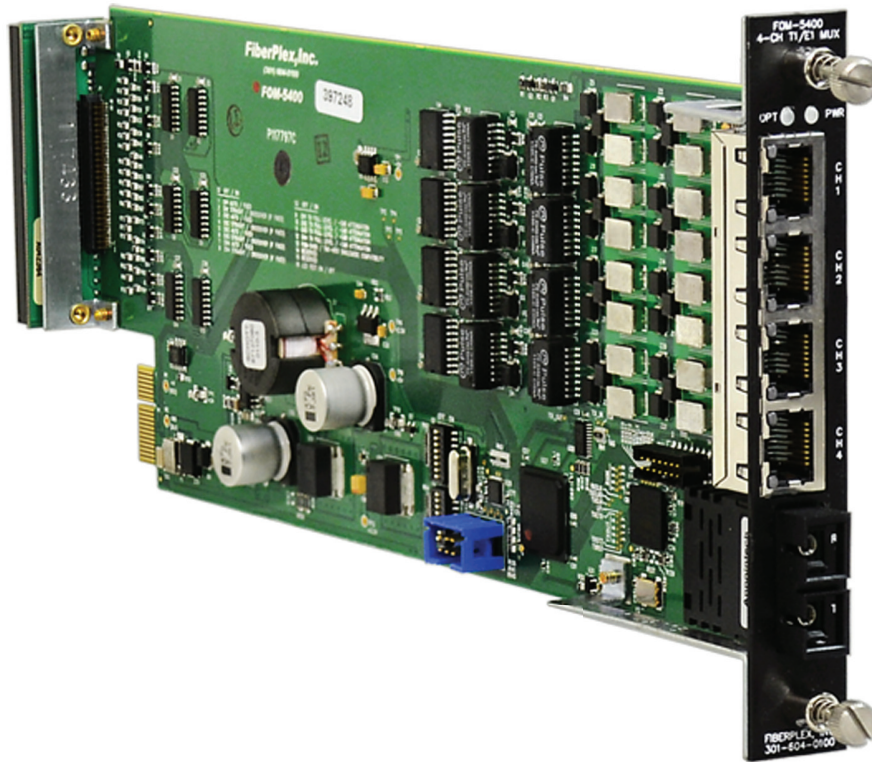


# FOM-5400

## FIBER OPTIC MODULE



### T/E Carrier

### 4-Channel Multiplexer for DS0, DS1 (T1), E1, DS1C (T1C), DS2, T2, E2

#### Features

- Supported Standards:
  - DS0 64 kbps
  - DS1, T1 1.544 Mbps
  - E1 2.048 Mbps
  - DS1C, T1C 3.152 Mbps
  - DS2, T2 6.312 Mbps
  - E2 8.448 Mbps
- Backwards compatible with TMX-4815 singlemode units.
- All 4 channels are independent and may be operated at different data rates.
- Auto-detect function. The card will automatically determine the correct pinouts for the transmit and receive pairs on the RJ-48C. Therefore, users can use either a straight or crossover cable.

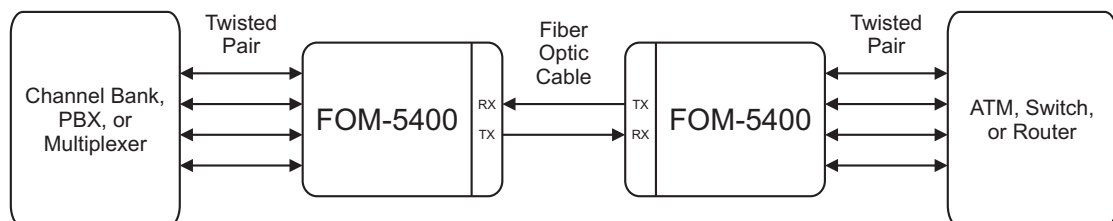
### Description

The FOM-5400 is a 4 channel multiplexer that provides electrical-to-optical conversions for T/E carrier communications. It has four RJ-48C and one fiber optic transceiver. The card is designed to pass all Alternate Mark Inversion (AMI) signaling regardless of the specific line encoding, making it transparent to any handshaking protocol or standards. Each channel is independent of one another and may also be operated at different data rates.

The card incorporates an auto-detect function on the RJ-48C, which determines the correct pinouts for the transmit and receive pairs when a Cat5 cable is plugged in. This allows users to use either a straight or crossover cable, which can be extremely useful to users who are unaware of cable types and can also save time on network configurations.

In addition, the FOM-5400 offers much longer transmission distances than traditional Cat5 cabling. The distance limitations for both T1 and E1 as specified in ANSI T1.403 is 6200ft (1890m) for T1 and 4800ft (1460m) for E1. However, singlemode optics on the card can extend the distances up to 80km. A typical link consists of two FOM-5400, one at each end of the network with a fiber optic cable between them as shown under "TYPICAL APPLICATION".

### Typical Application

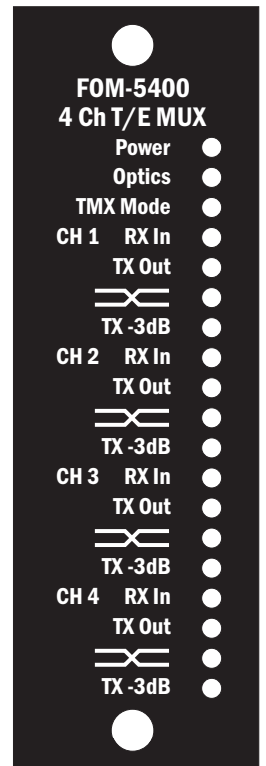


# FOM-5400

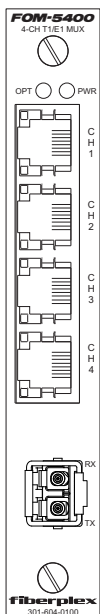
## FIBER OPTIC MODULE

### LED Indicators

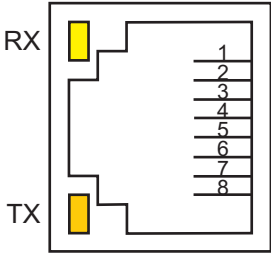
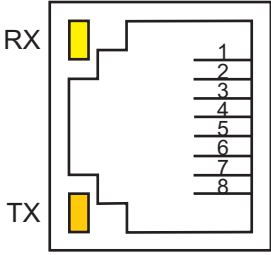
Label	Color	Description
Power	Green	The power supplies on the card are operating properly.
	Red	The power supplies on the card are not regulating the correct voltages or there is an open fuse on the card. Unplug the power from the card for 30 seconds and then plug it in again so that the fuse on the card has time to reset. If the Power led is still red or not a constant green, replace the card.
Optics	Green	An optical link has been established between the local and remote card.
	Orange	An optical signal has been detected on the RX optic, but an optical link has not been established between the local and remote card.
	Red	No optical signal detected on the RX optic or the optical level is too low to be detected. Check that the opposite card has power and that the fiber optic cables are properly connected. The TX optic from one end of the network connects to the RX optic at the opposite end as shown under "TYPICAL APPLICATION".
	Flashing Red	No SFP module detected inside the cage. Check if the SFP module has been fully inserted into the cage.
TMX Mode	Green	TMX-4815 backwards compatibility is on. This function can only operate with TMX-4815 singlemode units and FOM-5400 singlemode units that have 1310nm optics.
RX In	Yellow	Receive data has been detected on the RJ-48C.
	Red	No receive data detected on the RJ-48C. Check if the switch settings are in the correct position. If the switch is set to "Auto", the card will attempt to automatically determine the correct pinouts for the transmit and receive pairs on the RJ-48C. If the transmit and receive pairs are reversed, the card will internally swap both pairs to establish a link. Therefore, either a straight or crossover cable can be used.  If the switch is set to "Fixed" and data can not be detected, then flip the "Straight/Crossover" switch to the opposite setting to reverse the pinouts. For more information see the RJ-48C pinout tables.
TX Out	Orange	Transmit data is being sent out on the RJ-48C.
	Off	No transmit data is being sent out on the RJ-48C.
	Orange	Crossover pinout has been detected on the RJ-48C.
	Off	Straight pinout has been detected on the RJ-48C.
TX -3dB	Orange	-3dB attenuation is added to the transmit data being sent out on the RJ-48C. If the signal received by the far-end equipment is too strong, you can reduce the signal level by entering this attenuation. This might be useful shorter cable length.
	Off	No attenuation is added to the transmit data being sent out on the RJ-48C.



### Back Panel Line Drawing



Switch Settings

Switch	Label	Description																											
1 - CH1 3 - CH2 5 - CH3 7 - CH4	Auto   Fixed	The card will automatically determine the correct pinouts for the transmit and receive pairs on the RJ-48C. If the transmit and receive pairs are reversed, the card will internally swap both pairs to establish a link. Therefore, either a straight or crossover cable can be used.  The card manually sets the RJ-48C pinouts to "Straight" or "Crossover".																											
2 - CH1 4 - CH2 6 - CH3 8 - CH4	Straight   Crossover	<p><b>RJ-48C straight pinout</b></p>  <table border="1"> <thead> <tr> <th>Pin</th> <th>Direction</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>In</td> <td>Receive Tip +</td> </tr> <tr> <td>2</td> <td>In</td> <td>Receive Ring -</td> </tr> <tr> <td>3</td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>Out</td> <td>Transmit Tip +</td> </tr> <tr> <td>5</td> <td>Out</td> <td>Transmit Ring -</td> </tr> <tr> <td>6</td> <td></td> <td></td> </tr> <tr> <td>7</td> <td></td> <td></td> </tr> <tr> <td>8</td> <td></td> <td></td> </tr> </tbody> </table> <p>This switch is only applicable when the channel is set to "Fixed". It allows users to manually set the RJ-48C pinout, and is not intended to imply that all straight cables will establish a link in this setting. If a link can not be established with the "Straight" setting, then use the "Crossover" setting to reverse the pinouts.</p>	Pin	Direction	Description	1	In	Receive Tip +	2	In	Receive Ring -	3			4	Out	Transmit Tip +	5	Out	Transmit Ring -	6			7			8		
		Pin	Direction	Description																									
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3																													
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6																													
7																													
8																													
<p><b>RJ-48C crossover pinout</b></p>  <table border="1"> <thead> <tr> <th>Pin</th> <th>Direction</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Out</td> <td>Transmit Tip +</td> </tr> <tr> <td>2</td> <td>Out</td> <td>Transmit Ring -</td> </tr> <tr> <td>3</td> <td></td> <td></td> </tr> <tr> <td>4</td> <td>In</td> <td>Receive Tip +</td> </tr> <tr> <td>5</td> <td>In</td> <td>Receive Ring -</td> </tr> <tr> <td>6</td> <td></td> <td></td> </tr> <tr> <td>7</td> <td></td> <td></td> </tr> <tr> <td>8</td> <td></td> <td></td> </tr> </tbody> </table> <p>This switch is only applicable when the channel is set to "Fixed". It allows users to manually set the RJ-48C pinout, and is not intended to imply that all crossover cables will establish a link in this setting. If a link can not be established with the "Crossover" setting, then use the "Straight" setting to reverse the pinouts.</p>	Pin	Direction	Description	1	Out	Transmit Tip +	2	Out	Transmit Ring -	3			4	In	Receive Tip +	5	In	Receive Ring -	6			7			8				
Pin	Direction	Description																											
1	Out	Transmit Tip +																											
2	Out	Transmit Ring -																											
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4	In	Receive Tip +																											
5	In	Receive Ring -																											
6																													
7																													
8																													
9 - CH1 10 - CH2 11 - CH3 12 - CH4	-3dB Attenuation	-3dB attenuation is added to the transmit data being sent out on the RJ-48C. If the signal received by the far-end equipment is too strong, you can reduce the signal level by entering this attenuation. This might be useful shorter cable length.																											
13	TMX-4815 Compatibility	TMX-4815 backwards compatibility. This function can only operate with TMX-4815 singlemode units and FOM-5400 singlemode units that have 1310nm optics.																											
16	LED Test	Front and rear panel LEDs will flash through a sequence of red, orange, yellow, and green.																											

# FOM-5400

## FIBER OPTIC MODULE

### Electrical Specifications

		Min	Typ	Max
<b>Power Requirement</b>	Voltage Range (V)	20	24	34
	Supply Current (mA)	-	400	600
<b>Standard</b>	<b>Data Rate</b>	<b>Sampling Jitter</b>		
DS0	64 kbps	0.20%		
DS1,T1	1.544 Mbps	4%		
E1	2.048 Mbps	5%		
DS1C,T1C	3.152 Mbps	8%		
DS2,T2	6.312 Mbps	16%		
E2	8.448 Mbps	21%		
<b>Environmental</b>	Storage Temperature (°C)	-40	-	85
	Operating Temperature (°C)	0	-	50
<b>Interface Connector</b>		RJ-48C		

### Physical Specifications

	Length	Width	Height	Weight
<b>Card Dimensions</b>	11.25 in (286 mm)	0.825 in (21 mm)	5.25 in (133 mm)	10 oz (0.3 kg)

### Optical Characteristics - All

Order Suffix	Fiber	Fiber Type *	Max Dist (km)	λ (nm)	Bandwidth Typ (dB)	Loss (dB)	Connector
T12	Multimode	OM2	1.88	850	15.5	10.14	ST
L12	Multimode	OM2	1.88	850	14.5	10.14	LC
T5B	Singlemode	OS1, OS2	20	1310	20	12.5	ST
L5B	Singlemode	OS1, OS2	20	1310	13.5	12.5	LC
C	SFP Cage with no Optical Module Installed						

\* Specs obtained assuming fiber is as described in 'Fiber Type' with a 266MB Data Rate

### Accessories

<b>RMC-5000</b>	16 slot, 7.5" high (5U), 19" wide rack mount chassis Includes one PSM-5000 AC power supply
<b>RMC-5000D</b>	16 slot, 7.5" high (5U), 19" wide rack mount chassis Includes one PSM-5048 DC power supply
<b>PSM-5000</b>	RMC-5000 AC redundant power supply, 90-250 VAC input, 250W
<b>PSM-5048</b>	RMC-5000 DC redundant power supply, 35-56 VDC input, 250W
<b>SAC-1AC</b>	Single slot stand-alone chassis, 90-250 VAC or 120-370 VDC input, 15W
<b>SAC-1DC</b>	Single slot stand-alone chassis, 35-56 VDC input, 15W

### Ordering Information

FOM - 5400 -

#### Optical Interface:

T12 = multimode, 850nm, 2km, ST  
 L12 = multimode, 850nm, 2km, LC  
 T5B = singlemode, 1300nm, 20km, ST  
 L5B = singlemode, 1300nm, 20km, LC  
 C = SFP cage, no optical module

Other Optical interfaces available on our custom Catalog

#### Card Type:

FOM = for use with RMC-5000 or SAC-1

**For special applications that require custom units,  
please call FiberPlex for more information.**