

## SFP/SFP+

Amphenol has developed a fully featured low cost alternative to multi-mode optical SFP+ assemblies. Our optical alternative uses copper assemblies with incorporated features such as TX disable and loss of signal. Utilizing this cable solution will be transparent to the system as it behaves as though it is optical. Another benefit in addition to the price point is the significant reduction in power consumption as our units use 250 mW vs. 500 mW seen on most optical modules. Amphenol High Speed Assemblies are ultra-high performance, cost effective solutions for gigabit speed applications in data and switched fabric I/O, switches, routers, data storage arrays, and computer clusters. Amphenol's High Speed Assemblies meet and exceed industry standards and have been tested to work at double the specified rates. The Small Form Factor Pluggable (SFP) standard offers a solution to Fiber Channel, Gigabit Ethernet (GbE) and SONET/SDH high speed links as well as other proprietary applications.

### Interface

- › Small Form Factor Pluggable

### Cable Options

- › Twin Axial SkewClear™ 2 Pair

### Key Features

- › Compliant with Optical Ports
- › I/O Connector designed for high speed differential signal applications
- › Low crosstalk
- › Low power consumption
- › EMI shield spring for reduced EMI
- › Wide temperature range
- › Data rates of up to 4.25Gbps for SFP and 11.3Gbps for SFP+ guaranteed
- › Push to release latch
- › Compliant to SFP & SFP+ MSA

## Optical Alternative

### Active Copper Assembly



### Applications

- › Storage Area Networks, Network Attached Storage, and Storage Servers
- › Switched fabric I/O such as ultra high bandwidth switches and routers
- › Telecomm transport to metro or enterprise hand-off and transport to switching i/f
- › Data center cabling infrastructure
- › High density connections between networking equipment

# SFP Active Copper Modules

## Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit
Operating Temperature Range	TA	-20	--	85	C
Supply Voltage	VccR, VccT	--	3.3	4.0	V
Supply Current (per cable end)	Icc	--	70	80	mA
Data Rate	DR	--	--	4.25	Gbps
Transmitter					
Differential Input Voltage Swing	V <sub>DIFF</sub>	100	--	1800	mV <sub>p-p</sub>
Receiver					
Differential Output Voltage Swing	V <sub>DIFF</sub>	--	600	--	mV <sub>p-p</sub>
Data Output Rise Time / Fall Time	t <sub>R</sub> , t <sub>F</sub>	--	--	120	ps

## Supported Length

0.5 meters to 5 meters typical & customer specific requirements



Pin	Logic	Symbol	Name/Description	Note
1		VeeT	Transmitter Ground	
2	LV-TTL-O	TX_Fault	Transmitter Fault	1
3	LV-TTL-I	TX_DIS	Transmitter Disable	
4	LV-TTL-I/O	SDA	Two Wire Serial Data	
5	LV-TTL-I	SCL	Two Wire Serial Clock	
6		MOD_DEF0	Module present, connect to VeeT	
7	LV-TTL-I	Rate Select	Rate Select	2
8	LV-TTL-O	LOS	Loss of Signal	
9	LV-TTL-I	VeeR	Receiver Ground	
10		VeeR	Receiver Ground	
11		VeeR	Receiver Ground	
12	CML-O	RD-	Receiver Data Inverted	
13	CML-O	RD+	Receiver Data Non-Inverted	
14		VeeR	Receiver Ground	
15		VccR	Receiver Supply 3.3V	
16		VccT	Transmitter Supply 3.3V	
17		VeeT	Transmitter Ground	
18	CML-I	TD+	Transmitter Data Non-Inverted	
19	CML-I	TD-	Transmitter Data Inverted	
20		VeeT	Transmitter Ground	

1. Connected to VeeT

2. Connected thru 33k resistor to VeeT