1029-101
1550nm TX / 1310nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

S4TEF1029-102
1310nm TX / 1550nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

S4TEF1029-103
1550nm TX / 1310nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 6-pin DIN **[3 m / 10 ft.]**

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-SA *(see page 72)*
Stand-Alone Power Supply

Mounting Options:

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]

WMBD-F *(see page 70)*
DIN Rail Bracket (flat) 3.3" [84 mm]

WMBL *(see page 70)*
Wall Mount Bracket 4.0" [102 mm]

WMBV *(see page 70)*
Vertical Wall Mount Bracket 5.0" [127 mm]

4X T1/E1/J1 + 10/100 Ethernet to Fiber Transport Mux

4x T1/E1/J1 + 10/100 Ethernet Transport Mux

AUTO NEG · AUTO CROSS · TRANSPARENT LINK PASS THROUGH · AUTO LINK RESTORE · PAUSE · REMOTE MGMT · LOOP BACK · REMOTE FIRMWARE UPGRADE

- Low cost transport capability: (4) T1/E1/J1; (1) Ethernet and (1) RS232 data channel line
- Target applications include: FTTx, such as Fiber-to-the-Business, Fiber-to-the-Building, Fiber-to-the-MDU and Fiber-to-the-Home.

S4TEF10xx-11x

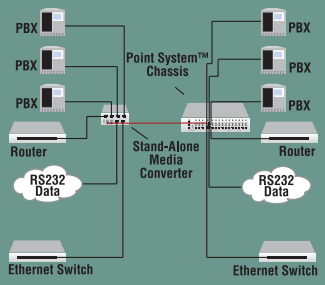
Table of Contents
Select Media Converter
Select Switch

These products offer a low cost transport capability for four T1/E1/J1, one Ethernet and one data channel line (x4TEF10XX-11X). The offering will provide copper connections compatible with G.703, AMI/B8ZS/HDB3, 10/100BASE-TX, as well as RS232 channel; while the optical connection will run at 155Mbps. TDM traffic is not mapped to Ethernet. A hardware-based solution guarantees the constant bit rate of TDM transport without requiring traffic management. The product provides physical layer status monitoring, alarm classification and data classification functions for Telecom providers to manage their fiber optic network and reduce operation and maintenance costs. Target applications of the converter include: FTTx, such as Fiber-to-the-Business, Fiber-to-the-Building, Fiber to-the-MDU and Fiber-to-the-Home.

Features

- Auto-Negotiation for 10/100BASE-TX *(see page 14)*
- AutoCross™ (auto MDI/MDI-X) *(see page 14)*
- Transparent Link Pass Through for Ethernet *(see page 15)*
- Automatic Link Restoration *(see page 16)*
- Pause (Flow Control) *(see page 15)*
- Remote Management *(see page 15)*
- Local and Remote Loopback *(see page 16)*
- Remote Fiber Loss Signaling
- AIS/TAOS
- LEDs for each data port
- DIP switches for line code, line length, local loopback or remote loopback
- T1/E1/J1 mode settings
- Dry Relay Contacts on each TDM port
- Local (AUX) Management Interface (RS232 connector)
- Switch selection for Data or Management mode on RS232 interface
- Access to complete status information on local and remote device
- Access to local and remote configuration
- Switch or SNMP selected Baud rate operation
- 802.1Q VLAN Management
- Remote Firmware Upgrade *(see page 16)*

Application



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™ 2003; Telecordia TR-NWT-001089: FCC Part 68, UL1459; ITU-T, ANSI, AT&T, ETSI; TBR 12; PD 7024: 1994 (NTR 4); AMI/B8ZS/HDB3; G.703
Switches	Numerous switch settings for line coding, line buildout, loopback (per port), AIS setting, data/mgmt RS-232 and RS-232 port speed and parity
Ethernet port settings	Auto-Negotiation, Force speed/duplex and enable Transparent Link Pass Through
Dimensions	**Width**: 3.7" [94 mm] **Depth**: 4.7" [119 mm] **Height**: 1.8" [46 mm]
Power	External AC/DC provided; 12VDC, 1.25A; unregulated; standard; UL listed
Power Consumption	6.0 watts
Operating Temperature	0 – 50°C
Storage Temperature	-40 to +85°C
Altitude	0 – 10,000 ft.
Operating Humidity	5% – 95% (non-condensing)
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	**Wall Mount Power Supply**: UL listed, and CSA certified
Regulatory Compliance	FCC Class A, VCCI Class A, CISPR/EN55022 Class A, ICES-003, CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.
Note: RS-232 cable included with each unit (6-pin DIN to DB-9)

S4TEF1011-110
1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

S4TEF1013-110
1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

S4TEF1014-110
1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

S4TEF1015-110
1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

S4TEF1016-110
1310nm single mode (SC)
[60 km/37.3 mi.] Link Budget: 29.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

S4TEF1017-110
1550nm single mode (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

S4TEF1035-110
1550nm single mode (SC)
[120 km/74.6 mi.] Link Budget: 36.0 dB
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

Single Fiber Products
Recommended use in pairs (see page 17)

S4TEF1029-110
1310nm TX/1550nm RX single fiber SM (SC) **[20 km/12.4 mi.] LB: 19.0 dB**
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

S4TEF1029-111
1550nm TX/1310nm RX single fiber SM (SC) **[20 km/12.4 mi.] LB: 19.0 dB**
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

S4TEF1029-112
1310nm TX/1550nm RX single fiber SM (SC) **[40 km/24.9 mi.] LB: 25.0 dB**
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

S4TEF1029-113
1550nm TX/1310nm RX single fiber SM (SC) **[40 km/24.9 mi.] LB: 25.0 dB**
to (4) RJ-48 **[1.5 km / 0.9 mi.]**
plus 10/100BASE-TX (RJ-45) **[100 m]**
plus 6-pin DIN **[3 m / 10 ft.]**

Optional Accessories

(sold separately)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-SA ***(see page 72)***
Stand-Alone Power Supply

Mounting Options:

WMBD ***(see page 70)***
DIN Rail Bracket 5.0" [127 mm]

WMBD-F ***(see page 70)***
DIN Rail Bracket (flat) 3.3" [84 mm]

WMBL ***(see page 70)***
Wall Mount Bracket 4.0" [102 mm]

WMBV ***(see page 70)***
Vertical Wall Mount Bracket 5.0" [127 mm]

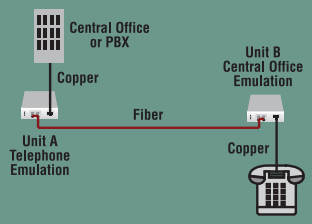
POTS 2-wire Copper to Fiber

POTS 2-wire Copper to Fiber Media Converter

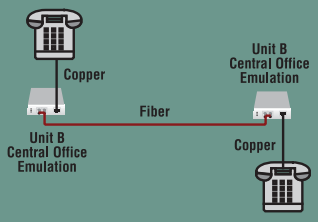
SAPTF33xx-1xx

Connect central-office voice grade signals to distant Plain Old Telephone equipment (POTS) utilizing standard telephone signaling. Two units are required to implement an end to end system. Unit A connects to a telephone line or PBX and has the ability to detect ringing voltages and to act as a telephone (LINE SIDE FXS). Unit B is the reciprocal unit and has the ability to act as a Central Office and connects to a telephone device (CUSTOMER SIDE FXO.

Loop Extender / Isolator



Automatic Ring Down



Features

- Audio transmission
- Caller ID
- Automatic Ring Down
- Duplex or single fiber options

See Also:

- POTS 2-wire
  Point System™ Slide-In-Module Media Converters

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Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	FCC Part 68, TBR21
Analog Port (Telephone Emulation or FXS)	**Connector**: RJ-11 **Impedance**: 600 ohms **REN**: 0.48 **Loop Current**: 20 to 100 ma. **Insertion Loss**: 0.0 +/-1.0 dB at 1000 Hz when both ports are terminated at 600 ohms
Analog Port (Central Office Emulation or FXO)	**Impedance**: 600 ohms **Battery Source**: 48 VDC +/- 5V **Ringing Supply**: 90Vp-p **Ring Frequency**: 15 – 30 Hz. (Reproduces frequency detected by side A) **Ring Cadence**: Reproduces cadence detected by side A **Insertion Loss**: 1.0 +/- 1.0 dB @ 1000 Hz when both ports are terminated at 600 ohms
Voice Frequency	300Hz – 3KHz
Switches/Optional Jumpers	Automatic Ring Down/Normal
Status LEDs	LED colors are Green **Fiber Link**: On indicates fiber link up; **In Use**: On indicates unit in use; Flashing indicates ringing; **Power**: On indicates power is on
Dimensions	**Width**: 3.7" [94 mm] **Depth**: 4.7" [119 mm] **Height**: 1.8" [46 mm]
Power	External AC/DC provided; 12VDC, 1.25A; unregulated; standard; UL Listed
Environment	0 – 50°C, 5% – 95% humidity (non-condensing), 0 – 10,000 feet
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	Wall Mount Power Supply: UL Listed and CSA certified
Regulatory Compliance	FCC Class A; VCCI Class A; EN 55022 (CISPR 22) Class A; ICES 003; CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

Line Side FXS: SAPTF3311-100
Customer Side FXO: SAPTF3311-110
Twisted Pair (RJ-11) **[5 km / 3.1 mi.]**
to 1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

Line Side FXS: SAPTF3313-100
Customer Side FXO: SAPTF3313-110
Twisted Pair (RJ-11) **[5 km / 3.1 mi.]**
to 1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

Line Side FXS: SAPTF3314-100
Customer Side FXO: SAPTF3314-110
Twisted Pair (RJ-11) **[5 km / 3.1 mi.]**
to 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

Line Side FXS: SAPTF3315-100
Customer Side FXO: SAPTF3315-110
Twisted Pair (RJ-11) **[5 km / 3.1 mi.]**
to 1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

Line Side FXS: SAPTF3317-100
Customer Side FXO: SAPTF3317-110
Twisted Pair (RJ-11) **[5 km / 3.1 mi.]**
to 1550nm single mode (SC)
[80 km/49.7 mi.] Link Budget: 29.0 dB

Single Fiber Products
Recommended use in pairs (see page 17)

Line Side FXS: SAPTF3329-100
Customer Side FXO: SAPTF3329-110
Twisted Pair (RJ-11) **[5 km / 3.1 mi.]**
to 1310nm TX/1550nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

Line Side FXS: SAPTF3329-101
Customer Side FXO: SAPTF3329-111
Twisted Pair (RJ-11) **[5 km / 3.1 mi.]**
to 1550nm TX/1310nm RX single fiber single mode (SC)
[20 km/12.4 mi.] Link Budget: 19.0 dB

Line Side FXS: SAPTF3329-102
Customer Side FXO: SAPTF3329-112
Twisted Pair (RJ-11) **[5 km / 3.1 mi.]**
to 1310nm TX/1550nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

Line Side FXS: SAPTF3329-103
Customer Side FXO: SAPTF33129-113
Twisted Pair (RJ-11) [5 km / 3.1 mi.]
to 1550nm TX/1310nm RX single fiber single mode (SC)
[40 km/24.9 mi.] Link Budget: 25.0 dB

Note: Single Fiber products should be paired by application:

Loop Extender/Isolator Application
Line Side FXS: CAPTF3329-100
Customer Side FXO: CAPTF3329-111

Automatic Ring Down Application
Line Side FXS: CAPTF3329-102
Customer Side FXO: CAPTF3329-103

Analog CCTV Video Copper to Fiber Media Converter

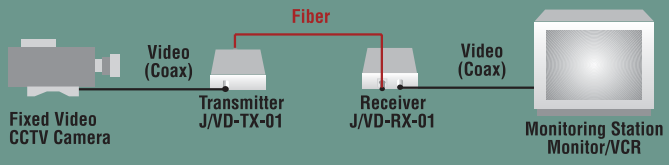
J/VD-xX-01

Transmitter Receiver

Transition Networks's analog composite video media transmitter, **J/VD-TX-01**, converts a CCTV signal from cameras to multimode or single mode fiber for up to 10 km. Transition Networks's analog video media receiver, **J/VD-RX-01**, converts the optical signal back to an analog composite video signal. All conversion is performed in real time. Automatic gain control installed on both Transmitter and Receiver maintains desired quality of video's contrast and brightness for extended distances. No field adjustments are necessary. Wide input range power supply allows for multiple choices of power source including camera power supply.

To assure best quality Transition Networks's Transmitters & Receivers should be used on both ends of the link.

Connect uni-directional analog video devices over fiber



Features

- AM Modulation
- NTSC, PAL, SECAM compatibility
- Compatible with all video CCTV equipment
- Real Time Full Color Video
- Automatic Gain Control on Transmitter
- Automatic Gain Control on Receiver
- Link Pass Through
- Wide input power supply:
  - Transmitter: 9 – 24 VAC; 9 – 40 VDC
  - Receiver: 9 – 16 VAC/DC
- Video Specification:
  - Input Video: .5 to 2-volt pk-pk (75 ohms)
  - Bandwidth: 5 Hz – 10 MHz
  - Differential Gain: < 5 %
  - Differential Phase: < 5°
  - Tilt: < 1%
  - Signal/Noise Ratio: 60dB

- Extended temperature rating for use in controlled outdoor applications

See Also:

- Analog CCTV Video Point System™ Slide-In-Module Media Converters
page 68

Specifications

Video Formats	NTSC, PAL, SECAM
Optical Specs	**Multimode**: 850nm 6.0 dB Link Budget Single Mode: 1310nm 10.0 dB Link Budget
LEDs	**J/VD-TX-01(xx) Transmitter**: **Pwr**: ON = Power connected **RX**: ON = Copper Video feed IN **J/VD-RX-01(xx) Receiver**: **Pwr**: ON = Power connected **RX**: ON = Fiber Video feed IN
Dimensions	**Transmitter/Miniature Receiver**: **Width**: 2.0" [51 mm] **Depth**: 2.2" [56 mm] **Height**: 1.0" [25 mm] **Receiver**: **Width**: 4.0" [102 mm] **Depth**: 3.0" [76 mm] **Height**: 1.0" [25 mm]
Power Supply	**Transmitter**: 9 – 40 VDC, 9 – 24 VAC **Receiver**: 9 – 16 VAC/DC
Power Consumption	2 watts
Operating Temperature (Standard)	-40 to 75°C
Storage Temperature	-25 to 85°C
Altitude	0 – 10,000 feet
Operating Humidity	5% – 95% non-condensing
Shipping Weight	1 lb. (0.45 kg)
Safety Compliance	CE Mark **Power Supply**: UL listed, EN60950
Regulatory Compliance for Emissions	FCC Class A, EN55022 Class A
Regulatory Compliance for Immunity	EN55024
Warranty	Lifetime

Ordering Info

J/VD-TX-01: Video Transmitter
BNC (75 ohm)
to Multimode (ST)
[1 km/ 0.6 miles]

J/VD-RX-01: Video Receiver
BNC (75 ohm)
to Multimode (ST)
[1 km/ 0.6 miles]

J/VD-MRX-01: Miniature Video Receiver
BNC (75 ohm)
to Multimode (ST)
[1 km/ 0.6 miles]

J/VD-TX-01(SC): Video Transmitter
BNC (75 ohm)
to Multimode (SC)
[1 km/ 0.6 miles]

J/VD-RX-01(SC): Video Receiver
BNC (75 ohm)
to Multimode (SC)
[1 km/ 0.6 miles]

J/VD-MRX-01(SC): Miniature Video Receiver
BNC (75 ohm)
to Multimode (SC)
[1 km/ 0.6 miles]

J/VD-TX-01(SM): Video Transmitter
BNC (75 ohm)
to Single Mode (ST)
[10 km/ 6.2 miles]

J/VD-RX-01(SM): Video Receiver
BNC (75 ohm)
to Single Mode (ST)
[10 km/ 6.2 miles]

J/VD-MRX-01(SM): Miniature Video Receiver
BNC (75 ohm)
to Single Mode (ST)
[10 km/ 6.2 miles]

Optional Accessory

(sold separately)

Mounting Kit:

WMBJ-V
Wall Mount Bracket Kit

Analog CCTV Video + Data: Transmitter & Receiver

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Select Media Converter
Select Switch

mounting options
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fast ethernet
10/100 bridging
10/100/1000
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rs232
rs422/485
t1/e1
pots 2-wire
video
industrial

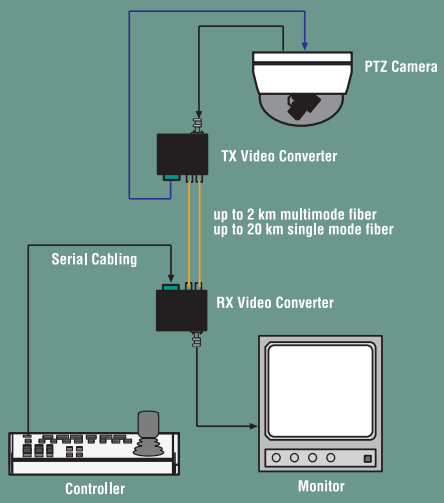
SVIDF201x-100

SVIDF201x-110

Transition Networks's Analog Video + Data TX and RX units transport analog composite video and data simultaneously over multimode or single mode fiber up to 20 km. The TX device receives the video output from the camera and transmits it over the fiber cable. In addition, the TX device receives the data stream over fiber and transmits it to the camera to control PTZ functionality. The RX device receives the video signal on fiber and converts it back to an analog composite video stream and outputs the video on coaxial cable to the monitor. In addition, the RX device receives the data stream from the PTZ controller and transmits it over the fiber cable to the other end of the link.

All conversion is performed in real time. Automatic gain control installed on both Transmitter and Receiver maintains desired quality of video's contrast and brightness for extended distances. No field adjustments are necessary. Wide input range power supply allows for multiple choices of power source including camera power supply.

Connect uni-directional analog video devices over fiber



Features

- AM Modulation
- NTSC, PAL, SECAM compatibility
- Supports unidirectional RS-232, RS-422 or RS485 data transmission for PTZ camera functionality
- Extended temperature rating
- Wide input power supply:
  - Transmitter: 9 – 24 VAC; 9 – 40 VDC
  - Bandwidth: 5 Hz – 10 MHz
- Automatic Gain Control on TX and RX
- Real Time Full Color Video
- Transparent to Data Encoding/Compatible with Major CCTV Camera Manufacturers
- Video Specification:
  - Input Video: 0.5 to 2-volt pk-pk (75 ohms)
  - Receiver: 9 – 16 VAC/DC
  - Differential Gain: < 5 %
  - Differential Phase: < 5°
  - Tilt: < 1%
  - Signal/Noise Ratio: 60dB

Specifications

Video Formats	NTSC, PAL, SECAM
Data Formats	RS-232, RS-422, RS-485
Data Rate	**Serial:** 115 kb/s
Status LEDs	**PWR (Power)**: ON = Power connected **V (video)**: ON = video signal present **D (data)**: ON = data transmitted
Dimensions	**Transmitter**: **Width**: 2.9" [74 mm] **Depth**: 3.0" [76 mm] **Height**: 1.0" [25 mm] **Receiver**: **Width**: 3.3" [84 mm] **Depth**: 4.8" [122 mm] **Height**: 1.0" [25 mm]
Power Supply	**Input Power (TX)**: 9 – 24 VAC/VDC direct input **Input Power (RX)**: External AC/DC; 12 VDC, 0.4A
Environment	**-100 models:** -40°C to +75°C operating temperature **-110 models:** 0°C to +60°C operating temperature
Altitude	0 – 10,000 feet
Operating Humidity	5% – 95% non-condensing
Shipping Weight	2 lbs. [0.90 kg]
Compliance	CISPR/EN55022 Class A + EN55024; EN60950 Class A; FCC Class A; CE Mark
Warranty	Lifetime

Ordering Info

Video Transmitter (camera side)

SVIDF2011-100
BNC (75 ohm) **[228 m/750 ft.]**
to 850nm Multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SVIDF2013-100
BNC (75 ohm) **[228 m/750 ft.]**
to 850nm Multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SVIDF2012-100
BNC (75 ohm) **[228 m/750 ft.]**
to 1310nm Single Mode (ST)
[20 km/12.4 mi.] Link Budget: 15.0 dB

Video Receiver (monitor/controller side)

SVIDF2011-110
BNC (75 ohm) **[228 m/750 ft.]**
to 850nm Multimode (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SVIDF2013-110
BNC (75 ohm) **[228 m/750 ft.]**
to 850nm Multimode (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SVIDF2012-110
BNC (75 ohm) **[228 m/750 ft.]**
to 1310nm Single Mode (ST)
[20 km/12.4 mi.] Link Budget: 15.0 dB

Optional Accessories

(sold separately)

Mounting Options:

WMBJ-V *(see page 70)*
Wall Mount Bracket Kit
(for -100 models only)

WMBD *(see page 70)*
DIN Rail Bracket 5.0" [127 mm]
(for -110 models only)

WMBL *(see page 70)*
Wall Mount Bracket 4.0" [102 mm]
(for -110 models only)

E-MCR-04 *(see page 70)*
12-slot Media Converter Rack
(for -110 models only)

RMS19-SA4-01 *(see page 71)*
4-slot Media Converter Shelf
(for -110 models only)

Wide Input (18 – 72VDC) Power Supplies:

SPS-1872-PS *(see page 72)*
Piggy Back Power Supply

SPS-1872-SA *(see page 72)*
Stand-Alone Power Supply
(for -110 models only)

See Also:

- Analog CCTV Video + Data Point System™ Slide-In-Module Media Converters
  page 69

Industrial Media Converter

Transition Networks's Industrial Media Converters are hardened devices designed to reliably operate in harsh environments such as those found on factory floors, outdoor enclosures or other hazardous environments.

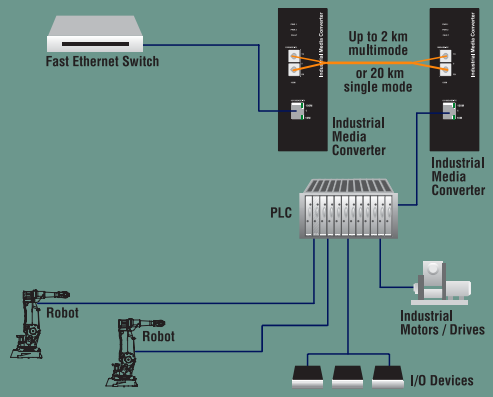
Eliminate EMI and RFI issues or overcome distance limitations with copper based cabling by using the Industrial Media Converter to convert your copper based equipment over to fiber optics. The media converter can connect to either 10Base-T or 100Base-TX ports and provides a 100Base-FX fiber optic connection for links up to 20km.

SISTF101x-111-LRx

Features

- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- Link Pass Through *(see page 15)*
- DIN Rail Mounting and Wall Mount Brackets Included
- Standard (0°C to 60°C) or extended (-40°C to 75°C) operating temperature
- Dry Contact Relay Alarm Output
- Dual Auto-Sensing Redundant DC Power Inputs
- Media Converter Mode or Switch Converter Mode
- Barrel connector interface cable included for connecting external AC/DC power supply

Extend Network Distance in Industrial Applications



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™, 802.3u™, 802.3x™
Status LEDs	**PWR (Power)**: ON = Unit has power connected **PWR 1 (Power)**: ON = primary power connected **PWR 2 (Power)**: ON = backup power connected **Fault**: ON = Power failure or port link failure **LNK/ACT (Ports 1 – 2)**: ON = Link; Flashing = data transmitting **HDX/FDX (Ports 1 – 2)**: ON = Full duplex mode **10/100 (UTP)**: ON = 100Mbps
Dip Switches	**1:** Enable / Disable Port Alarms **2:** Enable / Disable Link Pass Through **3:** Full / Half Duplex 100BASE-FX **4:** Converter / Switch Mode

Dimensions	**Width**: 2.1" [54 mm] **Depth**: 4.1" [105 mm] **Height**: 5.3" [135 mm]
Ingress Protection	IP 31
Input Power	12 to 48 VDC, 0.2A-0.7A, redundant inputs with reverse polarity protection; Additional barrel connector
Power Consumption	4.6 watts
Environment	0 to +60°C Std. operating temp. -40 to +75°C Ext. operating temp. 5 – 95% humidity non-condensing 0 – 10,000 feet altitude -40 to +85°C storage temp.
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	UL 60950; UL508; CSA C22.2 no 60950
EMI Compliance	CISPR/EN55022 Class A; FCC Class A; CE Mark; EN61000-4-2; EN61000-4-3; EN61000-4-4; EN61000-4-5; EN61000-4-6
Environmental Compliance	IEC60068-2-32 (Free fall) IEC60068-2-27 (Shock) IEC60068-2-6 (Vibration)
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

Standard Operating Temperature
0°C to +60°C

SISTF1011-111-LR
(1) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]
to (1) 100BASE-FX 1300nm MM (ST)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

SISTF1013-111-LR
(1) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]
to (1) 100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

SISTF1014-111-LR
(1) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]
to (1) 100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 17.0 dB

Extended Operating Temperature
-40°C to +75°C

SISTF1011-111-LRT
(1) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]
to (1) 100BASE-FX 1300nm MM (ST)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

SISTF1013-111-LRT
(1) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]
to (1) 100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

SISTF1014-111-LRT
(1) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]
to (1) 100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 17.0 dB

Optional Accessories

(sold separately)

External AC/DC Power Supply:

SPS-UA12DHT
(100-240 VAC input -25°C to +70°C operating temperature)

Industrial 10/100BASE-TX to 100BASE-FX

Industrial Switch

AUTO NEG AUTO CROSS

Transition Networks's Industrial Switches are hardened devices designed to reliably operate in harsh environments such as those found on factory floors, outdoor enclosures or other hazardous environments.

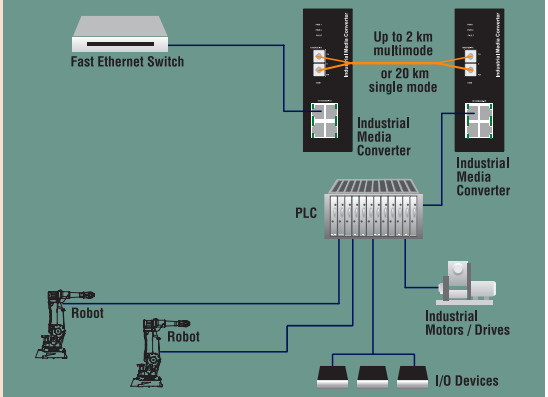
Eliminate EMI and RFI issues or overcome distance limitations with copper based cabling by using the Industrial Media Converter to convert your copper based equipment over to fiber optics. The media converter can connect to either 10Base-T or 100Base-TX ports and provides a 100Base-FX fiber optic connection for links up to 20km.

SISTF101x-141-LRx

Features

- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- DIN Rail Mounting and Wall Mount Brackets Included
- Standard (0°C to 60°C) or extended (-40°C to 75°C) operating temperature
- Dual Auto-Sensing Redundant DC Power Inputs
- Barrel connector interface cable included for connecting external AC/DC power supply

Extend Network Distance in Industrial Applications



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™, 802.3u™, 802.3x™
Status LEDs	**PWR (Power)**: ON = Unit has power connected **PWR 1 (Power)**: ON = primary power connected **PWR 2 (Power)**: ON = backup power connected **Fault**: ON = Power failure or port link failure **LNK/ACT (fiber)**: ON = Link; Flashing = data transmitting **FDX/COL (fiber)**: ON = Full duplex mode; Flashing = collisions occurring **RJ-45 (Ports 1 – 4)**: ON orange = Full duplex mode; Flashing orange = collisions occurring; ON green = UTP link; Flashing green = data transmitting
Dip Switches	**1:** Full Duplex Fiber / Half Duplex Fiber
Data Transfer Rate	**10BASE-T:** 14,880 pps **100BASE-TX:** 148,800 pps
MAC Addresses	1K
Data Memory Buffer	512Kb
Backplane	1.0 Gbps
Dimensions	**Width**: 2.1" [54 mm] **Depth**: 4.1" [105 mm] **Height**: 5.3" [135 mm]
Ingress Protection	IP 31
Input Power	12 to 48 VDC, 0.2A-0.7A, redundant inputs with reverse polarity protection; Additional barrel connector
Power Consumption	3.3 watts
Environment	0 to +60°C Std. operating temp. -40 to +75°C Ext. operating temp. 5 – 95% humidity non-condensing 0 – 10,000 feet altitude -40 to +85°C storage temp.
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	UL 60950; UL508; CSA C22.2 no 60950
EMI Compliance	CISPR/EN55022; EN60950 Class A; FCC Class A; CE Mark; EN61000-4-2; EN61000-4-3; EN61000-4-4; EN61000-4-5; EN61000-4-6
Environmental Compliance	IEC60068-2-32 (Free fall) IEC60068-2-27 (Shock) IEC60068-2-6 (Vibration)
Warranty	Lifetime

Ordering Info

Standard Operating Temperature
0°C to +60°C

SISTF1011-141-LR
(4) 10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to (1) 100BASE-FX 1300nm MM (ST) **[2 km / 1.2 mi.] Link Budget: 11.0 dB**

SISTF1013-141-LR
(4) 10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to (1) 100BASE-FX 1300nm MM (SC) **[2 km / 1.2 mi.] Link Budget: 11.0 dB**

SISTF1014-141-LR
(4) 10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to (1) 100BASE-FX 1310nm SM (SC) **[20 km/12.4 mi.] Link Budget: 17.0 dB**

Extended Operating Temperature
-40°C to +75°C

SISTF1011-141-LRT
(4) 10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to (1) 100BASE-FX 1300nm MM (ST) **[2 km / 1.2 mi.] Link Budget: 11.0 dB**

SISTF1013-141-LRT
(4) 10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to (1) 100BASE-FX 1300nm MM (SC) **[2 km / 1.2 mi.] Link Budget: 11.0 dB**

SISTF1014-141-LRT
(4) 10/100BASE-TX (RJ-45) **[100 m/328 ft.]**
to (1) 100BASE-FX 1310nm SM (SC) **[20 km/12.4 mi.] Link Budget: 17.0 dB**

Optional Accessories

(sold separately)

External AC/DC Power Supply:

SPS-UA12DHT
(100-240 VAC input -25°C to +70°C operating temperature)

Industrial Switch

AUTO NEG AUTO CROSS

Transition Networks's Industrial Switches are hardened devices designed to reliably operate in harsh environments such as those found on factory floors, outdoor enclosures or other hazardous environments.

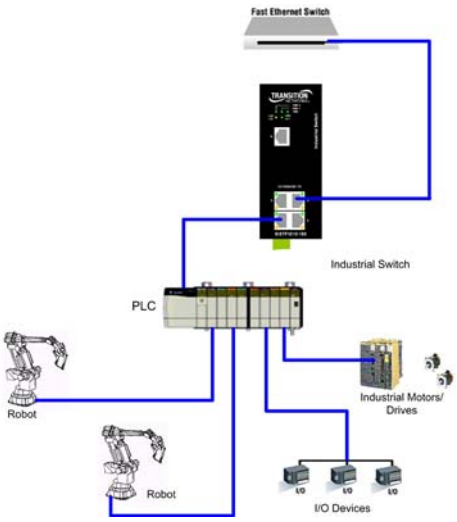
SISTF1010-1x0-LRx

Features

- Auto-Negotiation *(see page 14)*
- AutoCross™ *(see page 14)*
- Standard (0°C to 60°C) or Extended operating temperature (-40°C to 75°C)
- Dual Auto-Sensing Redundant DC Power Inputs
- DIN Rail Mounting and Wall Mount Brackets Included
- Barrel connector interface cable included

for connecting external AC/DC power supply

Utilize Ethernet Connectivity in Industrial Automation



Specifications

Standards	IEEE Std. 802.3™, 802.3u™, 802.3x™
Status LEDs	**PWR (Power):** ON = unit has power connected **PWR 1 (Power):** ON = primary power connected **PWR 2 (Power):** ON = backup power connected **LNK/ACT (ports 1 – 8):** ON = Link; FLASHING = data transmitting **FDX/COL (ports 1 – 8):** ON = Full duplex mode; FLASHING = collisions occurring
Data Transfer Rate	**10BASE-T:** 14,880 pps **100BASE-TX:** 148,800 pps
MAC Addresses	**-150 models:** 1K **-180 models:** 2K
Data Memory Buffer	**-150 models:** 512Kb **-180 models:** 1Mb
Backplane	**-150 models:** 1.0 Gbps **-180 models:** 1.6 Gbps
Dimensions	Width: 2.1" [54 mm] Depth: 4.1" [105 mm] Height: 5.3" [135 mm]
Ingress Protection	IP 31
Input Power	12 to 48 VDC; 0.2A; redundant inputs with reverse polarity protection Additional barrel connector
Power Consumption	**-150 models:** 2.8 Watts **-180 models:** 4.6 Watts
Environment	0 to +60°C standard operating temperature; -40 to +75°C extended operating temperature; 5% – 95% humidity non-condensing; 0 – 10,000 ft. altitude -40 to +85°C storage temperature
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	UL 60950; UL508; CSA C22.2 no 60950
EMI Compliance	CISPR22/EN55022; EN60950 Class A; FCC Class A; CE Mark; EN61000-4-2; EN61000-4-3; EN61000-4-4; EN61000-4-5; EN61000-4-6
Environmental Compliance	IEC60068-2-32 (Free fall); IEC60068-2-27 (Shock); IEC60068-2-6 (Vibration)
Warranty	Lifetime

Ordering Info

Standard Operating Temperature: 0°C to +60°C

Extended Operating Temperature: -40°C to +75°C

SISTF1010-150-LR (standard temp)
SISTF1010-150-LRT (extended temp)
(5) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]

SISTF1010-180-LR (standard temp)
SISTF1010-180-LRT (extended temp)
(8) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]

Optional Accessories

(sold separately)

External AC/DC Power Supply:
SPS-UA12DHT
(100-240 VAC input -25°C to +70°C operating temperature*)*

Managed Redundant Industrial Switch

AUTO NEG AUTO CROSS

Incorporate Redundant Ring technology into your industrial automation network to increase reliability and system uptime. Critical communication needs can now be protected using redundant copper or fiber links with switching recovery times of less than 300ms. These 8-port switches can be SNMP managed via web browser to configure all of the latest advanced industrial networking capability including IGMP snooping, VLANs, QoS, port mirroring and trunking.

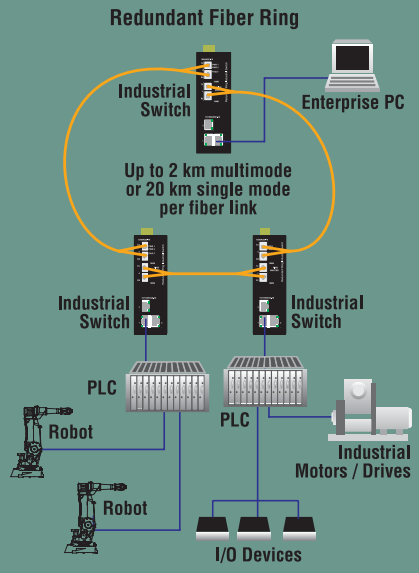
Transition Networks's Industrial Switches are hardened devices designed to reliably operate in harsh environments such as those found on factory floors, outdoor enclosures or other hazardous environments.

SISTM101x-1xx-LRx

Features

- AutoCross™ *(see page 14)*
- IEEE 802.1P, 4-level priority queuing
- IGMP Snooping V1 with Query mode
- Auto-Negotiation *(see page 14)*
- IEEE 802.1Q VLAN capability
- Port Trunking/Mirroring
- Redundant Ring Switching Technology (recovery time < 300ms)
- SNMP trap and SMTP email trap support
- SNTP Clock Synchronization
- Bandwidth Allocation
- Ingress Packet Filtering
- DHCP Client Support
- Spanning Tree/Rapid Spanning Tree
- TFTP Firmware Update
- Dual Homing Application Support
- Auto-Sensing Redundant DC Power Inputs
- Dry Contact Relays
- System Configuration Restore/Backup

Industrial Redundant Ring Topologies



- Standard (0°C to 60°C) or extended (-40°C to 75°C) operating temperature
- Barrel connector interface cable included for connecting external AC/DC power supply

Specifications

Standards	IEEE Std. 802.3™, 802.1p™, 802.1Q™, 802.3u™, 802.1d™, 802.1w™, 802.3x™
Status LEDs	**PWR (Power)**: ON = power connected **R.M.**: ON = Device is the Master in the redundant ring network **PWR 1 (Power)**: ON = primary power connected **PWR 2 (Power)**: ON = backup power connected **Fault**: ON = Fault on port link or loss of PWR 1 or PWR 2 **LNK/ACT (Fiber)**: ON = Link on fiber 100Mb/s; Flashing = data transmitting **FDX/COL (Fiber)**: ON = Full duplex link on fiber; Flashing = collisions occurring
Data Transfer Rate	**10BASE-T:** 14,880 pps **100BASE-TX:** 148,800 pps
MAC Addresses	2K
Max Packet Size	1536 bytes
Data Memory Buffer	1Mb
Backplane	2.0 Gbps
SNMP MIB	RFC 1213 MIBII, RFC 1493 Bridge MIB, RMON RFC 1757, RFC 2674 VLAN MIB, RFC 1643 Ethernet like MIB, RFC 1215 Trap MIB

Dimensions	**Width**: 2.1" [54 mm] **Depth**: 4.1" [105 mm] **Height**: 5.3" [135 mm]
Ingress Protection	IP 31
Input Power	12 to 48 VDC, 0.2A, redundant inputs with reverse polarity protection; Additional barrel connector cable
Power Consumption	**-180 Models:** 4.6 watts **-162 Models:** 6.0 watts
Environment	0 to +60°C Std. operating temp. -40 to +75°C Ext. operating temp. -40 to +85°C storage temp. 5 – 95% humidity non-condensing 0 – 10,000 feet altitude
Shipping Weight	2 lbs. [0.90 kg]
Safety Compliance	UL 60950; cUL60950
EMI Compliance	CISPR22/EN55022; EN60950 Class A; FCC Class A; CE Mark; EN61000-4-2; EN61000-4-3; EN61000-4-4; EN61000-4-5; EN61000-4-6
Warranty	Lifetime

Ordering Info

Standard Operating Temperature
0°C to +60°C

SISTM1010-180-LR
(8) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]

SISTM1011-162-LR
(6) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]
to (2) 100BASE-FX 1300nm MM (ST)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

SISTM1013-162-LR
(6) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]
to (2) 100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

SISTM1014-162-LR
(6) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]
to (2) 100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 17.0 dB

Extended Operating Temperature
-40°C to +75°C

SISTM1010-180-LRT
(8) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]

SISTM1011-162-LRT
(6) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]
to (2) 100BASE-FX 1300nm MM (ST)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

SISTM1013-162-LRT
(6) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]
to (2) 100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

SISTM1014-162-LRT
(6) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]
to (2) 100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 17.0 dB

Optional Accessories

(sold separately)

External AC/DC Power Supply:

SPS-UA12DHT
(100-240 VAC input -25°C to +70°C operating temperature*)*

Substation Industrial Switch 10/100BASE-TX to 100BASE-FX

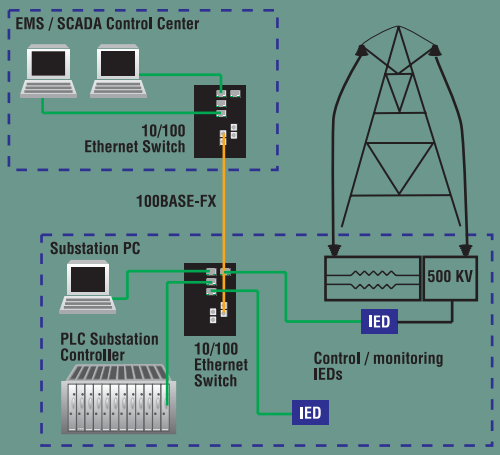
Substation Industrial Switch

AUTO NEG · AUTO CROSS · LINK PASS THROUGH · FAR END FAULT · PAUSE · AUTO LINK RESTORE

SIBTF10xx-1xx-Mx

Table of Contents
Select Media Converter
Select Switch

Extend Network Distance in Substation



Transition Networks's Substation Industrial Switches are hardened devices designed to reliably operate in harsh substation environments or other hazardous environments (Class 1, Div. 2). The switches are IEEE1613 compliant and offer many, industry first features such as a Lifetime Warranty, Automatic Link Restoration, Far-End Fault, Pause and the widest selection of fiber optic ports and distances.

A wide voltage input range accommodates both AC and DC voltage inputs and the extended operating temperature range of -40°C to +75°C with no fans, offers flexibility in the mounting environment with the utmost in reliability. For mission critical applications, a dual fiber port version is offered that can be used in a redundant fiber ring or multiple path configurations.

Features

- IEEE 1613 compliant
- AutoCross™ *(see page 14)*
- Auto-Negotiation *(see page 14)*
- Link Pass Through (-110 model) *(see page 15)*
- Far End Fault *(see page 14)*
- Pause *(see page 15)*
- Automatic Link Restoration *(see page 16)*
- Redundant Fiber Ports (-130 model)
- Dry Contact Relays
- DIN-Rail, Rack or Wall Mounted
- Single or Redundant 48 – 170 VDC Power Inputs
- -40°C to 75°C operating temp
- Hazardous Location Rated (Class 1, Div. 2/Zone2)

Eliminate EMI and RFI issues or overcome distance limitations with copper based cabling by using the Industrial Switch to convert your copper based equipment over to fiber optics. The switch can connect to either 10BASE-T or 100BASE-TX ports and provides a 100BASE-FX fiber optic connection for links up to 20km in both duplex and single fiber configurations.

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™, 802.3u™, 802.3x™, 802.3p™
Status LEDs	**PRI P.G. (Power):** ON = primary power connected **AUX P.G. (Power):** ON = auxiliary power connected **FAULT:** ON = unit failed to initialize correctly **100M:** ON = Link on fiber 100Mb/s; FLASHING = data transmitting **10M:** ON = Link on copper 10Mb/s; FLASHING = data transmitting
Switches	**Switch 1:** Auto-Negotiation on/off **Switch 2:** Force 10Mb or 100Mb (copper) **Switch 3:** Full/Half duplex (copper) **Switch 4:** Full/Half duplex **Switch 5:** Full/Half duplex (fiber port 5, if present) **Switch 6:** Link Pass Through on/off (-110 models only) **Switch 7:** Fiber Redundancy on/off (-130 models only) **Switch 8:** AutoCross™ On/Off
Dimensions (-110 models)	Width: 3.38" [86 mm] Depth: 5.0" [127 mm] Height: 6.0" [152 mm]
Dimensions (-130 & -140 models)	Width: 4.13" [105 mm] Depth: 5.0" [127 mm] Height: 6.0" [152 mm]
Ingress Protection	IP 30
Input Power	48 to 170 VDC; 15W max., single or redundant inputs
Environment	-40 to +75°C operating temp; -40 to +85°C storage temp; 5% – 95% humidity non-condensing; 0 – 10,000 ft. altitude
Shipping Weight	4 lbs. [1.86 kg]
Compliance	UL/C-UL1604 Class 1, Div 2, Groups A, B, C, D; UL 60950; UL508; CSA C22.2 no 60950; CISPR22/EN55022; EN60950 Class A; FCC Class A; CE Mark; IEC 61000-4; IEC 61850-3; IEEE1613; NEMA TS-2
Warranty	Lifetime

See product manual for latest EMS and Environmental test ratings.

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

SIBTF1011-110-MS (single power input)
SIBTF1011-110-MR (dual power inputs)
(1) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]
to (1) 100BASE-FX 1300nm MM (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SIBTF1011-130-MS (single power input)
SIBTF1011-130-MR (dual power inputs)
(3) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]
to (2) 100BASE-FX 1300nm MM (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SIBTF1011-140-MS (single power input)
SIBTF1011-140-MR (dual power inputs)
(4) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]
to (1) 100BASE-FX 1300nm MM (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SIBTF1013-110-MS (single power input)
SIBTF1013-110-MR (dual power inputs)
(1) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]
to (1) 100BASE-FX 1300nm MM (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SIBTF1013-130-MS (single power input)
SIBTF1013-130-MR (dual power inputs)
(3) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]
to (2) 100BASE-FX 1300nm MM (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SIBTF1013-140-MS (single power input)
SIBTF1013-140-MR (dual power inputs)
(4) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]
to (1) 100BASE-FX 1300nm MM (SC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

SIBTF1014-110-MS (single power input)
SIBTF1014-110-MR (dual power inputs)
(1) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]
to (1) 100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

SIBTF1014-130-MS (single power input)
SIBTF1014-130-MR (dual power inputs)
(3) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]
to (2) 100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

SIBTF1014-140-MS (single power input)
SIBTF1014-140-MR (dual power inputs)
(4) 10/100BASE-TX (RJ-45)
[100 m/328 ft.]
to (1) 100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

Industrial Device Server RS232 to 100BASE-FX

SDSFE311x-100

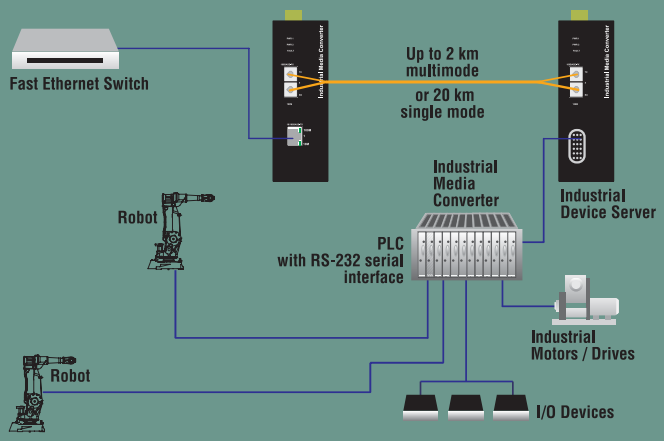
Transition Networks's Industrial Device Servers provide a serial-to-Ethernet conversion to enable customers to integrate any legacy serial-based device into their Ethernet networks located in either the office environment or on the factory floor.

These hardened devices are designed to reliably operate in harsh environments and/or extreme temperatures such as those found on factory floors, outdoor enclosures or other hazardous environments.

Network-enable serial based devices quickly and cost-effectively with these hardened industrial serial-to-Ethernet device servers. The device server can connect to RS232 serial ports and provides a 100BASE-FX Fast Ethernet fiber optic connection for links up to 80 km.

Device servers can also help eliminate EMI and RFI issues or overcome distance limitations with copper based serial cabling by converting your copper-based serial equipment over to fiber optics.

Network Enable Serial Devices in Industrial Applications



Features

- Remote Management
- Supports asynchronous serial data rates up to 115kb/s
- Control up to 4,096 virtual COM ports from one PC
- Extended (0°C to 70°C) operating temperature
- Redundant DC Power Inputs
- Dry Contact Relay output for power failure and link down
- DIN rail mounting brackets included

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	EIA/TIA-574, EIA/TIA RS232E, IEEE Std. 802.3™
Data Rate	**Serial:** 115 kb/s **Fiber:** 100Mb/s
Drivers	Windows 95, 98, ME, 2000, 2003, XP, NT 4.0 Microsoft NT/2000/2003 Terminal Server
Signal Support	TxD, RxD, CTS, RTS, DTR, DSR, RI, DCD, GND
Switches	**Switch 1:** Primary power alarm on/off **Switch 2**: Redundant power alarm on/off **Switch 3**: Fiber port alarm on/off **Switch 4**: n/a
Status LEDs	**PWR (Power)**: ON = primary power connected **RPS (Power)**: ON = backup power connected **ALM**: ON = fault on port link or loss of PWR or RPS **100 (fiber)**: ON = link on fiber 100Mb/s **LNK/ACT (fiber)**: ON = fiber link / activity **POST**: ON = Power On Self Test successful; FLASHING = performing POST **ACT (copper)**: ON = Serial link / activity
Dimensions	**Width**: 2.0" [50 mm] **Depth**: 3.9" [100 mm] **Height**: 4.7" [120 mm]
Ingress Protection	IP 30
Input Power	9 to 48 VDC; 1.0A; redundant inputs
Environment	0 to +70°C standard operating temperature; 5% – 90% humidity non-condensing; 0 – 10,000 ft. altitude
Shipping Weight	2 lbs. [0.90 kg]
Compliance	CISPR22/EN55022 Class A + EN55024; EN60950 Class A; FCC Class A; CE Mark
Warranty	Lifetime

Ordering Info

SDSFE3111-100
DB-9 [15 m/49 ft.]
to 1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 12.0 dB

SDSFE3113-100
DB-9 [15 m/49 ft.]
to 1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 12.0 dB

SDSFE3114-100
DB-9 [15 m/49 ft.]
to 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 15.0 dB

SDSFE3115-100
DB-9 [15 m/49 ft.]
to 1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 19.0 dB

SDSFE3117-100
DB-9 [15 m/49 ft.]
to 1550nm single mode (SC)
[80 km/49.7 mi.] Link Budget: 34.0 dB

Optional Accessories

(sold separately)

External AC/DC Power Supply:

SPS-UA12DHT
(100-240 VAC input -25°C to +70°C operating temperature)

See page 170 for EMS and Environmental test ratings.

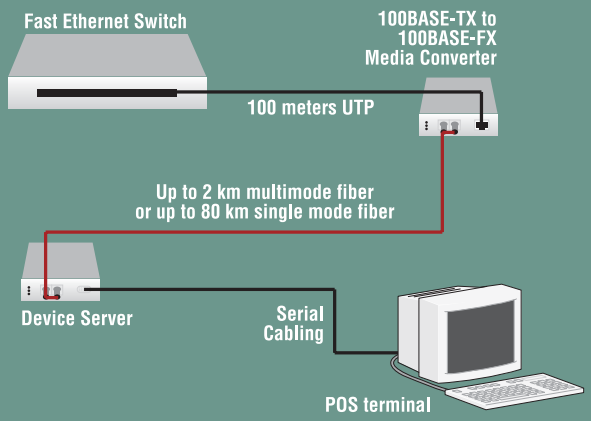
Device Server RS-232/422/485 to 100BASE-FX

SDSFE311x-120

Transition Networks's Device Servers provide a serial-to-Ethernet conversion to enable customers to integrate any legacy serial-based device into their Ethernet networks.

Network-enable serial based devices quickly and cost-effectively with these serial-to-Ethernet device servers. The device server can connect to RS-232, RS-422 or RS-485 serial ports and provides a 10/100BASE-TX or 100BASE-FX Ethernet fiber optic connection for links up to 80 km.

Network Enable Serial Devices



Features

- AutoCross™ (RJ-45 model only) *(see page 14)*
- Auto-Negotiation (RJ-45 model only) *(see page 14)*
- Remote Management
- Supports asynchronous serial data rates up to 115kb/s
- Supports RS-232, 4-wire RS-422 or 2/4-wire RS485 operation
- Control up to 4,096 virtual COM ports from one PC
- DIN rail mounting brackets included

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	EIA/TIA RS-232/422/485, EIA/TIA-574, IEEE Std. 802.3™
Data Rate	**Serial:** 115 kb/s **RJ-45:** 10/100Mb/s **Fiber:** 100Mb/s
Drivers	Windows 95, 98, ME, 2000, 2003, XP, NT 4.0 Microsoft NT/2000/2003 Terminal Server
Switches	**Switch 1:** ON = console serial port (RS-232); OFF = data serial port **Switch 2:** RS-232 mode on/off **Switch 3:** RS-422/485 (4-wire) mode on/off **Switch 4:** RS-485 (2-wire) mode on/off **Switch 7:** Termination resistor on/off
Status LEDs	**PWR (Power):** ON = power connected **100 (RJ-45):** ON = Link at 100Mb/s **LNK/ACT (RJ-45):** ON = UTP link; FLASHING = activity **LNK/ACT (Fiber):** ON = fiber link; FLASHING = activity **POST:** ON = Power On Self Test successful **ACT (serial):** ON = Serial link FLASHING = activity
Dimensions	Width: 3.5" [90 mm] Depth: 4.3" [109 mm] Height: 1.3" [32 mm]
Input Power	External AC/DC; 9 to 32 VDC, 0.8A
Environment	0 to +50°C std. Operating temp. 5 – 90% humidity non-condensing; 0 – 10,000 feet altitude
Shipping Weight	2 lb. [0.90 kg]
Compliance	CISPR22/EN55022 Class A + EN55024; EN60950 Class A; FCC Class A; CE Mark
Warranty	Lifetime

Ordering Info

SDSFE3110-120
DB-9 [15 m/49 ft.]*
to RJ-45 [100 m/328 ft.]

SDSFE3111-120
DB-9 [15 m/49 ft.]*
to 1300nm multimode (ST)
[2 km / 1.2 mi.] Link Budget: 12.0 dB

SDSFE3113-120
DB-9 [15 m/49 ft.]*
to 1300nm multimode (SC)
[2 km / 1.2 mi.] Link Budget: 12.0 dB

SDSFE3114-120
DB-9 [15 m/49 ft.]*
to 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 15.0 dB

SDSFE3115-120
DB-9 [15 m/49 ft.]*
to 1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 19.0 dB

SDSFE3117-120
DB-9 [15 m/49 ft.]*
to 1550nm single mode (SC)
[80 km/49.7 mi.] Link Budget: 34.0 dB

**Max. distance on the serial port is dependent on protocol:*
15 m/49 ft. (RS-232);
1.2 km/0.7 mi. (RS-422/485)

Industrial Device Server RS-422/485 to 100BASE-FX

industrial

SDSFE321x-110

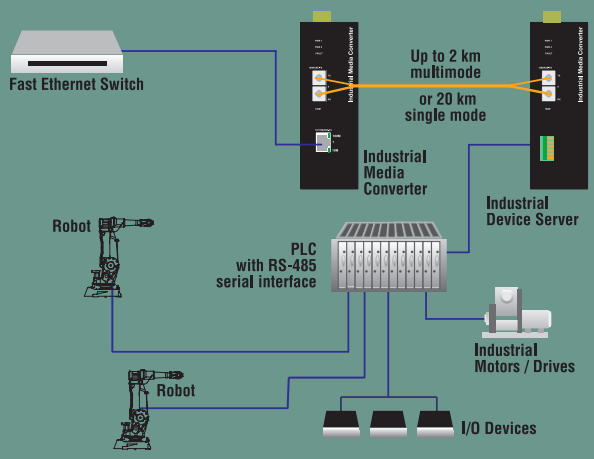
Transition Networks's Industrial Device Servers provide a serial-to-Ethernet conversion to enable customers to integrate any legacy serial-based device into their Ethernet networks located in either the office environment or on the factory floor.

These hardened devices are designed to reliably operate in harsh environments and/or extreme temperatures such as those found on factory floors, outdoor enclosures or other hazardous environments.

Network-enable serial based devices quickly and cost-effectively with these hardened industrial serial-to-Ethernet device servers. The device server can connect to RS-422 or RS-485 serial ports and provides a 100Base-FX Fast Ethernet fiber optic connection for links up to 80km.

Device servers can also help eliminate EMI and RFI issues or overcome distance limitations with copper based serial cabling by converting your copper-based serial equipment over to fiber optics.

Network Enable Serial Devices in Industrial Applications



Features

- Remote Management
- Supports asynchronous serial data rates up to 115kb/s
- Supports 4-wire RS-422 or 2/4-wire RS485 operation
- Control up to 4,096 virtual COM ports from one PC
- Extended (0°C to 70°C) operating temperature
- Redundant DC Power Inputs
- Dry Contact Relay output for power failure and link down
- DIN rail mounting brackets included

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	EIA/TIA RS-422, EIA/TIA RS-485, IEEE Std. 802.3™
Data Rate	**Serial:** 115 kb/s **Fiber:** 100Mb/s
Drivers	Windows 95, 98, ME, 2000, 2003, XP, NT 4.0 Microsoft NT/2000/2003 Terminal Server
Switches	**Switch 1:** Primary power alarm on/off **Switch 2**: Redundant power alarm on/off **Switch 3**: Fiber port alarm on/off **Switch 7**: 2-wire 485 or 4-wire 422/485 **Switch 8**: Termination resistor on/off
Status LEDs	**PWR (Power)**: ON = primary power connected **RPS (Power)**: ON = backup power connected **ALM**: ON = fault on port link or loss of PWR or RPS **100 (fiber)**: ON = link on fiber 100Mb/s **LNK/ACT (fiber)**: ON = fiber link / activity **POST**: ON = Power On Self Test successful; FLASHING = performing POST **ACT (copper)**: ON = Serial link / activity
Dimensions	**Width**: 2.0" [50 mm] **Depth**: 3.9" [100 mm] **Height**: 4.7" [120 mm]
Ingress Protection	IP 30
Input Power	9 to 48 VDC; 1.0A; redundant inputs
Environment	0 to +70°C standard operating temperature; 5% – 90% humidity non-condensing; 0 – 10,000 ft. altitude
Shipping Weight	2 lbs. [0.90 kg]
Compliance	CISPR22/EN55022 Class A + EN55024; EN60950 Class A; FCC Class A; CE Mark
Warranty	Lifetime

Ordering Info

SDSFE3211-110
Terminal Block [1.2 km / 0.7 miles] to 1300nm multimode (ST)
[2 km/1.2 mi.] Link Budget: 12.0 dB

SDSFE3213-110
Terminal Block [1.2 km / 0.7 miles] to 1300nm multimode (SC)
[2 km/1.2 mi.] Link Budget: 12.0 dB

SDSFE3214-110
Terminal Block [1.2 km / 0.7 miles] to 1310nm single mode (SC)
[20 km/12.4 mi.] Link Budget: 15.0 dB

SDSFE3215-110
Terminal Block [1.2 km / 0.7 miles] to 1310nm single mode (SC)
[40 km/24.9 mi.] Link Budget: 19.0 dB

SDSFE3217-110
Terminal Block [1.2 km / 0.7 miles] to 1550nm single mode (SC)
[80 km/49.7 mi.] Link Budget: 34.0 dB

Optional Accessories

(sold separately)

External AC/DC Power Supply:

SPS-UA12DHT
(100-240 VAC input -25°C to +70°C operating temperature)

See page 170 for EMS and Environmental test ratings.

Ethernet AUI to RJ-45 Transceiver

This Attachment Unit Interface (AUI) transceiver provides a method for connecting a workstation, or any other device with an AUI port, to twisted pair cabling in a 10BASE-T network. Devices with AUI ports could include: servers, hubs, bridges and routers. The E-TBT-MC04 transceiver allows twisted pair, UTP or STP, to be connected to these AUI ports.

E-TBT-MC04

Features

- Provides a complete interface of the AUI to Ethernet UTP cable.
- Supports data transfer rate of 10Mbps
- CSMA/CD access mechanism
- Capable of driving the UTP cable segment up to 100 meters (328 ft.) without the use of a repeater
- Selectable Link test and SQE test functions
- AUI locking post design allows the E-TBT-MC04 to directly attach to a host's AUI connector
- Can be used with or without an AUI cable
- LED indicators for network monitoring and diagnosing
- The RJ-45 port will automatically detect and reverse the polarity on the receive pair if needed.

Specifications

Standards	IEEE Std. 802.3™ 10BASE-T
Status LEDs	**COL:** Blinks when detecting collisions **STAT:** Solid Green: UTP Link established; Blinks Green: No UTP Link; 4-Blink Pattern: Polarity reversal detected on UTP cable **TX:** Blinks when transmitting data on the RJ-45 **RX:** Blinks when receiving data on the RJ-45
Switches	**SW1:** SQE Test: Up is enabled **SW2:** Link Test: Up is enabled **SW3:** Half or Full-Duplex: Up is for Half, Down is for Full
Dimensions	**Width:** 3.1" [79 mm] **Depth:** 0.8" [20 mm] **Height:** 1.7" [43 mm]
Power	No external power required
Input Voltage	10.2 to 15.75 VDC
Input Current	250mA@12VDC
Environment	0 – 50°C, 5% – 95% humidity non-condensing, 0 – 10,000 ft. altitude
Shipping Weight	1 lb. [0.45 kg]
Compliance	FCC & CISPR Class A, CE Mark
Warranty	Lifetime

Ordering Info

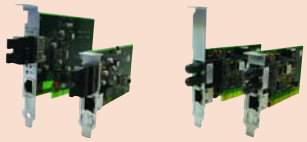
E-TBT-MC04
10BASE5 (AUI) DB-15 male
[50 m/164 ft.]
to 10BASE-T (RJ-45)
[100 m/328 ft.]

Ethernet or Fast Ethernet Twisted Pair to Fiber

PCI-Based Copper to Fiber Media Converters

AUTO NEG | AUTO CROSS | LINK PASS THROUGH | FAR END FAULT | AUTO LINK RESTORE | PAUSE

E-TBT-FRL-Nxx-02(xx) &
E-100BTX-FX-Nxx-01(xx)



Extend Network Distance: Two PCI-Based Media Converters used back-to-back extend the distance between two 10BASE-T or 100BASE-TX devices up to 2 km using multimode fiber or up to 20 km using single mode fiber.

Fiber to the Desktop: Connect an existing 10BASE-T or 100BASE-TX PC, workstation or file server directly to a fiber optic backbone in either full or half-duplex by bringing the fiber directly to the device. Simply connect the twisted pair port to the existing twisted pair NIC to create a safe, effective, space-saving solution.

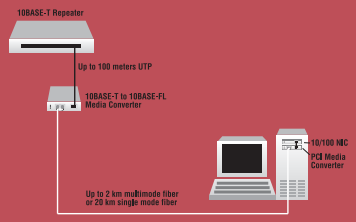
Deliver low cost, fiber optic connectivity to the desktop with these full-featured PCI powered media converters, designed to install directly inside a workstation or file server and mount into any slot on a standard PCI. No configuration is required; making installation a breeze. Since power is drawn directly from the PCI slot, no additional power supply is needed, nor is there any CPU utilization.

- 2 sizes to accommodate both standard and low profile PCI slots
- AutoCross™ *(see page 14)*
- Link Pass Through *(see page 15)*
- Easily installs inside PC or file server; no configuration required; no drivers to install
- Provides LEDs for easy network monitoring
- Saves space over traditional stand-alone converters
- No need to replace existing NICs
- Draws power directly from PCI slot; no power supply needed
- Universal PCI Compliant, supports both 3.3V and 5V signaling environments

E-100BTX-FX-N-01(xx) &
E-100BTX-FX-NLP-01(xx) only:

- Auto-Negotiation *(see page 14)*
- Far End Fault *(see page 14)*
- Automatic Link Restoration *(see page 16)*
- Pause *(see page 15)*

Extended Network Distance



Specifications

Standards	IEEE Std. 802.3™
Status LEDs	E-TBT-FRL-N-02(xx) & E-TBT-FRL-NLP-02(xx): **Power**: Lit for normal operation **LKF**: Link Fiber **LKC**: Link Copper **RXF**: Receive Fiber **RXC**: Receive Copper E-100BTX-FX-N-01(xx) & E-100BTX-FX-NLP-01(xx): **LED1**: Steady = Copper link **LED2**: Steady = Fiber link
Switches	E-TBT-FRL-N-02(xx) & E-TBT-FRL-NLP-02(xx): **S1**: Switch to enable/disable LinK Pass Through E-100BTX-FX-N-01(xx) & E-100BTX-FX-NLP-01(xx): **S1**: Auto-Negotiation On/Off **S2**: Pause On/Off **S3**: LPT On/Off **S4**: FEF On/Off
Dimensions	E-TBT-FRL-N-02(xx) & E-100BTX-FX-N-01(xx): **Width**: 0.8" [19 mm] **Depth**: 4.8" [121 mm] **Height**: 4.8" [121 mm] E-TBT-FRL-NLP-02(xx) & E-100BTX-FX-NLP-01(xx): **Width**: 0.8" [19 mm] **Depth**: 4.8" [121 mm] **Height**: 3.1" [79 mm]
Power Consumption	E-TBT-FRL-N-02(xx) & E-TBT-FRL-NLP-02(xx): >450mA E-100BTX-FX-N-01(xx) & E-100BTX-FX-NLP-01(xx): 600mA
Power Source	PCI edge connector
Environment	0°C – 50°C; 5% – 95% humidity non-condensing; 0 – 10,000 ft. altitude
Shipping Weight	1 lb. [0.45 kg]
Compliance	CISPR22/EN55022; EN55024; EN60950 Class A; FCC Class A; CE Mark
Warranty	Lifetime

Ordering Info

E-TBT-FRL-N-02(ST)
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 850nm MM (ST)
[2 km/ 1.2 mi.] Link Budget: 13.5 dB

E-TBT-FRL-N-02(SC)
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 850nm MM (SC)
[2 km/ 1.2 mi.] Link Budget: 13.5 dB

E-100BTX-FX-N-01
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm MM (ST)
[2 km/ 1.2 mi.] Link Budget: 11.0 dB

E-100BTX-FX-N-01(SC)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm MM (SC)
[2 km/ 1.2 mi.] Link Budget: 11.0 dB

E-100BTX-FX-N-01(SM)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

Low Profile Cards

E-TBT-FRL-NLP-02(ST)
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 850nm MM (ST)
[2 km/ 1.2 mi.] Link Budget: 13.5 dB

E-TBT-FRL-NLP-02(SC)
10BASE-T (RJ-45) **[100 m/328 ft.]**
to 10BASE-FL 850nm MM (SC)
[2 km/ 1.2 mi.] Link Budget: 13.5 dB

E-100BTX-FX-NLP-01
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm MM (ST)
[2 km/ 1.2 mi.] Link Budget: 11.0 dB

E-100BTX-FX-NLP-01(SC)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1300nm MM (SC)
[2 km/ 1.2 mi.] Link Budget: 11.0 dB

E-100BTX-FX-NLP-01(SM)
100BASE-TX (RJ-45) **[100 m/328 ft.]**
to 100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

GBIC Modules 1000BASE-LX or SX

TN-GB-xM5x

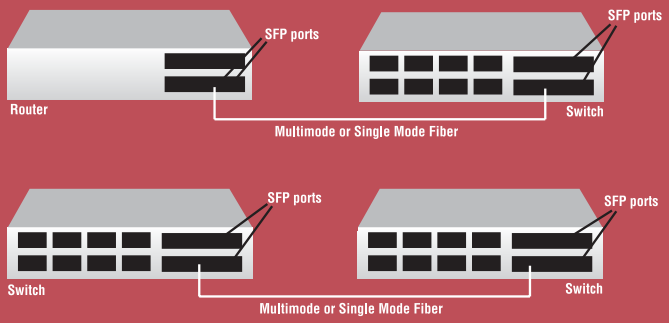
Transition Networks's GBIC transceiver is a plug-in module and it is hot-swappable. It allows for seamless integration of fiber with copper LAN connections wherever GBIC interface slots are available. This device is economical, it saves time, offers flexibility and eliminates the necessity for replacing entire devices when the customers need to change or upgrade fiber connections.

Notes:
Using Transition Networks GBIC modules will not void or interfere with the original equipment manufacturer's warranty or maintenance contracts.

Transition Networks GBICs are built to comply with IEEE 802.3z which is intended to provide Gigabit interconnectivity between different vendors.

Transition's GBIC modules are compatible with all major switch and router vendors.

Fiber Connections with GBICs



Features

- Laser Class 1 Product
- Compliant with 802.3z 1000BASE-SX; 1000BASE-LX
- Plug-and-Play module
- Hot-swappable
- TTL Logic Interface

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE 802.3z 1000BASE-SX; 1000BASE-LX
Dimensions	**Width**: 1.2" [30 mm] **Depth**: 2.6" [65 mm] **Height**: 0.40" [10 mm]
Power	TN-GB-xxx: 5V, no external power required MIL-GBIC-xxx: 3.3/5V, no external power required
Power Consumption	0.8 watts
Environment	0°C – 70°C
Compliance	UL Registered, CSA, IEC 60825-1 and IEC 60825-2, CE Marked
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

TN-GB-MM5
1000BASE-SX 850nm MM (SC)
[62.5/125µm: 220 m / 722 ft.]
Link Budget: 8.5 dB
[50/125µm: 550 m / 1804 ft.]
Link Budget: 8.5 dB

TN-GB-SM5
1000BASE-LX 1310nm SM (SC)
[10 km/6.2 mi.] Link Budget: 11.0 dB

TN-GB-SM53
1000BASE-LX 1310nm SM (SC)
[30 km/18.6 mi.] Link Budget: 19.0 dB

TN-GB-SM55
1000BASE-LX 1550nm SM (SC)
[50 km/31.1 mi.] Link Budget: 19.0 dB

TN-GB-SM58
1000BASE-LX 1550nm SM (SC)
[80 km/49.7 mi.] Link Budget: 24.0 dB

TN-GB-SM512
1000BASE-LX 1550nm SM (SC)
[120 km/74.6 mi.] Link Budget: 32.0 dB

GBIC Modules for use with MIL-SM808G(xx) Switch):

MIL-GBIC-SX
1000BASE-SX 850nm MM (SC)
[62.5/125µm: 220 m / 722 ft.]
Link Budget: 8.5 dB
[50/125µm: 550 m / 1804 ft.]
Link Budget: 8.5 dB

MIL-GBIC-LX10
1000BASE-LX 1310nm SM (SC)
[10 km/6.2 mi.] Link Budget: 11.0 dB

Small Form Factor Pluggables

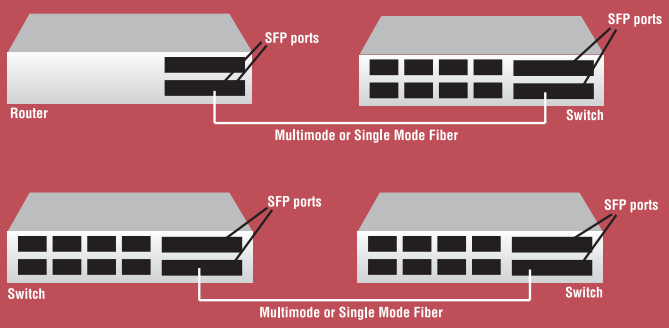
TN-SFP-xxx

- Hot-Pluggable SFP Footprint LC Optical Transceiver
- Digital Diagnostic Function
- Class 1 Laser International Safety Standard IEC-60825 Compliant
- Compatible with Small Form Factor Pluggable Multi-Sourcing Agreement (MSA)

Note: Per Cisco Systems's literature, the Cisco switches with SFP slots do not accept modules other than Cisco's own SFPs. The Cisco switch identifies the manufacturer ID along with the part number and blocks operations to this port for non-Cisco interfaces. Other major SFP switch manufacturers do not indicate in their literature that such restrictions are imposed.

Transition Networks's SFP units fully comply with Multi-Sourcing Agreement (MSA). This compliance allows Transition Networks SFP modules to be used on other MSA-compliant SFP platforms without any problems.

Fiber Connections with SFPs



Applications

- Gigabit Ethernet Switches and Routers
- Fibre Channel Switch Infrastructure
- XDSL Applications
- Metro Edge Switching

Additional Features

TN-SFP-SX or -LXx SFP modules:

- Compliant with IEEE 802.3z Gigabit Ethernet
- Compliant with Fiber Channel 1X SM-LC-L FC-PI

TN-SFP-OC3x SFP modules:

- Compliant with 100BASE-FX
- Compliant with Intermediate-Reach SONET OC-3 / SDH STM-1 (S-1.1)

TN-SFP-OC12x SFP modules:

- Compliant with Intermediate-Reach SONET OC-12 / SDH STM-4 (S-4.1)

TN-SFP-FC2Xx SFP modules:

- Compliant with IEEE 802.3z Gigabit Ethernet
- Compliant with Fiber Channel 1X/2X SM-LC-L FC-PI
- Compliant with Short-Reach SONET OC-48 / SDH STM-16 (S-16.1)

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE 802.3 2003; ANSI X3.297-1997
Dimensions	**Width:** 0.52" [13 mm] **Depth**: 2.18" [55 mm] **Height**: 0.33" [8 mm]
Power	3.3V
Power Consumption	0.66 watts
Environment	**TN-SFP-SX, TN-SFP-SXD, TN-SFP-LX1, TN-SFP-ESX5, TN-SFP-ESX6, TN-SFP-ELX1, TN-SFP-FC2XM, TN-SFP-FC2XS2:** -10°C – 85°C **TN-SFP-LX3, TN-SFP-LX5, TN-SFP-LX8, TN-SFP-LX12, TN-SFP-OCx, TN-SFP-LX16, TN-SFP-FC2XS40, TN-SFP-FC2XS15:** 0°C – 70°C
Compliance	IEC-60825; FDA 21; CFR 1040.10 and 1040.11
Warranty	Lifetime

Ordering Info

TN-SFP-OC3M
SFP 100BASE-FX/OC-3
1300nm MM (LC)
[2 km/1.2 mi.] Link Budget: 11.0 dB

TN-SFP-OC3S
SFP 100BASE-FX/OC-3
1310nm SM (LC)
[20 km/12.4 mi.] Link Budget: 17.0 dB

TN-SFP-OC12M
OC-12/STM-4 SFP 1300nm MM (LC)
[1 km/0.6 miles] Link Budget: 7.0 dB

TN-SFP-OC12S
OC-12/STM-4 SFP 1310nm SM (LC)
[20 km/12.4 mi.] Link Budget: 14.0 dB

TN-SFP-SX (model without DMI)
TN-SFP-SXD (model with DMI)
1000BASE-SX 850nm MM (LC)
[62.5/125µm: 220 m/722 ft.]
Link Budget: 8.0 dB
[50/125µm: 550 m/1804 ft.]
Link Budget: 8.0 dB

TN-SFP-ESX5
1000BASE-SX 1300nm Ext. MM (LC)
[50/125µm fiber only:
up to 2 km/1.2 mi.] Link Budget: 8.0 dB

TN-SFP-ESX6
1000BASE-SX 1300nm Ext. MM (LC)
[62.5/125µm fiber only:
up to 2 km/1.2 mi.] Link Budget: 8.0 dB

TN-SFP-LX1 (model with DMI)
TN-SFP-ELX1 (model without DMI)
1000BASE-LX 1310nm (LC) SM
[10 km/6.2 mi.] Link Budget: 11.5 dB

TN-SFP-LX3
1000BASE-LX 1310nm (LC) SM
[30 km/18.6 mi.] Link Budget: 19.0 dB

TN-SFP-LX5
1000BASE-LX 1550nm (LC) SM
[50 km/31.1 mi.] Link Budget: 19.0 dB

TN-SFP-LX8
1000BASE-LX 1550nm (LC) SM
[80 km/49.7 mi.] Link Budget: 24.0 dB

TN-SFP-LX12
1000BASE-LX 1550nm (LC) SM
[120 km/74.6 mi.] Link Budget: 32.0 dB

TN-SFP-LX16
1000BASE-LX 1550nm (LC) SM
[160 km/99.4 mi.] Link Budget: 37.0 dB

TN-SFP-FC2XM
OC-48/STM-16/Fibre Channel
1x/2x/1000BASE-SX 850nm (LC) MM
[62.5/125µm: 150 m/492 ft.]*
Link Budget: 6.0 dB
[50/125µm: 300 m/984 ft.]*
Link Budget: 6.0 dB

TN-SFP-FC2XS2
Fibre Channel 2x/1x / OC-48 / STM-16/
1000BASE-LX 1310nm SM (LC)
[2 km/1.2 miles] Link Budget: 8.5 dB

TN-SFP-FC2XS15
Fibre Channel 2x/1x / OC-48 / STM-16/
1000BASE-LX 1310nm SM (LC)
[15 km/9.3 mi.] Link Budget: 13.0 dB

TN-SFP-FC2XS40
Fibre Channel 2x/1x / OC-48 / STM-16/
1000BASE-LX 1310nm SM (LC)
[40 km/24.9 mi.] Link Budget: 26.0 dB

*Link distance at 1000BASE-SX and Fibre Channel 1x:
220m/722 ft using 62.5/125um MMF
550m/1804 ft using 50/125um MMF
*Link distance at Fibre Channel 2x/OC-48/STM-16:
150m/492 ft using 62.5/125um MMF
300m/984 ft using 50/125um MMF

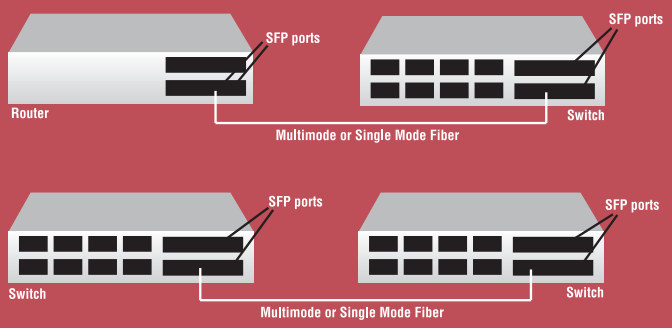
- Course Wavelength Division Multiplexing (CWDM) ITU Grid Compliant Wavelengths
- Hot-Pluggable SFP Footprint LC Optical Transceiver
- Digital Diagnostic Function
- Class 1 Laser International Safety Standard IEC-60825 Compliant
- Compatible with Small Form Factor Pluggable Multi-Sourcing Agreement (MSA)

TN-SFP-xxx-Cxx

Note: Per Cisco Systems's literature, the Cisco switches with SFP slots do not accept modules other than Cisco's own SFPs. The Cisco switch identifies the manufacturer ID along with the part number and blocks operations to this port for non-Cisco interfaces. Other major SFP switch manufacturers do not indicate in their literature that such restrictions are imposed.

Transition Networks's SFP units fully comply with Multi-Sourcing Agreement (MSA). This compliance allows Transition Networks SFP modules to be used on other MSA-compliant SFP platforms without any problems.

Fiber Connections with SFPs



Applications

- Gigabit Ethernet Switches and Routers
- Fibre Channel Switch Infrastructure
- XDSL Applications
- Metro Edge Switching

Additional Features

TN-SFP-LX8-Cxx SFP modules:

- Compliant with IEEE 802.3z Gigabit Ethernet
- Compliant with Fiber Channel 1X SM-LC-L FC-PI

TN-SFP-OC3S8-Cxx SFP modules:

- Compliant with 100BASE-FX
- Compliant with Intermediate-Reach SONET OC-3 / SDH STM-1 (S-1.1)

TN-SFP-OC12S-Cxx SFP modules:

- Compliant with Intermediate-Reach SONET OC-12 / SDH STM-4 (S-4.1)

TN-SFP-OC48S-Cxx SFP modules:

- Compliant with IEEE 802.3z Gigabit Ethernet
- Compliant with Fiber Channel 1X/2X SM-LC-L FC-PI
- Compliant with Short-Reach SONET OC-48 / SDH STM-16 (S-16.1)

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE 802.3 2003; ANSI X3.297-1997 (see additional standards by part number to the left)
Date Rate (Mb/s)	
Output Wavelength	-5.5nm < λ_c < +7.5nm
Dimensions	**Width:** 0.52" [13 mm] **Depth**: 2.18" [55 mm] **Height**: 0.33" [8 mm]
Power	3.3V
Power Consumption	0.66 watts

SKU	Min	Typical	Max
TN-SFP-OC3S8-Cxx	--	155	200
TN-SFP-OC12S-Cxx	--	622	--
TN-SFP-LX8-Cxx	100	1250	--
TN-SFP-OC48S-Cxx	622	2488	2670

Environment	0°C – 70°C
Compliance	IEC-60825; FDA 21; CFR 1040.10 and 1040.11
Warranty	Lifetime

Ordering Info

TN-SFP-OC3S8-Cxx
SFP 100BASE-FX/OC-3 (LC) SM
[80 km/49.7 mi.] Link Budget: 29.0 dB

TN-SFP-OC12S-Cxx
OC-12/STM-4 (LC) SM
[80 km/49.7 mi.] Link Budget: 29.0 dB

TN-SFP-LX8-Cxx
1000BASE-LX/Fibre Channel 1x (LC) SM
[80 km/49.7 mi.] Link Budget: 24.0 dB

TN-SFP-OC48S-Cxx
OC-48/STM-16/Fibre Channel 2x/1x/1000BASE-LX (LC) SM
[40 km/24.9 mi.] Link Budget: 18.0 dB

xx = center wavelength (λ_c)

27 = 1270nm	45 = 1450nm
29 = 1290nm	47 = 1470nm
31 = 1310nm	49 = 1490nm
33 = 1330nm	51 = 1510nm
35 = 1350nm	53 = 1530nm
37 = 1370nm	55 = 1550nm
39 = 1390nm	57 = 1570nm
41 = 1410nm	59 = 1590nm
43 = 1430nm	61 = 1610nm

CWDM-xxxxxxxxR

NEW

Features

- Increase bandwidth on existing fiber infrastructure
- Alleviate fiber exhaustion
- Transmit multiple protocols over an existing duplex fiber link by combining the fiber outputs of multiple media converters
- Provide scalable bandwidth of up to 20Gbps over existing fiber links
- "Plug and play," no configuration of CWDM components
- Use existing standard optical ports on switches and routers
  - •Utilize Optical Line Converter as transponder
- Lifetime Warranty

Accessory *(sold separately)*

CWDM-MB19R1
19" Rack Mount Bracket, 1RU High, holds 2 CWDM Modules

Ordering Info

CWDM- ____ **R**

Module Type

A	Add/Drop Mux
M	Mux/Demux

Connectors

LC	LC/PC
SC	SC/PC

Channel Configuration (Module Type A Only)

1A451	1 Ch. Add/Drop 1510nm (group 451)
1B451	1 Ch. Add/Drop 1530nm (group 451)
1C451	1 Ch. Add/Drop 1550nm (group 451)
1D451	1 Ch. Add/Drop 1570nm (group 451)
1A453	1 Ch. Add/Drop 1530nm (group 453)
1B453	1 Ch. Add/Drop 1550nm (group 453)
1C453	1 Ch. Add/Drop 1570nm (group 453)
1D453	1 Ch. Add/Drop 1590nm (group 453)
1A455	1 Ch. Add/Drop 1550nm (group 455)
1B455	1 Ch. Add/Drop 1570nm (group 455)
1C455	1 Ch. Add/Drop 1590nm (group 455)
1D455	1 Ch. Add/Drop 1610nm (group 455)
1A847	1 Ch. Add/Drop 1470nm (group 847)
1B847	1 Ch. Add/Drop 1490nm (group 847)
1C847	1 Ch. Add/Drop 1510nm (group 847)
1D847	1 Ch. Add/Drop 1530nm (group 847)
1E847	1 Ch. Add/Drop 1550nm (group 847)
1F847	1 Ch. Add/Drop 1570nm (group 847)
1G847	1 Ch. Add/Drop 1590nm (group 847)
1H847	1 Ch. Add/Drop 1610nm (group 847)

Channel Configuration (Module Type M Only)

451	4 Ch. 1510/1530/1550/1570nm
453	4 Ch. 1530/1550/1570/1590nm
455	4 Ch. 1550/1570/1590/1610nm
551	5 Ch. 1510/1530/1550/1570nm + 1310nm
553	5 Ch. 1530/1550/1570/1590nm + 1310nm
555	5 Ch. 1550/1570/1590/1610nm + 1310nm
847	8 Ch. 1470 ~ 1610nm
947	9 Ch. 1470 ~ 1610nm + 1310nm

** Note: 1310nm channel is wideband (+/- 50nm)*

Other channel configurations may be available upon request. Please contact Transition Networks.

Examples

CWDM-M455LCR
CWDM Mux/Demux Module, 4 channel, 1550 nm ~ 1610nm

CWDM-1D847SCR
CWDM Add/Drop Mux Module, 1 channel drop (1530nm) pass 1470nm ~ 1510nm & pass 1500nm ~ 1610nm

Specifications

4 Channel Mux/Demux Specific Optical Specs		
	Operating Wavelength:	1500nm ~ 1620nm
	Center Wavelength (λ_c):	1510nm ~ 1610nm
	Max Insertion Loss*:	1.7 dB/channel
5 Channel Mux/Demux Specific Optical Specs		
	CWDM Operating Wavelength:	1500nm ~ 1620nm
	CWDM Center Wavelength (λ_c):	1510nm ~ 1610nm
	1310nm Ch. Operating Wavelength:	1260nm ~ 1360nm
	1310nm Ch. Center Wavelength (λ_c):	1310nm
	CWDM Max. Insertion Loss*:	2.0 dB/channel
	1310nm Ch. Max Insertion Loss*:	1.0 dB/channel
	1310nm Ch. Port Isolation: Min.(@CWDM bands)	30 dB
8 Channel Mux/Demux Specific Optical Specs		
	Operating Wavelength:	1460nm ~ 1620nm
	Center Wavelength (λ_c):	1470nm ~ 1610nm
	Max Insertion Loss*:	3.0 dB/channel
9 Channel Mux/Demux Specific Optical Specs		
	CWDM Operating Wavelength:	1460nm ~ 1620nm
	CWDM Center Wavelength (λ_c):	1470nm ~ 1610nm
	1310nm Ch. Operating Wavelength:	1260nm ~ 1360nm
	1310nm Ch. Center Wavelength (λ_c):	1310nm
	CWDM Max. Insertion Loss*:	3.3 dB/channel
	1310nm Ch. Max Insertion Loss*:	1.0 dB/channel
	1310nm Ch. Port Isolation: Min.(@CWDM bands)	30 dB

** Note: All Insertion Loss values include one connector pair*

1 Channel Add/Drop (4 ch. group) Specific Optical Specs		
	Operating Wavelength:	1500nm ~ 1620nm
	Center Wavelength (λ_c):	1510nm ~ 1610nm
	Add/Drop Ch. Max Insertion Loss*:	0.7 dB
	Pass Ch. Max Insertion Loss*:	1.0 dB
1 Channel Add/Drop (8 ch. group) Specific Optical Specs		
	Operating Wavelength:	1460nm ~ 1620nm
	Center Wavelength (λ_c):	1470nm ~ 1610nm
	Add/Drop Ch. Max Insertion Loss*:	0.7 dB
	Pass Ch. Max Insertion Loss*:	1.0 dB
General Optical Specs (applies to all CWDM configurations)		
	CWDM Channel Spacing:	20nm
	CWDM Channel Passband:	-5.5nm < λ_c < +7.5nm
	Passband Ripple:	0.5 dB max.
	Adjacent Channel Isolation:	30 dB min.
	Non-adjacent Channel Isolation:	40 dB min.
	Directivity:	50 dB min.
	Return Loss:	45 dB min.
	Polarization Dependent Loss (PDL):	0.2 dB max.
	Optical Operating Power:	300 mW max.
Fiber Type	Corning SMF-28	
Dimensions	Module **Width:** 8.3" [212 mm] **Depth**: 7.6" [192 mm] **Height**: 1.7" [43 mm]	Rack Mount Bracket **Width:** 18.9" [481 mm] **Depth**: 1.6" [40 mm] **Height**: 1.7" [44 mm]
Environment	0°C to +70°C operating temperature -40°C to +85°C storage temperature	
Warranty	Lifetime	

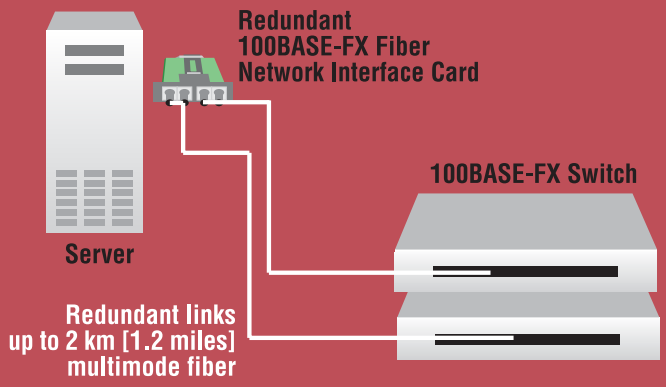
Redundant Fast Ethernet 100BASE-FX

Redundant Ethernet Network Interface Cards

ND-FX-xx-01

Maintain network stability and reliability with a redundant NIC. Dual-port NICs provide redundancy and, if port failure is detected, the auto-failover feature automatically transfers network communications to the secondary port without disrupting the network. Whether it's a desktop solution or network server, using a redundant NIC with auto-failover guarantees consistent reliable network performance.

Redundancy



Features

- LED status indicators monitor Full/Half Duplex, Collisions, Activity, Port Select, Link Status and Magic Packet.
- Supported by the latest drivers for a wide variety of operating systems including Windows 2000, 3.X, 9X & NT; Novell; Banyan; Solaris; Linux; UNIX and supports most popular LAN protocols.
- Supported for Desktop Management Task Force (DMTF) DMI 2.0 specification and PermaNet for network servers running Novell Netware or Microsoft Windows NT.

Fast Ethernet Dual Port

Supports PC98/PC99 and Wired for Management baseline specifications; full OnNow support and AMD's Magic Packet technology for remote wake-up and power-on. Supports Advanced Configuration and Power Interface (ACPI) specification version 1.0.

Specifications

See pages 171–181 for complete fiber optic connector specs.

Operation	Operates as a TIA SP4360A Type I, II device
Standards	IEEE Std. 802.3™ 100BASE-FX
Controls	IRQ and DMA Controlled by PCI Bus
Status LEDs	Full/Half-Duplex Collision Activity Port Select Link Status Magic Packet
Dimensions	**Width**: 0.5" [13 mm] **Depth**: 5.5" [140 mm] **Height**: 3.8" [96 mm]
Power	+5V DC 800mA max.
Standby Power	+5V DC 500mA min.
Environment	0° – 50°C; 5% – 90% humidity non-condensing; 0 – 10,000 ft. altitude
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	FCC Class A Part 15, VCCI Class 1, EN55022 Class 1
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

ND-FX-ST-01
(2) 100BASE-FX 1300nm MM (ST)
[2 km/1.2 mi.] Link Budget: 11.0 dB

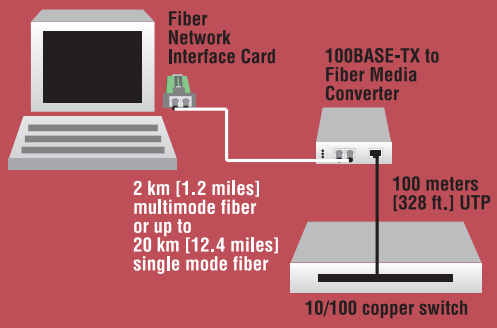
ND-FX-SC-01
(2) 100BASE-FX 1300nm MM (SC)
[2 km / 1.2 mi.] Link Budget: 11.0 dB

ND-FX-MT-01
(2) 100BASE-FX 1300nm MM (MT-RJ)
[2 km/1.2 mi.] Link Budget: 14.5 dB

Fast Ethernet Network Interface Cards

N-FX-xx-02(x)

The Fast Ethernet NIC provides a 100BASE-FX fiber port and delivers low cost, fiber optic connectivity to the desktop in fiber rich LAN environments. With both standard and low profile form factors; driver support for most popular operating systems; and PCI 2.2 plug-and-play capability; installation is a breeze in virtually any PC in your network.



Features

- Lifetime Warranty
- 32-bit bus master
- Supports 802.1P/Q VLAN tag
- IP multicast filter
- PCI 2.1 and 2.2 compliant
- Wake-On-LAN (WOL) power management
- Both standard and low profile form factors

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™ 2000 IEEE Std. 802.1P IEEE Std. 802.1Q
Expansion Bus Standard	PCI 2.1, 2.2
Status LEDs	**LINK/ACT (Link/Activity)**: ON = communication link; FLASHING = activity on link **FDX (Full-duplex)**: ON = Full-duplex link
LAN Drivers	Windows 95, 98 ME, 2000, 2003, XP, NT 4.0, VISTA NDIS 2,3,4,5 NetWare Server 3.12, 4.x, 5.x, 6.x NetWare DOS Client ODI MAC OS Linux x86 Kernel 2.2.x ~ 2.6.x Linux AMD64 Kernel 2.4.x ~ 2.6.x FreeBSD 3.2, 4.x, 5.x SCO Unixware 7.1, OpenUnix 8 SCO Open Server 5.0.x Solaris 8, 9, 10
Boot Server Support	PXE RPL NetWare NCP/IPX DHCP BOOTP
PCB Dimensions	**Width**: 2.2" [56 mm] **Depth**: 4.8" [122 mm] **Height**: 0.9" [23 mm]
Power	1.0A @ +5V
Environment	0° – 50°C; 5% – 95% humidity non-condensing; 0 – 10,000 ft. altitude
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	FCC Class B Part 15, CE Mark
Warranty	Lifetime

Product Number (standard profile)	Product Number (standard profile 20-pack)	Product Number (low profile)	Product Number (low profile 20-pack)	Description
N-FX-ST-02	N-FX-ST-02-020	N-FX-ST-02(L)	N-FX-ST-02(L)-020	100BASE-FX 1300nm MM (ST) **[2 km/1.2 mi.] Link Budget: 12.0 dB**
N-FX-SC-02	N-FX-SC-02-020	N-FX-SC-02(L)	N-FX-SC-02(L)-020	100BASE-FX 1300nm MM (SC) **[2 km/1.2 mi.] Link Budget: 12.0 dB**
N-FX-MT-02	N-FX-MT-02-020	N-FX-MT-02(L)	N-FX-MT-02(L)-020	100BASE-FX 1300nm MM (MT-RJ) **[2 km/1.2 mi.] Link Budget: 12.0 dB**
N-FX-LC-02	N-FX-LC-02-020	N-FX-LC-02(L)	N-FX-LC-02(L)-020	100BASE-FX 1300nm MM (LC) **[2 km/1.2 mi.] Link Budget: 12.0 dB**
N-FX-SC5-02		N-FX-SC5-02(L)		100BASE-FX 1310nm SM (SC) **[5 km/3.1 mi.] Link Budget: 12.0 dB**
N-FX-SC20-02		N-FX-SC20-02(L)		100BASE-FX 1310nm SM (SC) **[20 km/12.4 mi.] Link Budget: 16.0 dB**
Single Fiber Products				
N-FX-SB201-02		N-FX-SB201-02(L)		100BASE-FX 1310nm / 1550nm single fiber SM (SC) **[20 km/12.4 mi.] Link Budget: 18.0 dB**
N-FX-SB202-02		N-FX-SB202-02(L)		100BASE-FX 1550nm / 1310nm single fiber SM (SC) **[20 km/12.4 mi.] Link Budget: 18.0 dB**
Bundled Products				
N-FX-ST-02F (includes extra low profile bracket and Boot ROM is installed)				100BASE-FX 1300nm MM (ST) **[2 km/1.2 miles] Link Budget: 12.0 dB**
N-FX-SC-02F (includes extra low profile bracket and Boot ROM is installed)				100BASE-FX 1300nm MM (SC) **[2 km/1.2 miles] Link Budget: 12.0 dB**

Optional Accessories *(sold separately)*

Product Number	Description
BTR-NFX	Boot ROM chip supporting both BBS (BIOS Boot Specification) and non-BBS compliant PCs

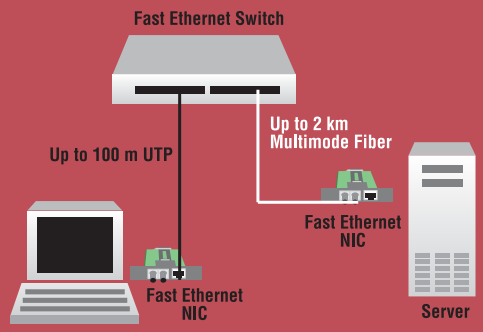
Fast Ethernet 10/100BASE-TX + 100BASE-FX

Dual Media Network Interface Cards

NDM-FTX-xx-01(x)

The Fast Ethernet Dual Media NIC provides both a 10/100BASE-TX copper port and a 100BASE-FX fiber port to allow ultimate flexibility for installation in both new and legacy LAN environments. With both standard and low profile form factors, driver support for most popular operating systems and PCI 2.2 plug-and-play capability helps make installation a breeze in virtually any PC in your network.

Application



Features

- Lifetime Warranty
- 32-bit bus master
- Supports 802.1P/Q VLAN tag
- IP multicast filter
- PCI 2.1 and 2.2 compliant
- Wake-On-LAN (WOL) power management
- Both standard and low profile form factors

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™ IEEE Std 802.1P IEEE Std 802.1Q
Expansion Bus Standard	PCI 2.1, 2.2
Status LEDs	**LINK/ACT (Link/Activity)**: ON = communication link; FLASHING = activity on link **FDX (Full-duplex)**: ON = Full-duplex link
LAN Drivers	NetWare Server 4.1x, 5.X NetWare DOS Client ODI Windows 95, 98, ME, 2000, 2003, XP, NT 4.0 Linux
Boot Server Support	Novell RPL Boot ROM PXE Boot ROM
PCB Dimensions	**Width**: 4.8" [122 mm] **Depth**: 7.1" [180 mm] **Height**: 0.9" [23 mm]
Power	1.0A @ +5V
Environment	0° – 50°C; 5% – 95% humidity non-condensing; 0 – 10,000 ft. altitude
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	FCC Part 15 Class A, CE Mark
Warranty	Lifetime

Product Number (standard profile)	Product Number (standard profile 20-pack)	Product Number (low profile)	Product Number (low profile 20-pack)	Description
NDM-FTX-ST-01	**NDM-FTX-ST-01-020**	**NDM-FTX-ST-01(L)**	**NDM-FTX-ST-01(L)-020**	10/100BASE-TX (RJ-45) **[100 m/328 ft.]** 100BASE-FX 1300nm MM (ST) **[2 km/1.2 mi.] Link Budget: 12.0 dB**
NDM-FTX-SC-01	**NDM-FTX-SC-01-020**	**NDM-FTX-SC-01(L)**	**NDM-FTX-SC-01(L)-020**	10/100BASE-TX (RJ-45) **[100 m/328 ft.]** 100BASE-FX 1300nm MM (SC) **[2 km/1.2 mi.] Link Budget: 12.0 dB**
NDM-FTX-MT-01	**NDM-FTX-MT-01-020**	**NDM-FTX-MT-01(L)**	**NDM-FTX-MT-01(L)-020**	10/100BASE-TX (RJ-45) **[100 m/328 ft.]** 100BASE-FX 1300nm MM (MT-RJ) **[2 km/1.2 mi.] Link Budget: 12.0 dB**
NDM-FTX-SC5-01	**NDM-FTX-SC5-01-020**	**NDM-FTX-SC5-01(L)**	**NDM-FTX-SC5-01(L)-020**	10/100BASE-TX (RJ-45) **[100 m/328 ft.]** 100BASE-FX 1310nm SM (SC) **[5 km/3.1 mi.] Link Budget: 12.0 dB**
NDM-FTX-SC20-01		**NDM-FTX-SC20-01(L)**		10/100BASE-TX (RJ-45) **[100 m/328 ft.]** 100BASE-FX 1310nm SM (SC) **[20 km/12.4 mi.] Link Budget: 16.0 dB**
Single Fiber Products				
NDM-FTX-SB201-01		**NDM-FTX-SB201-01(L)**		10/100BASE-TX (RJ-45) **[100 m/328 ft.]** 100BASE-FX 1310nm / 1550nm single fiber SM (SC) **[20 km/12.4 mi.] Link Budget: 18.0 dB**
NDM-FTX-SB202-01		**NDM-FTX-SB202-01(L)**		10/100BASE-TX (RJ-45) **[100 m/328 ft.]** 100BASE-FX 1550nm / 1310nm single fiber SM (SC) **[20 km/12.4 mi.] Link Budget: 18.0 dB**

Optional Accessories ***(sold separately)***

Product Number	Description
BTR-NDM-PXE	PXE Boot ROM
BTR-NDM-RPL	RPL Boot ROM

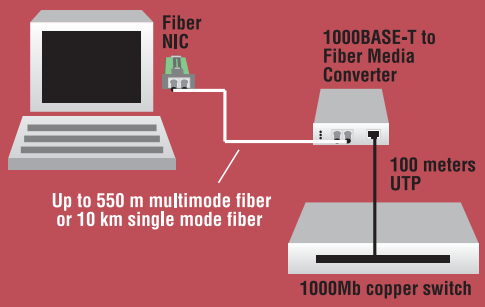
Gigabit Ethernet 1000BASE-SX/LX

Gigabit Ethernet Network Interface Cards

N-GxX-xx-01(x)

The Gigabit Ethernet NIC provides a 1000BASE-SX/LX fiber port to deliver fiber optic connectivity to the desktop in fiber rich LAN environments. With both standard and low profile form factors, driver support for most popular operating systems and PCI 2.2 plug-and-play capability helps make installation a breeze in virtually any PC in your network.

Application



Features

- Lifetime Warranty
- Supports 32/64-bit PCI 2.2 bus
- Supports 802.1P/Q VLAN tag
- Full-duplex flow control
- Plug-and-Play auto-configuration
- TCP, UDP & IP checksum off-loading
- Supports jumbo frames up to 9KB
- Both standard and low profile form factors

Product Number (standard profile)	Product Number (standard profile 20-pack)	Product Number (low profile)	Product Number (low profile 20-pack)	Description
N-GSX-SC-01	N-GSX-SC-01-020	N-GSX-SC-01(L)	N-GSX-SC-01(L)-020	1000BASE-SX 850nm MM (SC) [62.5/125µm: 220 m / 722 ft.] [50/125µm: 550 m / 1804 ft.] Link Budget: 8.5 dB
N-GSX-LC-01	N-GSX-LC-01-020	N-GSX-LC-01(L)	N-GSX-LC-01(L)-020	1000BASE-SX 850nm MM (LC) [62.5/125µm: 220 m / 722 ft.] [50/125µm: 550 m / 1804 ft.] Link Budget: 8.5 dB
N-GLX-SC-01		N-GLX-SC-01(L)		1000BASE-LX 1310nm SM (SC) [10 km/6.2 mi.] Link Budget: 10.5 dB
N-GLX-LC-01		N-GLX-LC-01(L)		1000BASE-LX 1310nm SM (LC) [10 km/6.2 mi.] Link Budget: 10.5 dB

Optional Accessories ***(sold separately)***

Product Number	Description
BTR-NGX-PXE	PXE Boot ROM

Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™ IEEE Std. 802.1P IEEE Std. 802.1Q
Expansion Bus Standard	PCI 2.2 bus 32/64-bit, 33/66MHz
Status LEDs	**LINK/ACT (Link/Activity)**: ON = communication link; FLASHING = activity on link **FDX (Full-duplex)**: ON = Full-duplex link
LAN Drivers	NetWare Server 4.x, 5.x, 6.x NetWare DOS Client ODI Windows 98, ME, 2000, 2003, XP, NT 4.0, VISTA Linux SCO UnixWare 7.1.x OpenUnix 8.0
Boot Server Support	PXE Boot ROM (optional)
PCB Dimensions	**Width**: 2.2" [56 mm] **Depth**: 6.5" [165 mm] **Height**: 0.9" [23 mm]
Power	2.0A @ +5V
Environment	0° – 50°C; 5% – 95% humidity non-condensing; 0 – 10,000 ft. altitude
Shipping Weight	1 lb. [0.45 kg]
Regulatory Compliance	FCC Class B Part 15, CE Mark
Warranty	Lifetime

Fast Ethernet 100BASE-FX

Fast Ethernet PCMCIA Fiber Adapter Cards

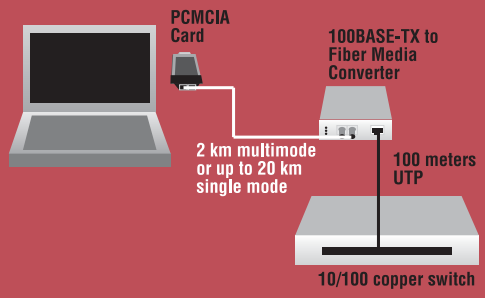
PCMxx-FX-xx-01

Fast Ethernet PCMCIA cards provide a 100BASE-FX fiber port to deliver fiber optic connectivity to the laptop in high-security, fiber rich LAN environments. They are offered in either 16-bit PC Card or high-performance 32-bit CardBus versions to match virtually any laptop PC and help save money by eliminating the need for a docking station and a fixed, fiber NIC.

Features

- Lifetime Warranty
- 32-bit CardBus or 16-bit PC card option
- Dongle-less fiber connection for fiber to the notebook applications in either high security or high bandwidth LAN environments
- Flow control and full/half duplex (32-bit)
- PCMCIA Type II compliant
- Diagnostic LEDs

Application



Specifications

See pages 171–181 for complete fiber optic connector specs.

Standards	IEEE Std. 802.3™ PCMCIA Type II CardBus PCMCIA Release 2.x JEIDA 4.x
Card Slot	PC Card 68-pin connector to PC
Status LEDs	**PCM16-FX-xx-01:** LINK: On = communication link; ACT: Flashing = collisions occurring **PCM32-FX-xx-01:** LINK/ACT: On = communication link; Flashing = activity on link FDX/COL: On = full duplex link; Flashing = collisions occurring
LAN Drivers	**PCM16-FX-xx-01:** NetWare 3.x, 4.0 NetWare DOS Client ODI Windows 95, 98, ME, 2000, XP, NT 4.0 **PCM32-FX-xx-01:** NetWare 3.x, 4.0 NetWare DOS Client ODI Windows 95, 98, ME, 2000, XP, NT 3.51, NT 4.0 Windows for Workgroup 3.1/3.11 Linux
Dimensions	**Width**: 2.1" [54 mm] **Depth**: 4.7" [120 mm] **Height**: 0.6" [16 mm]
Power	0.7A @ +5V max.
Environment	0° – 50°C; 5% – 95% humidity non-condensing; 0 – 10,000 ft. altitude
Shipping Weight	1 lb. [0.45 kg]
Compliance	FCC Class A Part 15, CE Mark
Warranty	Lifetime

Ordering Info

See pages 171–181 for complete fiber optic connector specs.

PCM16-FX-ST-01 (16-bit PC Card)
PCM32-FX-ST-01 (32-bit PC CardBus)
100BASE-FX 1300nm MM (ST)
[2 km/1.2 mi.] Link Budget: 12.0 dB

PCM16-FX-SC-01 (16-bit PC Card)
PCM32-FX-SC-01 (32-bit PC CardBus)
100BASE-FX 1300nm MM (SC)
[2 km/1.2 mi.] Link Budget: 12.0 dB

PCM16-FX-LC-01 (16-bit PC Card)
PCM32-FX-LC-01 (32-bit PC CardBus)
100BASE-FX 1300nm MM (LC)
[2 km/1.2 mi.] Link Budget: 12.0 dB

PCM16-FX-SC5-01 (16-bit PC Card)
PCM32-FX-SC5-01 (32-bit PC CardBus)
100BASE-FX 1310nm SM (SC)
[5 km/3.1 mi.] Link Budget: 12.0 dB

PCM16-FX-SC20-01 (16-bit PC Card)
PCM32-FX-SC20-01 (32-bit PC CardBus)
100BASE-FX 1310nm SM (SC)
[20 km/12.4 mi.] Link Budget: 16.0 dB

8-port 10/100 Layer 2 Managed Switch

MIL-SM800P

10/100 copper

10/100 with fiber
10/100/1000 with fiber

(8) 10/100 ports

- 8-port 10/100BASE-TX
- Non-blocking architecture for full wire speed performance
- Store and forward architecture
- IEEE802.1q VLAN tagging
- IEEE802.1p Class of service
- Internal Power Supply
- Auto MDI-MDIX
- IGMP/GVRP
- Port Mirroring
- 8K MAC Address
- Telnet/ Web-Based management
- TFTP Firmware Upgrade

Features

- Non-blocking full wire speed performance
- Store-and-forward architecture
- 10-inch design for desktop or rackmount
- Static MAC addresses for secure network
- Backpressure and flow control
- Console port on rear panel
- Conforms to IEEE 802.3, 802.3u, and 802.3x Ethernet Standards
- Automatic MDI/MDIX crossover for each 10Base-T/100Base-TX port
- LED indicators for Power, 100M, LK/ACT, FD/COL
- **Management interface:** Console port, Web-based GUI, Telnet and SNMP
- **VLANs:** Supports port based VLAN, up to 256 Groups, and Compatible IEEE 802.1Q VLAN Tagging, VLAN Tagging ID up to 4094
- **Port Mirroring:** Supports source-port-based, destination-port-based and source-destination-port mirroring
- **Spanning Tree:** Insures only one path between any two nodes on network
- **Broadcast Storm Filtering:** Only allows a percentage of port's total bandwidth before broadcast traffic is dropped
- **Scheduling schemes:** Packets can be transmitted by different priority schemes; FIFO, WRR with Enable Delay Bound, All High before Low
- **Trunking:** Supports 802.3ad port trunking with flexible load distribution with 800Mbps aggregate bandwidth per trunk group
- **VLAN Options:** Supports VLAN tagging, 802.1Q, port based VLANs, overlapping VLANs
- **Class of Service:** Supports 802.1p Class of service with 2-level priority queuing
- **IGMP, GVRP:** IGMP support to reduce IP multicast traffic for the multimedia applications, support for Group VLAN Resolution Protocol

The MIL-SM800P series of layer 2 managed switches provides high performance non-blocking switching. The switch has (8) 10/100 auto-MDI/MDIX ports.

Management features include port based, dynamic and static VLANs, GVRP, VLAN tagging, IGMP Snooping, port mirroring, and port security. Security includes static addressing, filtering and blocking of packets to identified MAC addresses. Two priority queues per port insure minimum delay for voice over IP or multimedia network data. Console port provides local management while Telnet and Web-based management is provided via any network device.

Non-blocking architecture assures rapid packet delivery while 8,000 MAC address table provides swift lookup and packet forwarding.

Other ASIC features that enhance performance are included such as 802.1d spanning tree, 802.3x flow control, 802.3ad link aggregation and broadcast storm control.

Specifications

Standards
- IEEE802.3 10BASE-T 10Mbps, Half/Full Duplex
- IEEE802.3u 100BASE-TX, 10/100Mbps, Half/Full Duplex
- IEEE802.3x Flow control and Back-pressure
- IEEE802.3ad Link Aggregation
- IEEE802.1Q VLAN Tagging
- IEEE802.1p Class of service
- IEEE802.1d Spanning Tree Protocol

MAC Address Table	8K with Auto-learning function
Packet Buffer	2MBits
Back-plane bandwidth	Up to 3.8 Gbps
System throughput	2.67 Mpps packet per second on full-duplex mode
Voltage	100~240VAC
Frequency	50/60HZ
Power Consumption	17W
Operation Temperature	0° to 45°C (32° to 113°F)
Operation Humidity	10% to 90% (non-condensing)
Dimensions	**Width:** 10.0" [250 mm] **Depth:** 5.25" [132 mm] **Height:** 1.75" [37.5 mm]
Weight	2.0 lbs 6 oz.
Emissions & Safety	FCC Class A, CE Mark, UL listed

Technical Support & Warranty
Free technical support and advanced warranty support for 5 years. Includes free telephone support, 24-hour support via web and ftp.

Ordering Info

MIL-SM800P
8-port 10/100 switch

8-port 10/100 Layer 2 Managed Switch with 100BASE-FX uplink port

(8) 10/100 ports + (1) 100BASE-FX port

- 8-port 10/100BASE-TX
- Non-blocking architecture for full wire speed performance
- IEEE802.1q VLAN tagging
- IEEE802.1p Class of service
- Auto MDI-MDIX
- Internal Power Supply
- IGMP/GVRP
- Port Mirroring
- 8K MAC Address
- Telnet/ Web-Based management
- TFTP Firmware Upgrade
- (1) 100Mbps fiber port

MIL-SM801P(xx)

Table of Contents
Select Media Converter
Select Switch

Features

- Non-blocking full wire speed performance
- Store-and-forward architecture
- 10-inch design for desktop or rackmount
- Static MAC addresses for secure network
- Backpressure and flow control
- Console port on rear panel
- Conforms to IEEE 802.3, 802.3u, and 802.3x Ethernet Standards
- Automatic MDI/MDIX crossover for each 10Base-T/100Base-TX port
- LED indicators for Power, 100M, LK/ACT, FD/COL
- **Management interface:** Console port, Web-based GUI, Telnet and SNMP
- **VLANs:** Supports port based VLAN, up to 256 Groups, and Compatible IEEE 802.1Q VLAN Tagging, VLAN Tagging ID up to 4094
- **Port Mirroring:** Supports source-port-based, destination-port-based and source-destination-port mirroring
- **Spanning Tree:** Insures only one path between any two nodes on network
- **Broadcast Storm Filtering:** Only allows a percentage of port's total bandwidth before broadcast traffic is dropped
- **Scheduling schemes:** Packets can be transmitted by different priority schemes; FIFO, WRR with Enable Delay Bound, All High before Low
- **Trunking:** Supports 802.3ad port trunking with flexible load distribution with 800Mbps aggregate bandwidth per trunk group
- **VLAN Options:** Supports VLAN tagging, 802.1Q, port based VLANs, overlapping VLANs
- **Class of Service:** Supports 802.1p Class of service with 2-level priority queuing
- **IGMP, GVRP:** IGMP support to reduce IP multicast traffic for the multimedia applications, support for Group VLAN Resolution Protocol

The MIL-SM801P series of layer 2 managed switches provides high performance non-blocking switching. The switch has (8) 10/100 auto-MDI/MDIX ports and one fixed 100Mbps fiber port.

Management features include port based, dynamic and static VLANs, GVRP, VLAN tagging, IGMP Snooping, port mirroring, and port security. Security includes static addressing, filtering and blocking of packets to identified MAC addresses. Two priority queues per port insure minimum delay for voice over IP or multimedia network data. Console port provides local management while Telnet and Web-based management is provided via any network device.

Non-blocking architecture assures rapid packet delivery while 8,000 MAC address table provides swift lookup and packet forwarding.

Other ASIC features that enhance performance are included such as 802.1d spanning tree, 802.3x flow control, 802.3ad link aggregation and broadcast storm control.

Specifications

Standards
- IEEE802.3 10BASE-T 10Mbps, Half/Full Duplex
- IEEE802.3u 100BASE-TX, 10/100Mbps, Half/Full Duplex
- IEEE802.3x Flow control and Back-pressure
- IEEE802.3ad Link Aggregation
- IEEE802.1Q VLAN Tagging
- IEEE802.1p Class of service
- IEEE802.1d Spanning Tree Protocol

MAC Address Table	8K with Auto-learning function
Packet Buffer	2MBits
Back-plane bandwidth	Up to 3.8 Gbps
System throughput	2.67 Mpps packet per second on full-duplex mode
Voltage	100~240VAC
Frequency	50/60HZ
Power Consumption	17W
Operation Temperature	0° to 45°C (32° to 113°F)
Operation Humidity	10% to 90% (non-condensing)
Dimensions	**Width:** 10.0" [250 mm] **Depth:** 5.25" [132 mm] **Height:** 1.75" [37.5 mm]
Weight	2.0 lbs 6 oz.
Emissions & Safety	FCC Class A, CE Mark, UL listed

Technical Support & Warranty
Free technical support and advanced warranty support for 5 years. Includes free telephone support, 24-hour support via web and ftp.

Ordering Info

MIL-SM801PST
8-port 10/100 switch plus
(1) 100BASE-FX MM (ST)
[2 km/1.2 miles]

MIL-SM801PSC
8-port 10/100 switch plus
(1) 100BASE-FX MM (SC)
[2 km/1.2 miles]

MIL-SM801PSC-15
8-port 10/100 switch plus
(1) 100BASE-FX SM (SC)
[15 km/9.5 miles]

8-port 10/100 Layer 2 Managed Switch with Gigabit uplink port

(8) 10/100 ports + (1) 1000BASE-SX port

- 8-port 10/100BASE-TX
- 1 Gigabit fiber port
- Non-blocking architecture
- IEEE802.1q VLAN tagging
- IEEE802.1p Class of service
- Auto MDI-MDIX
- IGMP/GVRP
- Port Mirroring
- 8K MAC Address
- Telnet/ Web-Based management
- TFTP Firmware Upgrade
- Internal Power Supply

MIL-SM801G

Features

- Non-blocking full wire speed performance
- Store-and-forward architecture
- 10-inch design for desktop or rackmount
- Static MAC addresses for secure network
- Backpressure and flow control
- Console port on rear panel
- Conforms to IEEE 802.3, 802.3u, and 802.3x Ethernet Standards
- Automatic MDI/MDIX crossover for each 10Base-T/100Base-TX port
- One fixed 1000BASE-SX port
- LED indicators for Power, 100M, LK/ACT, FD/COL
- DHCP auto-provisioning for group firmware and configuration upgrade using DHCP option 60,66 & 67
- **Management interface:** Console port, Web-based GUI, Telnet and SNMP
- **VLANs:** Supports port based VLAN, up to 256 Groups, and Compatible IEEE 802.1Q VLAN Tagging, VLAN Tagging ID up to 4094
- **Port Mirroring:** Supports source-port-based, destination-port-based and source-destination-port mirroring
- **Spanning Tree:** Insures only one path between any two nodes on network
- **Broadcast Storm Filtering:** Only allows a percentage of port's total bandwidth before broadcast traffic is dropped
- **Scheduling schemes:** Packets can be transmitted by different priority schemes; FIFO, WRR, with Enable Delay Bound, All High before Low
- **Trunking:** Supports 802.3ad port trunking with flexible load distribution with 800Mbps aggregate bandwidth per trunk group
- **VLAN Options:** Supports VLAN tagging, 802.1Q, port based VLANs, overlapping VLANs
- **Class of Service:** Supports 802.1p Class of service with 2-level priority queuing
- **IGMP, GVRP:** IGMP support to reduce IP multicast traffic for the multimedia applications, support for Group VLAN Resolution Protocol

Call us at 800-526-9267 or 952-941-7600

The MIL-SM801G series of layer 2 managed switches provides high performance non-blocking switching. The switch has (8) 10/100 auto-MDI/MDIX ports and one fixed 1000Mbps fiber port.

Management features include port based, dynamic and static VLANs, GVRP, VLAN tagging, IGMP Snooping, port mirroring, and port security. Security includes static addressing, filtering and blocking of packets to identified MAC addresses. Two priority queues per port insure minimum delay for voice over IP or multimedia network data. Console port provides local management while Telnet and Web-based management is provided via any network device.

Non-blocking architecture assures rapid packet delivery while 8,000 MAC address table provides swift lookup and packet forwarding.

Other ASIC features that enhance performance are included such as 802.1d spanning tree, 802.3x flow control, 802.3ad link aggregation and broadcast storm control.

Specifications

Standards
- IEEE802.3 10BASE-T 10Mbps, Half/Full Duplex
- IEEE802.3u 100BASE-TX, 10/100Mbps, Half/Full Duplex
- IEEE802.3z Gigabit SX/LX 1000Mbps
- IEEE802.3ab Gigabit 1000T 10/100/1000Mbps
- IEEE802.3x Flow control and Back-pressure
- IEEE802.3ad Link Aggregation
- IEEE802.1Q VLAN Tagging
- IEEE802.1p Class of service
- IEEE802.1d Spanning Tree Protocol

MAC Address Table	8K with Auto-learning function
Packet Buffer	2MBits
Back-plane bandwidth	Up to 3.8 Gbps
System throughput	2.67 Mpps packet per second on full-duplex mode
Voltage	100~240VAC
Frequency	50/60HZ
Power Consumption	19W
Operation Temperature	0° to 45°C (32° to 113°F)
Operation Humidity	10% to 90% (non-condensing)
Dimensions	**Width:** 10.0" [250 mm] **Depth:** 5.25" [132 mm] **Height:** 1.75" [37.5 mm]
Weight	2.0 lbs 6 oz.
Emissions & Safety	FCC Class A, CE Mark, UL listed

Technical Support & Warranty
Free technical support and advanced warranty support for 5 years. Includes free telephone support, 24-hour support via web and ftp.

Ordering Info

MIL-SM801G
8-port 10/100 switch plus
(1) 1000BASE-SX 850nm MM (SC)
[62.5/125µm fiber: 220 m / 722 ft.]
[50/125µm fiber: 550 m / 1804 ft.]

MIL-SM801GLX-10
8-port 10/100 switch plus
(1) 1000BASE-LX 1310nm SM (SC)
[10 km/6.2 miles]

8-port 100BASE-FX Layer 2 Managed Switch with SFP uplink port

Table of Contents
Select Media Converter
Select Switch

(8) 100BASE-FX ports + (1) SFP port

- High Back-plane Bandwidth 5.6 Gbps
- IEEE802.1Q VLAN tagging
- IEEE802.1P Class of service
- Port, Protocol, Tagged VLANs and GVRP support
- Internal Power Supply
- IGMP Query and IGMP Snooping
- Port Mirroring /Port Security
- Web-GUI/ Console/Telnet/SNMP Management
- TFTP Firmware Upgrade
- SFP Port

MIL-SM808GP(xx)

Features

- Non-blocking full speed performance
- Store-and-forward, shared memory architecture
- Designed for desktop or rackmount
- Static MAC addresses and MAC filtering for secure networks
- Backpressure and flow control
- Serial console port for out of band management
- Conforms to IEEE 802.1D, 802.3u/z/ab Ethernet Standards
- LED indicators for Power, 100M, LK/ACT, FD/COL
- **Management interface:** Console port, Web-based GUI, Telnet and SNMP
- **VLANs:** Supports port based or protocol based VLANs, up to 256 Groups, and IEEE 802.1Q VLAN Tagging, VLAN Tagging ID up to 4094
- **Port Mirroring:** Supports source-port-based, destination-port-based and source-destination-port mirroring of transmit, receive or bi-directional data.
- **Spanning Tree:** Insures only one path between any two nodes on network
- **Broadcast Storm Filtering:** Only allows a percentage of port's total bandwidth before broadcast traffic is dropped
- **Scheduling schemes:** Packets can be transmitted by different priority schemes; FIFO, WRR with Enable Delay Bound, All High before Low
- **Trunking:** Supports 802.3ad port trunking with flexible load distribution with 800Mbps aggregate bandwidth per trunk group
- **VLAN Options:** Supports VLAN tagging, 802.1Q, port based VLANs, overlapping VLANs
- **Class of Service:** Supports 802.1p Class of service with 2-level priority queuing
- **IGMP:** Query modes for flat Layer 2 environments needing multicast traffic limiting and IGMP snooping mode to limit traffic to specific ports within VLANs.
- **GVRP:** Support for Group VLAN Resolution Protocol dynamic join and leave of IEEE 802.1Q VLAN types.

The MIL-SM808G series of layer 2 managed switches provides high performance non-blocking switching. The switch has (8) 100BASE-FX ports and one fixed SFP port. This is the ideal switch for aggregating remote classroom or workgroup switches.

Management features include port based, dynamic and static VLANs, GVRP, VLAN tagging, IGMP Snooping, port mirroring, and port security. Security includes static addressing, filtering and blocking of packets to identified MAC addresses. Two priority queues with selection of queue management, insure minimum delay for voice over IP or multimedia network data. Console port provides local management while Telnet and Web-based management is provided via any network device.

Non-blocking 5.6Gbps, store and forward, shared memory architecture assures rapid packet delivery while 8,000 MAC address table provides swift lookup and packet forwarding.

Other ASIC features that enhance performance are included such as 802.1d spanning tree, 802.3x flow control, 802.3ad link aggregation and broadcast storm control.

Specifications

Standards
- IEEE802.3u 100BASE-FX
- IEEE802.3z Gigabit SX/LX 1000Mbps
- IEEE802.3ab Gigabit 1000T 10/100/1000Mbps
- IEEE802.3x Flow control and Back-pressure
- IEEE802.3ad Link Aggregation
- IEEE802.1Q VLAN Tagging
- IEEE802.1p Class of service
- IEEE802.1d Spanning Tree Protocol

MAC Address Table	8K with Auto-learning function
Packet Buffer	2MBits
Back-plane bandwidth	5.6 Gbps
System throughput	148,800 pps for 100Mbps 1,488,000pps for Gigabit
Voltage	100~240VAC
Frequency	50/60HZ
Power Consumption	17W Maximum
Operation Temperature	0° to 45°C (32° to 113°F)
Operation Humidity	10% to 90% (non-condensing)
Dimensions	**Width:** 17.6" [250 mm] **Depth:** 6.4" [160 mm] **Height:** 1.75" [44 mm]
Weight	2.0 lbs. 6 oz.
Emissions & Safety	FCC Class A, CE Mark, UL listed

Technical Support & Warranty
Free technical support and advanced warranty support for 5 years. Includes free telephone support, 24-hour support via web and ftp.

Ordering Info

MIL-SM808GPST
8-port 100BASE-FX switch
multimode (ST) **[2 km/1.2 miles]**
plus (1) SFP port

MIL-SM808GPSC
8-port 100BASE-FX switch
multimode (SC) **[2 km/1.2 miles]**
plus (1) SFP port

MIL-SM808GPSC-15
8-port 100BASE-FX switch
single mode (SC) **[15 km/9.5 miles]**
plus (1) SFP port

MIL-SM808GPSC-60
8-port 100BASE-FX switch
single mode (SC) **[60 km/37.3 miles]**
plus (1) SFP port

Optional Accessories

(sold separately)

SFP Modules (see pages 135-136)

24-port 10/100 Layer 2 Stackable Managed Switch with Dual-Port uplink modules

MIL-SM2401M-STK

(24) 10/100 ports + (1) slot for Dual-Port Modules

- Manage through the master switch up to a stack of 8 switches
- Built-in IEEE 802.1X Authentication using a centralized RADIUS server
- LED indicators provide real-time status
- Simplify deployment with built-in DHCP Client protocol
- Supports Bandwidth Provisioning and rate monitoring
- Internal Power Supply

Table of Contents
Select Media Converter
Select Switch

High Performance Non-blocking Switch with Advanced Features

- 24 Auto-sensing 10/100 Auto MDI/MDI-X ports
- Dual port module bay for 100Mbps or 1000Mbps fiber or copper ports
- Non-blocking full wire speed performance
- Store-and-forward architecture
- 1 U high 19 inch rack mount design
- IEEE 802.1X support for centralized authentication or static MAC address filters for limiting network access.
- Backpressure and flow control
- Console port, Telnet, SNMP or Web-based GUI Management
- Conforms to IEEE 802.3, 802.3u, and 802.3x Standards
- Automatic MDI/MDIX crossover for each 10/100 port
- IP Stacking. The IP stacking function allows up to eight MIL-SM2401M-STK switches to be joined as a single unit group. The stackable switches can then be managed through a single IP address.

Specifications

Standards Compliance	IEEE802.3 10BASE-T 10Mbps, Half/Full Duplex IEEE802.3u 100BASE-TX, 10/100Mbps, Half/Full Duplex IEEE802.3z Gigabit SX/LX 1000Mbps IEEE802.3ab Gigabit 1000T 10/100/1000Mbps IEEE802.3x Flow control and Back-pressure IEEE802.3ad Link Aggregation IEEE802.1Q VLAN Tagging IEEE802.1q Quality of Service IEEE802.1p Class of service IEEE802.1d Spanning Tree Protocol IEEE802.1w Rapid Spanning Tree IEEE802.1x EAP Authentication
MAC Address Table	8K with Auto-learning function
Packet Buffer	3Mb
Backplane bandwidth	8.8 Gbps
System throughput	Wire speed 6.5 Mpps
Voltage	100 – 240 VAC
Frequency	50/60 HZ
Power Consumption	34W Maximum
Operating Temperature	32° to 104° F (0° to 40° C)
Relative Humidity	10% to 90% non-condensing
Dimensions	**Width:** 17.4" [440 mm] **Depth:** 9.15" [225 mm] **Height:** 1.75" [44.5 mm]
Weight	6 lbs. 8 oz.
Emissions & Safety	FCC Class A, CE Mark, UL listed

Technical Support & Warranty
Free technical support and advanced warranty support for 5 years. Includes free telephone support, 24-hour support via web and ftp.

Features

The MIL-SM2401M-STK series of layer 2 stackable managed switches provides high performance non-blocking switching. The switch has (24) 10/100 auto MDI/MDIX parts and (1) expansion slot. This is an ideal switch for workgroup, department, or backbone computing environments.

Management Features include Port-based, dynamic and static VLANs, GVRP, VLAN tagging, IGMP Snooping, Port Mirroring, Port Security. Security includes static addressing, filtering and blocking of packets to identified MAC addresses and IEEE 802.1X authentication utilizing a centralized RADIUS server. Two priority queues per port insure minimum delay for voice over IP or multimedia network data. The bandwidth rate limiting feature allows for selecting different limits in each direction down to 100 Kbps and in 100 Kbps increments. Console port provides local management while Telnet and Web-base management is provided via any network device. Our private MIB allows for configuring and management from any SNMP Manager.

Non-blocking 8.8Gbps architecture assures rapid packet delivery while 8K MAC address table provides swift lookup and packet forwarding. ASIC based counters make SNMP management highly reliable and accurate.

- **Management Interface** Console port, WEB Browser Interface, Telnet and Simple Network Management Protocol (SNMP)
- **VLANs** Supports port or protocol based VLANs, up to 2,048 Groups, and Compatible IEEE802.1Q VLAN Tagging, VLAN Tagging ID up to 4094 with GVRP for automatic connection to other parts of the network.
- **Port Mirroring** Supports source-port based, destination-port-based and source-destination-port mirroring
- **Spanning Tree** Insures only one path between any two nodes on network
- **Broadcast Storm Monitoring and Filtering** Only allows a percentage of port's total bandwidth before broadcast traffic is dropped
- **Bandwidth rate limiting** Selectively set ingress and egress rate limiting on a per port basis in 100 Kbps increments starting at 100 Kbps.
- **Queue scheduling schemes** Packets can be transmitted by different priority schemes; FIFO, WRR, with Enable Delay Bound, All High before Low
- **Link Aggregation** Supports 802.3ad port trunking with flexible load distribution with 4 ports per trunk group
- **Class of Service** Supports 802.1p Class of service with 2-level priority queuing
- **IGMP** Groom multicast traffic to the ports needing it with IGMP snooping per port and IGMP Query mode

Ordering Info

MIL-SM2401M-STK
24-port 10/100 Stackable Managed Switch with 1 slot for Dual-Port Modules

Dual-Port Modules:
(sold separately)

MIL-M24-02ST
(2) port 100BASE-FX 1300nm MM (ST) **[2 km/1.2 miles]**

MIL-M24-02SC
(2) port 100BASE-FX 1300nm MM (SC) **[2 km/1.2 miles]**

MIL-M24-02SC-15
(2) port 100BASE-FX 1310nm SM (SC) **[15 km/9.5 miles]**

MIL-M24-02SC-30
(2) port 100BASE-FX 1310nm SM (SC) **[30 km/18.6 miles]**

MIL-M24-02SC-60
(2) port 100BASE-FX 1310nm SM (SC) **[60 km/37.3 miles]**

MIL-M24-20GB
(2) GBIC slots (empty)

MIL-M24-20SC
(2) port 1000BASE-SX 850nm MM (SC) **[62.5/125µm fiber: 220 m/722 ft.] [50/125µm fiber: 550 m/1804 ft.]**

MIL-M24-20SC-10
(2) port 1000BASE-LX 1310nm SM (SC) **[10 km/6.2 miles]**

MIL-M24-20TC
(1) port 1000BASE-T (RJ-45) **[100 m/328 ft.]**
(1) 1000BASE-SX 850nm MM (SC) **[62.5/125µm fiber: 220 m/722 ft.] [50/125µm fiber: 550 m/1804 ft.]**

MIL-M24-02T
(2) port 1000BASE-T (RJ-45) **[100 m/328 ft.]**

8-port 10/100 Power Over Ethernet (POE) Layer 2+ Remotely Managed Switch

(8) 10/100 ports + (1) SFP/RJ-45 Combo port

AUTO NEG

- 8-port Managed Switch with 4-port integrated POE injector
- 4 ports with full POE functionality
- Power over unused pins for Legacy support
- Remote Management
- Optional Reverse Polarity Cable
- Supports SNMP v1, v2c and v3

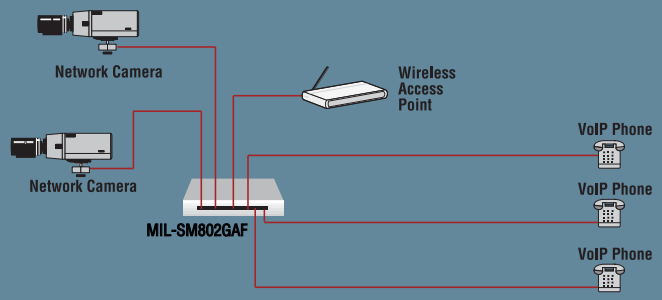
MIL-SM802GAF

Table of Contents
Select Media Converter
Select Switch

Features

- IGMP v1 & v2
- 8-port 10/100 Base-TX plus 100/1000Base-X or 10/100/1000Base-T
- 4 ports with full PSE POE delivery
- Reverse polarity POE cable
- IEEE Std. 802.3af Compliant
- Full 15.4 Watts per port
- POE Legacy and Reverse Polarity Support
- Remote Device power shutdown
- IEEE802.1p Class of service
- Ipv4 IP TOS and DiffServ QOS classification, IPv6 Traffic class with 4 queues per port
- IEEE 802.1q™ VLAN, up to 256 groups, VLAN tagging ID up to 4096
- Static MAC, 50 entries
- IEEE 802.1x
- RADIUS client
- DHCP Client and Server, SNTP
- Auto MDI-MDIX
- IGMP/GVRP
- Port Mirroring
- 8K MAC Address
- Telnet/CLI/Web-based management
- TFTP Firmware Upgrade

Connect and power Wireless Access Points, Network Cameras and VOIP



Ordering Info

MIL-SM802GAF
8-port 10/100 POE Remotely Managed switch with (4) POE Injector ports and (1) SFP/copper port

MIL-LRPC
POE Reverse Polarity Cable

Optional Accessories

(sold separately)

SFP Modules (see pages 135-136)

The **MIL-SM802GAF** connects remote POE segment to the network over fiber. The switch delivers a full 15.4Watts of DC power on each of four POE switch ports. POE ports provide data connection and the power source (PSE) for such POE PD devices as Wireless Access Points, VoIP phones and Network Cameras. The series includes a PD signature sensing and power monitoring features per the IEEE 802.3af standard. Other POE features include Over-Current Protection and Under-Current Detection. The series is fully compatible with devices that comply with the IEEE802.3af standard and it is capable of inserting power on the **unused** pairs of the MDI.

Management features include port based, dynamic and static VLANs, GVRP, VLAN tagging, IGMP Snooping or querying, port mirroring, port security. Security includes static addressing, filtering and blocking of packets to identified MAC addresses. Four priority queues insure minimum delay for voice over IP or multimedia network data.

Non-blocking 5.6Gbps architecture assures rapid packet delivery while 8,000 MAC address table provides swift lookup and packet forwarding.

Specifications

Standards	IEEE Std. 802.3 10BASE-T 10Mbps, Half/Full Duplex; IEEE Std. 802.3u 100BASE-TX, 10/100Mbps, Half/Full Duplex; IEEE Std. 802.3x Flow control and Back-pressure; IEEE Std. 802.3ad Link Aggregation; IEEE Std. 802.1Q VLAN Tagging; IEEE Std. 802.1p Class of service; IEEE Std. 802.1d Spanning Tree Protocol; IEEE Std. 802.1X Authentication Protocol IEEE Std. 802.3ab 1000BASE-T IEEE Std. 802.3z Gigabit Fiber IEEE Std. 802.3af Power Over Ethernet IEEE 802.1w Rapid Spanning Tree Protocol
Protocols	CSMA/CD
Technology	Store and Forward switching architecture
Transfer Rate	14,880 pps for 10Mbps 148,800 pps for 100Mbps 1,488,000 pps for Gigabit Fiber Ethernet Port
Connectors	**10/100 Copper:** 8x RJ-45 incl. 4x(POE) Ports **Fiber:** 1x dual speed SFP port 100BASEFX/1000BASE-X
MAC Address	8K MAC address table
Memory Buffer	384Kbytes (3Mbits)
Jumbo packet support	Max 9Kbytes jumbo packet size
Network Cable	**10BASE-T:** 2-pair UTP/STP Cat. 3, 4, 5 cable; EIA/TIA-568 100-ohm (100 m) **100BASE-TX:** 2-pair UTP/STP Cat. 5 cable; EIA/TIA-568 100-ohm (100 m)
Backplane	5.6Gbps
LEDs	**RJ-45 port:** 10/100; Link/Activity; Full duplex/Collision **Fiber:** Link/Activity **Power:** On/Off
Power Supply	Built-in AC power supply: AC 100~240V, 50/60Hz, 110W;
Power Consumption	(DC) 20 watts (Non-POE functions)
Operating Temperature	0° to 45°C (32° to 113°)
Operating Humidity	10% to 90% (non-condensing)
Dimensions	**Width:** 8.5" [217 mm] **Depth:** 5.5" [140 mm] **Height:** 1.7" [44 mm]
EMI	FCC Class A, CE Mark
Safety Compliance	UL, cUL

For larger port-count POE applications, please refer to:
MIL-SM8TXAF2GPA
MIL-SM2401MAF

For smaller port-count POE applications, please refer to our POE media conversion products:
SPOEB10xx-100
J/POE-CF-01(xx)

8-port 10/100 Power Over Ethernet Layer 2 Remotely Managed Switch

Table of Contents
Select Media Converter
Select Switch

(8) 10/100 ports + (2) SFP/RJ-45 Combo ports

AUTO NEG

- Managed Switch
- 8 ports with full POE functionality; power limit per classification
- Dual Speed 100/1000 SFP slot
- AC and DC power inputs
- Supports SNMP v1, v2c and v3
- Power over unused pins for legacy support
- Optional Reverse Polarity Cable

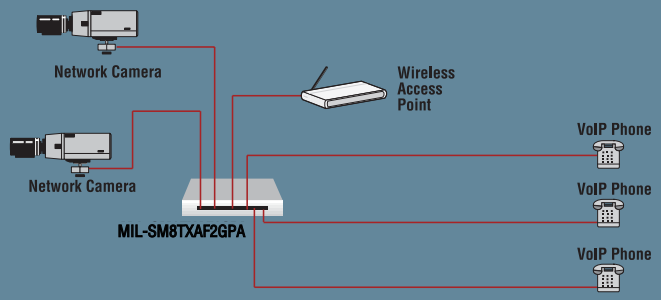
MIL-SM8TXAF2GPA

NEW

Features

- IGMP v1 & v2
- 8-port 10/100 Base-TX plus 100Base-FX/1000 Base-X SFP
- 8 ports with integrated POE injectors
- Never Down Ring Technology
- IEEE Std. 802.3af Compliance
- Full 15.4 Watts per port
- POE Legacy and Reverse Polarity Support
- Non-blocking switching architecture
- IEEE802.1p Class of service
- Ipv4 IP TOS and DiffServ QOS classification, IPv6 Traffic class with 4 queues per port
- IEEE 802.1q VLAN, up tp 256 groups, VLAN tagging ID up to 4096.
- Static MAC, 100 entries
- IEEE 802.1x
- RADIUS client
- DHCP Client and Server, SNTP
- Auto MDI-MDIX
- IGMP/GVRP
- Port Mirroring
- 8K MAC Address
- Telnet/ Web-Based management
- TFTP Firmware Upgrade and configuration backup

Connect and power Wireless Access Points, Network Cameras and VOIP



The **MIL-SM8TXAF2GPA** connects remote POE segment to the network over fiber. The switch delivers a full 15.4Watts of DC power on each of eight POE switch ports. POE ports provide data connection and the power source (PSE) for such POE PD devices as Wireless Access Points, VoIP phones and Network Cameras. The series includes a PD signature sensing and power monitoring features per the IEEE 802.3af standard. Other POE features include Over-Current Protection and Under-Current Detection. The series is fully compatible with devices that comply with the IEEE802.3af standard and it is capable of inserting power on the unused pairs of the MDI.

Management features include port based, dynamic and static VLANs, GVRP, VLAN tagging, IGMP Snooping or querying, port mirroring, port security. Security includes static addressing, filtering and blocking of packets to identified MAC addresses. Four priority queues insure minimum delay for voice over IP or multimedia network data.

Non-blocking 5.6Gbps architecture assures rapid packet delivery while 8,000 MAC address table provides swift lookup and packet forwarding.

Call us at 800-526-9267 or 952-941-7600

Specifications

Standards	IEEE Std. 802.3 10BASE-T 10Mbps, Half/Full Duplex; IEEE Std. 802.3u 100BASE-TX, 10/100Mbps, Half/Full Duplex; IEEE Std. 802.3x Flow control and Back-pressure; IEEE Std. 802.3ad Link Aggregation; IEEE Std. 802.1Q VLAN Tagging; IEEE Std. 802.3ab 1000BASE-T IEEE 802.3z Gigabit Fiber IEEE 802.3af Power over Ethernet IEEE Std. 802.1p Class of service; IEEE Std. 802.1d Spanning Tree Protocol; IEEE Std. 802.1w Rapid Spanning Tree Protocol; IEEE Std. 802.1X Authentication Protocol
Protocols	CSMA/CD
Technology	Store and Forward switching architecture
Transfer Rate	14,880 pps for 10Mbps 148,800 pps for 100Mbps 1,488,000 pps for Gigabit Fiber Ethernet Port
Connectors	**10/100 copper:** 8x RJ-45 with Auto-MDIX **Fiber:**Two dual speed SFP ports 100BASE-FX/1000 BASE-X
MAC Address	8K MAC address table
Jumbo packet support	Max 9Kbytes jumbo packet size
Network Cable	**10BASE-T:** 2-pair UTP/STP Cat. 3, 4, 5 cable; EIA/TIA-568 100-ohm (100 m) **100BASE-TX:** 2-pair UTP/STP Cat. 5 cable; EIA/TIA-568 100-ohm (100 m)
Backplane	5.6Gbps
LEDs	**RJ-45 port:** 10/100; Link/Activity; Full duplex/Collision **Fiber:** Link/Activity **Power:** On/Off **POE:** PWR FWD
Power Supply	Built-in AC power supply: AC 100~240V, 50/60Hz, 200W; Optional External AC/DC Power Supply 48VDC Input
Power Consumption	(DC) 20 watts (Non-POE functions)
Operating Temperature	0° to 45°C (32° to 113°)
Operating Humidity	10% to 90% (non-condensing)
Dimensions	**Width:** 11" [280 mm] **Depth:** 8.3" [211 mm] **Height:** 1.7" [44 mm]
EMI	FCC Class A, CE Mark
Safety Compliance	UL, cUL

Ordering Info

MIL-SM8TXAF2GPA
8-port 10/100 POE Remotely Managed switch with (2) SFP Combo Gigabit ports

MIL-LRPC
POE Reverse Polarity Cable

Optional Accessories

(sold separately)

SFP Modules (see pages 135-136)

For larger port-count POE applications, please refer to our 24-port remotely-managed POE switch:
MIL-SM2401MAF

For smaller port-count POE applications, please refer to our POE media conversion products:
SPOEB10xx-100
J/POE-CF-01(xx)

24-port 10/100 Power Over Ethernet Layer 2 Remotely Managed Switch

Table of Contents
Select Media Converter
Select Switch

(24) 10/100 ports + (2) SFP/RJ-45 Combo ports

AUTO NEG

- Managed POE Switch
- 24 ports with full POE functionality; power limit per classification
- High Back-plane bandwidth 8.8Gbps
- DC and AC power inputs on switch
- IGMP v1, v2
- Auto-MDIX on all ports

MIL-SM2401MAF

Features

- 15.4 Watts of DC power per port
- 24 ports with full PoE functionality
- Enable/Disable POE function
- Power limit by classification
- Power limit by management power feeding priority
- Legacy Power Signature Detection for unique electrical signatures
- Auto-Negotiation
- 12K Jumbo Frame support
- True non-blocking switching
- 8K MAC address table
- Back pressure and flow control
- Store and forward switching architecture
- 384Kbytes memory buffer
- **Management:** Console port, Web-based GUI, telnet and SNMP
- **Firmware update:** TFTP firmware upgrade
- **Port Trunk:** Supports IEEE802.3ad with LACP function. Up to 7 trunk groups and group member up to 4.
- **VLAN:** Supports port based VLAN, up to 256 static VLAN groups and up to 2048 dynamic VLAN groups. VLAN tagging up to 4094. Compatible with IEEE802.1Q and IEEE802.1v
- **Quality of Service:** Support port based, Tag based and IPv4 ToS
- **Class of Service:** Supports 802.1p class of service with 2-level priority queuing.
- **Spanning Tree:** Supports IEEE802.1w rapid spanning tree and IEEE802.1d spanning tree.
- **Port Mirror:** Supports RX, TX and Both packet mirror
- **IGMP:** Supports IGMP V1, V2
- **Broadcast Storm:** Only allows a percentage of port's total bandwidth before broadcast traffic is dropped. Enable/Disable, 5%, 10%, 20%, 25%

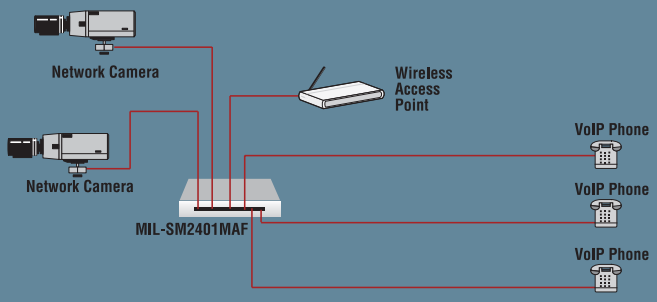
The MIL-SM2401MAF Power over Ethernet series of layer 2 managed switches provides high performance non-blocking switching. The switch has (24) auto-sensing 10/100 auto MDI/MDIX ports with full PoE functionality. The switch also has (2) SFP Gigabit ports.

Management features include port based, dynamic and static VLANs, GVRP, IGMP, port mirroring, and port security. Security includes static addressing, filtering and blocking of packets to identified MAC address. Two priority queues per port insure minimum delay for voice over IP or multimedia network data. Console port provides local management while Telnet and Web-based management is provide via any network device.

Non-blocking 8.8Gbps architecture assures rapid packet delivery while 8,000 MAC address table provides swift lookup and packet forwarding.

Other ASIC features that enhance performance are included such as 802.1d spanning tree, 802.3x flow control, 802.3ad link aggregation and broadcast storm control.

Connect and power Wireless Access Points, Network Cameras and VOIP



Ordering Info

MIL-SM2401MAF
24-port 10/100 POE Remotely Managed switch with (2) SFP/RJ-45 Combo ports

Optional Accessories

(sold separately)

SFP Modules (see pages 135-136)

Specifications

Standards	IEEE Std. 802.3 10BASE-T 10Mbps, Half/Full Duplex; IEEE Std. 802.3u 100BASE-TX, 10/100Mbps, Half/Full Duplex; IEEE Std. 802.3af Power over Ethernet IEEE Std. 802.1w Rapid Spanning Tree Protocol IEEE Std. 802.3z Gigabit SX/LX IEEE Std. 802.3ab Gigabit 1000T IEEE Std. 802.3x Flow control and Back-pressure; IEEE Std. 802.3ad Link Aggregation; IEEE Std. 802.1Q VLAN Tagging; IEEE Std. 802.1p Class of service; IEEE Std. 802.1d Spanning Tree Protocol; IEEE Std. 802.1X Authentication Protocol
Protocols	CSMA/CD
Technology	Store and Forward switching architecture
Transfer Rate	14,880 pps for 10Mbps 148,800 pps for 100Mbps
Connectors	**10/100 copper:** 24x RJ-45 with Auto-MDIX, Two SFP Gigabit ports/RJ-45 10/100/1000BASE-T
MAC Address	8K MAC address table
Memory Buffer	384Kbytes (3Mbits)
Jumbo packet support	Max 12Kbytes jumbo packet size
Network Cable	**10BASE-T:** 2-pair UTP/STP Cat. 3, 4, 5 cable; EIA/TIA-568 100-ohm (100 m) **100BASE-TX:** 2-pair UTP/STP Cat. 5 cable; EIA/TIA-568 100-ohm (100 m)
Backplane	8.8Gbps
LEDs	**RJ-45 port:** 10/100; Link/Activity; Full duplex/Collision **Fiber:** Link/Activity **Power:** On/Off
Power Supply	Built-in AC power supply: AC 90~240V, 50/60Hz, 200W; Extra power input: DC 48V
Power Consumption	20W Maximum with additional DC power input
Operating Temperature	0° to 40°C (32° to 96°)
Operating Humidity	10% to 90% (non-condensing)
Dimensions	**Width:** 17.0" [440 mm] **Depth:** 11.0" [280 mm] **Height:** 1.7" [44 mm]
EMI	FCC Class A, CE Mark
Safety Compliance	UL, cUL

48-port 10/100 Multi-Layer Stackable Managed Switch

MIL-SM4804G

(48) 10/100 ports + (2) SFP/RJ-45 Combo ports & (2) stacking ports

- Auto-sensing 10/100 ports
- (2) hot-swappable Gigabit Small Form Factor Pluggable interfaces
- (2) 10/100/1000 Stacking Ports
- Robust Security
- Multi-Layer Protocol Support
- Simplified Network Management
- Outstanding Value
- 1U Rack-Mount Form Factor

Table of Contents
Select Media Converter
Select Switch

Most Powerful, Flexible Multi-Layer Switch in its Class

The MILAN Multi-Layer 10/100 switch delivers maximum throughput and flexibility where you need it:

- High-density workgroups at the edge of the network
- The backbone of small networks

The non-blocking design of the switch delivers simultaneous, full wire-speed, low-latency throughput to all ports. In addition, the 1U rack-mount form factor uses less rack space and provides a lower per-port cost over comparable switches.

Multi-Layer Management Features

Graphical User Interface HTML browser-based with password protection for local and remote management

Command Line Interface Industry-standard CLI

Front panel Graphical representation of unit with real-time network and port status

Port Status Displays current per-port configuration showing speed, flow-control, bandwidth status and port security status.

Port Statistics Displays link, type and state of each port including RX/TX/Error for each port and unit. Table view also shows current, peak average & total packets for each port.

Ordering Info

MIL-SM4804G
48-port 10/100 Multi-Layer Stackable Managed Switch with (2) SFP Gigabit ports and (2) Gigabit stacking ports

Optional Accessories

(sold separately)

SFP Modules (see pages 135-136)

Specifications

Connectors	• 48-Port Fast Ethernet with Auto-MDI/MDIX (100BaseTX, 10BaseT): RJ-45 • 2 Combo (RJ-45/SFP) Ports • 2 Gigabit Ethernet Ports with Auto-MDI/MDI-X (1000BASET, 100BASETX, 10BASET): RJ-45 for Stacking • Console: Serial (RS-232): DB9
LED Indicators	Port, Uplink, System, Diagnostic, Stack/Master
Performance	17.6 Gbps Switching Fabric 8k MAC Addresses
Dimensions	**Width:** 17.4" [440 mm] **Depth:** 12.8" [324 mm] **Height:** 1.7" [43 mm]
Mounting	Install into a standard 19-inch rack (1 RU height) or placed on a desktop; rackmount kit included
Operating Temperature	32° to 104° F (0° to 40° C)
Relative Humidity	10% to 90% non-condensing
Power Requirements	Auto-switching, 110/240 VAC, 47 – 63Hz; 35W

Standards Compliance
IEEE 802.1DF Spanning tree and bridge filters
IEEE 802.1W Rapid spanning tree and bridge filters
IEEE 802.1p Quality of Service (QoS)
IEEE 802.1X EAP Authentication
IEEE 802.1p Prioritization (Class of Service)
IEEE 802.1Q Virtual LAN (VLAN) Tagging
IEEE 802.3ad Link aggregation (LACP)
IEEE 802.3ac Frame extension for VLAN tagging
IEEE 802.3x Flow control and back pressure
IEEE 802.3z 1000BaseSX/LX over single mode/ multimode fiber; max distance 49200 ft. (15 km)
IEEE 802.3ab 1000BaseT over Cat. 5 UTP (4 pairs); max distance 328 ft. (100 meters)
IEEE 802.3u 100BaseTX over Cat. 5 UTP (2 pairs); max distance 328 ft. (100 meters)
IEEE 802.3 10BaseT over Cat. 3 UTP (2 pairs); max distance 328 ft. (100 meters)
RFC 2674 Extended Bridge MIB
RFC 2665 Ether-Like MIB
RFC 2863 Interface MIB
RFC 1493 Bridge MIB
RFC 1213 MIB II

Emissions & Safety	FCC Class A, CE Mark, UL listed

Technical Support & Warranty
Free technical support and advanced warranty support for 5 years. Includes free telephone support, 24-hour support via web and ftp.

Port Controls Configure the state (enabled, disabled), link status (up, down) and mode (speed, duplex); Auto-Negotiation, flow control, priority and bandwidth limits.

Link Aggregation Set up IEEE 802.3ad Port Trunking with flexible load distribution, up to 8 ports per trunk group.

VLAN Configuration Supports port or protocol based VLANs up to 255 active VLANs (0~4094). GVRP for automatic VLAN registration and dynamic VLAN management.

Spanning Tree Supports IEEE802.1D STP and IEEE802.1w RSTP

IGMP Supports IGMP v1/v2 Snooping and Query functions

Port Mirroring Monitor network traffic by Enable/disable Port Mirroring and select the ports for packet analysis

Remote Management Supports SNMP v1/v2c, RMON, and Telnet

Security Port and MAC-based IEEE802.1X Authentication, TACACS+, SSL, SSH v1.5/v2, and Access Control List (ACL)

Jumbo Frame Supports up to 9100Kb Jumbo Frames

Quality of Service (QoS)

- L2/L3/L4 Traffic Classification/Priority Management, based on IEEE802.1p 4 priority queues control, based on IP Precedence/TOS & DSCP/TOS, and based on TCP/UDP port numbers
- Supports WRR & SPF for priority queues, DiffServ/IPToS Prioritization, and Random Early Detection (RED)

Bandwidth Control Supports Ingress/Egress based Bandwidth Limiting

IP Stacking Single IP Address, closed loop Stacking, up to 8 units:

- Manage Trunking, VLAN memberships, Packet priority and Port Mirroring across stack

9-port 10/100/1000 Layer 2 Indoor/Protected Outdoor Remote IP-Managed Switch

MIL-SM8002TG

Table of Contents
Select Media Converter
Select Switch

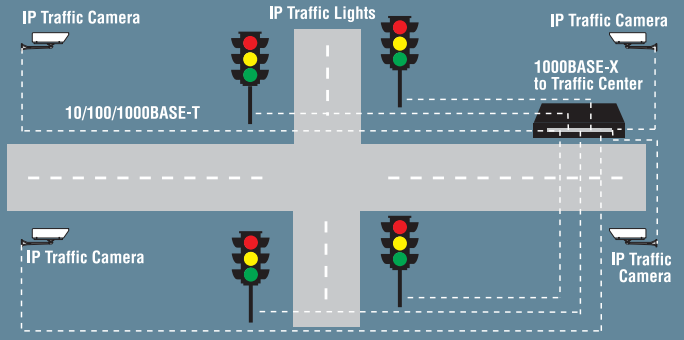
(9) 10/100/1000 ports + (2) SFP/RJ-45 Combo ports

- 9-port 10/100/1000BASE-T
- Auto MDI/MDI-X
- (2) 1000BASE-X SFP combo ports
- Indoor/Outdoor installation up to 60°C (140°F)
- Non-blocking switching architecture
- IEEE 802.1q VLAN tagging & Q in Q for SNMP GVRP/MVR
- IEEE 802.1p Class of Service 4 priority queues

Additional Features

- IGMP query and snooping
- 802.1X Authentication
- RADIUS/TACACS+
- Port Mirroring
- 8K MAC Address
- Telnet/Web-based management
- TFTP firmware and configuration upgrade
- Enable/disable ports
- Auto-Negotiation
- Forced modes, 10H/10H/100H/100F/1000F
- Auto-MDIX on all ports
- 802.3X Flow control and Back-pressure
- 16Mb System Memory
- 8Mb Flash ROM
- 1Mbps Buffer
- Broadcast storm filter
- DHCP Client, Relay, Server
- SNTP and SMTP support
- MAC Address Security
- Bandwidth Allocation
- QoS port-based/Tag based, IPv4, Tos/Ipv4, IPv6, DiffServ
- Ingress & Egress MAC address filter & static source MAC address lock

Connect Indoor or Protected Outdoor Ethernet Devices over High Speed Dual Gigabit Links



Ordering Info

MIL-SM8002TG
9-port 10/100/1000 Indoor/Outdoor Remotely Managed switch with (2) SFP combo Gigabit ports

Optional Accessories

(sold separately)

SFP Modules (see pages 135-136)

Software Features

- **Management:** Remote IP-Based Management, Web Management, SNMP V1/2, Telnet, Menu based CLI
- **Firmware update:** TFTP firmware upgrade and configuration backup
- **System default:** Restore function for system default
- **Port Trunk:** Supports IEEE802.3ad port trunk with link aggregation control protocol (LACP). Up to 3 trunk groups and maximum group member up to 8 ports.
- **VLAN:** Port Based VLAN; IEEE802.1Q, 4096 VLAN IDs, 256/2048 static/dynamic VLAN groups, 256 GVRP Groups
- **Quality of Service:** Support port based, Tag based and IPv4 ToS, IPv4/IPv6 Diff Serve
- **Class of Service:** Per port supports 2 priority queues
- **Spanning Tree:** Supports IEEE802.1w rapid spanning tree and IEEE 802.1d
- **Port Mirror:** Supports TX or bi-directional RX packet mirroring
- **IGMP:** Supports IGMP V1, V2
- **Broadcast Storm:** Enable/Disable, 5%, 10%, 20%, 25%

Specifications

Standards	IEEE Std. 802.3 10BASE-T; IEEE Std. 802.3u 100BASE-TX; IEEE Std. 802.3z Gigabit fiber; IEEE Std. 802.3ab 1000BASE-T; IEEE Std. 802.3x Flow control and Back-pressure; IEEE Std. 802.3ad Port trunk with LACP; IEEE Std. 802.1d Spanning Tree Protocol; IEEE Std. 802.1w Rapid spanning tree; IEEE Std. 802.1p Class of service IEEE Std. 802.1q VLAN Tagging IEEE Std. 802.1x user authentication
Protocols	CSMA/CD
Technology	Store and Forward switching architecture
Connectors	10/100/1000 copper: 9x RJ-45 with AutoCross (Auto MDI/MDI-X), Two SFP ports
MAC Address	8K MAC address table
Memory Buffer	128Kbytes
Jumbo packet support	Max 9Kbytes jumbo packet size
Network Cable	**10BASE-T:** 2-pair UTP/STP Cat. 3, 4, 5 cable; EIA/TIA-568 100-ohm (100 m) **100BASE-TX:** 2-pair UTP/STP Cat. 5 cable; EIA/TIA-568 100-ohm (100 m); **1000BASE-T:** 4-pair UTP/STP Cat. 5e cable; EIA/TIA-568 100-ohm (100 m)
Backplane	18Gbps
LEDs	**RJ-45 port:** 10/100/1000; Link/Activity; Full duplex/Collision **Fiber:** Link/Activity **Power:** On/Off
Power Supply	Internal power: 100 – 240VAC
Power Consumption	10 watts max.
Operation Temperature	0° to 60°C (32° to 140°F)
Operation Humidity	10% to 90% (non-condensing)
Dimensions	**Width:** 217 mm **Depth:** 140 mm **Height:** 43 mm
EMI	FCC Class A, CE Mark
Safety Compliance	UL, cUL
Technical Support & Warranty	Free technical support and advanced warranty support for 5 years. Includes free telephone support, 24-hour support via web and ftp.

24-port 10/100/1000 Multi-Layer Managed Switch

MIL-SM24004TG

(24) 10/100/1000 ports + (4) SFP/RJ-45 Combo ports

- Auto-sensing 10/100/1000 ports
- (4) hot-swappable Small Form Factor Pluggable interfaces
- L2/L3/L4 Traffic classification Prioritization
- IGMP v1, v2
- Robust Security
- Multi-Layer Protocol Support
- Simplified Network Management
- Outstanding Value

Most Powerful, Gigabit Multi-Layer Switch in its Class

The MILAN Multi-Layer Gigabit Ethernet switch delivers maximum throughput and flexibility where you need it:

- High-density workgroups at the edge of the network
- The backbone of small networks

It also supports L2/L4 Gigabit Switching performance and eliminates network bottlenecks with wire-speed switching fabric.

Specifications

Connectors	• 24-Port 10/100/1000 Ethernet with Auto-MDI/MDIX (1000BaseT, 100BaseTX, 10BaseT): RJ-45 • 4 Combo (RJ-45/SFP) Ports • Console: Serial (RS-232): DB9
LED Indicators	Port, Uplink, System, Diagnostic
Performance	48 Gbps Switching Fabric 16k MAC Addresses
Buffer	1MB
Dimensions	**Width:** 17.4" [440 mm] **Depth:** 12.8" [324 mm] **Height:** 1.7" [43 mm]
Operating Temperature	32° to 104° F (0° to 40° C)
Relative Humidity	10% to 90% non-condensing
Power Requirements	Auto-switching, 110/240 VAC, 47~63Hz; 35W

Standards Compliance

IEEE 802.1D Spanning tree and bridge filters
IEEE 802.1W Rapid spanning tree and bridge filters
IEEE802.1S Multiple Spanning Tree
IEEE 802.1p Quality of Service (QoS)
IEEE 802.1X EAP Authentication
IEEE 802.1p Prioritization (Class of Service)
IEEE 802.1Q Virtual LAN (VLAN) Tagging
IEEE 802.3ad Link aggregation (LACP)
IEEE 802.3ac Frame extension for VLAN tagging
IEEE 802.3x Flow control and back pressure
IEEE 802.3z 1000BaseSX/LX over SM/MM fiber [15 km]
IEEE 802.3ab 1000BaseT over Cat. 5 UTP (4 pairs) [100 m]
IEEE 802.3u 100BaseTX over Cat. 5 UTP (2 pairs) [100 m]
IEEE 802.3 10BaseT over Cat. 3 UTP (2 pairs) [100 m]
RFC 2674 Extended Bridge MIB
RFC 2665 Ether-Like MIB
RFC 2863 Interface MIB
RFC 1493 Bridge MIB
RFC 1213 MIB II
RFC 792 ICMP
RFC 1112 IGMP
RFC 2236 IGMPv2
RFC 2618 RADIUS+
RFC 1757 (group 1,2,3,9) RMON
RFC 1157 SNMP
RFC 1907 SNMPv2
RFC 2030 SNTP

Emissions & Safety	FCC Class A, CE Mark, UL listed

Technical Support & Warranty

Free technical support and advanced warranty support for 5 years. Includes free telephone support, 24-hour support via web and ftp.

Multi-Layer Management Features

- **Graphical User Interface:** HTML browser-based with password protection for local and remote management
- **Command Line Interface:** Industry-standard CLI
- **Front panel:** Graphical representation of unit with real-time network and port status
- **Port Status:** Displays current per-port configuration showing speed, flow-control, bandwidth status and port security status.
- **Port Statistics:** Displays link, type and state of each port including RX/TX/Error for each port and unit. Table view also shows current, peak average & total packets for each port.
- **Port Controls:** Configure the state (enabled, disabled), link status (up, down) and mode (speed, duplex); Auto-Negotiation, flow control, priority, bandwidth limits, MAC address learning mode & MAC filtering.
- **Link Aggregation:** Set up IEEE 802.3ad Port Trunking with flexible load distribution, up to 8 ports per trunk group.
- **VLAN Configuration:** Supports 802.1q tagged port or protocol based VLANs up to 255 active VLANs (0~4094). GVRP for automatic VLAN registration and dynamic VLAN management.
- **Spanning Tree:** Supports IEEE802.1D STP, IEEE802.1w RSTP and IEEE 802.1S Multiple Spanning Tree
- **IGMP:** Supports IGMP v1/v2 Snooping and Query functions
- **Port Mirroring:** Monitor network traffic by Enable/disable Port Mirroring and select the ports for packet analysis
- **Remote Management:** Supports SNMP v1/v2c, RMON, and Telnet
- **Security:** Port and MAC-based IEEE802.1X Authentication, TACACS+, SSL, SSH v1.5/v2, and Standard, Extended IP & MAC Access Control List (ACL)
- **Jumbo Frame:** Supports up to 9KB Jumbo Frames
- **Quality of Service (QoS):**
  - L2/L3/L4 Traffic Classification/Priority Management, based on IEEE802.1p 4 priority queues control, based on IP Precedence/TOS & DSCP/TOS, and based on TCP/UDP port numbers
  - Supports WRR & SPF for priority queues, DiffServ/IPToS Prioritization, and Random Early Detection (RED)
- **Bandwidth Control:** Supports Ingress/Egress based Bandwidth Limiting
- **Remote Firmware Upgrade:** and Remote Configuration Storage support
- Editable configuration file
- System Log
- SNTP Clock Synchronization
- DNS Server

Ordering Info

MIL-SM24004TG
24-port 10/100/1000BASE-T Ethernet Multi-Layer Managed switch with (4) SFP Combo Gigabit Ports

Optional Accessories

(sold separately)

SFP Modules (see pages 135-136)

5 or 8-port 10/100BASE-TX Compact Switches

(5) or (8) 10/100BASE-TX ports

- Full Duplex Flow Control
- Store-and-Forward
- Auto-Negotiating

MIL-S500 & MIL-S800

With award-winning performance in an incredibly compact design, MILAN by Transition's MIL-S500 and MIL-S800 Switches auto-negotiate 10/100Mbps connections for fast and simple switching in workgroup, small office, and home environments. Features include:

Full/Half Duplex
Each port capable of operating at full or half duplex, allowing up to 200 Mbps for end users. Flow control and back pressure minimize packet loss and maximize performance.

High-performance Switching
Non-blocking architecture assures rapid packet delivery, while extensive MAC address tables and memory buffering provide swift lookup and packet forwarding.

Automatic MDI/MDIX
Provides automatic cable detection on 10/100BASE-TX ports for adjusting to straight-through or crossover cables during installation.

Ruggedized Chassis
Sturdy metal enclosures with optional mounting brackets and magnets for installation in nontraditional environments.

Straightforward Diagnostics
Perpetual port status provided via front-side LEDs to simplify troubleshooting.

Secure and Safe
UL, cUL, and TUV Certifications; conforms to IEEE 802.3, 802.3u, and 802.3x standards.

Features

- Filtering/Forwarding/Learning:Non-blocking, full wire speed
- Ports: Auto-negotiating for speed and duplex
- Forwarding mode: Store-and-forward
- Auto-MDI/MDIX: Crossover cables not needed
- LEDs: Power, 100 Mbps, Link/Activity, FDX/COL

Ordering Info

MIL-S500
5-Port 10/100BASE-TX Micro Switch

MIL-S800
8-Port 10/100BASE-TX Switch

Optional Accessories

(sold separately)
Mounting Brackets:

MIL-BR500
Mounting bracket for MIL-S500

MIL-BRSW
Mounting bracket for MIL-S800

Specifications

Standards Compliance	IEEE Std. 802.3 10BASE-T Ethernet; IEEE Std. 802.3 100BASE-TX Ethernet; IEEE Std. 802.3x full-duplex flow control
MAC Address Table	**MIL-S500:** 1K **MIL-S800:** 2K
Packet Buffer	**MIL-S500:** 128 KB **MIL-S800:** 128KB
Network Interface	**10BASE-T:** RJ-45 Categories 3, 4, 5 100-ohm UTP **100BASE-TX:** RJ-45 Category 5 100-ohm UTP
Dimensions	**MIL-S500:** Width: 4.3" [110 mm] Depth: 2.8" [70 mm] Height: 0.7" [19 mm] **MIL-S800:** Width: 6.5" [165 mm] Depth: 4.0" [100 mm] Height: 1.0" [24 mm]

Operating Temperature	0° to 45°C (32°F to 113°F)
Storage Temperature	-25°C to 70°C (-13°F to 158°F)
Operating Humidity	10% to 90% (non-condensing)
Relative Humidity	10% to 90%
Weight	**MIL-S500:** 0.26 kg (9 oz) **MIL-S800:** 0.45 kg (1 lb.)
External Power Supply	DC Output Power: 9V DC, 700mA
Power Consumption	**MIL-S500:** 1.5 Watts maximum **MIL-S800:** 4.2 Watts maximum
Compliance	**Safety:** UL, cUL, TUV **Emissions:** FCC Class B, CISPR 22 Class B, CE Mark
Technical Support & Warranty	Free technical support and advanced warranty support for 5 years. Includes free telephone support, 24-hour support via web and ftp.

8-port 10/100BASE-TX Compact Switches with internal power

Table of Contents
Select Media Converter
Select Switch

(8) 10/100BASE-TX ports

- 10/100 Unmanaged Switch
- Compact Size
- Internal power supply
- Store-and-Forward
- Auto-MDI/MDIX

MIL-S800i

The industry's smallest 8-port compact switch with an internal power supply—MILAN by Transition's MIL-S800i—auto-negotiates 10/100Mbps connections for fast and simple switching in workgroup, small office, and home environments. Features include:

Full/Half Duplex
Each port is capable of operating at full or half duplex, allowing up to 200 Mbps for end users. Flow control and back pressure minimize packet loss and maximize performance.

High-performance Switching
Non-blocking architecture assures rapid packet delivery, while 4K MAC address table and memory buffering provide swift lookup and packet forwarding.

MDI/MDIX
Provides automatic cable detection on 10/100BASE-TX ports for adjusting to straight-through or crossover cables during installation.

Ruggedized Chassis
Sturdy metal enclosures with wall holes mounts for installation in non-traditional environments

Straightforward Diagnostics
Perpetual port status provided via LEDs on top of switch to simplify troubleshooting.

Secure and Safe
Class B, UL, cUL, and TUV Certifications; conforms to IEEE 802.3, 802.3u, and 802.3x standards.

Ordering Info

MIL-S800i
8-port 10/100BASE-TX Micro Switch with internal power supply

Specifications

Standards	IEEE Std. 802.3 10BASE-T Ethernet; IEEE Std. 802.3 100BASE-TX Ethernet; IEEE Std. 802.3x full-duplex flow control
Network Interface	**10BASE-T:** RJ-45 Categories 3, 4, 5 100-ohm UTP; **100BASE-TX:** RJ-45 Category 5 100-ohm UTP
Buffer Memory	256KB
Dimensions	Width: 6.3" [160 mm] Depth: 4.0" [100 mm] Height: 1.0" [28 mm]
Operating Temperature	0 to 45°C (32°F to 113°F)
Operating Humidity	10% to 90% (non-condensing)
Storage Temperature	-25°C to 75°C (-13°F to 167°F)
Relative Humidity	10% to 95%
Weight	0.45 kg (1 lb.)
Internal Power Supply	AC Power: 100 – 240 VAC Line Frequency: 50/60Hz
Power Consumption	7 Watts maximum
Compliance	**Safety:** UL, cUL, TUV/GS, CE **Emissions:** FCC Class B, CISPR 22 Class B, CE Mark, VCCI Class B
Technical Support & Warranty	Free technical support and advanced warranty support for 5 years. Includes free telephone support, 24-hour support via web and ftp.

5 or 8-port 10/100BASE-TX Switches with built-in fiber

Table of Contents
Select Media Converter
Select Switch

(5) or (8) 10/100BASE-TX ports + (1) fiber port

- Auto-Negotiation
- Full/Half duplex Flow Control
- Full/Half duplex Fiber Mode Control
- Compact Size
- Sturdy Metal Enclosure

MIL-S501xx & MIL-S801xx

MiLAN's 10/100Mbps Switches with Fiber provide multiple 10/100BASE-TX ports with one 100BASE-FX fiber port. Both the MIL-S501 and MIL-S801 Series are ideal for alleviating traffic bottlenecks in workgroup environments; by combining copper and fiber ports in the same chassis, they offer an inexpensive solution for segmenting LANs and easily interconnecting networks in campus or multi-tenant environments.

High-Powered Switching
Each switch operates at wire speed with automatic MAC address learning and aging, requiring no user configuration; MIL-S801 has non-blocking 1.8Gbps architecture assuring rapid packet delivery.

Half/Full Duplex
All ports running at 100Mbps operate in either half or full duplex mode, providing up to 200Mbps of bandwidth for end users.

Simple Configuration
Flow control minimizes packet loss, while all copper ports auto negotiate for speed.

Fiber Connectivity
Four different connection types: SC or ST for Multimode and SC or ST for Single Mode—ideal for linking long-distance network segments up to 37 miles (60 km).

Auto MDI/MDIX
Automatic cable detection for adjusting 10/100BASE-TX ports to straight-through or crossover cables during install

Compact and Flexible
Sturdy metal enclosure with wall mounts, optional mounting brackets and all media connections on front panel.

Specifications

Standards Compliance	IEEE 802.3 10BASE-T; IEEE 802.3u 100BASE-TX/FX
System LEDs	Power, Speed, Link, Activity, and Duplex
Packet Forwarding	Store-and-Forward
MAC Address Support	4K
Packet Buffer Memory	256KB
Operating Temperature	0° to 45°C (32°F to 113°F)
Storage Temperature	-25°C to 70°C (-13°F to 158°F)
Operating Humidity	10% to 90% (non-condensing)

Relative Humidity	10% to 90%
Chassis	Metal
Power Supply	MIL-S501 External MIL-S801 Internal
AC Input Voltage	100 – 240 VAC
DC Output Power	9VDC, 700mA (MIL-S501)
Power Consumption	5.5 Watts maximum
Dimensions	**MIL-S501:** Width: 6.5" [165mm] Depth: 4.0" [100mm] Height: 1.0" [24mm] **MIL-S801:** Width: 9.8" [250 mm] Depth:5.2" [132 mm] Height: 1.5" [37 mm]
Weight	**MIL-S501:** 0.45 kg [1 lb.] **MIL-S801:** 1.35 kg [3 lbs.]
Safety	UL, cUL, TUV
Emissions	FCC Class B, CISPR 22 Class B, CE Mark
Technical Support & Warranty	Free technical support and advanced warranty support for 5 years. Includes free telephone support, 24-hour support via web and ftp.

Ordering Info

MIL-S501ST
5-Port 10/100BASE-TX + (1) 100BASE-FX multimode (ST) **[2 km/1.2 miles]**

MIL-S501SC
5-Port 10/100BASE-TX + (1) 100BASE-FX multimode (SC) **[2 km/1.2 miles]**

MIL-S501SC-15
5-Port 10/100BASE-TX + (1) 100BASE-FX single mode (SC) **[15 km/9.3 miles]**

MIL-S501SC-30
5-Port 10/100BASE-TX + (1) 100BASE-FX single mode (SC) **[30 km/18.6 miles]**

MIL-S501SC-60
5-Port 10/100BASE-TX + (1) 100BASE-FX single mode (SC) **[60 km/37.3 miles]**

MIL-S801ST
8-Port 10/100BASE-TX + (1) 100BASE-FX multimode (ST) **[2 km/1.2 miles]**

MIL-S801SC
8-Port 10/100BASE-TX + (1) 100BASE-FX multimode (SC) **[2 km/1.2 miles]**

MIL-S801SC-60
8-Port 10/100BASE-TX + (1) 100BASE-FX single mode (SC) **[60 km/37.3 miles]**

Optional Accessories

(sold separately)
Mounting Brackets:

MIL-BRSW
Mounting bracket for MIL-S501

MIL-RMS801
Mounting bracket for MIL-S801

16 or 24-port 10/100BASE-TX Compact Switches

(16) or (24) 10/100BASE-TX ports

- Automatic MDI/MDIX
- Wire Speed Performance
- Auto-Negotiation for Speed and Duplex
- Store and Forward Architecture
- Ruggedized metal chassis with internal power supply
- Front panel LED status indicators

MIL-S1600S & MIL-S2400S

The MIL-S1600S and MIL-S2400S compact Fast Ethernet Switches have sixteen or twenty-four 10/100 Base-TX ports with low latency and error-free performance provided via an advanced store-and-forward architecture. Other features include:

Automatic MDI / MDIX
Cable detection and correction is automatic as the switch adjusts for straight-through or crossover cables during installation—no uplink port necessary.

High-performance Switching
Non-blocking architecture assures rapid packet delivery and the extensive 8,000 MAC address table and memory buffering provide swift lookup and packet forwarding.

Full Duplex Operation
Bandwidth for each port is effectively doubled, increasing the speed of a 100Mbps port to 200Mbps.

Flow Control
Enhances packet transmission by full-duplex flow control and half-duplex back pressure, providing congestion control on busy ports.

Rugged Chassis
Sturdy metal enclosures for added durability.

Straight Forward Diagnostics
Perpetual port status provided via LEDs to simplify troubleshooting.

Standards
Conforms to IEEE 802.3, 802.3u, and 802.3x standards.

Ordering Info

MIL-S1600S
16-port 10/100BASE-TX switch
"small form factor"

MIL-S2400S
24-port 10/100BASE-TX switch
"small form factor"

Specifications

Ports	**MIL-S1600S:** 16 fixed 10/100BASE-TX ports: RJ-45 connectors **MIL-S4200S:** 24 fixed 10/100BASE-TX ports: RJ-45 connectors
Standards	IEEE 802.3 10BASE-T; IEEE 802.3u 100BASE-TX/FX; IEEE 802.3x
Packet Forwarding	Store-and-Forward
Address Support	8K MAC entry
System LEDs	Power, Link/Activity
Switch Fabric	3.2Gbps for MIL-S1600S 4.8Gbps for MIL-S2400S
Latency	5 ms
Buffer Memory	512kb
Operating Temperature	0 to 45°C (32°F to 113°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Operating Humidity	10% to 90% (non-condensing)
Relative Humidity	10% to 90%

Dimensions	Width: 9.8" [250 mm] Depth: 5.2" [132 mm] Height: 1.5" [37 mm]
Weight	3 lbs. [1.35 kg]
Chassis	Metal
Mounting	Desktop rubber feet
Safety	UL, cUL
Emissions	FCC Class A, CE Mark
Power Supply	Universal AC power input: 100 to 240 VAC 50 – 60Hz; Output rate: +3.3V/3A
Technical Support & Warranty	Free technical support and advanced warranty support for 5 years. Includes free telephone support, 24-hour support via web and ftp.

5-port 10/100/1000BASE-T Unmanaged Switch

(5) 10/100/1000BASE-T ports

- Full wire speed reception and transmission with 10 Gbps backplane speed
- Rugged metal chassis with external power supply
- Supports IEEE802.3x Flow Control for full duplex

MIL-S5000T

The Most Affordable Way to Go Gig!

With Gigabit Ethernet rapidly gaining in popularity, we are excited to offer a 5-Port Gigabit Ethernet switch that will transform your current crawling Fast Ethernet network into blazing fast network that runs at 1000 Mbps!

Five 10/100/1000BaseT Ports in a small footprint

The MIL-S5000T is a hard-working switch that delivers exceptional performance. Right out of the box, this switch can give you five 10/100/1000 Gigabit Ethernet ports and best yet, it will take up as little desk space as your tiny USB hub. Imagine transferring data/voice/multimedia files across your network at 2 Gbps full duplex; the waiting game is eliminated. Whether you need 10BaseT, 100BaseTX or 1000BaseT, this switch is ready to run with any version of Ethernet over copper cabling.

Performance, Performance, Performance

MILAN once again delivers the highest performance switch in its class. A single integrated switch engine automatically filters and forwards traffic at full line rate for all 5 ports simultaneously.

Features:

- (5) 10/100/1000BaseT ports
- Small footprint takes up minimal desktop space
- Compatible with any computers/laptop machines with an Ethernet port
- Supports Auto-MDI/MDIX which eliminates cabling confusion

Ordering Info

MIL-S5000T
5-port 10/100/1000BASE-T switch

Specifications

Connectors	(5) 10/100/1000 Mbps Gigabit Ethernet (10BaseT, 100BaseTX, 1000BaseT): RJ-45
Status Indicators	Power plus 3 indicators per RJ-45 port (link/activity, 10/100 Mbps, 1000 Mbps)
Performance **Flow Control:** Supports IEEE802.3x Flow Control **Memory:** Embedded 256KB packet buffer **Address Table:** 8K entries	
Case	Rugged metal chassis with desk-mount kit included
Dimensions	Width: 6.7" [171 mm] Depth: 3.9" [98 mm] Height: 1.1" [29 mm]

Standards Compliance **Network:** IEEE 802.3z/ab Gigabit Ethernet over 4 pairs of UTP Category 5 (1000BaseT); IEEE 802.3u Fast Ethernet over 2 pairs of UTP Category 5 (100BaseTX); IEEE 802.3 Ethernet (10BaseT) **Expansion:** Auto-Uplink (MDI/MDIX) on all five RJ-45 ports. Uplink to additional switches using standard or crossover cables	
Operating Temperature	32° to 104° F (0° to 40° C)
Relative Humidity	10% to 90% non-condensing
Power	External power supply; Output: DC 7.5V/1.5A; Consumption: 8.5 watts (max.)
Emissions	FCC Class A and CE Mark
Warranty	5-year product warranty covers defects in manufacturing and workmanship; Technical Support: 5 years of free telephone support plus 24-hour support via web

8-Port 10/100/1000BASE-T Compact Workgroup Switch

(8) 10/100/1000BASE-T ports

- Small Form factor
- Internal Power Supply
- 8 10/100/1000BaseT Auto-negotiating ports
- Auto-MDI/MDIX which eliminates cabling confusion
- Wall Mount Brackets

MIL-S8TA

Specifications

Physical Characteristics	
Enclosure Case	Rugged metal chassis
Dimensions	Width: 6.5" [165 mm] Depth: 4.0" [100 mm] Height: 1.3" [33 mm]
Internal Power Supply	AC 100 – 240V, 50/60Hz
Connectors	(8) 10/100/1000 Mbps Gigabit Ethernet (10BASE-T, 100BASE-TX, 1000BASE-T) RJ-45
Status Indicators	3 indicators per RJ-45 port: Link/Activity, 10/100 Mbps, 1000 Mbps
Performance	
Flow Control	Supports IEEE802.3x Flow Control
CoS	Two queues, WRR 4:1
Memory	Embedded 144KB packet buffer
MAC Address Table	8K entries
MDI/MDI-X	Auto

Standards Compliance	
Network: IEEE 802.3 2002	
Environmental Range	
Operating Temperature	32° to 113°F (0° to 45°C)
Relative Humidity	10% to 90% non-condension
Power	Internal power supply
Power Consumption	7.6 watts (max.)
Emissions	FCC Class A and CE Mark
Technical Support & Warranty	Free technical support and advanced warranty support for 5 years. Includes free telephone support, 24-hour support via web and ftp.

Ordering Info

MIL-S8TA
8-port 10/100/1000BASE-T switch

8-port 10/100/1000BASE-T Gigabit Switch with console management

Table of Contents
Select Media Converter
Select Switch

MIL-S8000G

(8) 10/100/1000BASE-T ports

- 10/100/1000Mbps - All Ports
- Automatic MDI/MDIX
- Wire Speed Performance
- Auto-Negotiation for Speed and Duplex
- Store and Forward Architecture
- Light Console Management
- Port-based VLANs
- Port Mirroring
- Port Trunking

Gigabit Ethernet over copper technology is a cost-effective way to upgrade network equipment from Fast Ethernet to Gigabit speeds. By using standard 4-pair Category 5 copper cabling, you don't need to pull expensive fiber optic cabling. This technology will create high-speed backbone connections between switches, servers, database and end stations.

The MILAN MIL-S8000G Gigabit Ethernet Switch has eight 10/100/1000 Base-TX ports with low latency and error-free performance provided via an advanced store-and-forward architecture.

Other features include:

- **Automatic MDI / MDIX:** Cable detection and correction is automatic as the switch adjusts for straight-through or crossover cables during installation - no uplink port necessary
- **High-performance Switching:** Non-blocking architecture backplane of 16G assures rapid packet delivery and the extensive 8,000 MAC address table and memory buffering provide swift lookup and packet forwarding.
- **Full Duplex Operation:** Bandwidth for each port is effectively doubled, increasing the speed of a 1000Mbps port to 2000Mbps
- **Flow Control:** Enhances packet transmission by full-duplex flow control and half-duplex back pressure, providing congestion control on busy ports
- **Console Management:** Light management via the console port- Port Status, Port configuration, Port-based VLANs, Port trunking, Port Mirroring, Aging
- **Rugged Chassis:** Standard 19-inch rackmount design with mounting brackets included
- **Standards:** Conforms to IEEE 802.3, 802.3u, 802.3ab and 802.3x standards
- **Power:** Internal Power Supply
- **LED Indicators:** Front side LEDs provide system status on Power along with 100M, 1000M, LK/ACT and FD per port

Ordering Info

MIL-S8000G
8-port 10/100/1000BASE-T switch with console management

Specifications

Ports	8 fixed 10/100/1000BASE-TX ports: RJ-45 connectors
Standards	IEEE 802.3 10BASE-T; IEEE 802.3u 100BASE-TX; IEEE 802.3x Flow Control; IEEE 802.3ab 1000BASE-T
Packet Forwarding	Store-and-Forward
Address Support	8K MAC entry
System LEDs	**Unit:** Power **Per Port:** 100, 1000, Link/Activity, Full Duplex/ Collision
Switch Fabric	16 Gbps
Buffer Memory	512kb
Operating Temperature	0 to 45°C (32°F to 113°F)
Storage Temperature	-40°C to 70°C (-40°F to 158°F)
Operating Humidity	10% to 90% (non-condensing)
Relative Humidity	10% to 90%

Dimensions	**Width:** 17.4" [440 mm] **Depth:** 8.8" [224 mm] **Height:** 1.75" [44 mm]
Weight	2.9 kg (6.4 lbs)
Chassis	Metal
Mounting	Desktop rubber feet included Rackmount kit included
Safety	UL, cUL
Emissions	FCC Class A, CE Mark
Internal Power Supply	Universal AC power input: 100 to 240 VAC 50-60Hz
Power Consumption	30 Watts maximum
Technical Support & Warranty	Free technical support and advanced warranty support for 5 years. Includes free telephone support, 24-hour support via web and ftp.

8-port 10/100/1000BASE-T Gigabit Smart Switch with SFP uplink slot

(8) 10/100/1000BASE-T ports + (1) SFP slot

- SMART features include: console Management, 4K VLANs, QoS, and Broadcast Storm Filtering.
- Full wire speed reception and transmission with 16 Gbps backplane speed.
- Ruggedized metal chassis with Internal power supply
- Front panel LED status indicators

MIL-S8001TG

The Smart Choice for Flexible, Gigabit Ethernet!

With Gigabit Ethernet rapidly becoming the de facto standard, MiLAN Technology is proud to introduce our new 8-Port Gigabit Ethernet switch. The new MIL-S8001TG will transform your current Fast Ethernet network into a blazing fast Gigabit Ethernet network that runs at 1000 Mbps!

Converge Copper and Fiber Gigabit Networks

The MIL-S8001TG is a hard-working switch that delivers exceptional performance. Right out of the box, the MIL-S8001TG gives you eight 10/100/1000 Gigabit Ethernet ports and a Mini-GBIC slot that will interface with any industry-standard Small-Form-Pluggable Gigabit Ethernet Interface transceivers. The addition of the Mini-GBIC slot allows for flexible Gigabit fiber deployment by converging it with cost-effective Gigabit copper connectivity. Imagine transferring data/voice/multimedia files across your network at 2 Gbps full duplex per port, the waiting game is over.

Smart Connectivity

Like all MiLAN unmanaged switches, the MIL-S8001TG is completely plug-and-play; no configuration is required for basic operation. Advanced configurations can be accessed through MiLAN's easy to use menu-driven management system.

Advanced Features

- **Console-Managed:** All advanced features are accessible from an easy-to use console interface. No cryptic command line commands or third party network management applications required.
- **VLAN:** Supports 4K 802.1Q tagged-based VLANs plus port-based VLANs
- **Quality of Service (QoS):** 802.1p/TOS support efficiently control network resources by classifying traffic and prioritizing network traffic flows
- Supports **Broadcast Storm Filtering** that eliminates unnecessary network traffic
- Increase network performance with **9.5KB Jumbo Frame** support

Ordering Info

MIL-S8001TG
8-port 10/100/1000BASE-T switch with (1) SFP uplink slot

Optional Accessories

(sold separately)

SFP Modules (see pages 135-136)

Specifications

Connectors	**Copper:** Eight 10/100/1000 Mbps Gigabit Ethernet (10BaseT, 100BaseTX, 1000BaseT): RJ-45 **Fiber:** One Industry-Standard Small-Form-Pluggable GBIC transceiver slot
Status Indicators	**RJ-45:** Power plus 3 indicators per RJ-45 port (link/activity, 10/100/1000 Mbps, Duplex/Collision) **Mini-GBIC:** Link/Activity
Console	RS-232
Performance	**Efficiency:** Gigabit Switching (1.488,000 pps) and Fast Ethernet Switching (148,800 pps) **Flow Control:** Supports IEEE802.3x Flow Control (Full-Duplex) and Back Pressure (Half-Duplex) **Switch Architecture:** Single-Chip non-blocking wire-speed design, 16 Gbps Backplane **Memory Embedded:** 1.5Mb packet buffer **Address Table:** 4K entries
Software Features	**VLAN:** Port Based VLAN up to 8 groups; 4K IEEE802.1Q Tag VLAN **Quality of Service (QoS):** 2 Types of quality of service: 1.Port based priority. 2. 802.1p/TOS priority tag. **Priority Queue:** System provides 4 queues for High and Low priority.
Software Features (cont'd.)	**Queue Ratio:** High / Middle / Low/ Lowest=8/4/2/1 **Trunking:** Supports one trunk group, and the trunk member can be Port(5,6,7,8),Port(6,7,8) or Port(7,8) **Broadcast Storm:** Disable or Enable (Supports rate setting)
Case	Ruggedized metal chassis
Dimensions	**Width:** 250 mm **Depth:** 132 mm **Height:** 37 mm
Power	Internal Universal power supply; Input: 90 – 240V, 50/60Hz; Output: DC 5 V/4 A (internal)
Power Consumption	22 watts (max.)
Standards Compliance	**Network:** IEEE 802.3ab 1000BaseT, IEEE 802.3u 100BaseTX; IEEE 802.3 10BaseT; IEEE 802.3z 1000BaseSX/LX; IEEE 802.3x Flow Control; IEEE 802.1p Quality of Service; IEEE 802.1Q Tag VLAN **Expansion:** Auto-MDI/MDIX on all eight RJ-45 ports. Uplink to additional switches using standard or crossover cables **Mini-GBIC slot:** Compatible with industry standard small-form-pluggable GBICs for a wide variety of fiber connections and distances **Emissions:** FCC Class A and CE Mark **Safety:** EN60950
Operating Temperature	32° to 113°F (0° to 45°C)
Relative Humidity	10% to 90% non-condensing
Warranty	5-year product warranty covers defects in manufacturing and workmanship; 5 years of free telephone support plus 24-hour support via web.

24-port 10/100/1000BASE-T Switches with (2) SFP uplink slots

(24) 10/100/1000BASE-T ports + (2) SFP slots

- Full wire speed reception and transmission with 48 Gbps backplane speed
- 2 SFP Combo Ports for Optical Connectivity
- 802.1x Flow Control
  - Full Duplex Pause
  - Half Duplex Backpressure
- Ruggedized metal chassis with external power supply
- Supports IEEE802.3x Flow Control for full duplex
- JUMBO Frames Support
- Internal Power Supply
- Front panel LED status indicators

MIL-S24T2GPA

Next Generation of Copper and Fiber Switching

The switch provides 48Gbps Gigabit switching performance with an added benefit of combining copper and fiber interfaces in a compact 1U design. The MIL-S24T2GPA delivers cost-efficient switching capability for 24 ports of Copper Gigabit Ethernet and two combo ports for SFP based Gigabit Ethernet.

Two Combo SFP Ports

The switch enables fiber connectivity through two hot-swappable Small Form-factor Pluggable (SFP) gigabit interfaces.

With Gigabit Ethernet rapidly gaining in popularity, network administrators are demanding higher density 10/100/1000 Mbps switches.

(24) 10/100/1000BASE-T Ports

The MIL-S24T2GPA is a hard-working switch that delivers exceptional performance. Combining wire-speed switch fabric together with shared memory architecture design, they eliminate head-of-line blocking and easily out perform other first generation Gigabit switches using old-fashioned "bridge" architecture. Whether you need 10BASE-T, 100BASE-TX or 1000BASE-T, this switch is ready to run with any version of Ethernet over copper cabling.

Performance, Performance, Performance

MiLAN by Transition Networks delivers the highest performance switch in its class. A single integrated switch engine automatically filters and forwards traffic at full line rate for all 24 ports simultaneously. With a Jumbo Frame compatible network infrastructure, you'll be transferring data at Ethernet Packet of 9 KB instead of 1.5KB—that's almost 4X larger than conventional switches.

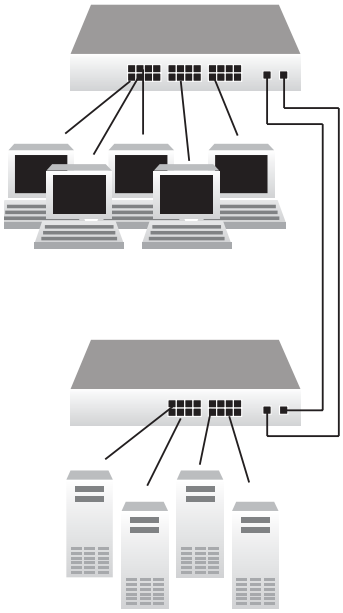
Ordering Info

MIL-S24T2GPA
24-port 10/100/1000BASE-T switch with (2) SFP uplink ports

Optional Accessories

(sold separately)

SFP Modules (see pages 135-136)



Specifications

Connectors **MIL-S24T2GPA:** (24) 10/100/1000 Mbps Gigabit Ethernet (10BaseT, 100BaseTX, 1000BaseT): RJ-45 plus 2 SFP combo open slots for 1000Base-x, optical or copper SFP modules	
Status Indicators	Power plus LED indicators per RJ-45 port (duplex, link/activity, 10/100 Mbps, 1000 Mbps)
Performance **Backplane Speed:** 48 Gbps **Switch Architecture:** Shared memory **Maximum Frame Size:** 9 KB Jumbo Frame **Filtering and Forwarding:** Includes multi-layer filtering and forwarding **Forwarding Table:** 8K MAC addresses **RAM Buffer:** 4Mbps	
Case	Ruggedized Metal Chassis

Dimensions	Width: 17.3" [440 mm] Depth: 6.33" [161 mm] Height: 1.7" [44 mm]
Weight	8.25 lbs.
Standards Compliance **Network:** IEEE 802.3ab Gigabit Ethernet over 4 pairs of UTP Category 5 (1000BaseT); IEEE 802.3z Gigabit Ethernet over Fiber optics (1000Base-SX/LX); IEEE 802.3u Fast Ethernet over 2 pairs of UTP Category 5 (100BaseTX); IEEE 802.3 Ethernet (10BaseT) **Protocol:** CSMA/CD **Expansion:** Auto-MDI/MDIX on all RJ-45 ports	
Operating Temperature	32° to 104° F (0° to 40° C)
Relative Humidity	10% to 95% non-condensing
Power	100 – 240 VAC, 50/60 Hz, internal switching supply
Power Consumption	47 watts (max.)
Emissions	FCC Class A and CE Mark
Warranty	Five-year product warranty covers defects in manufacturing and workmanship; Five-year technical support plus 24-hour support via web

Power Over Ethernet (PoE) Injectors & Splitters

- Ensures uninterrupted network operation by providing a "power safe" path to the user
- Intelligent detection process to detect Power over Ethernet enabled terminals and protect legacy endpoints
- Furnishes easy and cost-effective installation with fewer cables and electrical outlets
- 1U height and 19" Rack mountable (MIL-L800i only)
- Provides one central secure location for power (MIL-L800i & MIL-L100i)

MIL-x100x

Best Way to Bring Power to Your Network

MILAN by Transition's new EmPowered Ethernet™ Series Power over Ethernet solutions deliver unified supply of data, voice, and video as well as electrical power through a single source by sending power over standard Category 5 and above twisted pair cables. Power over Ethernet simplifies installation and eliminates the need to run separate power cords and LAN cables to each Access Point or port locations.

Our PoE products provide organizations with affordable, easy-to-use solutions that enable them to migrate their network infrastructure to support a growing number of advanced cost-saving, performance enhancing applications, such as streamlining wireless, VOIP, Network IP camera deployments, and centralized power backup solutions. Whether on a factory floor or in an enterprise facility, running power to hard to reach locations with MILAN by Transition's Power over Ethernet solutions significantly reduce cabling and outlet requirements while providing the lowest total cost of ownership.

IEEE802.3af Compliant

The EmPowered Ethernet™ Series Power over Ethernet solutions are IEEE802.3af compliant, which means that you are ensured of the following:

Legacy Installation: ensures safe delivery of power to existing legacy devices as well as power-enabled terminals.

Preservation of Cabling Infrastructure: avoids altering existing wiring and does not damage cabling infrastructure already in place.

Data Integrity: Power delivery over Ethernet cables does not cause data degradation or loss of data integrity.

Power Shut Off: When data is disconnected POE power is not provided to the PD device. This provides and easy PD reset option.

Ordering Info

MIL-L100i
EmPowered™ Ethernet 1-port POE Injector

MIL-L800i
EmPowered™ Ethernet 8-Port POE Injector Hub

MIL-L100s
EmPowered™ Ethernet 1-port POE Dual Voltage Splitter (5v/12V)

Specifications

MIL-L100i

Standards	IEEE802.3af Compliant IEEE802.3 10BASE-T IEEE 802.3u 100BASE-TX
LEDs	**System:** Power
Ports	• (1) DATA IN RJ-45 Ethernet Port • (1) DATA OUT PoE Injector RJ-45 Ethernet Port
Cable Requirements	**10BASE-T:** 2-pair UTP/STP Cat.3,4,5 cable EIA/TIA-568 100-ohm(100 m) **100BASE-TX:** 2-pair UTP/STP Cat.5 cable EIA/TIA-568 100-ohm(100 m)
Weight	200g
Dimensions	**Width:** 117 mm **Depth:** 60 mm **Height:** 35 mm
Power Output	-48 VDC, 300 mA
Power Input	AC 100~240V, 50~60Hz, 0.3A
Operating Environment	0~ 40°C , 90% Relative Humidity (non-condensing)
Storage Temperature	0~70°C, 95% Relative Humidity (non-condensing)
EMI and Safety	FCC Class B, CE Mark; UL, cUL, CE/EN60950

Specifications

MIL-L800i

Standards	IEEE802.3af Compliant IEEE802.3 10BASE-T IEEE 802.3u 100BASE-TX
Management	Microsoft® Windows-based utility for power management
Power Management Functions	• Current ports serviced list • System total serviced power budget • Power port disable/ enable • Power support priority • Power overload auto shut down • Power port operation status • Power consumption limit
LEDs	**System:** Power **Per Port:** Port Forwarding, Power Off
Ports	• (8) DATA IN RJ-45 Ethernet Ports • (8) DATA OUT PoE Injector RJ-45 Ethernet Ports • (1) RS-232 Console Port
Cable Requirements	**10BASE-T:** 2-pair UTP/STP Cat.3,4,5 cable; EIA/TIA-568 100-ohm(100 m) **100BASE-TX:** 2-pair UTP/STP Cat.5 cable; EIA/TIA-568 100-ohm(100 m)
Weight	2.7 kg
Dimensions	440 mm x 224 mm x 44 mm (W x D x H)
Mounting	19" rack mountable
Power Output	• -48 VDC via Pins (+)4/5:(-)7/8 • Current (per port max.): 350mA @ 48VDC
Power Input	AC 100~240V, 50/60 Hz, IEC power socket with fuse and power switch
Power Consumption	130 Watts Maximum
Operating Environment	0~45°C, 10~90% Relative Humidity (non-condensing)
Storage Temperature	0~70°C, 95% Relative Humidity (non-condensing)
EMI and Safety	FCC Class A, CE Mark; UL, cUL , CE/EN60950

Specifications

MIL-L100s

Standards	IEEE802.3af Compliant IEEE802.3 10BASE-T IEEE 802.3u 100BASE-TX
LEDs	**System:** Power
Ports	• (1) DATA IN RJ-45 Ethernet Port • (1) DATA OUT PoE Injector RJ-45 Ethernet Port • (1) POWER OUT JACK, 5.5x2 mm
Dip Switch	5V/12V Dip switch
Cable Requirements	**10BASE-T:** 2-pair UTP/STP Cat.3,4,5 cable; EIA/TIA-568 100-ohm(100 m) **100BASE-TX:** 2-pair UTP/STP Cat.5 cable; EIA/TIA-568 100-ohm(100 m)
Weight	150g
Dimensions	**Width:** 80 mm **Depth:** 55 mm **Height:** 26 mm
Power Output	5 (default) or 12 VDC
Power Input	-48 VDC
Operating Environment	0~ 40°C , 90% Relative Humidity (non-condensing)
Storage Temperature	0~70°C, 95% Relative Humidity (non-condensing)
EMI and Safety	FCC Class B, CE Mark, CE/EN60950

Fiber Optic Patch Cords

FPC-xxx-xxxx-xxM

Transition Networks's high-quality fiber optic patch cords are designed to meet or exceed industry specifications and are offered in a wide variety of connector styles, fiber types and lengths. Each cable assembly is 100% optically inspected, tested and individually packaged with descriptive labeling and test results included.

Features

- 10-Gigabit Ethernet laser-optimized multimode cable for runs up to 550 meters. Ideal for campus LAN backbone and storage area network (SAN) applications.
- Factory terminated and 100% optical testing to guarantee test results.
- Individually packaged with IL and RL test results included.
- Available fiber types include single mode 8/125µm and multimode 50/125µm or 62.5/125µm.
- Lifetime Warranty

Ordering Info

FPC-____-____-__M

Cable Type

MD5	Multimode 50/125µm duplex
MD6	Multimode 62.5/125µm duplex
SD	Single Mode 8/125µm duplex
MD5G	Multimode 50/125µm duplex (10-Gigabit Optimized)

Length

xx	Length in meters

Available lengths: 1, 2 and 3 meters

Note: Other lengths may be available upon request.

Connector Type

LC	LC/PC
MT	MT-RJ/PC
SC	SC/PC
ST	ST/PC

(List each end separately.)

Examples:

FPC-MD6-LCMT-03M
Fiber Patch Cord, duplex multimode 62.5/125µm, LC to MT-RJ, 3 meters long

FPC-SD-SCSC-01M
Fiber Patch Cord, duplex single mode 8/125µm, SC to SC, 1 meter long

Specifications
Multimode Fiber

Standards	ITU-T G.651; IEC 60793-2-10 Type A1A.1, A1B
Fiber Optic Connector Specs	**Max. Insertion Loss:** < 0.5 dB **Max. Insertion Loss:** < 0.7 dB (MT-RJ only) **Typical Insertion Loss:** < 0.3 dB
Fiber Optic Cable Specs	
Core/Cladding Diameter	50/125µm or 62.5/125µm
Jacketing	2mm or 3mm tight buffered, OFNR, orange PVC (diameter will depend on connector type)
Bandwidth	**50/125µm:** 500MHz/km @ 850nm; 500MHz/km @ 1300nm **62.5/125µm:** 160MHz/km @ 850nm; 500MHz/km @ 1300nm
Attenuation	**Max:** 3.5 dB/km @850nm; 1.5 dB/km @1300nm **Typical:** 3.0 dB/km @850nm; 1.0 dB/km @1300nm
Length Tolerance	**Length specified:** + 0.15m (+6.0") / -0.0m (-0.0")
Environment	-40°C to +85°C operating temperature, 5% – 95% humidity non-condensing
Warranty	Lifetime

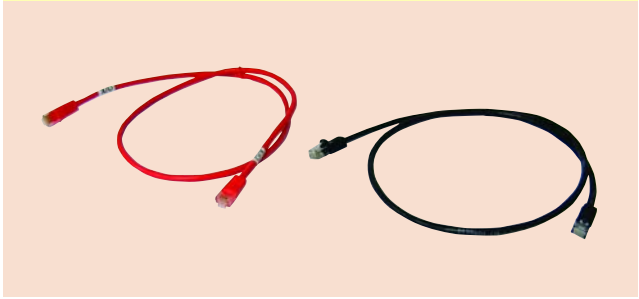
Specifications
Multimode Fiber (10-Gigabit Optimized)

Standards	TIA/EIA-492-AAAC; IEC 60793-2-10 Type A1A.2; ISO/IEC 11801 OM-3
Fiber Optic Connector Specs	**Max. Insertion Loss:** < 0.5 dB **Max. Insertion Loss:** < 0.7 dB (MT-RJ only) **Typical Insertion Loss:** < 0.3 dB
Fiber Optic Cable Specs	
Core/Cladding Diameter	50/125µm
Jacketing	2mm or 3mm tight buffered, OFNR, purple PVC (diameter will depend on connector type)
Bandwidth	**LED w/OFL:** 3500MHz/km @ 850nm; 500MHz/km @ 1300nm **Laser:** 4700MHz/km @ 850nm; 500MHz/km @ 1300nm
Attenuation	**Max:** 2.4 dB/km @ 850nm; 0.6 dB/km @ 1300nm **Typical:** 2.0 dB/km @ 850nm; 0.5 dB/km @ 1300nm
Length Tolerance	**Length specified:** + 0.15m (+6.0") / -0.0m (-0.0")
Environment	-40°C to +85°C operating temperature, 5% – 95% humidity non-condensing
Warranty	Lifetime

Specifications
Single Mode Fiber

Standards	Telcordia GR-20, GR-326-CORE; TIA/EIA-492-CAAB; ITU-T G.652.D; IEC 60793-2-50 Type B1.3
Fiber Optic Connector Specs	**Max. Insertion Loss:** < 0.3 dB **Typical Insertion Loss:** < 0.2 dB **Max. Reflectance:** < -55.0 dB **Typical Reflectance:** < -57.0 dB
Fiber Optic Cable Specs	
Core/Cladding Diameter	8.3/125µm
Jacketing	2mm or 3mm tight buffered, OFNR, yellow PVC (diameter will depend on connector type)
Attenuation	**Max:** 0.35 dB/km @ 1310nm; 0.21 dB/km @ 1550nm
Length Tolerance	**Length specified:** + 0.15m (+6.0") / -0.0m (-0.0")
Environment	-40°C to +85°C operating temperature, 5% – 95% humidity non-condensing
Warranty	Lifetime

CPC-xxxx-xxF



Features

- Snagless, molded boots provide strain relief and prevent kinking as well as snagless cable mining.
- All Cat5e cables tested to 350MHz; Cat6 cables tested to 250MHz.
- All have 4-pair, 24 AWG construction with RJ-45 connectors.
- Available in both straight or crossover pinning.
- Lifetime Warranty

Specifications

Standards	TIA/EIA-568-A, B
Cable Specs Cat 5e	
Cable Type	4-pair UTP
Conductor Gauge	24 AWG, stranded
Jacket	PVC, 80C, OD=5.3mm
Frequency	up to 350MHz
Impedance	100 +/- 15 ohms
Attenuation (max.)	24dB/100m @ 100MHz; 49dB/100m @ 350MHz
Cable Specs Cat 6	
Cable Type	4-pair UTP
Conductor Gauge	24 AWG, stranded
Jacket	PVC, 80C, OD=6.2mm
Frequency	up to 250MHz
Impedance	100 +/- 15 ohms @ 100MHz
Attenuation (max.)	24dB/100m @ 100MHz; 39dB/100m @ 250MHz
Length Tolerance	Length specified +/- 2%
Environment	-40°C to +85°C operating temperature, 5% – 95% humidity non-condensing
Warranty	Lifetime

Ordering Info

CPC-____-__F

Cable Type

5EB	Cat 5e Straight-through
X5ER	Cat 5e Crossover
6B	Cat 6 Straight-through
X6R	Cat 6 Crossover

Length

xx	Length in feet

03 = 3 ft. [0.91 m]

Available lengths: 1, 2, 3, 5 and 10 feet

Notes:

All cables include molded boot; same color as the cable.

Standard color for straight-through cables is **black**.

Standard color for crossover cables is **red**.

Custom colors and lengths may be available upon request.

Calculating Fiber Loss and Distance Estimates

There are a number of ways to tackle the problem of determining the power requirements for a particular fiber optic link. The easiest and most accurate way is to perform an Optical Time Domain Reflectometer (OTDR) trace of the actual link. This will give you the actual loss values for all events (connectors, splices and fiber loss) in the link. In the absence of an actual OTDR trace, there are two alternatives that can be used to estimate the power requirements of the link:

1. Estimate the total link loss across an existing fiber optic link if the fiber length and loss variables are known.

2. Estimate the maximum fiber distance if optical budget and loss variable are known.

Loss variables are connectors, splices and attenuation per kilometer of the fiber. If actual values for all of the loss variables are not known, an estimation for each is needed to complete the calculations. In this case, one would want to take a worst case approach to assure that there is adequate power available for the link. The following table includes commonly accepted loss values used in these calculations:

Fiber Type	Wavelength	Fiber attenuation / km *	Fiber attenuation / km #	Connector Loss	Splice Loss
Multimode 50/125µm	850nm	3.5 dB	2.5 dB	0.75 dB	0.1 dB
	1300nm	1.5 dB	0.8 dB	0.75 dB	0.1 dB
Multimode 62.5/125µm	850nm	3.5 dB	3.0 dB	0.75 dB	0.1 dB
	1300nm	1.5 dB	0.7 dB	0.75 dB	0.1 dB
Single Mode 9µm	1310nm	0.4 dB	0.35 dB	0.75 dB	0.1 dB
Single Mode 9µm	1550nm	0.3 dB	0.22 dB	0.75 dB	0.1 dB

**These values are per TIA/EIA and other industry specifications and are the values used by Transition Networks in all link loss calculations.*

#These values are one example of the performance that can be obtained with a new fiber installation.

The IEEE also recommends maximum cable distances as defined in the table below:

Standard	Data Rate (Mbps)	Cable Type	IEEE Standard Distance
10BASE-FL	10	850nm Multimode 50/125µm or 62.5/125µm	2 km
100BASE-FX	100	1300nm Multimode 50/125µm or 62.5/125µm	2 km
100BASE-SX	100	850nm Multimode 50/125µm or 62.5/125µm	300 m
1000BASE-SX	1000	850nm Multimode 50/125µm	550 m
		850nm Multimode 62.5/125µm	220 m
1000BASE-LX	1000	1300nm Multimode 50/125µm or 62.5/125µm	550 m
		1310nm Single mode 9/125µm	5 km
1000BASE-LH	1000	1550nm Single mode 9/125µm	70 km

Transition Networks assumes the multimode standard distances defined by IEEE for all of its products.

Fiber Optic Definitions

Before discussing actual fiber optic budget calculations, please review the following commonly used terms:

Maximum Transmit Power The maximum output power in dBm (decibels relative to 1mW) of the optical transmitter/transceiver. This is abbreviated as Max TX PWR in the connector specifications listed in this catalog.

Minimum Transmit Power The minimum output power in dBm (decibels relative to 1mW) of the optical transmitter/transceiver. This is abbreviated as Min. TX PWR in the connector specifications listed in this catalog.

Launch Power The actual output power in dBm (decibels relative to 1mW) of the optical transmitter/transceiver. This value will reside somewhere within the max. and min. transmit power levels listed.

Receive Sensitivity The minimum input power in dBm (decibels relative to 1mW) necessary to correctly drive the optical receiver. This is abbreviated as RX Sensitivity in the connector specifications listed in this catalog.

Maximum Receive Power The maximum input power in dBm (decibels relative to 1mW) the optical receiver can safely accept without overdriving the receiver. This is abbreviated as Max In PWR in the connector specifications listed in this catalog.

Link Budget The amount of power available for dissipation over the fiber link between end devices. It is calculated using worst case assumptions by subtracting the receive sensitivity from the minimum transmit power.

Link Loss The total amount of power dissipation over the fiber link between end devices. It is calculated using maximum loss values for distance, splices and connectors.

Splice Loss The amount of power loss attributable to a fiber optic spliced connection.

Connector Loss The amount of power loss attributable to a fiber optic connector pair.

Attenuation The amount of power loss per kilometer over the fiber link. Attenuation is wavelength specific and will depend greatly on type and condition of the optical fiber found in the link.

Safety Margin It is common practice to add a couple of dB loss as a safety buffer to account for items such as fiber aging, splice and connector degradation over time and environmental factors such as temperature and humidity.

Calculating Fiber Loss and Distance Estimates

Estimate Total Link Loss

This calculation will estimate the total link loss through a particular fiber optic link where the fiber length, as well as the number of splices and connectors, are known. This calculation is simply the sum of all worst-case loss variables in the link:

Link Loss = [fiber length (km) x fiber attenuation per km] +
[splice loss x # of splices] +
[connector loss x # of connectors] + [safety margin]

For example: Assume a 40 km single mode link at 1310nm with 2 connector pairs and 5 splices.

Link Loss = [40km x 0.4dB/km] + [0.1dB x 5] + [0.75dB x 2] + [3.0dB]
= 21.0dB

In this example, an estimated 21.0 dB of power would be required to transmit across this link. Of course, it is very important to measure and verify the actual link loss values once the link is established to identify any potential performance issues.

Estimate Fiber Distance

This calculation will estimate the maximum distance of a particular fiber optic link given the optical budget and the number of connectors and splices contained in the link:

$$\text{Fiber Length} = \frac{[\text{Optical budget}] - [\text{link loss}]}{[\text{fiber loss/km}]}$$

Fiber Length = {[(min. TX PWR) - (RX sensitivity)]
- [splice loss x # of splices]
- [connector loss x # of connectors]
- [safety margin]}
÷ [fiber lost/km]

For example: Assume a Fast Ethernet Single mode link at 1310nm with 2 connector pairs and 5 splices.

$$\text{Fiber Length} = \frac{[(-8.0\text{dB}) - (-34.0\text{dB})] - [0.1\text{dB} \times 5] - [0.75\text{dB} \times 2] - [3.0\text{dB}]}{[0.4\text{dB/km}]}$$

$$\text{Fiber Length} = \frac{[26.0\text{dB}] - [0.5\text{dB}] - [1.5\text{dB}] - [3.0\text{dB}] = 52.5\ \text{km}}{[0.4\text{dB/km}]}$$

In this example, an estimated 52.5 km distance is possible before dissipating the optical power to a value below the Rx sensitivity. As always, it is very important to measure and verify the actual link loss values once the link is established to identify any potential performance issues. Actual maximum distances will very depending on:

- Actual optical fiber attenuation per km
- Optical fiber design and age
- Quality of connectors and actual loss per pair
- Quality of splices and actual loss per splice
- Quantity of splices and connectors in the link

Note: The recommended fiber distances listed in this catalog are based on calculations similar to those shown above. These distances are a suggestion at best and are no substitute for actual measurements of link loss using an OTDR or other similar optical loss test sets. Transition Networks has no way of guaranteeing distance results due to the myriad of variables involved in a fiber link loss calculation.

Feature / Protocol	Known As	Standard	Description
Auto-Negotiation	N-WAY Protocol	IEEE 802.3u	With Auto-Negotiation in place, Ethernet can determine the common set of options supported between a pair of "link partners." Twisted-pair link partners can use Auto-Negotiation to figure out the highest speed that they each support as well as automatically setting full-duplex operation if both ends support that mode.
Auto MDI / MDIX	Auto MDI / MDIX	-	Auto MDI/MDIX automatically detects the MDI or MDIX setting on a connecting device in order to obtain a link. This means installers can use either a straight through or crossover cable when connecting to any device.
Flow Control	Flow Control	IEEE 802.3X	Prevents congestion and overloading when a sending port is transmitting more data than a receiving port can receive.
Port Labeling	Port Labeling	-	The ability to assign names to ports through the management interface.
IP Stacking	IP Stacking	Proprietary	The capability to stack multiple switches together and manage them under one IP address.
Jumbo Frames	Jumbo Frames	-	Jumbo frames are frames larger than the standard Ethernet frame size, which is 1518 bytes (1522 if VLAN-tagged). Though this is not a standard, more and more vendors are adding support for jumbo frames.
MAC Table Size	FDB, MAC	-	MAC Table, also known as Forwarding Data Base (FDB), is where switches store learned addresses. The size of the MAC table determines how many unicast streams the switch can support without flooding.
Static MAC Entry	Static MAC Entry	-	Static MAC entry support means that users can assign MAC addresses to ports manually that never age out.
MAC-based Security	MAC Lockdown	-	MAC Lockdown is the ability to lock the learning mechanism down on a port. This means that no further MACs will be learned on those ports.
Private Virtual-LAN	PVLANs	Proprietary	Private VLANs are the non standardized way of segmenting ports into separate groups.
802.1Q Virtual-LAN	VLAN, VID, dot1Q	IEEE 802.1Q	802.1Q is a standardized way of segmenting and distributing VLAN information. Switches that support 802.1Q can recognize, forward, a tag packets upon egress.
Max VLAN Support	Max VLANs	-	The number of VLANs supported on a single switch
GVRP	GVRP	Part of IEEE 802.1Q and IEEE 802.1p	The GARP (Generic Attribute Registration Protocol) VLAN Registration Protocol (GVRP) defines a GARP application that provides the 802.1Q-compliant VLAN pruning and dynamic VLAN creation on 802.1Q ports. GVRP is an application defined in the IEEE 802.1P standard that allows for the control of 802.1Q VLANs.
Spanning-Tree	STP	IEEE 802.1D	Spanning-Tree Protocol prevents loops from being formed when switches are interconnected via multiple paths.
Rapid Spanning Tree	RSTP	IEEE 802.1w	IEEE 802.1w Rapid Spanning Tree Protocol is an improvement to 802.1D standard that provides faster spanning tree convergence after a topology change.
Link Aggregation Control Protocol	LACP	IEEE 802.3ad	Link Aggregation Control Protocol allows you to bundle several physical ports together to form a single logical channel. LACP allows a switch to negotiate an automatic bundle by sending LACP packets to the peer.
Internet Group Multicast Protocol	IGMP snooping	-	IGMP snooping allows a switch to "listen in" on the IGMP conversation between hosts and routers. Based on the query and reports being passed through the switch, a forwarding database for multicast is created.
IGMP Query Mode	IGMP Query Mode	-	IGMP Query Mode allows MILAN managed switches to advertise Multicast groups.
Port-based Authentication	802.1X	IEEE 802.1X	802.1X allows each user's access to the LAN to be conditioned on who the user is, not which Ethernet receptacle he or she happened to plug into.
L2/L3/L4 Access Control List Port Based	ACLs	-	ACLs allow administrators to create, permit and deny lists based on various traffic characteristics such as Source MAC, Destination MAC, Source IP, Destination IP, and UDP/TCP ports.
Remote Access Dial In User Services	RADIUS Authentication	RFC 2865 and RFC 2866	Allows secure centralized authentication management using UDP to the switches management.
Terminal Access Controller Access Control System Plus Authentication	TACACS + Authentication	Cisco Proprietary	TACACS+ is Cisco's proprietary implementation of centralized authentication using TCP to access switch management.
Secure Shell (Secured Telnet)	SSH	RFC 4251	SSH is used to provide a secure Telnet session to the console/command line interface of a network device through an insecure environment.

Feature / Protocol	Known As	Standard	Description
Secure Sockets Layer (HTTPS)	SSL	RFC 2818	SSL is used to manage a network device via it's web interface.
802.1p Prioritization	CoS	IEEE 802.1p	The ability to send traffic to various prioritization queues based on the 802.1q VLAN Tag priority field.
CoS Queues	CoS Queues	IEEE 802.1p	Class of Service allows traffic to be directed into different priority levels or "internal queues" in the switch on a particular network transaction. When network traffic congestion occurs, the data assigned to a higher queue will get through first.
Weighted Fair Queue Forwarding	WFQ Forwarding	-	A method of scheduling the number of forwarding packets per CoS queued.
Strict Priority Forwarding	SPF	-	A method of scheduling CoS queued traffic where high priority queues always take precedence over low priority queues.
Differentiated Services Prioritization	DSCP / DiffServ Prioritization	RFC 3290	The ability to prioritize traffic internally based on the DSCP field in the IP header of a packet.
DiffServ Modification	DSCP / DiffServ Remark	RFC 3290	The ability to change the DSCP field value on egress
IP Type of Service Prioritization	IPToS	-	The ability to prioritize traffic internally based on the IPToS field in the IP header of a packet.
TCP/UDP Port Prioritization	Layer 4 Prioritization	-	The ability to prioritize traffic internally based on the a TCP or UDP port number.
Port-Based Rate Limiting / metering	Rate Limiting	-	The ability regulate throughput per port
Simple Network Management Protocol	SNMP	RFC 1157	A set of protocols for managing complex IP networks.
Remote Monitoring	RMON	RFC 1271	A part of SNMP, RMON is a network management protocol that gathers remote network information.
Dynamic Host Configuration Protocol	DHCP	RFC 2131	DHCP lets a network administrator supervise and distribute IP addresses from a central point, and automatically sends a new address when a computer is plugged into a different place in the network.
Command Line Interface	CLI	-	Allows users to setup switch configurations by using simple command phrases through a console / telnet session.
Web-based Management	Web GUI	-	Allows users to manage the switch through a web browser.
Telnet	Telnet	RFC 854	A terminal emulation program for TCP/IP networks that runs on your computer and connects your PC to a switches management.
Event log	Event log	-	Logs events such as port link down, configuration changes, etc. in a database.
Simple Network Time Protocol	SNTP	RFC 2030	Used to synchronize times on IP devices over a network.
TFTP download/upload	TFTP	RFC 1350	The ability to load the firmware and configuration files through a TFTP server.
Auto-provisioning	-	-	Auto-provisioning is a process that enables centralized management for multiple end user devices. It uses DHCP option 60, 66 and 67 to provide centralized firmware and configuration management. The feature provides mass firmware upgrade capability as well as booting-up full end device configuration without any manual intervention. Select MILAN switches implement this solution to support automated firmware and configuration control.

Industrial Test Levels

EMS Type Tests

Test	Description		Test Levels	Severity Level
IEC61000-4-2	ESD	Air Discharge	+/- 8KV	3
		Contact Discharge	+/- 6KV	3
		ESD Contact Indirect	+/- 6KV	3
IEC61000-4-3	Radiated RFI	Housing	10V/m, 80 MHz – 1 GHz AM 1 KHz, 80% modulation 10V/m, 0.9 – 1.8 GHz FM 200 Hz, 50% modulation	3
IEC61000-4-4	Burst (Fast Transient)	PWR Supply Lines	+/- 2KV	3
		Communication Lines	+/- 1KV	3
		Relay	+/- 1KV	3
IEC61000-4-5	Surge	PWR Supply Lines	+/- 2KV, 12 ohm, CM +/- 1KV, 2 ohm, DM	3
		Relay	+/- 2KV, 12 ohm, CM +/- 1KV, 2 ohm, DM	3
IEC61000-4-6	Induced (Conducted RFI)	PWR Supply Lines	10 Vrms, 150 KHz – 80 MHz AM 1 KHz, 80% modulation	3
		Communication Lines	10 Vrms, 150 KHz – 80 MHz AM 1 KHz, 80% modulation	3
		Relay	10 Vrms, 150 KHz – 80 MHz AM 1 KHz, 80% modulation	3

Environmental Type Tests

Test	Description	Test Levels
IEC60068-2-6	Vibration	10 – 500 – 10 HZ, 0.5 oct./min, 4g, X, Y, Z (3 axes)
IEC60068-2-27	Shock	50 g, 11ms, 4g, +/- X, +/- Y, +/- Z (6 direction)
IEC60068-2-32	Free Fall	75 cm, 1 corner, 3 edges, 6 faces (total 10 drops)

Fiber Specification Table

Product SKU	Min TX PWR	Max TX PWR	RX Sensitivity	Max In PWR	Link Budget	Page
C4TEF1011-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	64
C4TEF1011-110	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	65
C4TEF1013-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	64
C4TEF1013-110	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	65
C4TEF1014-100	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	64
C4TEF1014-110	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	65
C4TEF1015-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	64
C4TEF1015-110	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	65
C4TEF1016-100	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	64
C4TEF1016-110	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	65
C4TEF1017-100	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	64
C4TEF1017-110	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	65
C4TEF1029-100	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	64
C4TEF1029-101	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	64
C4TEF1029-102	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	64
C4TEF1029-103	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	64
C4TEF1029-110	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	65
C4TEF1029-111	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	65
C4TEF1029-112	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	65
C4TEF1029-113	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	65
C4TEF1035-100	0.0 dBm	+5.0 dBm	-36.0 dBm	-3.0 dBm	36.0 dB	64
C4TEF1035-110	0.0 dBm	+5.0 dBm	-36.0 dBm	-3.0 dBm	36.0 dB	65
CAPTF3311-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	67
CAPTF3311-110	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	67
CAPTF3313-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	67
CAPTF3313-110	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	67
CAPTF3314-100	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	67
CAPTF3314-110	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	67
CAPTF3315-100	-27.0 dBm	-10.0 dBm	-34.0 dBm	-14.0 dBm	7.0 dB	67
CAPTF3315-110	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	67
CAPTF3329-100	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	67
CAPTF3329-101	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	67
CAPTF3329-102	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	67
CAPTF3329-103	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	67
CAPTF3329-110	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	67
CAPTF3329-111	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	67
CAPTF3329-112	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	67
CAPTF3329-113	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	67
CBFFG1013-100	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	49
CBFFG1013-110	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	49
CBFFG1014-100	-13.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	7.0 dB	49
CBFFG1014-110	-13.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	7.0 dB	49
CBFFG1015-100	-5.0 dBm	0.0 dBm	-20.0 dBm	-3.0 dBm	15.0 dB	49
CBFFG1015-110	-5.0 dBm	0.0 dBm	-20.0 dBm	-3.0 dBm	15.0 dB	49
CBFFG1017-100	-3.0 dBm	-2.0 dBm	-24.0 dBm	-3.0 dBm	21.0 dB	49
CBFFG1029-100	-8.0 dBm	-3.0 dBm	-22.0 dBm	3.0 dBm	14.0 dB	49
CBFFG1029-101	-8.0 dBm	-3.0 dBm	-22.0 dBm	3.0 dBm	14.0 dB	49
CBFFG1029-102	-3.0 dBm	2.0 dBm	-23.0 dBm	-3.0 dBm	20.0 dB	49
CBFFG1029-103	-3.0 dBm	2.0 dBm	-23.0 dBm	3.0 dBm	20.0 dB	49
CBFFG1029-110	-8.0 dBm	-3.0 dBm	-22.0 dBm	3.0 dBm	14.0 dB	49
CBFFG1029-111	-8.0 dBm	-3.0 dBm	-22.0 dBm	3.0 dBm	14.0 dB	49
CBFFG1035-100	0.0 dBm	5.0 dBm	-27.0 dBm	-3.0 dBm	27.0 dB	49

Product SKU	Min TX PWR	Max TX PWR	RX Sensitivity	Max In PWR	Link Budget	Page
CBFFG1313-100 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	50
CBFFG1313-100 SM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	50
CBFFG1313-110 MM	-9.5 dBm	-4.0 dBm	-18.0 dBm	0.0 dBm	8.5 dB	50
CBFFG1313-110 SM	-9.5 dBm	-4.0 dBm	-18.0 dBm	0.0 dBm	8.5 dB	50
CBFFG1314-100 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	50
CBFFG1314-100 SM	-13.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	7.0 dB	50
CBFFG1314-110 MM	-9.5 dBm	-4.0 dBm	-18.0 dBm	0.0 dBm	8.5 dB	50
CBFFG1314-110 SM	-9.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	12.0 dB	50
CBFFG1315-100 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	50
CBFFG1315-100 SM	-5.0 dBm	0.0 dBm	-20.0 dBm	-3.0 dBm	15.0 dB	50
CBFFG1315-110 MM	-9.5 dBm	-4.0 dBm	-18.0 dBm	0.0 dBm	8.5 dB	50
CBFFG1315-110 SM	-5.0 dBm	0.0 dBm	-24.0 dBm	-3.0 dBm	19.0 dB	50
CBFFG1317-100 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	50
CBFFG1317-100 SM	-3.0 dBm	-2.0 dBm	-24.0 dBm	-3.0 dBm	21.0 dB	50
CBFFG1329-100 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	50
CBFFG1329-100 SM	-8.0 dBm	-3.0 dBm	-22.0 dBm	-3.0 dBm	14.0 dB	50
CBFFG1329-101 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	50
CBFFG1329-101 SM	-8.0 dBm	-3.0 dBm	-22.0 dBm	-3.0 dBm	14.0 dB	50
CBFFG1329-110 MM	-9.5 dBm	-4.0 dBm	-18.0 dBm	0.0 dBm	8.5 dB	50
CBFFG1329-110 SM	-9.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	11.0 dB	50
CBFFG1329-111 MM	-9.5 dBm	-4.0 dBm	-18.0 dBm	0.0 dBm	8.5 dB	50
CBFFG1329-111 SM	-9.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	11.0 dB	50
CBFFG1335-100 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	50
CBFFG1335-100 SM	0.0 dBm	5.0 dBm	-32.0 dBm	-9.0 dBm	32.0 dB	50
CBFTF1011-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	43
CBFTF1011-110	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	44
CBFTF1011-120	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	44
CBFTF1011-140	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	44
CBFTF1011-155	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	46
CBFTF1013-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	43
CBFTF1013-110	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	44
CBFTF1013-120	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	44
CBFTF1013-140	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	44
CBFTF1013-155	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	46
CBFTF1014-100	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	43
CBFTF1014-110	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	44
CBFTF1014-120	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	44
CBFTF1014-140	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	44
CBFTF1014-155	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	46
CBFTF1015-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	43
CBFTF1015-110	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	44
CBFTF1015-120	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	44
CBFTF1015-140	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	44
CBFTF1015-155	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	46
CBFTF1016-100	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	43
CBFTF1016-110	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	44
CBFTF1016-120	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	44
CBFTF1016-140	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	44
CBFTF1017-100	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	43
CBFTF1017-110	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	44
CBFTF1017-120	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	44
CBFTF1017-140	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	44

Fiber Specification Table

Product SKU	Min TX PWR	Max TX PWR	RX Sensitivity	Max In PWR	Link Budget	Page
CBFTF1018-100	-19.0 dBm	-14.0 dBm	-33.5 dBm	-14.0 dBm	14.5 dB	43
CBFTF1018-110	-19.0 dBm	-14.0 dBm	-33.5 dBm	-14.0 dBm	14.5 dB	44
CBFTF1018-120	-19.0 dBm	-14.0 dBm	-33.5 dBm	-14.0 dBm	14.5 dB	44
CBFTF1018-140	-19.0 dBm	-14.0 dBm	-33.5 dBm	-14.0 dBm	14.5 dB	44
CBFTF1018-155	-19.0 dBm	-14.0 dBm	-33.5 dBm	-14.0 dBm	14.5 dB	46
CBFTF1019-100	-15.2 dBm	-8.0 dBm	-32.5 dBm	-3.0 dBm	17.3 dB	43
CBFTF1029-100	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	43
CBFTF1029-101	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	43
CBFTF1029-102	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	43
CBFTF1029-103	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	43
CBFTF1029-110	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	44
CBFTF1029-111	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	44
CBFTF1029-112	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	44
CBFTF1029-113	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	44
CBFTF1029-120	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	44
CBFTF1029-121	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	44
CBFTF1029-122	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	44
CBFTF1029-123	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	44
CBFTF1029-140	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	44
CBFTF1029-141	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	44
CBFTF1029-142	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	44
CBFTF1029-143	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	44
CBFTF1029-155	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	46
CBFTF1029-156	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	46
CBFTF1029-157	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	46
CBFTF1029-158	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	46
CBFTF1035-100	0.0 dBm	+5.0 dBm	-36.0 dBm	-3.0 dBm	36.0 dB	43
CBFTF1039-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	43
CCH-MCM12-RJ-70S	-7.5 dBm	-2.0 dBm	-16.0 dBm	-2.0 dBm	8.5dB	108
CCSCF3011-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	58
CCSCF3013-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	58
CCSCF3014-100	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	58
CCSCF3015-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	58
CCSCF3016-100	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	58
CCSCF3017-100	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	58
CCSCF3018-100	-19.0 dBm	-14.0 dBm	-33.5 dBm	-14.0 dBm	14.5 dB	58
CCSCF3029-100	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	58
CCSCF3029-101	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	58
CCSCF3029-102	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	58
CCSCF3029-103	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	58
CEMTF1011-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	66
CEMTF1013-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	66
CEMTF1014-100	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	66
CEMTF1015-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	66
CEMTF1029-100	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	66
CEMTF1029-101	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	66
CEMTF1029-102	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	66
CEMTF1029-103	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	66
CETTF1011-105	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	33
CETTF1011-200	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	33
CETTF1012-105	-27.0 dBm	-10.0 dBm	-34.0 dBm	-14.0 dBm	7.0 dB	33
CETTF1012-200	-27.0 dBm	-10.0 dBm	-34.0 dBm	-14.0 dBm	7.0 dB	33
CETTF1013-105	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	33
CETTF1013-200	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	33
CETTF1014-105	-19.0 dBm	-14.0 dBm	-34.0 dBm	-3.0 dBm	15.0 dB	33
CETTF1014-200	-27.0 dBm	-10.0 dBm	-34.0 dBm	-14.0 dBm	7.0 dB	33
CETTF1015-105	-18.0 dBm	-7.0 dBm	-32.0 dBm	-7.0 dBm	14.0 dB	33
CETTF1018-105	-16.0 dBm	-10.0 dBm	-29.5 dBm	-7.2 dBm	13.5 dB	33
CETTF1022-105	-15.0 dBm	-5.0 dBm	-34.0 dBm	-14.0 dBm	19.0 dB	33
CETTF1022-200	-15.0 dBm	-5.0 dBm	-34.0 dBm	-14.0 dBm	19.0 dB	33
CETTF1027-105	-19.0 dBm	-15.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	33
CETTF1027-200	-19.0 dBm	-15.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	33
CETTF1029-105	-14.0 dBm	-8.0 dBm	-33.0 dBm	-3.0 dBm	19.0 dB	33
CETTF1029-106	-14.0 dBm	-8.0 dBm	-33.0 dBm	-3.0 dBm	19.0 dB	33
CFBRM1011-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	40
CFBRM1011-110	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	40
CFBRM1013-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	40
CFBRM1013-110	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	40
CFBRM1014-100	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	40
CFBRM1014-110	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	40
CFBRM1015-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	40
CFBRM1016-100	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	40
CFBRM1017-100	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	40
CFBRM1029-100	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	40
CFBRM1029-101	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	40
CFBRM1029-110	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	40
CFBRM1029-111	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	40
CFBRM1035-100	0.0 dBm	+5.0 dBm	-36.0 dBm	-3.0 dBm	36.0 dB	40
CFBRM1313-100 FEMM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	41
CFBRM1313-100 GEMM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	41
CFBRM1313-110 FEMM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	41
CFBRM1313-110 GEMM	-9.5 dBm	-4.0 dBm	-18.0 dBm	0.0 dBm	8.5 dB	41
CFBRM1314-100 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	41
CFBRM1314-100 SM	-13.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	7.0 dB	41
CFBRM1314-110 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	41
CFBRM1314-110 SM	-9.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	12.0 dB	41
CFBRM1315-100 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	41
CFBRM1315-100 SM	-5.0 dBm	0.0 dBm	-20.0 dBm	-3.0 dBm	15.0 dB	41
CFBRM1315-110 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	41
CFBRM1315-110 SM	-5.0 dBm	0.0 dBm	-24.0 dBm	-3.0 dBm	19.0 dB	41
CFBRM1317-100 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	41
CFBRM1317-100 SM	-3.0 dBm	2.0 dBm	-24.0 dBm	-3.0 dBm	21.0 dB	41
CFBRM1329-100 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	41
CFBRM1329-100 SM	-8.0 dBm	-3.0 dBm	-22.0 dBm	-3.0 dBm	14.0 dB	41
CFBRM1329-101 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	41
CFBRM1329-101 SM	-8.0 dBm	-3.0 dBm	-22.0 dBm	-3.0 dBm	14.0 dB	41
CFBRM1329-110 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	41
CFBRM1329-110 SM	-9.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	11.0 dB	41
CFBRM1329-111 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	41
CFBRM1329-111 SM	-9.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	11.0 dB	41
CFBRM1335-100 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	41
CFBRM1335-100 SM	0.0 dBm	5.0 dBm	-32.0 dBm	-9.0 dBm	32.0 dB	41
CFETF1011-105	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	35
CFETF1011-205	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	36

Fiber Specification Table

Product SKU	Min TX PWR	Max TX PWR	RX Sensitivity	Max In PWR	Link Budget	Page
CFETF1013-105	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	35
CFETF1013-205	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	36
CFETF1014-105	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	35
CFETF1014-205	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	36
CFETF1015-105	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	35
CFETF1015-205	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	36
CFETF1016-105	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	35
CFETF1016-205	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	36
CFETF1017-105	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	35
CFETF1017-205	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	36
CFETF1018-105	-19.0 dBm	-14.0 dBm	-33.5 dBm	-14.0 dBm	14.5 dB	35
CFETF1018-205	-19.0 dBm	-14.0 dBm	-33.5 dBm	-14.0 dBm	14.5 dB	36
CFETF1019-205	-15.2 dBm	-8.0 dBm	-32.5 dBm	-3.0 dBm	17.3 dB	36
CFETF1029-205	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	36
CFETF1029-206	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	36
CFETF1029-207	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	36
CFETF1029-208	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	36
CFETF1029-209	-5.0 dBm	0.0 dBm	-34.0 dBm	-3.0 dBm	29.0 dB	36
CFETF1029-210	-6.0 dBm	0.0 dBm	-34.0 dBm	-3.0 dBm	28.0 dB	36
CFETF1029-211	-2.0 dBm	+3.0 dBm	-35.0 dBm	-3.0 dBm	33.0 dB	36
CFETF1029-212	-3.0 dBm	+2.0 dBm	-35.0 dBm	-3.0 dBm	32.0 dB	36
CFETF1039-205	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	36
CFMFF1313-200	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	38
CFMFF1313-220	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	53
CFMFF1314-200 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	38
CFMFF1314-200 SM	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	38
CFMFF1314-210 MM	-19.0 dBm	-14.0 dBm	-31.0 dBm	-14.0 dBm	12.0 dB	57
CFMFF1314-210 SM	-15.0 dBm	-8.0 dBm	-26.0 dBm	-14.0 dBm	11.0 dB	57
CFMFF1314-220 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	53
CFMFF1314-220 SM	-13.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	7.0 dB	53
CFMFF1314-280 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	54
CFMFF1314-280 SM	-2.0 dBm	+3.0 dBm	-35.0 dBm	-3.0 dBm	33.0 dB	54
CFMFF1315-200 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	38
CFMFF1315-200 SM	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	38
CFMFF1315-220 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	53
CFMFF1315-220 SM	-5.0 dBm	0.0 dBm	-20.0 dBm	-3.0 dBm	15.0 dB	53
CFMFF1315-280 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	54
CFMFF1315-280 SM	-5.0 dBm	0.0 dBm	-20.0 dBm	-3.0 dBm	15.0 dB	54
CFMFF1316-200 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	38
CFMFF1316-200 SM	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	38
CFMFF1316-210 MM	-19.0 dBm	-14.0 dBm	-31.0 dBm	-14.0 dBm	12.0 dB	57
CFMFF1316-210 SM	-3.0 dBm	2.0 dBm	-28.0 dBm	-7.0 dBm	25.0 dB	57
CFMFF1317-200 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	38
CFMFF1317-200 SM	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	38
CFMFF1317-210 MM	-19.0 dBm	-14.0 dBm	-26.0 dBm	-14.0 dBm	7.0 dB	57
CFMFF1317-210 SM	-3.0 dBm	2.0 dBm	-28.0 dBm	-7.0 dBm	25.0 dB	57
CFMFF1317-220 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	53
CFMFF1317-220 SM	-3.0 dBm	2.0 dBm	-23.0 dBm	-3.0 dBm	20.0 dB	53
CFMFF1317-280 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	54
CFMFF1317-280 SM	-3.0 dBm	+2.0 dBm	-24.0 dBm	-3.0 dBm	21.0 dB	54
CFMFF1324-220 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	53
CFMFF1324-220 MME	-10.0 dBm	-3.0 dBm	-17.0 dBm	-3.0 dBm	7.0 dB	53
CFMFF1324-280 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	54
CFMFF1324-280 MME	-10.0 dBm	-3.0 dBm	-17.0 dBm	-3.0 dBm	7.0 dB	54
CFMFF1329-200 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	38
CFMFF1329-200 SM	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	38
CFMFF1329-201 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	38
CFMFF1329-201 SM	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	38
CFMFF1329-202 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	38
CFMFF1329-202 SM	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	38
CFMFF1329-203 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	38
CFMFF1329-203 SM	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	38
CFMFF1329-210 MM	-19.0 dBm	-14.0 dBm	-26.0 dBm	-14.0 dBm	7.0 dB	57
CFMFF1329-210 SM	-14.0 dBm	-8.0 dBm	-28.0 dBm	-8.0 dBm	14.0 dB	57
CFMFF1329-211 MM	-19.0 dBm	-14.0 dBm	-26.0 dBm	-14.0 dBm	7.0 dB	57
CFMFF1329-211 SM	-14.0 dBm	-8.0 dBm	-28.0 dBm	-8.0 dBm	14.0 dB	57
CFMFF1329-212 MM	-19.0 dBm	-14.0 dBm	-26.0 dBm	-14.0 dBm	7.0 dB	57
CFMFF1329-212 SM	-5.0 dBm	0.0 dBm	-28.0 dBm	-8.0 dBm	23.0 dB	57
CFMFF1329-213 MM	-19.0 dBm	-14.0 dBm	-26.0 dBm	-14.0 dBm	7.0 dB	57
CFMFF1329-213 SM	-6.0 dBm	0.0 dBm	-28.0 dBm	-8.0 dBm	22.0 dB	57
CFMFF1329-220 MM	-19.0 dBm	-14.0 dBm	-26.0 dBm	-14.0 dBm	7.0 dB	53
CFMFF1329-220 SM	-8.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	13.0 dB	53
CFMFF1329-221 MM	-19.0 dBm	-14.0 dBm	-26.0 dBm	-14.0 dBm	7.0 dB	53
CFMFF1329-221 SM	-8.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	13.0 dB	53
CFMFF1329-222 MM	-19.0 dBm	-14.0 dBm	-26.0 dBm	-14.0 dBm	7.0 dB	53
CFMFF1329-222 SM	-3.0 dBm	2.0 dBm	-23.0 dBm	-8.0 dBm	20.0 dB	53
CFMFF1329-223 MM	-19.0 dBm	-14.0 dBm	-26.0 dBm	-14.0 dBm	7.0 dB	53
CFMFF1329-223 SM	-3.0 dBm	2.0 dBm	-23.0 dBm	-8.0 dBm	20.0 dB	53
CFMFF1329-280 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	54
CFMFF1329-280 SM	-8.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	13.0 dB	54
CFMFF1329-281 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	54
CFMFF1329-281 SM	-8.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	13.0 dB	54
CFMFF1329-282 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	54
CFMFF1329-282 SM	-3.0 dBm	2.0 dBm	-23.0 dBm	-8.0 dBm	20.0 dB	54
CFMFF1329-283 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	54
CFMFF1329-283 SM	-3.0 dBm	2.0 dBm	-23.0 dBm	-8.0 dBm	20.0 dB	54
CFMFF1329-286 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	54
CFMFF1329-286 SM	-2.0 dBm	+3.0 dBm	-26.0 dBm	-3.0 dBm	24.0 dBm	54
CFMFF1329-287 MM	-2.0 dBm	+3.0 dBm	-26.0 dBm	-3.0 dBm	24.0 dB	54
CFMFF1329-287 SM	-2.0 dBm	+3.0 dBm	-26.0 dBm	-3.0 dBm	24.0 dB	54
CFMFF1335-220 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	53
CFMFF1335-220 SM	0.0 dBm	5.0 dBm	-27.0 dBm	-3.0 dBm	27.0 dB	53
CFMFF1335-280 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	54
CFMFF1335-280 SM	0.0 dBm	5.0 dBm	-27.0 dBm	-3.0 dBm	27.0 dB	54
CFMFF1414-200 SM	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	38
CFMFF1414-220 SM	-13.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	7.0 dB	53
CFMFF1414-280 SM	-13.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	7.0 dB	54
CFMFF1415-200 SM	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	38
CFMFF1415-200 SM	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	38
CFMFF1424-220 MM	-10.0 dBm	-3.0 dBm	-17.0 dBm	-3.0 dBm	7.0 dB	53
CFMFF1424-220 SM	-13.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	7.0 dB	53
CFMFF1429-200 MM	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	38
CFMFF1429-200 SM	-13.0 dBm	-6.0 dBm	-32.0 dBm	-6.0 dBm	19.0 dB	38
CFMFF1429-201 MM	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	38

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CFMFF1429-201 SM	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	38
CFMFF1429-202 MM	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	38
CFMFF1429-202 SM	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	38
CFMFF1429-203 MM	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	38
CFMFF1429-203 SM	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	38
CFMFF1429-210 MM	-15.0 dBm	-8.0 dBm	-28.0 dBm	-7.0 dBm	13.0 dB	57
CFMFF1429-210 SM	-14.0 dBm	-8.0 dBm	-28.0 dBm	-8.0 dBm	14.0 dB	57
CFMFF1429-211 MM	-15.0 dBm	-8.0 dBm	-28.0 dBm	-7.0 dBm	13.0 dB	57
CFMFF1429-211 SM	-14.0 dBm	-8.0 dBm	-28.0 dBm	-8.0 dBm	14.0 dB	57
CFMFF1429-212 MM	-15.0 dBm	-8.0 dBm	-28.0 dBm	-7.0 dBm	13.0 dB	57
CFMFF1429-212 SM	-5.0 dBm	0.0 dBm	-28.0 dBm	-8.0 dBm	23.0 dB	57
CFMFF1429-213 MM	-15.0 dBm	-8.0 dBm	-28.0 dBm	-7.0 dBm	13.0 dB	57
CFMFF1429-213 SM	-6.0 dBm	0.0 dBm	-28.0 dBm	-8.0 dBm	22.0 dB	57
CGETF1013-110	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	52
CGETF1014-110	-9.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	12.0 dB	52
CGETF1015-110	-5.0 dBm	0.0 dBm	-21.0 dBm	-3.0 dBm	16.0 dB	52
CGETF1017-110	-3.0 dBm	2.0 dBm	-24.0 dBm	-3.0 dBm	21.0 dB	52
CGETF1024-110	-10.0 dBm	-3.0 dBm	-17.0 dBm	-3.0 dBm	7.0 dB	52
CGETF1029-110	-8.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	13.0 dB	52
CGETF1029-111	-9.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	13.0 dB	52
CGETF1029-112	-3.0 dBm	2.0 dBm	-23.0 dBm	-3.0 dBm	20.0 dB	52
CGETF1029-113	-3.0 dBm	2.0 dBm	-23.0 dBm	-3.0 dBm	20.0 dB	52
CGETF1035-110	0.0 dBm	5.0 dBm	-27.0 dBm	-9.0 dBm	27.0 dB	52
CGETF1039-110	-9.0 dBm	-4.0 dBm	-17.0 dBm	-3.0 dBm	8.0 dB	52
CGFEB1013-100	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	47
CGFEB1013-110	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	48
CGFEB1014-100	-13.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	7.0 dB	47
CGFEB1014-110	-13.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	7.0 dB	48
CGFEB1015-100	-5.0 dBm	0.0 dBm	-20.0 dBm	-3.0 dBm	15.0 dB	47
CGFEB1015-110	-5.0 dBm	0.0 dBm	-20.0 dBm	-3.0 dBm	15.0 dB	48
CGFEB1017-100	-3.0 dBm	2.0 dBm	-23.0 dBm	-3.0 dBm	20.0 dB	47
CGFEB1017-110	-3.0 dBm	2.0 dBm	-23.0 dBm	-3.0 dBm	20.0 dB	48
CGFEB1024-100	-10.0 dBm	-3.0 dBm	-17.0 dBm	-3.0 dBm	7.0 dB	47
CGFEB1024-110	-10.0 dBm	-3.0 dBm	-17.0 dBm	-3.0 dBm	7.0 dB	48
CGFEB1029-100	-8.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	13.0 dB	47
CGFEB1029-101	-8.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	13.0 dB	47
CGFEB1029-102	-3.0 dBm	2.0 dBm	-23.0 dBm	-8.0 dBm	20.0 dB	47
CGFEB1029-103	-3.0 dBm	2.0 dBm	-23.0 dBm	-8.0 dBm	20.0 dB	47
CGFEB1029-104	-2.0 dBm	+3.0 dBm	-26.0 dBm	-3.0 dBm	24.0 dB	47
CGFEB1029-105	-2.0 dBm	+3.0 dBm	-26.0 dBm	-3.0 dBm	24.0 dB	47
CGFEB1029-110	-8.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	13.0 dB	48
CGFEB1029-111	-8.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	13.0 dB	48
CGFEB1035-100	0.0 dBm	5.0 dBm	-27.0 dBm	-3.0 dBm	27.0 dB	47
CMEFG1013-100	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	51
CMEFG1013-110	-9.5 dBm	-4.0 dBm	-18.0 dBm	0.0 dBm	8.5 dB	51
CMEFG1014-100	-13.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	7.0 dB	51
CMEFG1014-110	-9.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	12.0 dB	51
CMEFG1015-100	-5.0 dBm	0.0 dBm	-20.0 dBm	-3.0 dBm	15.0 dB	51
CMEFG1015-110	-5.0 dBm	0.0 dBm	-24.0 dBm	-3.0 dBm	19.0 dB	51
CMEFG1017-100	-3.0 dBm	+2.0 dBm	-24.0 dBm	-3.0 dBm	21.0 dB	51
CMEFG1019-100	-9.5 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	11.5 dB	51
CMEFG1019-110	-9.5 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	11.5 dB	51

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CMEFG1029-100	-8.0 dBm	-3.0 dBm	-22.0 dBm	+3.0 dBm	14.0 dB	51
CMEFG1029-101	-8.0 dBm	-3.0 dBm	-22.0 dBm	-3.0 dBm	14.0 dB	51
CMEFG1029-102	-3.0 dBm	+2.0 dBm	-23.0 dBm	-3.0 dBm	20.0 dB	51
CMEFG1029-103	-3.0 dBm	+2.0 dBm	-23.0 dBm	+3.0 dBm	20.0 dB	51
CMEFG1029-110	-9.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	11.0 dB	51
CMEFG1029-111	-9.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	11.0 dB	51
CMEFG1035-100	0.0 dBm	5.0 dBm	-27.0 dBm	-3.0 dBm	27.0 dB	51
CMEFG1039-100	-9.5 dBm	-4.0 dBm	-17.0 dBm	-3.0 dBm	7.5 dB	51
CMEFG1039-110	-9.5 dBm	-4.0 dBm	-17.0 dBm	-3.0 dBm	7.5 dB	51
CPSVT2611-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	59
CPSVT2613-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	59
CPSVT2614-100	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	59
CPSVT2629-100	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	59
CPSVT2629-101	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	59
CPSVT2629-102	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	59
CPSVT2629-103	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	59
CRMFE1011-200	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	37
CRMFE1013-200	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	37
CRMFE1014-200	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	37
CRMFE1015-200	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	37
CRMFE1016-200	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	37
CRMFE1017-200	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	37
CRMFE1018-200	-19.0 dBm	-14.0 dBm	-33.5 dBm	-14.0 dBm	14.5 dB	37
CRMFE1029-200	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	37
CRMFE1029-201	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	37
CRMFE1029-202	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	37
CRMFE1029-203	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	37
CRMFE1035-200	0.0 dBm	+5.0 dBm	-36.0 dBm	-3.0 dBm	36.0 dB	37
CRS2F3111-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	60
CRS2F3113-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	60
CRS2F3114-100	-15.0 dBm	-8.0 dBm	-31.0 dBm	-7.0 dBm	16.0 dB	60
CRS2F3115-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	60
CRS4F3111-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	61
CRS4F3113-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	61
CRS4F3114-100	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	61
CRS4F3115-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	61
CRS4F3211-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	61
CRS4F3213-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	61
CRS4F3214-100	-15.0 dBm	-8.0 dBm	-31.0 dBm	-7.0 dBm	16.0 dB	61
CRS4F3215-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	61
CSDTF1011-105	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	62
CSDTF1012-105	-27.0 dBm	-10.0 dBm	-34.0 dBm	-14.0 dBm	7.0 dB	62
CSDTF1013-105	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	62
CSDTF1014-105	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	62
CSDTF1015-105	-8.0 dBm	-2.0 dBm	-38.0 dBm	-8.0 dBm	30.0 dB	62
CSDTF1016-105	-5.0 dBm	0.0 dBm	-38.0 dBm	-7.0 dBm	33.0 dB	62
CSDTF1017-105	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	62
CSDTF1018-105	-19.0 dBm	-14.0 dBm	-33.5 dBm	-14.0 dBm	14.5 dB	62
CSDTF1022-105	-15.0 dBm	-5.0 dBm	-25.0 dBm	-14.0 dBm	10.0 dB	62
CSDTF1027-105	-19.0 dBm	-15.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	62
CSDTF1029-105	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	62
CSDTF1029-106	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	62

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CSDTF1029-107	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	62
CSDTF1029-108	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	62
CSDTF3011-115	-14.0 dBm	-12.0 dBm	-25.0 dBm	-12.0 dBm	11.0 dB	62
CSDTF3012-115	-27.0 dBm	-10.0 dBm	-34.0 dBm	-14.0 dBm	7.0 dB	62
CSDTF3013-115	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	62
CSDTF3014-115	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	62
CSDTF3015-115	-8.0 dBm	-2.0 dBm	-38.0 dBm	-8.0 dBm	30.0 dB	62
CSDTF3016-115	-5.0 dBm	0.0 dBm	-38.0 dBm	-7.0 dBm	33.0 dB	62
CSDTF3017-115	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	62
CSDTF3018-115	-19.0 dBm	-14.0 dBm	-33.5 dBm	-14.0 dBm	14.5 dB	62
CSDTF3022-115	-15.0 dBm	-5.0 dBm	-25.0 dBm	-14.0 dBm	10.0 dB	62
CSDTF3027-115	-19.0 dBm	-15.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	62
CSDTF3029-115	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	62
CSDTF3029-116	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	62
CSDTF3029-117	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	62
CSDTF3029-118	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	62
CSEFE1012-100	-15.0 dBm	-8.0 dBm	-32.0 dBm	-5.0 dBm	17.0 dB	34
CSEFE1014-100	-15.0 dBm	-8.0 dBm	-32.0 dBm	-5.0 dBm	17.0 dB	34
CSEFE1015-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-5.0 dBm	26.0 dB	34
CSEFE1022-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-5.0 dBm	26.0 dB	34
CSEFE1029-100	-14.0 dBm	-8.0 dBm	-33.0 dBm	-3.0 dBm	19.0 dB	34
CSEFE1029-101	-14.0 dBm	-8.0 dBm	-33.0 dBm	-3.0 dBm	19.0 dB	34
CSETF1011-205	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	39
CSETF1013-205	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	39
E-100BTX-FX-05	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	81
E-100BTX-FX-05(100)	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	81
E-100BTX-FX-05(101)	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	81
E-100BTX-FX-05(102)	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	81
E-100BTX-FX-05(103)	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	81
E-100BTX-FX-05(104)	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	81
E-100BTX-FX-05(105)	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	81
E-100BTX-FX-05(106)	-2.0 dBm	3.0 dBm	-35.0 dBm	-3.0 dBm	33.0 dB	81
E-100BTX-FX-05(107)	-3.0 dBm	2.0 dBm	-35.0 dBm	-3.0 dBm	32.0 dB	81
E-100BTX-FX-05(HT)	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	82
E-100BTX-FX-05(LC)	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	81
E-100BTX-FX-05(LH)	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	81
E-100BTX-FX-05(LHHT)	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	82
E-100BTX-FX-05(LW)	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	81
E-100BTX-FX-05(LWHT)	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	82
E-100BTX-FX-05(MT)	-19.0 dBm	-14.0 dBm	-33.5 dBm	-14.0 dBm	14.5 dB	81
E-100BTX-FX-05(SC)	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	81
E-100BTX-FX-05(SCHT)	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	82
E-100BTX-FX-05(SM)	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	81
E-100BTX-FX-05(SMHT)	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	82
E-100BTX-FX-05(SMLC)	-15.2 dBm	-8.0 dBm	-32.5 dBm	-3.0 dBm	17.3 dB	81
E-100BTX-FX-05(XL)	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	81
E-100BTX-FX-05(XLHT)	-5.0 dBm	0.0 dBm	-38.0 dBm	-8.0 dBm	33.0 dB	82
E-100BTX-FX-05(XLW)	0.0 dBm	+5.0 dBm	-36.0 dBm	-3.0 dBm	36.0 dB	81
E-100BTX-FX-N-01	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	133
E-100BTX-FX-N-01(SC)	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	133
E-100BTX-FX-N-01(SM)	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	133
E-100BTX-FX-NLP-01	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	133
E-100BTX-FX-NLP-01(SC)	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	133
E-100BTX-FX-NLP-01(SM)	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	133
E-TBT-FRL-05	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	74
E-TBT-FRL-05(HT)	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	75
E-TBT-FRL-05(L)	-19.0 dBm	-15.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	74
E-TBT-FRL-05(LH)	-15.0 dBm	-5.0 dBm	-25.0 dBm	-14.0 dBm	10.0 dB	74
E-TBT-FRL-05(MT)	-16.0 dBm	-10.0 dBm	-29.5 dBm	-7.2 dBm	13.5 dB	74
E-TBT-FRL-05(SC)	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	74
E-TBT-FRL-05(SCHT)	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	75
E-TBT-FRL-05(SM)	-27.0 dBm	-10.0 dBm	-34.0 dBm	-14.0 dBm	7.0 dB	74
E-TBT-FRL-05(SMHT)	-15.0 dBm	-8.0 dBm	-38.0 dBm	-8.0 dBm	23.0 dB	75
E-TBT-FRL-05(XC)	-27.0 dBm	-10.0 dBm	-34.0 dBm	-14.0 dBm	7.0 dB	74
E-TBT-FRL-05(XCHT)	-18.0 dBm	-7.0 dBm	-32.0 dBm	-7.0x dBm	14.0 dB	75
E-TBT-FRL-05(XLHT)	-5.0 dBm	0.0 dBm	-38.0 dBm	-7.0 dBm	33.0 dB	75
E-TBT-FRL-N-02(SC)	-16.0 dBm	-10.0 dBm	-29.5 dBm	-7.2 dBm	13.5 dB	133
E-TBT-FRL-N-02(ST)	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	133
E-TBT-FRL-NLP-02(SC)	-16.0 dBm	-10.0 dBm	-29.5 dBm	-7.2 dBm	13.5 dB	133
E-TBT-FRL-NLP-02(ST)	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	133
F-SM-MM-02 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	85
F-SM-MM-02 SM	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	85
F-SM-MM-02(LH) MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	85
F-SM-MM-02(LH) SM	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	85
F-SM-MM-02(LW) MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	85
F-SM-MM-02(LW) SM	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	85
F-SM-MM-02(XL) MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	85
F-SM-MM-02(XL) SM	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	85
F-SM-MM-05 MM	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	79
F-SM-MM-05 SM	-27.0 dBm	-10.0 dBm	-34.0 dBm	-14.0 dBm	7.0 dB	79
F-SM-MM-06 MM	-19.0 dBm	-14.0 dBm	-26.0 dBm	-14.0 dBm	7.0 dB	111
F-SM-MM-06 SM	-15.0 dBm	-8.0 dBm	-28.0 dBm	-7.0 dBm	13.0 dB	111
F-SM-MM-06(XL) MM	-19.0 dBm	-14.0 dBm	-26.0 dBm	-14.0 dBm	7.0 dB	111
F-SM-MM-06(XL) SM	-3.0 dBm	2.0 dBm	-29.0 dBm	-7.0 dBm	26.0 dB	111
J/E-CF-02	-16.0 dBm	-10.0 dBm	-29.5 dBm	-7.2 dBm	13.5 dB	77
J/E-CF-02(SC)	-16.0 dBm	-9.0 dBm	-32.5 dBm	-8.0 dBm	16.5 dB	77
J/E-CF-02(SM)	-27.0 dBm	-10.0 dBm	-34.0 dBm	-14.0 dBm	7.0 dB	77
J/E-PSW-FX-02	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	96
J/E-PSW-FX-02(SC)	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	96
J/E-PSW-FX-02(SM)	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	96
J/E-PSW-FX-02(100)	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	96
J/E-PSW-FX-02(101)	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	96
J/FE-CF-03	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	83
J/FE-CF-03(SC)	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	83
J/FE-CF-03(SM)	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	83
J/FE-CF-03(LH)	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	19.0 dB	83
J/FE-CF-03(100)	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	83
J/FE-CF-03(101)	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	83
J/GE-CF-01(LX1)	9.5 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	10.5 dB	105
J/GE-CF-01(LX2)	-5.0 dBm	0.0 dBm	-20.0 dBm	-3.0 dBm	15.0 dB	105
J/GE-CF-01(LX6)	-3.0 dBm	+2.0 dBm	-24.0 dBm	-3.0 dBm	21.0 dB	105
J/GE-CF-01(LX101)	-8.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	13.0 dB	105
J/GE-CF-01(SX)	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	105
J/POE-CF-01	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	98

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Product SKU	Min TX PWR	Max TX PWR	RX Sensitivity	Max In PWR	Link Budget	Page
J/POE-CF-01(SC)	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	98
J/POE-CF-01(SM)	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	98
J/RS232-CF-01	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	115
J/RS232-CF-01(SC)	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	115
J/RS232-TF-01	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	115
J/RS232-TF-01(SC)	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	115
M/E-PSW-FX-01	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	99
M/E-PSW-FX-01(SC)	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	99
M/E-PSW-FX-01(SM)	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	99
M/E-PSW-FX-01(100)	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	99
M/E-PSW-FX-01(101)	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	99
MIL-GBIC-SX	-9.5 dBm	-4.0 dBm	-18.0 dBm	0.0 dBm	8.5 dB	134
MIL-GBIC-LX10	-9.5 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	10.5 dB	134
MIL-S501SC	-19.0 dBm	-14.0 dBm	-31.0 dBm	-14.0 dBm	12.0 dB	156
MIL-S501SC-15	-20.0 dBm	0.0 dBm	-32.0 dBm	0.0 dBm	12.0 dB	156
MIL-S501SC-30	-15.0 dBm	-8.0 dBm	-34.0 dBm	0.0 dBm	19.0 dB	156
MIL-S501SC-60	-5.0 dBm	0.0 dBm	-35.0 dBm	0.0 dBm	19.0 dB	156
MIL-S501ST	-19.0 dBm	-14.0 dBm	-31.0 dBm	-14.0 dBm	12.0 dB	156
MIL-S801SC	-19.0 dBm	-14.0 dBm	-31.0 dBm	-14.0 dBm	12.0 dB	156
MIL-S801SC-60	-15.0 dBm	-8.0 dBm	-34.0 dBm	0.0 dBm	19.0 dB	156
MIL-S801ST	-19.0 dBm	-14.0 dBm	-31.0 dBm	-14.0 dBm	12.0 dB	156
MIL-SM801G	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	145
MIL-SM801PST	-19.0 dBm	-14.0 dBm	-31.0 dBm	-14.0 dBm	12.0 dB	144
MIL-SM801PSC	-19.0 dBm	-14.0 dBm	-31.0 dBm	-14.0 dBm	12.0 dB	144
MIL-SM801PSC-15	-20.0 dBm	0.0 dBm	-32.0 dBm	0.0 dBm	12.0 dB	144
MIL-SM808GPST	-19.0 dBm	-14.0 dBm	-31.0 dBm	-14.0 dBm	12.0 dB	146
MIL-SM808GPSC	-19.0 dBm	-14.0 dBm	-31.0 dBm	-14.0 dBm	12.0 dB	146
MIL-SM808GPSC-15	-20.0 dBm	0.0 dBm	-32.0 dBm	0.0 dBm	12.0 dB	146
MIL-SM808GPSC-60	-5.0 dBm	0.0 dBm	-35.0 dBm	0.0 dBm	19.0 dB	146
MP/E-PSW-FX-01	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	99
MP/E-PSW-FX-01(SC)	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	99
MP/E-PSW-FX-01(SM)	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	99
MU/E-PSW-FX-01(100)	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	99
MU/E-PSW-FX-01(101)	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	99
MU/E-PSW-FX-01	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	99
MU/E-PSW-FX-01(SC)	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	99
MU/E-PSW-FX-01(SM)	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	99
N-FX-LC-02	-19.0 dBm	-14.0 dBm	-31.0 dBm	-17.0 dBm	12.0 dB	139
N-FX-LC-02(L)	-19.0 dBm	-14.0 dBm	-31.0 dBm	-17.0 dBm	12.0 dB	139
N-FX-MT-02	-19.0 dBm	-14.0 dBm	-31.0 dBm	-17.0 dBm	12.0 dB	139
N-FX-MT-02(L)	-19.0 dBm	-14.0 dBm	-31.0 dBm	-17.0 dBm	12.0 dB	139
N-FX-SB201-02	-14.0 dbm	-8.0 dBm	-32.0 dBm	0.0 dBm	18.0 dB	139
N-FX-SB202-02	-14.0 dbm	-8.0 dBm	-32.0 dBm	0.0 dBm	18.0 dB	139
N-FX-SC-02	-19.0 dBm	-14.0 dBm	-31.0 dBm	-17.0 dBm	12.0 dB	139
N-FX-SC-02(L)	-19.0 dBm	-14.0 dBm	-31.0 dBm	-17.0 dBm	12.0 dB	139
N-FX-SC5-02	-19.0 dBm	-14.0 dBm	-31.0 dBm	-7.5 dBm	12.0 dB	139
N-FX-SC5-02(L)	-19.0 dBm	-14.0 dBm	-31.0 dBm	-7.5 dBm	12.0 dB	139
N-FX-SC20-02	-15.0 dBm	-8.0 dBm	-31.0 dBm	0.0 dBm	16.0 dB	139
N-FX-SC20-02(L)	-15.0 dBm	-8.0 dBm	-31.0 dBm	0.0 dBm	16.0 dB	139
N-FX-ST-02	-19.0 dBm	-14.0 dBm	-31.0 dBm	-17.0 dBm	12.0 dB	139
N-FX-ST-02(L)	-19.0 dBm	-14.0 dBm	-31.0 dBm	-17.0 dBm	12.0 dB	139
N-GLX-LC-01	-9.5 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	10.5 dB	141
N-GLX-LC-01(L)	-9.5 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	10.5 dB	141
N-GLX-SC-01	-9.5 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	10.5 dB	141
N-GLX-SC-01(L)	-9.5 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	10.5 dB	141
N-GSX-LC-01	-9.5 dBm	-4.0 dBm	-18.0 dBm	0.0 dBm	8.5 dB	141
N-GSX-LC-01(L)	-9.5 dBm	-4.0 dBm	-18.0 dBm	0.0 dBm	8.5 dB	141
N-GSX-SC-01	-9.5 dBm	-4.0 dBm	-18.0 dBm	0.0 dBm	8.5 dB	141
N-GSX-SC-01(L)	-9.5 dBm	-4.0 dBm	-18.0 dBm	0.0 dBm	8.5 dB	141
ND-FX-MT-01	-19.0 dBm	-14.0 dBm	-33.5 dBm	-14.0 dBm	14.5 dB	138
ND-FX-SC-01	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	138
ND-FX-ST-01	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	138
NDM-FTX-MT-01	-19.0 dBm	-14.0 dBm	-31.0 dBm	-17.0 dBm	12.0 dB	140
NDM-FTX-MT-01(L)	-19.0 dBm	-14.0 dBm	-31.0 dBm	-17.0 dBm	12.0 dB	140
NDM-FTX-SB201-01	-14.0 dBm	-8.0 dBm	-32.0 dBm	0.0 dBm	18.0 dB	140
NDM-FTX-SB201-01(L)	-14.0 dBm	-8.0 dBm	-32.0 dBm	0.0 dBm	18.0 dB	140
NDM-FTX-SB202-01	-14.0 dBm	-8.0 dBm	-32.0 dBm	0.0 dBm	18.0 dB	140
NDM-FTX-SB202-01(L)	-14.0 dBm	-8.0 dBm	-32.0 dBm	0.0 dBm	18.0 dB	140
NDM-FTX-SC-01	-19.0 dBm	-14.0 dBm	-31.0 dBm	-17.0 dBm	12.0 dB	140
NDM-FTX-SC-01(L)	-19.0 dBm	-14.0 dBm	-31.0 dBm	-17.0 dBm	12.0 dB	140
NDM-FTX-SC5-01	-19.0 dBm	-14.0 dBm	-31.0 dBm	-7.5 dBm	12.0 dB	140
NDM-FTX-SC5-01(L)	-19.0 dBm	-14.0 dBm	-31.0 dBm	-7.5 dBm	12.0 dB	140
NDM-FTX-SC20-01	-15.0 dBm	-8.0 dBm	-31.0 dBm	0.0 dBm	16.0 dB	140
NDM-FTX-SC20-01(L)	-15.0 dBm	-8.0 dBm	-31.0 dBm	0.0 dBm	16.0 dB	140
NDM-FTX-ST-01	-19.0 dBm	-14.0 dBm	-31.0 dBm	-17.0 dBm	12.0 dB	140
NDM-FTX-ST-01(L)	-19.0 dBm	-14.0 dBm	-31.0 dBm	-17.0 dBm	12.0 dB	140
PCM16-FX-LC-01	-19.0 dBm	-14.0 dBm	-31.0 dBm	-17.0 dBm	12.0 dB	142
PCM16-FX-SC-01	-19.0 dBm	-14.0 dBm	-31.0 dBm	-17.0 dBm	12.0 dB	142
PCM16-FX-SC5-01	-19.0 dBm	-14.0 dBm	-31.0 dBm	-7.5 dBm	12.0 dB	142
PCM16-FX-SC20-01	-15.0 dBm	-8.0 dBm	-31.0 dBm	0.0 dBm	16.0 dB	142
PCM16-FX-ST-01	-19.0 dBm	-14.0 dBm	-31.0 dBm	-17.0 dBm	12.0 dB	142
PCM32-FX-LC-01	-19.0 dBm	-14.0 dBm	-31.0 dBm	-17.0 dBm	12.0 dB	142
PCM32-FX-SC-01	-19.0 dBm	-14.0 dBm	-31.0 dBm	-17.0 dBm	12.0 dB	142
PCM32-FX-SC5-01	-19.0 dBm	-14.0 dBm	-31.0 dBm	-7.5 dBm	12.0 dB	142
PCM32-FX-SC20-01	-15.0 dBm	-8.0 dBm	-31.0 dBm	0.0 dBm	16.0 dB	142
PCM32-FX-ST-01	-19.0 dBm	-14.0 dBm	-31.0 dBm	-17.0 dBm	12.0 dB	142
S4TEF1011-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	119
S4TEF1011-110	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	120
S4TEF1013-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	119
S4TEF1013-110	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	120
S4TEF1014-100	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	119
S4TEF1014-110	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	120
S4TEF1015-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	119
S4TEF1015-110	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	120
S4TEF1016-100	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	119
S4TEF1016-110	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	120
S4TEF1017-100	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	119
S4TEF1017-110	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	120
S4TEF1029-100	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	119
S4TEF1029-101	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	119
S4TEF1029-102	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	119
S4TEF1029-103	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	119
S4TEF1029-110	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	120
S4TEF1029-111	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	120

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Product SKU	Min TX PWR	Max TX PWR	RX Sensitivity	Max In PWR	Link Budget	Page
S4TEF1029-112	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	120
S4TEF1029-113	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	120
S4TEF1035-100	0.0 dBm	+5.0 dBm	-36.0 dBm	-3.0 dBm	36.0 dB	119
S4TEF1035-110	0.0 dBm	+5.0 dBm	-36.0 dBm	-3.0 dBm	36.0 dB	120
SAPTF3311-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	121
SAPTF3311-110	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	121
SAPTF3313-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	121
SAPTF3313-110	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	121
SAPTF3314-100	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	121
SAPTF3314-110	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	121
SAPTF3315-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-8.0 dBm	26.0 dB	121
SAPTF3315-110	-8.0 dBm	-2.0 dBm	-34.0 dBm	-8.0 dBm	26.0 dB	121
SAPTF3317-100	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	121
SAPTF3317-110	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	121
SAPTF3329-100	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	121
SAPTF3329-101	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	121
SAPTF3329-102	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	121
SAPTF3329-103	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	121
SAPTF3329-110	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	121
SAPTF3329-111	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	121
SAPTF3329-112	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	121
SAPTF3329-113	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	121
SBFFG1013-100	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	101
SBFFG1014-100	-13.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	7.0 dB	101
SBFFG1015-100	-5.0 dBm	0.0 dBm	-20.0 dBm	-3.0 dBm	15.0 dB	101
SBFFG1017-100	-3.0 dBm	-2.0 dBm	-24.0 dBm	-3.0 dBm	21.0 dB	101
SBFFG1029-100	-8.0 dBm	-3.0 dBm	-22.0 dBm	3.0 dBm	14.0 dB	101
SBFFG1029-101	-8.0 dBm	-3.0 dBm	-22.0 dBm	3.0 dBm	14.0 dB	101
SBFFG1029-102	-3.0 dBm	2.0 dBm	-23.0 dBm	-3.0 dBm	20.0 dB	101
SBFFG1029-103	-3.0 dBm	2.0 dBm	-23.0 dBm	3.0 dBm	20.0 dB	101
SBFFG1035-100	0.0 dBm	5.0 dBm	-27.0 dBm	-3.0 dBm	27.0 dB	101
SBFFG1313-100 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	102
SBFFG1313-100 SM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	102
SBFFG1313-110 MM	-9.5 dBm	-4.0 dBm	-18.0 dBm	0.0 dBm	8.5 dB	102
SBFFG1313-110 SM	-9.5 dBm	-4.0 dBm	-18.0 dBm	0.0 dBm	8.5 dB	102
SBFFG1314-100 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	102
SBFFG1314-100 SM	-13.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	7.0 dB	102
SBFFG1314-110 MM	-9.5 dBm	-4.0 dBm	-18.0 dBm	0.0 dBm	8.5 dB	102
SBFFG1314-110 SM	-9.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	12.0 dB	102
SBFFG1315-100 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	102
SBFFG1315-100 SM	-5.0 dBm	0.0 dBm	-20.0 dBm	-3.0 dBm	15.0 dB	102
SBFFG1315-110 MM	-9.5 dBm	-4.0 dBm	-18.0 dBm	0.0 dBm	8.5 dB	102
SBFFG1315-110 SM	-5.0 dBm	0.0 dBm	-24.0 dBm	-3.0 dBm	19.0 dB	102
SBFFG1317-100 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	102
SBFFG1317-100 SM	-3.0 dBm	-2.0 dBm	-24.0 dBm	-3.0 dBm	21.0 dB	102
SBFFG1329-100 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	102
SBFFG1329-100 SM	-8.0 dBm	-3.0 dBm	-22.0 dBm	-3.0 dBm	14.0 dB	102
SBFFG1329-101 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	102
SBFFG1329-101 SM	-8.0 dBm	-3.0 dBm	-22.0 dBm	-3.0 dBm	14.0 dB	102
SBFFG1329-110 MM	-9.5 dBm	-4.0 dBm	-18.0 dBm	0.0 dBm	8.5 dB	102
SBFFG1329-110 SM	-9.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	11.0 dB	102
SBFFG1329-111 MM	-9.5 dBm	-4.0 dBm	-18.0 dBm	0.0 dBm	8.5 dB	102
SBFFG1329-111 SM	-9.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	11.0 dB	102
SBFFG1335-100 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	102
SBFFG1335-100 SM	0.0 dBm	5.0 dBm	-32.0 dBm	-9.0 dBm	32.0 dB	102
SBFFG3535-100 MM	0.0 dBm	5.0 dBm	-32.0 dBm	-9.0 dBm	32.0 dB	102
SBFFG3535-100 SM	0.0 dBm	5.0 dBm	-32.0 dBm	-9.0 dBm	32.0 dB	102
SBFTF1011-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	93
SBFTF1011-110	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	94
SBFTF1011-120	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	94
SBFTF1011-140	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	94
SBFTF1013-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	93
SBFTF1013-110	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	94
SBFTF1013-120	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	94
SBFTF1013-140	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	94
SBFTF1014-100	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	93
SBFTF1014-110	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	94
SBFTF1014-120	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	94
SBFTF1014-140	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	94
SBFTF1015-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	93
SBFTF1015-110	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	94
SBFTF1015-120	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	94
SBFTF1015-140	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	94
SBFTF1016-100	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	93
SBFTF1016-110	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	94
SBFTF1016-120	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	94
SBFTF1016-140	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	94
SBFTF1017-100	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	93
SBFTF1017-110	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	94
SBFTF1017-120	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	94
SBFTF1017-140	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	94
SBFTF1018-100	-19.0 dBm	-14.0 dBm	-33.5 dBm	-14.0 dBm	14.5 dB	93
SBFTF1018-110	-19.0 dBm	-14.0 dBm	-33.5 dBm	-14.0 dBm	14.5 dB	94
SBFTF1018-120	-19.0 dBm	-14.0 dBm	-33.5 dBm	-14.0 dBm	14.5 dB	94
SBFTF1018-140	-19.0 dBm	-14.0 dBm	-33.5 dBm	-14.0 dBm	14.5 dB	94
SBFTF1019-100	-15.2 dBm	-8.0 dBm	-32.5 dBm	-3.0 dBm	17.3 dB	93
SBFTF1029-100	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	93
SBFTF1029-101	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	93
SBFTF1029-102	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	93
SBFTF1029-103	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	93
SBFTF1029-104	-5.0 dBm	0.0 dBm	-34.0 dBm	-3.0 dBm	29.0 dB	93
SBFTF1029-105	-6.0 dBm	0.0 dBm	-34.0 dBm	-3.0 dBm	28.0 dB	93
SBFTF1029-110	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	94
SBFTF1029-111	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	94
SBFTF1029-112	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	94
SBFTF1029-113	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	94
SBFTF1029-120	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	94
SBFTF1029-121	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	94
SBFTF1029-122	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	94
SBFTF1029-123	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	94
SBFTF1029-140	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	94
SBFTF1029-141	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	94
SBFTF1029-142	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	94
SBFTF1029-143	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	94

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Product SKU	Min TX PWR	Max TX PWR	RX Sensitivity	Max In PWR	Link Budget	Page
SBFTF1035-100	0.0 dBm	+5.0 dBm	-36.0 dBm	-3.0 dBm	36.0 dB	93
SBFTF1039-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	93
SCSCF3011-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	112
SCSCF3013-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	112
SCSCF3014-100	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	112
SCSCF3015-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	112
SCSCF3016-100	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	112
SCSCF3017-100	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	112
SCSCF3018-100	-19.0 dBm	-14.0 dBm	-33.5 dBm	-14.0 dBm	14.5 dB	112
SCSCF3029-100	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	112
SCSCF3029-101	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	112
SCSCF3029-102	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	112
SCSCF3029-103	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	112
SDSFE3111-100	-19.0 dBm	-14.0 dBm	-31.0 dBm	-14.0 dBm	12.0 dB	129
SDSFE3111-120	-19.0 dBm	-14.0 dBm	-31.0 dBm	-14.0 dBm	12.0 dB	130
SDSFE3113-100	-19.0 dBm	-14.0 dBm	-31.0 dBm	-14.0 dBm	12.0 dB	129
SDSFE3113-120	-19.0 dBm	-14.0 dBm	-31.0 dBm	-14.0 dBm	12.0 dB	130
SDSFE3114-100	-15.0 dBm	-3.0 dBm	-30.0 dBm	-3.0 dBm	15.0 dB	129
SDSFE3114-120	-15.0 dBm	-3.0 dBm	-30.0 dBm	-3.0 dBm	15.0 dB	130
SDSFE3115-100	-15.0 dBm	-8.0 dBm	-34.0 dBm	-7.0 dBm	19.0 dB	129
SDSFE3115-120	-15.0 dBm	-8.0 dBm	-34.0 dBm	-7.0 dBm	19.0 dB	130
SDSFE3117-100	-3.0 dBm	+3.0 dBm	-37.0 dBm	0.0 dBm	34.0 dB	129
SDSFE3117-120	-3.0 dBm	+3.0 dBm	-37.0 dBm	0.0 dBm	34.0 dB	130
SDSFE3211-110	-19.0 dBm	-14.0 dBm	-31.0 dBm	-14.0 dBm	12.0 dB	131
SDSFE3213-110	-19.0 dBm	-14.0 dBm	-31.0 dBm	-14.0 dBm	12.0 dB	131
SDSFE3214-110	-15.0 dBm	-3.0 dBm	-30.0 dBm	-3.0 dBm	15.0 dB	131
SDSFE3215-110	-15.0 dBm	-8.0 dBm	-34.0 dBm	-7.0 dBm	19.0 dB	131
SDSFE3217-110	-3.0 dBm	+3.0 dBm	-37.0 dBm	0.0 dBm	34.0 dB	131
SEPOE1011-150	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	78
SEPOE1013-150	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	78
SFBRM1011-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	88
SFBRM1011-110	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	88
SFBRM1011-180	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	89
SFBRM1011-190	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	89
SFBRM1013-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	88
SFBRM1013-110	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	88
SFBRM1013-180	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	89
SFBRM1013-190	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	89
SFBRM1014-100	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	88
SFBRM1014-110	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	88
SFBRM1014-180	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	89
SFBRM1014-190	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	89
SFBRM1015-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	88
SFBRM1015-180	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	89
SFBRM1016-100	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	88
SFBRM1016-180	-5.0 dBm	-0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	89
SFBRM1017-100	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	88
SFBRM1017-180	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	89
SFBRM1029-100	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	88
SFBRM1029-101	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	88
SFBRM1029-110	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	88
SFBRM1029-111	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	88
SFBRM1029-180	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	89
SFBRM1029-181	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	89
SFBRM1029-182	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	89
SFBRM1029-183	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	89
SFBRM1029-190	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	89
SFBRM1029-191	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	89
SFBRM1035-100	0.0 dBm	+5.0 dBm	-36.0 dBm	-3.0 dBm	36.0 dB	88
SFBRM1035-180	0.0 dBm	+5.0 dBm	-36.0 dBm	-3.0 dBm	36.0 dB	89
SFBRM1040-180	0.0 dBm	+5.0 dBm	-36.0 dBm	-3.0 dBm	36.0 dB	89
SFBRM1313-100 FEMM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	90
SFBRM1313-100 GEMM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	90
SFBRM1313-110 FEMM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	90
SFBRM1313-110 GEMM	-9.5 dBm	-4.0 dBm	-18.0 dBm	0.0 dBm	8.5 dB	90
SFBRM1314-100 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	90
SFBRM1314-100 SM	-13.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	7.0 dB	90
SFBRM1314-110 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	90
SFBRM1314-110 SM	-9.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	12.0 dB	90
SFBRM1315-100 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	90
SFBRM1315-100 SM	-5.0 dBm	0.0 dBm	-20.0 dBm	-3.0 dBm	15.0 dB	90
SFBRM1315-110 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	90
SFBRM1315-110 SM	-5.0 dBm	0.0 dBm	-24.0 dBm	-3.0 dBm	19.0 dB	90
SFBRM1317-100 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	90
SFBRM1317-100 SM	-3.0 dBm	2.0 dBm	-24.0 dBm	-3.0 dBm	21.0 dB	90
SFBRM1329-100 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	90
SFBRM1329-100 SM	-8.0 dBm	-3.0 dBm	-22.0 dBm	-3.0 dBm	14.0 dB	90
SFBRM1329-101 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	90
SFBRM1329-101 SM	-8.0 dBm	-3.0 dBm	-22.0 dBm	-3.0 dBm	14.0 dB	90
SFBRM1329-102 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	90
SFBRM1329-102 SM	-3.0 dBm	+2.0 dBm	-23.0 dBm	-3.0 dBm	20.0 dB	90
SFBRM1329-103 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	90
SFBRM1329-103 SM	-3.0 dBm	+2.0 dBm	-23.0 dBm	+3.0 dBm	20.0 dB	90
SFBRM1329-110 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	90
SFBRM1329-110 SM	-9.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	11.0 dB	90
SFBRM1329-111 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	90
SFBRM1329-111 SM	-9.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	11.0 dB	90
SFBRM1335-100 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	90
SFBRM1335-100 SM	0.0 dBm	5.0 dBm	-32.0 dBm	-9.0 dBm	32.0 dB	90
SFEPE1011-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	86
SFEPE1011-110	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	86
SFEPE1013-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	86
SFEPE1013-110	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	86
SFEPE1014-100	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	86
SFEPE1014-110	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	86
SFMFF1313-200	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	85
SFMFF1313-220	-9.5 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.5 dB	106
SFMFF1314-210 MM	-19.0 dBm	-14.0 dBm	-31.0 dBm	-14.0 dBm	12.0 dB	111
SFMFF1314-210 SM	-15.0 dBm	-8.0 dBm	-26.0 dBm	-14.0 dBm	11.0 dB	111
SFMFF1314-220 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	106
SFMFF1314-220 SM	-13.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	7.0 dB	106
SFMFF1314-280 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	107
SFMFF1314-280 SM	-13.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	7.0 dB	107
SFMFF1315-220 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	106

Fiber Specification Table

Product SKU	Min TX PWR	Max TX PWR	RX Sensitivity	Max In PWR	Link Budget	Page
SFMFF1315-220 SM	-5.0 dBm	0.0 dBm	-20.0 dBm	-3.0 dBm	15.0 dB	106
SFMFF1315-280 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	107
SFMFF1315-280 SM	-5.0 dBm	0.0 dBm	-20.0 dBm	-3.0 dBm	15.0 dB	107
SFMFF1316-210 MM	-19.0 dBm	-14.0 dBm	-26.0 dBm	-14.0 dBm	7.0 dB	111
SFMFF1316-210 SM	-3.0 dBm	2.0 dBm	-28.0 dBm	-7.0 dBm	25.0 dB	111
SFMFF1317-210 MM	-19.0 dBm	-14.0 dBm	-26.0 dBm	-14.0 dBm	7.0 dB	111
SFMFF1317-210 SM	-3.0 dBm	2.0 dBm	-28.0 dBm	-7.0 dBm	25.0 dB	111
SFMFF1317-220 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	106
SFMFF1317-220 SM	-3.0 dBm	2.0 dBm	-23.0 dBm	-3.0 dBm	20.0 dB	106
SFMFF1317-280 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	107
SFMFF1317-280 SM	-3.0 dBm	+2.0 dBm	-24.0 dBm	-3.0 dBm	21.0 dB	107
SFMFF1324-220 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	106
SFMFF1324-220 MME	-10.0 dBm	-3.0 dBm	-17.0 dBm	-3.0 dBm	7.0 dB	106
SFMFF1324-280 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	107
SFMFF1324-280 MME	-10.0 dBm	-3.0 dBm	-17.0 dBm	-3.0 dBm	7.0 dB	107
SFMFF1329-200 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	85
SFMFF1329-200 SM	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	85
SFMFF1329-201 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	85
SFMFF1329-201 SM	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	85
SFMFF1329-202 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	85
SFMFF1329-202 SM	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	85
SFMFF1329-203 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	85
SFMFF1329-203 SM	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	85
SFMFF1329-204 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	85
SFMFF1329-204 SM	-5.0 dBm	0.0 dBm	-34.0 dBm	-3.0 dBm	29.0 dB	85
SFMFF1329-205 MM	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	85
SFMFF1329-205 SM	-6.0 dBm	0.0 dBm	-34.0 dBm	-3.0 dBm	28.0 dB	85
SFMFF1329-210 MM	-19.0 dBm	-14.0 dBm	-26.0 dBm	-14.0 dBm	7.0 dB	111
SFMFF1329-210 SM	-14.0 dBm	-8.0 dBm	-28.0 dBm	-8.0 dBm	14.0 dB	111
SFMFF1329-211 MM	-19.0 dBm	-14.0 dBm	-26.0 dBm	-14.0 dBm	7.0 dB	111
SFMFF1329-211 SM	-14.0 dBm	-8.0 dBm	-28.0 dBm	-8.0 dBm	14.0 dB	111
SFMFF1329-220 MM	-19.0 dBm	-14.0 dBm	-26.0 dBm	-14.0 dBm	7.0 dB	106
SFMFF1329-220 SM	-8.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	13.0 dB	106
SFMFF1329-221 MM	-19.0 dBm	-14.0 dBm	-26.0 dBm	-14.0 dBm	7.0 dB	106
SFMFF1329-221 SM	-8.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	13.0 dB	106
SFMFF1329-222 MM	-19.0 dBm	-14.0 dBm	-26.0 dBm	-14.0 dBm	7.0 dB	106
SFMFF1329-222 SM	-3.0 dBm	2.0 dBm	-23.0 dBm	-8.0 dBm	20.0 dB	106
SFMFF1329-223 MM	-19.0 dBm	-14.0 dBm	-26.0 dBm	-14.0 dBm	7.0 dB	106
SFMFF1329-223 SM	-3.0 dBm	2.0 dBm	-23.0 dBm	-8.0 dBm	20.0 dB	106
SFMFF1329-280 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	107
SFMFF1329-280 SM	-8.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	13.0 dB	107
SFMFF1329-281 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	107
SFMFF1329-281 SM	-8.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	13.0 dB	107
SFMFF1329-282 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	107
SFMFF1329-282 SM	-3.0 dBm	2.0 dBm	-23.0 dBm	-8.0 dBm	20.0 dB	107
SFMFF1329-283 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	107
SFMFF1329-283 SM	-3.0 dBm	2.0 dBm	-23.0 dBm	-8.0 dBm	20.0 dB	107
SFMFF1329-286 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	107
SFMFF1329-286 SM	-2.0 dBm	+3.0 dBm	-26.0 dBm	-3.0 dBm	24.0 dB	107
SFMFF1329-287 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	107
SFMFF1329-287 SM	-2.0 dBm	+3.0 dBm	-26.0 dBm	-3.0 dBm	24.0 db	107
SFMFF1335-220 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	106
SFMFF1335-220 SM	0.0 dBm	5.0 dBm	-27.0 dBm	-3.0 dBm	27.0 dB	106
SFMFF1335-280 MM	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	107
SFMFF1335-280 SM	0.0 dBm	5.0 dBm	-27.0 dBm	-3.0 dBm	27.0 dB	107
SFMFF1414-220 SM	-13.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	7.0 dB	106
SFMFF1414-280	-13.0 dbm	-3.0 dBm	-20.0 dBm	-3.0 dBm	7.0 dB	107
SFMFF1415-200 SM	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	85
SFMFF1415-200 SMLH	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	85
SFMFF1417-200 MM	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	85
SFMFF1417-200 SM	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	85
SFMFF1424-220 MME	-10.0 dBm	-3.0 dBm	-17.0 dBm	-3.0 dBm	7.0 dB	106
SFMFF1424-220 SM	-13.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	7.0 dB	106
SFMFF1429-200 MM	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	85
SFMFF1429-200 SM	-13.0 dBm	-6.0 dBm	-32.0 dBm	-6.0 dBm	19.0 dB	85
SFMFF1429-201 MM	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	85
SFMFF1429-201 SM	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	85
SFMFF1429-202 MM	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	85
SFMFF1429-202 SM	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	85
SFMFF1429-203 MM	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	85
SFMFF1429-203 SM	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	85
SGETF1013-110	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	104
SGETF1014-110	-9.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	12.0 dB	104
SGETF1015-110	-5.0 dBm	0.0 dBm	-21.0 dBm	-3.0 dBm	16.0 dB	104
SGETF1017-110	-3.0 dBm	2.0 dBm	-24.0 dBm	-3.0 dBm	21.0 dB	104
SGETF1024-110	-10.0 dBm	-3.0 dBm	-17.0 dBm	-3.0 dBm	7.0 dB	104
SGETF1029-110	-8.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	13.0 dB	104
SGETF1029-111	-9.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	12.0 dB	104
SGETF1029-112	-3.0 dBm	2.0 dBm	-23.0 dBm	-3.0 dBm	20.0 dB	104
SGETF1029-113	-3.0 dBm	2.0 dBm	-23.0 dBm	-3.0 dBm	20.0 dB	104
SGETF1029-116	-2.0 dBm	3.0 dBm	-26.0 dBm	-3.0 dBm	24.0 dB	104
SGETF1029-117	-2.0 dBm	3.0 dBm	-26.0 dBm	-3.0 dBm	24.0 dB	104
SGETF1035-110	0.0 dBm	5.0 dBm	-27.0 dBm	-9.0 dBm	27.0 dB	104
SGETF1039-110	-9.0 dBm	-4.0 dBm	-17.0 dBm	-3.0 dBm	8.0 dB	104
SGFEB1013-100	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	100
SGFEB1014-100	-13.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	7.0 dB	100
SGFEB1015-100	-5.0 dBm	0.0 dBm	-20.0 dBm	-3.0 dBm	15.0 dB	100
SGFEB1017-100	-3.0 dBm	2.0 dBm	-23.0 dBm	-3.0 dBm	20.0 dB	100
SGFEB1024-100	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	100
SGFEB1029-100	-8.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	13.0 dB	100
SGFEB1029-101	-8.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	13.0 dB	100
SGFEB1029-102	-3.0 dBm	2.0 dBm	-23.0 dBm	-8.0 dBm	20.0 dB	100
SGFEB1029-103	-3.0 dBm	2.0 dBm	-23.0 dBm	-8.0 dBm	20.0 dB	100
SGFEB1035-100	0.0 dBm	5.0 dBm	-27.0 dBm	-3.0 dBm	27.0 dB	100
SIBTF1011-110-MS	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	128
SIBTF1011-110-MR	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	128
SIBTF1011-130-MS	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	128
SIBTF1011-130-MR	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	128
SIBTF1011-140-MS	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	128
SIBTF1011-140-MR	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	128
SIBTF1013-110-MS	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	128
SIBTF1013-110-MR	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	128
SIBTF1013-130-MS	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	128
SIBTF1013-130-MR	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	128

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Product SKU	Min TX PWR	Max TX PWR	RX Sensitivity	Max In PWR	Link Budget	Page
SIBTF1013-140-MS	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	128
SIBTF1013-140-MR	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	128
SIBTF1014-110-MS	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	128
SIBTF1014-110-MR	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	128
SIBTF1014-130-MS	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	128
SIBTF1014-130-MR	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	128
SIBTF1014-140-MS	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	128
SIBTF1014-140-MR	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	128
SISTF1011-111-LR	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	124
SISTF1011-111-LRT	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	124
SISTF1011-141-LR	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	125
SISTF1011-141-LRT	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	125
SISTF1013-111-LR	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	124
SISTF1013-111-LRT	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	124
SISTF1013-141-LR	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	125
SISTF1013-141-LRT	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	125
SISTF1014-111-LR	-15.0 dBm	-8.0 dBm	-32.0 dBm	-5.0 dBm	17.0 dB	124
SISTF1014-111-LRT	-15.0 dBm	-8.0 dBm	-32.0 dBm	-5.0 dBm	17.0 dB	124
SISTF1014-141-LR	-15.0 dBm	-8.0 dBm	-32.0 dBm	-5.0 dBm	17.0 dB	125
SISTF1014-141-LRT	-15.0 dBm	-8.0 dBm	-32.0 dBm	-5.0 dBm	17.0 dB	125
SMEFG1013-100	-10.0 dBm	-4.0 dBm	-17.0 dBm	0.0 dBm	7.0 dB	103
SMEFG1013-110	-9.5 dBm	-4.0 dBm	-18.0 dBm	0.0 dBm	8.5 dB	103
SMEFG1014-100	-13.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	7.0 dB	103
SMEFG1014-110	-9.0 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	12.0 dB	103
SMEFG1015-100	-5.0 dBm	0.0 dBm	-20.0 dBm	-3.0 dBm	15.0 dB	103
SMEFG1015-110	-5.0 dBm	0.0 dBm	-24.0 dBm	-3.0 dBm	19.0 dB	103
SMEFG1017-100	-3.0 dBm	+2.0 dBm	-24.0 dBm	-3.0 dBm	21.0 dB	103
SMEFG1019-100	-9.5 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	11.5 dB	103
SMEFG1019-110	-9.5 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	11.5 dB	103
SMEFG1029-100	-8.0 dBm	-3.0 dBm	-22.0 dBm	+3.0 dBm	14.0 dB	103
SMEFG1029-101	-8.0 dBm	-3.0 dBm	-22.0 dBm	+3.0 dBm	14.0 dB	103
SMEFG1029-102	-3.0 dBm	+2.0 dBm	-23.0 dBm	-3.0 dBm	20.0 dB	103
SMEFG1029-103	-3.0 dBm	+2.0 dBm	-23.0 dBm	+3.0 dBm	20.0 dB	103
SMEFG1029-110	-9.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	11.0 dB	103
SMEFG1029-111	-9.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	11.0 dB	103
SMEFG1035-100	0.0 dBm	5.0 dBm	-27.0 dBm	-3.0 dBm	27.0 dB	103
SMEFG1039-100	-9.5 dBm	-4.0 dBm	-17.0 dBm	-3.0 dBm	7.5 dB	103
SMEFG1039-110	-9.5 dBm	-4.0 dBm	-17.0 dBm	-3.0 dBm	7.5 dB	103
SPOEB1011-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	97
SPOEB1013-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	97
SPOEB1014-100	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	97
SPOEB1015-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	97
SPOEB1016-100	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	97
SPOEB1017-100	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	97
SPOEB1029-100	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	97
SPOEB1029-101	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	97
SPOEB1035-100	0.0 dBm	+5.0 dBm	-36.0 dBm	-3.0 dBm	36.0 dB	97
SPSVT2611-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	113
SPSVT2613-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	113
SPSVT2614-100	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	113
SPSVT2615-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	113
SPSVT2629-100	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	113
SPSVT2629-101	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	113
SPSVT2629-102	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	113
SPSVT2629-103	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	113
SRMFE1011-200	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	84
SRMFE1013-200	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	84
SRMFE1014-200	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	84
SRMFE1015-200	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	84
SRMFE1016-200	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	84
SRMFE1017-200	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	84
SRMFE1018-200	-19.0 dBm	-14.0 dBm	-33.5 dBm	-14.0 dBm	14.5 dB	84
SRMFE1029-200	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	84
SRMFE1029-201	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	84
SRMFE1029-202	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	84
SRMFE1029-203	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	84
SRS2F3111-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	114
SRS2F3113-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	114
SRS2F3114-100	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	114
SRS2F3115-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	114
SRS4F3111-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	116
SRS4F3113-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	116
SRS4F3114-100	-15.0 dBm	-8.0 dBm	-31.0 dBm	-7.0 dBm	16.0 dB	116
SRS4F3115-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	116
SRS4F3211-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	116
SRS4F3213-100	-19.0 dBm	-14.0 dBm	-30.0 dBm	-14.0 dBm	11.0 dB	116
SRS4F3214-100	-15.0 dBm	-8.0 dBm	-31.0 dBm	-7.0 dBm	16.0 dB	116
SRS4F3215-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-7.0 dBm	26.0 dB	116
SSDTF1011-105	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	117
SSDTF1012-105	-27.0 dBm	-10.0 dBm	-34.0 dBm	-14.0 dBm	7.0 dB	117
SSDTF1013-105	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	117
SSDTF1014-105	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	117
SSDTF1015-105	-8.0 dBm	-2.0 dBm	-38.0 dBm	-8.0 dBm	30.0 dB	117
SSDTF1016-105	-5.0 dBm	0.0 dBm	-38.0 dBm	-7.0 dBm	33.0 dB	117
SSDTF1017-105	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	117
SSDTF1018-105	-19.0 dBm	-14.0 dBm	-33.5 dBm	-14.0 dBm	14.5 dB	117
SSDTF1022-105	-15.0 dBm	-5.0 dBm	-25.0 dBm	-14.0 dBm	10.0 dB	117
SSDTF1027-105	-19.0 dBm	-15.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	117
SSDTF1029-105	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	117
SSDTF1029-106	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	117
SSDTF1029-107	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	117
SSDTF1029-108	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	117
SSDTF3011-115	-14.0 dBm	-12.0 dBm	-25.0 dBm	-12.0 dBm	11.0 dB	117
SSDTF3012-115	-27.0 dBm	-10.0 dBm	-34.0 dBm	-14.0 dBm	7.0 dB	117
SSDTF3013-115	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	117
SSDTF3014-115	-15.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	16.0 dB	117
SSDTF3015-115	-8.0 dBm	-2.0 dBm	-38.0 dBm	-8.0 dBm	30.0 dB	117
SSDTF3016-115	-5.0 dBm	0.0 dBm	-38.0 dBm	-7.0 dBm	33.0 dB	117
SSDTF3017-115	-5.0 dBm	0.0 dBm	-34.0 dBm	-7.0 dBm	29.0 dB	117
SSDTF3018-115	-19.0 dBm	-14.0 dBm	-33.5 dBm	-14.0 dBm	14.5 dB	117
SSDTF3022-115	-15.0 dBm	-5.0 dBm	-25.0 dBm	-14.0 dBm	10.0 dB	117
SSDTF3027-115	-19.0 dBm	-15.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	117
SSDTF3029-115	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	117
SSDTF3029-116	-13.0 dBm	-6.0 dBm	-32.0 dBm	-3.0 dBm	19.0 dB	117
SSDTF3029-117	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	117
SSDTF3029-118	-8.0 dBm	-3.0 dBm	-33.0 dBm	-3.0 dBm	25.0 dB	117

Fiber Specification Table

Product SKU	Min TX PWR	Max TX PWR	RX Sensitivity	Max In PWR	Link Budget	Page
SSEFE1012-100	-15.0 dBm	-8.0 dBm	-32.0 dBm	-5.0 dBm	17.0 dB	80
SSEFE1014-100	-15.0 dBm	-8.0 dBm	-32.0 dBm	-5.0 dBm	17.0 dB	80
SSEFE1015-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-5.0 dBm	26.0 dB	80
SSEFE1022-100	-8.0 dBm	-2.0 dBm	-34.0 dBm	-5.0 dBm	26.0 dB	80
SSEFE1029-100	-14.0 dBm	-8.0 dBm	-33.0 dBm	-3.0 dBm	19.0 dB	80
SSEFE1029-101	-14.0 dBm	-8.0 dBm	-33.0 dBm	-3.0 dBm	19.0 dB	80
SSETF1011-205	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	87
SSETF1013-205	-19.0 dBm	-14.0 dBm	-32.5 dBm	-14.0 dBm	13.5 dB	87
TN-GB-MM5	-9.5 dBm	-4.0 dBm	-18.0 dBm	-3. dBm	8.5 dB	134
TN-GB-SM5	-9.0 dBm	-3.0 dBm	-20.0 dBm	-3.0 dBm	11.0 dB	134
TN-GB-SM512	0.0 dBm	+5.0 dBm	-32.0 dBm	-9.0 dBm	32.0 dB	134
TN-GB-SM53	-5.0 dBm	0.0 dBm	-24.0 dBm	-3.0 dBm	19.0 dB	134
TN-GB-SM55	-5.0 dBm	0.0 dBm	-24.0 dBm	-3.0 dBm	19.0 dB	134
TN-GB-SM58	0.0 dBm	+5.0 dBm	-24.0 dBm	-3.0 dBm	24.0 dB	134
TN-SFP-ELX1	-9.5 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	11.5 dB	135
TN-SFP-ESX5	-10.0 dBm	-3.0 dBm	-18.0 dBm	-3.0 dBm	8.0 dB	135
TN-SFP-ESX6	-10.0 dBm	-3.0 dBm	-18.0 dBm	-3.0 dBm	8.0 dB	135
TN-SFP-FC2XM	-9.0 dBm	-4.0 dBm	-15.0 dBm	-3.0 dBm	6.0 dB	135
TN-SFP-FC2XS15	-5.0 dBm	0.0 dBm	-18.0 dBm	0.0 dBm	13.0 dB	135
TN-SFP-FC2XS2	-9.5 dBm	-3.0 dBm	-18.0 dBm	-3.0 dBm	8.5 dB	135
TN-SFP-FC2XS40	-2.0 dBm	+3.0 dBm	-28.0 dBm	-9.0 dBm	26.0 dB	135
TN-SFP-LX1	-9.5 dBm	-3.0 dBm	-21.0 dBm	-3.0 dBm	11.5 dB	135
TN-SFP-LX12	0.0 dBm	+5.0 dBm	-32.0 dBm	-9.0 dBm	32.0 dB	135
TN-SFP-LX3	-5.0 dBm	0.0 dBm	-24.0 dBm	-3.0 dBm	19.0 dB	135
TN-SFP-LX5	-5.0 dBm	0.0 dBm	-24.0 dBm	-3.0 dBm	19.0 dB	135
TN-SFP-LX8	0.0 dBm	+5.0 dBm	-24.0 dBm	-3.0 dBm	24.0 dB	135
TN-SFP-LX8-C27	0.0 dBm	5.0 dBm	-24.0 dBm	-3.0 dBm	24.0 dB	136
TN-SFP-LX8-C29	0.0 dBm	5.0 dBm	-24.0 dBm	-3.0 dBm	24.0 dB	136
TN-SFP-LX8-C31	0.0 dBm	5.0 dBm	-24.0 dBm	-3.0 dBm	24.0 dB	136
TN-SFP-LX8-C33	0.0 dBm	5.0 dBm	-24.0 dBm	-3.0 dBm	24.0 dB	136
TN-SFP-LX8-C35	0.0 dBm	5.0 dBm	-24.0 dBm	-3.0 dBm	24.0 dB	136
TN-SFP-LX8-C37	0.0 dBm	5.0 dBm	-24.0 dBm	-3.0 dBm	24.0 dB	136
TN-SFP-LX8-C39	0.0 dBm	5.0 dBm	-24.0 dBm	-3.0 dBm	24.0 dB	136
TN-SFP-LX8-C41	0.0 dBm	5.0 dBm	-24.0 dBm	-3.0 dBm	24.0 dB	136
TN-SFP-LX8-C43	0.0 dBm	5.0 dBm	-24.0 dBm	-3.0 dBm	24.0 dB	136
TN-SFP-LX8-C45	0.0 dBm	5.0 dBm	-24.0 dBm	-3.0 dBm	24.0 dB	136
TN-SFP-LX8-C47	0.0 dBm	5.0 dBm	-24.0 dBm	-3.0 dBm	24.0 dB	136
TN-SFP-LX8-C49	0.0 dBm	5.0 dBm	-24.0 dBm	-3.0 dBm	24.0 dB	136
TN-SFP-LX8-C51	0.0 dBm	5.0 dBm	-24.0 dBm	-3.0 dBm	24.0 dB	136
TN-SFP-LX8-C53	0.0 dBm	5.0 dBm	-24.0 dBm	-3.0 dBm	24.0 dB	136
TN-SFP-LX8-C55	0.0 dBm	5.0 dBm	-24.0 dBm	-3.0 dBm	24.0 dB	136
TN-SFP-LX8-C57	0.0 dBm	5.0 dBm	-24.0 dBm	-3.0 dBm	24.0 dB	136
TN-SFP-LX8-C59	0.0 dBm	5.0 dBm	-24.0 dBm	-3.0 dBm	24.0 dB	136
TN-SFP-LX8-C61	0.0 dBm	5.0 dBm	-24.0 dBm	-3.0 dBm	24.0 dB	136
TN-SFP-LX16	+1.0 dBm	+5.0 dBm	-36.0 dBm	-10.0 dBm	37.0 dB	135
TN-SFP-OC12M	-19.0 dBm	-12.0 dBm	-26.0 dBm	-8.0 dBm	7.0 dB	135
TN-SFP-OC12S	-14.0 dBm	-8.0 dBm	-28.0 dBm	-5.0 dBm	14.0 dB	135
TN-SFP-OC12S-C27	0.0 dBm	5.0 dBm	-29.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC12S-C29	0.0 dBm	5.0 dBm	-29.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC12S-C31	0.0 dBm	5.0 dBm	-29.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC12S-C33	0.0 dBm	5.0 dBm	-29.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC12S-C35	0.0 dBm	5.0 dBm	-29.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC12S-C37	0.0 dBm	5.0 dBm	-29.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC12S-C39	0.0 dBm	5.0 dBm	-29.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC12S-C41	0.0 dBm	5.0 dBm	-29.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC12S-C43	0.0 dBm	5.0 dBm	-29.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC12S-C45	0.0 dBm	5.0 dBm	-29.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC12S-C47	0.0 dBm	5.0 dBm	-29.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC12S-C49	0.0 dBm	5.0 dBm	-29.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC12S-C51	0.0 dBm	5.0 dBm	-29.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC12S-C53	0.0 dBm	5.0 dBm	-29.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC12S-C55	0.0 dBm	5.0 dBm	-29.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC12S-C57	0.0 dBm	5.0 dBm	-29.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC12S-C59	0.0 dBm	5.0 dBm	-29.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC12S-C61	0.0 dBm	5.0 dBm	-29.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC3M	-19.0 dBm	-12.0 dBm	-30.0 dBm	-8.0 dBm	11.0 dB	135
TN-SFP-OC3S	-14.0 dBm	-8.0 dBm	-31.0 dBm	-8.0 dBm	17.0 dB	135
TN-SFP-OC3S8-C27	-5.0 dBm	-0.0 dBm	-34.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC3S8-C29	-5.0 dBm	-0.0 dBm	-34.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC3S8-C31	-5.0 dBm	-0.0 dBm	-34.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC3S8-C33	-5.0 dBm	-0.0 dBm	-34.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC3S8-C35	-5.0 dBm	-0.0 dBm	-34.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC3S8-C37	-5.0 dBm	-0.0 dBm	-34.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC3S8-C39	-5.0 dBm	-0.0 dBm	-34.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC3S8-C41	-5.0 dBm	-0.0 dBm	-34.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC3S8-C43	-5.0 dBm	-0.0 dBm	-34.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC3S8-C45	-5.0 dBm	-0.0 dBm	-34.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC3S8-C47	-5.0 dBm	-0.0 dBm	-34.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC3S8-C49	-5.0 dBm	-0.0 dBm	-34.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC3S8-C51	-5.0 dBm	-0.0 dBm	-34.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC3S8-C53	-5.0 dBm	-0.0 dBm	-34.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC3S8-C55	-5.0 dBm	-0.0 dBm	-34.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC3S8-C57	-5.0 dBm	-0.0 dBm	-34.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC3S8-C59	-5.0 dBm	-0.0 dBm	-34.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC3S8-C61	-5.0 dBm	-0.0 dBm	-34.0 dBm	-8.0 dBm	29.0 dB	136
TN-SFP-OC48S-C27	-2.0 dBm	3.0 dBm	-20.0 dBm	0.0 dBm	18.0 dB	136
TN-SFP-OC48S-C29	-2.0 dBm	3.0 dBm	-20.0 dBm	0.0 dBm	18.0 dB	136
TN-SFP-OC48S-C31	-2.0 dBm	3.0 dBm	-20.0 dBm	0.0 dBm	18.0 dB	136
TN-SFP-OC48S-C33	-2.0 dBm	3.0 dBm	-20.0 dBm	0.0 dBm	18.0 dB	136
TN-SFP-OC48S-C35	-2.0 dBm	3.0 dBm	-20.0 dBm	0.0 dBm	18.0 dB	136
TN-SFP-OC48S-C37	-2.0 dBm	3.0 dBm	-20.0 dBm	0.0 dBm	18.0 dB	136
TN-SFP-OC48S-C39	-2.0 dBm	3.0 dBm	-20.0 dBm	0.0 dBm	18.0 dB	136
TN-SFP-OC48S-C41	-2.0 dBm	3.0 dBm	-20.0 dBm	0.0 dBm	18.0 dB	136
TN-SFP-OC48S-C43	-2.0 dBm	3.0 dBm	-20.0 dBm	0.0 dBm	18.0 dB	136
TN-SFP-OC48S-C45	-2.0 dBm	3.0 dBm	-20.0 dBm	0.0 dBm	18.0 dB	136
TN-SFP-OC48S-C47	-2.0 dBm	3.0 dBm	-20.0 dBm	0.0 dBm	18.0 dB	136
TN-SFP-OC48S-C49	-2.0 dBm	3.0 dBm	-20.0 dBm	0.0 dBm	18.0 dB	136
TN-SFP-OC48S-C51	-2.0 dBm	3.0 dBm	-20.0 dBm	0.0 dBm	18.0 dB	136
TN-SFP-OC48S-C53	-2.0 dBm	3.0 dBm	-20.0 dBm	0.0 dBm	18.0 dB	136
TN-SFP-OC48S-C55	-2.0 dBm	3.0 dBm	-20.0 dBm	0.0 dBm	18.0 dB	136
TN-SFP-OC48S-C57	-2.0 dBm	3.0 dBm	-20.0 dBm	0.0 dBm	18.0 dB	136
TN-SFP-OC48S-C59	-2.0 dBm	3.0 dBm	-20.0 dBm	0.0 dBm	18.0 dB	136
TN-SFP-OC48S-C61	-2.0 dBm	3.0 dBm	-20.0 dBm	0.0 dBm	18.0 dB	136
TN-SFP-SX	-9.0 dBm	-4.0 dBm	-17.0 dBm	-3.0 dBm	8.0 dB	135
TN-SFP-SXD	-9.0 dBm	-4.0 dBm	-17.0 dBm	-3.0 dBm	8.0 dB	135

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