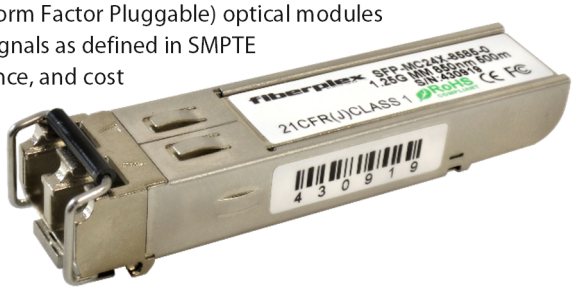
SFP-MHDV / SFP-SHDV

Optical Video SFP Modules

fiberplex TECHNOLOGIES, LLC
SFP Import Series

Overview

The FiberPlex Technologies Video SFP (Small Form Factor Pluggable) optical modules are designed to transmit optical serial digital signals as defined in SMPTE 297-2006. The SFP modules are high performance, and cost effective supporting a host of data rates and distances. They are RoHS compliant and lead-free. These optical modules are designed specifically for error-free performance in the presence of SDI pathological patterns across their entire range of supported data rates. The FiberPlex Video Optimized SFPs have a very high sensitivity and expanded optical power output making them highly reliable in even the most complex of cable plant applications. While they are optimized for maximum video performance, they can also be used for standard data and telecom applications. For data and telecom **only** applications see our line of Data SFP Modules.



Features:

- ST-424/ST-292/ST-259/DVB-ASI/ST-297 compliant
- Supports video pathological patterns at all specified rates
- Hot-pluggable SFP footprint
- RoHS compliant and Lead Free
- Metal enclosure for lower EMI
- Single +3.3V power supply
- Low power dissipation <800mW
- Available in both SFP MSA SFF-8074i Compliant and SMPTE Non-MSA versions

Applications:

- Broadcast
- System Integration
- Security

Why Video Optimization?

The Society of Motion Picture and Television Engineers, or SMPTE, is a leader in the development of standards for film, television, and other video. The Serial Digital Interface or SDI, was standardized by SMPTE for broadcast quality digital video transmission. Other standards evolved from this original standard, defining Enhanced, High-definition (HD), 3G-SDI (1080p) and Ultra High-definition (UHD), or 4K video (2160p).

To help ensure error-free transmission, the standards include a data scrambler / descrambler to create a high density of transitions in the serial data, making it easier for the receiver to maintain timing. As a result, there are certain combinations of scrambler state and the next data bits to be scrambled that result in a sequence of up to twenty consecutive ones or zeros. These sequences are referred to as pathological conditions, and are present in specific shades of pink or grey. These pathological conditions may create errors in transmission through typical AC coupled optics, or any other AC coupled interface. Video Enhanced or SMPTE Compliant optics are designed to accept these pathological conditions, allowing the longer sequences of ones or zeros to pass without error.

A Large Selection of Optics

The FiberPlex Technologies line of Video Optimized SFP Modules support a broad range data rates, wavelengths (λ) and power configurations providing maximum flexibility. The SFPs are available in dual fiber tranceivers (TX and RX) as well as dual transmit and dual receive versions. The table below lists many of the popular options and the corresponding FiberPlex SFP part number. Note that the part numbers in **bold** are standard parts. If you do not see exactly what you are looking for, contact your FiberPlex Technologies representative.

FiberPlex SFP	MSA Compliant?	Reclocker	TX/RX	Data Rate		Fiber Type	λ (nm)	Transmitter Power (dBm)		Receiver Sensitivity (dBm)	TX Jitter @ Max Rate (J_{TXp-p})	Max Distance @ Max Rate
				Min	Max			Min	Max			
Two Fiber Optical Transceiver Modules												
SFP-MHDVXC-8585-0	Yes		VCSEL	50 Mbps	2.97 Gbps	Multimode	850	-8	-3	-13		
SFP-SHDVXC-3131-B	Yes		FP/PIN			Singlemode	1310	-5	0	-22	60 ps	
SFP-SHDVXC-3131-MN	No		FP/PIN				1310	-5	0	-22	60 ps	
Two Fiber Optical Dual Transmit Modules												
SFP-MHDVT2-8585-0N	No		VCSEL	50 Mbps	2.97 Gbps	Multimode	850	-8	-3	-		500 m
SFP-SHDVT2-3133-MN	No		FP			Singlemode	1310	-6	0	-		
SFP-SHDVT2-3131-RN	No	X	FP				1310	-6	0	-		
Two Fiber Optical Dual Receive Modules												
SFP-MHDVR2-8585-0N	No			50 Mbps	2.97 Gbps							
SFP-SHDVR2-3131-MN	No		PIN			Singlemode	1310	-	-	-21		
SFP-SHDVR2-3131-RN	No	X	PIN				1310	-	-	-21		
Two Fiber Optical CWDM Transceiver Modules												
SFP-SHDVCW-XXXX-M*	Yes		FP/PIN	50 Mbps	2.97 Gbps	Singlemode	1270-1610*	-5	0	-22	60 ps	
SFP-SHDVCW-XXXX-MN*	No		FP/PIN					-5	0	-22	60 ps	

*To create a part number for a specific CWDM wavelength, replace the 'XXXX' with a code from the following table. The wavelength designation consists of 4 digits. The first two define the transmit (TX) wavelength and the second two the receive (RX) wavelength. In the case of these CWDM transceivers the TX and RX wavelength will always be the same.

Wavelength (nm)	Code (XXXX)	Wavelength (nm)	Code (XXXX)
1270	**2727**	1450	**4545**
1290	**2929**	1470	**4747**
1310	**3131**	1490	**4949**
1330	**3333**	1510	**5151**
1350	**3535**	1530	**5353**
1370	**3737**	1550	**5555**
1390	**3939**	1570	**5757**
1410	**4141**	1590	**5959**
1430	**4343**	1610	**6161**

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SFP MSA Compliance

The SFP Multi-Source Agreement (MSA) is an agreement that was drafted among competing manufacturers of SFP optical modules. The SFF Committee was formed to oversee the creation and maintenance of these agreements including the SFP MSA designated as INF-8074i. This agreement describes a mutually agreed upon standard for the form and function of SFP modules. However, not all SFPs produced are MSA compliant. The MSA provides for a transceiver (TX/RX) pinout. Other industries such as broadcast had the need for dual TX and dual RX SFP for unidirectional applications such as video. Naturally, a non-MSA standard was introduced allocating pinout assignments for dual output and dual input I/O configurations. In addition, the some of the internal serial communication pins were reassigned.

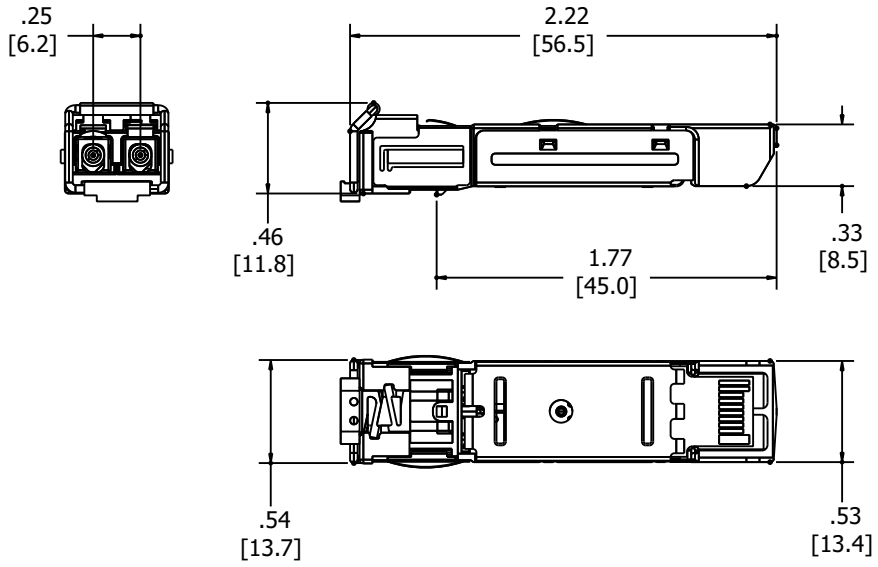
Regulatory Compliance

- ESD to the Electrical PINs: compatible with MIL-STD-883 Method 3015
- ESD to the Duplex LC Receptacle: compatible with IEC 61000-4-2
- Immunity compatible with IEC 61000-4-3
- EMI compatible with FCC Part 15 Class B EN55022 Class B (CISPR 22B) VCCI Class B
- Laser Eye Safety compatible with FDA 21CFR 1040.10 and 1040.11 EN60950, EN (IEC) 60825-1,2
- RoHs compliant with 2002/95/EC 4.1&4.2 2005/747/EC

Pinout Comparison Chart

PIN	Transceiver (MSA)	Transceiver (Non-MSA)	Dual TX (Non-MSA)	Dual RX (Non-MSA)
1	VEE	VEE	VEE	VEE
2	TX_FAULT [VEE]	VEE	NC	Rx2-
3	TX_DIS	NC	NC	Rx2+
4	MOD_DEF(2) - SDA	VEE	VEE	VEE
5	MOD_DEF(1) - SCL	SCL	SCL	SCL
6	MOD_DEF(0) – PRESENCE [VEE]	SDA	SDA	SDA
7	Rate [NC]	VEE	VEE	VEE
8	LOS	RX1_LOS	Tx2+	NC
9	VEE	NC	Tx2-	NC
10	VEE	NC	Tx2_DIS	NC
11	VEE	VEE	VEE	VEE
12	RD-	Rx1-	NC	Rx1-
13	RD+	Rx1+	NC	Rx1+
14	VEE	VEE	VEE	VEE
15	VCC	VCC	VCC	VCC
16	VCC	VCC	VCC	VCC
17	VEE	VEE	VEE	VEE
18	TD+	Tx1+	Tx1+	NC
19	TD-	Tx1-	Tx1-	NC
20	VEE	Tx1_DIS	Tx1_DIS	NC

Physical Specifications



SFP Dimensions (Typical)

ELECTRICAL SPECIFICATIONS					
		Min	Typ	Max	unit
Environmental	Storage Temperature (°C)	-40	-	85	°C
	Operating Temperature (°C)	0	-	70	°C
Power Requirement	Voltage Range	3.13	3.3	3.6	VDC
	Supply Current	-	-	390	mA

PHYSICAL SPECIFICATIONS				
	Length	Width	Height	Weight
SFP-MHDV / SFP-SHDV	2.22 in (56.5 mm)	0.54 in (13.7 mm)	0.47 in (12 mm)	0.8 oz (22.7 g)