



VENTURA

SFP, SFP+ and XFP options

Small form-factor pluggable (SFP) components

OVERVIEW

SFP, SFP+, and XFP components provide flexibility by enabling a Ventura card to support both electrical and optical interfaces, a range of line speeds, or laser wavelengths for different applications, or to change from simplex to duplex communications.

SFP (Small Form Factor Pluggable), SFP+ (Enhanced Small Form Factor Pluggable), and XFP (10 Gigabit Small Form Factor Pluggable) are standards developed through an industry collaboration known as a Multiple Supplier Agreement (MSA). The purpose of the MSA is to establish a standard for the physical footprint, the electrical interfaces and the optical specifications.

This document describes the functions provided by various SFP, SFP+, and XFP components, and the Ventura cards where they can be used.

SFP GUIDE

Nevion SFP part numbers indicate the type of SFP in the second element:

TV SFP, transmitter for 270Mbps and 1.5Gbps video applications
T3 SFP, transmitter for 3Gbps data applications
TV3G SFP, transmitter for 3Gbps video applications

TR SFP, transceiver for 3Gbps data applications
TR1 SFP, transceiver for 1Gbps data applications
TRV SFP, transceiver for 270Mbps, 1.5Gbps video applications
TRV SFP, transceiver for 270Mbps, 1.5Gbps, and 3Gbps video applications

RV SFP, receiver for 270Mbps and 1.5Gbps video applications
R3 SFP, receiver for 3Gbps data applications
RV3G SFP, receiver for 270Mbps, 1.5Gbps, and 3Gbps video applications

Nevion SFP part numbers indicate the wavelength or DWDM channel in the third element in the case of transmitters and transceivers:

850 850nm standard Wavelength Division Multiplexing (WDM)
1310 1310nm standard Wavelength Division Multiplexing (WDM)
1550 1550nm standard Wavelength Division Multiplexing (WDM)
xxxx 1270-1610nm Coarse Wavelength Division Multiplexing (CWDM)
yy Ch 17-59 Dense Wavelength Division Multiplexing (DWDM)

Nevion SFP part numbers indicate the technology in the fourth and fifth elements for transmitters and transceivers and in the third element for case of receivers:

S(F)* 1310 Standard, Fabry-Perot (FP)
S*, SD 1310 or 1550, distributed feed back (DFB)
C Coarse Wavelength Division Multiplexing (CWDM)
D Dense Wavelength Division Multiplexing (DWDM)
DH Dense Wavelength Division Multiplexing (DWDM), High optical power output
PIN P-Intrinsic-N (PIN) receiver, optimized for 270Mbps (SD-SDI)
HPIN HD P-Intrinsic-N (PIN) receiver, optimized for 1485Mbps (HD-SDI)
APD Avalanche Photo Diode (APD), optimized for 1485Mbps (HD-SDI)
HSR HD Short-range (HSR), optimized for short range 1485Mbps (HD-SDI)
M Multimode optics (Generally used in Gigabit Ethernet applications)
LP Low power output

* For SFP-TV-1310-S the "S" should be "SF" as it is an FP laser

In addition to optical components, an electrical Ethernet connector on an SFP, the SFP-1GE-RJ45 is also available.

SFP+ GUIDE

Nevion SFP+ part numbers are indicated in the second element by "TR10", where TR indicates a transceiver while 10 indicates the operational speed of 10Gbps. Note that these SFP+'s are specifically designated for use in 10Gigabit Ethernet.

Nevion SFP+ part numbers indicate the transmitter wavelength in the third element:

1310	1310nm standard Wavelength Division Multiplexing (WDM)
1550	1550nm standard Wavelength Division Multiplexing (WDM)
xxxx	1270-1610nm Coarse Wavelength Division Multiplexing (CWDM)

Nevion SFP+ part numbers indicate the distance in the fourth element and technology in the fourth element:

SR	Short reach for multi-mode applications
LR	Long reach for single-mode applications up to 10km
ER	Extended reach for single-mode applications up to 40km
UER	Ultra extended reach for single-mode applications up to 80km
C	Coarse Wavelength Division Multiplexing (CWDM)
WDM	Built in CWDM filter on the SFP+ to multiplex two wavelength onto a single port

In addition to optical components, an electrical Ethernet connector with two SFP+ on a single twinax cable, SFP-10GE-xx is also available in lengths of (as designated by xx): 1, 3, 5, 7, and 10m.

XFP GUIDE

Nevion XFP part numbers indicate the wavelength or DWDM channel in the second element:

1310	1310nm standard Wavelength Division Multiplexing (WDM)
1550	1550nm standard Wavelength Division Multiplexing (WDM)
xxxx	1470-1610nm Coarse Wavelength Division Multiplexing (CWDM)
yy	Ch 17-59 Dense Wavelength Division Multiplexing (DWDM)

Nevion XFP part numbers indicate the technology in the third and fourth elements:

DP	Distributed feed back (DFB) laser and P-Intrinsic-N (PIN) receiver
EP	Electro-absorption modulated (EML) laser and P-Intrinsic-N (PIN) receiver
EA	Electro-absorption modulated (EML) laser and Avalanche Photo Diode (APD) receiver
C	Coarse Wavelength Division Multiplexing (CWDM)
D	Dense Wavelength Division Multiplexing (DWDM)

Model	Application				Technology Type			Transmitter			Receiver				
	Video/Data	Rate	Type	Mode	Type	WDM Type	Wavelength	Type	Launch Power (dBm)		Type	Sensitivity (dBm)			
									MIN	TYP		MAX	MIN	TYP	Overload
SFP-TV-1310-S	Video/Data	270 Mbps	Transmitter	Singlemode	SFP	Standard	1310nm	FP	-2	0	1				
SFP-TV-1310-SD	Video/Data	1.5 Gbps	Transmitter	Singlemode	SFP	Standard	1310nm	DFB	0	2	4				
SFP-TV-1310-LP	Video/Data	1.5 Gbps	Transmitter	Singlemode	SFP	Standard	1310nm	DFB	-12	-10	-8				
SFP-TV-1550-S	Video/Data	1.5 Gbps	Transmitter	Singlemode	SFP	Standard	1550nm	DFB	0	2	4				
SFP-TV-xxxx-C	Video/Data	1.5 Gbps	Transmitter	Singlemode	SFP	CWDM	1270nm-1370nm 1430nm-1610nm	DFB	0	2	4				
SFP-T3-1310-S	Data	3 Gbps	Transmitter	Singlemode	SFP	standard	1310nm	DFB	0	0	3				
SFP-T3-1550-S	Data	3 Gbps	Transmitter	Singlemode	SFP	standard	1550nm	DFB	0	0	3				
SFP-T3-xxxx-C	Data	3 Gbps	Transmitter	Singlemode	SFP	CWDM	1470nm-1610nm	DFB	0	0	3				
SFP-TV3G-1310-SD	Video/Data	3 Gbps	Transmitter	Singlemode	SFP	standard	1310nm	DFB	0	2	4				
SFP-TV3G-1310-LP	Video/Data	1.5 Gbps	Transmitter	Singlemode	SFP	Standard	1310nm	DFB	-12	-10	-8				
SFP-TV3G-xxxx-C	Video/Data	3 Gbps	Transmitter	Singlemode	SFP	CWDM	1270nm-1610nm	DFB	0	2	4				
SFP-RV-PIN	Video/Data	270 Mbps	Receiver	Singlemode	SFP							PIN	-30	-32	-1
SFP-RV-HPIN	Video/Data	1.5 Gbps	Receiver	Singlemode	SFP							PIN	-20	-24	-1
SFP-RV-APD	Video/Data	1.5 Gbps	Receiver	Singlemode	SFP							APD	-30	-32	-6
SFP-R3-APD	Data	3 Gbps	Receiver	Singlemode	SFP							APD	-30	-30	-6
SFP-RV3G-APD	Video/Data	3 Gbps	Receiver	Singlemode	SFP							APD	-28	-28	-6
SFP-TRV-1310-HSR	Video/Data	270 Mbps	Transceiver	Singlemode	SFP	Standard	1310nm	FP	-9	-7	-3	PIN	-20	-20	-3
SFP-TRV-1550-PIN-SD	Video/Data	270 Mbps	Transceiver	Singlemode	SFP	Standard	1550nm	DFB	-2	0	1	PIN	-30	-32	-1
SFP-TRV-xxxx-PIN-C	Video/Data	270 Mbps	Transceiver	Singlemode	SFP	CWDM	1470nm-1610nm	DFB	0	0	3	PIN	-30	-32	-1
SFP-TRV-1310-PIN-SF	Video/Data	270 Mbps	Transceiver	Singlemode	SFP	Standard	1310nm	FP	-2	0	1	PIN	-30	-32	-1
SFP-TR1-850-SR	Data	1 Gbps	Transceiver	Multimode	SFP	Standard	850nm	VCSEL	-3	-6.5	-9.5	PIN	-17	-21	0
SFP-TR1-1310-APD-SD	Data	1 Gbps	Transceiver	Singlemode	SFP	Standard	1310nm	DFB	-8	0	-3	APD	-30	-30	-9
SFP-TR1-1550-APD-SD	Data	1 Gbps	Transceiver	Singlemode	SFP	Standard	1550nm	DFB	0	0	5	APD	-29	-30	-7
SFP-TR1-xxxx-APD-C	Data	1 Gbps	Transceiver	Singlemode	SFP	CWDM	1470nm-1610nm	DFB	0	0	5	APD	-29	-30	-7
SFP-TRV-1310-APD-SD	Video/Data	1.5 Gbps	Transceiver	Singlemode	SFP	Standard	1310nm	DFB	0	0	3	APD	-30	-32	-9
SFP-TRV-1550-APD-SD	Video/Data	1.5 Gbps	Transceiver	Singlemode	SFP	Standard	1550nm	DFB	0	0	3	APD	-30	-32	-9
SFP-TRV-xxxx-APD-C	Video/Data	1.5 Gbps	Transceiver	Singlemode	SFP	CWDM	1470nm-1610nm	DFB	0	0	3	APD	-30	-32	-9
SFP-TR-yy-D	Data	2.5 Gbps	Transceiver	Singlemode	SFP	DWDM	Channel: 17-59 1563.86nm- 1530.33nm	DFB	0	0	4	APD	-28	-28	-9
SFP-TR-yy-DH	Data	2.5 Gbps	Transceiver	Singlemode	SFP	DWDM	Channel: 17-59 1563.86nm- 1530.33nm	DFB	4	4	7	APD	-28	-28	-7
SFP-TRV3G-1310-APD-SD	Video/Data	3 Gbps	Transceiver	Singlemode	SFP	Standard	1310nm	DFB	0	0	3	APD	-28	-28	-9
SFP-TRV3G-xxxx-APD-C	Video/Data	3 Gbps	Transceiver	Singlemode	SFP	CWDM	1470nm-1610nm	DFB	0	0	3	APD	-28	-28	-9



Model	Application				Technology Type				Transmitter			Receiver		
	Video/Data	Rate	Type	Mode	Type	WDM Type	Wavelength	Type	Launch Power (dBm)		Type	Sensitivity (dBm)		
									MIN	MAX		MIN	Overload	
SFP-TR10-850-SR	Data	10 Gbps	Transceiver	Multimode	SFP+	Standard	850nm	VCSEL	-6	-1	PIN	-11	-11	-1
SFP-TR10-1310-LR	Data	10 Gbps	Transceiver	Singlemode	SFP+	Standard	1310nm	DFB	-6	0	PIN	-14	-14	0.5
SFP-TR10-1310-ER	Data	10 Gbps	Transceiver	Singlemode	SFP+	Standard	1310nm	DFB	-1	-1	PIN	-15	-15	0.5
SFP-TR10-1310-UER	Data	10 Gbps	Transceiver	Singlemode	SFP+	Standard	1550nm	DFB	2	2	APD	-23	-23	-8
SFP-TR10-1550-ER	Data	10 Gbps	Transceiver	Singlemode	SFP+	Standard	1550nm	EML	0	0	PIN	-15	-15	0
SFP-TR10-1550-UER	Data	10 Gbps	Transceiver	Singlemode	SFP+	Standard	1550nm	EML	0	0	APD	-23	-23	-8
SFP-TR10-xxxx-LR-C	Data	10 Gbps	Transceiver	Singlemode	SFP+	CWDM	1270nm-1610nm	DFB	-1	-1	PIN	-15	-14	0.5
SFP-TR10-xxxx-ER-C	Data	10 Gbps	Transceiver	Singlemode	SFP+	CWDM	1270nm-1330nm	DFB	-2	-2	PIN	-16	-16	0.5
SFP-TR10-xxxx-ER-C	Data	10 Gbps	Transceiver	Singlemode	SFP+	CWDM	1470nm-1610nm	EML	-1	-1	PIN	-15	-15	0.5
SFP-TR10-xxxx-ER-C	Data	10 Gbps	Transceiver	Singlemode	SFP+	CWDM	1270nm-1330nm	DFB	0	0	APD	-23	-23	0.5
SFP-TR10-xxxx-ER-C	Data	10 Gbps	Transceiver	Singlemode	SFP+	CWDM	1470nm-1610nm	EML	0	4	APD	-23	-23	-6
SFP-TR10-1270-LR-WDM	Data	10 Gbps	Transceiver	Singlemode	SFP+	CWDM	1270nm/1330nm	DFB	-5	-5	PIN	-14	-14	0.5
SFP-TR10-1330-LR-WDM	Data	10 Gbps	Transceiver	Singlemode	SFP+	CWDM	1330nm/1270nm	DFB	-5	-5	PIN	-14	-14	0.5
SFP-TR10-1270-ER-WDM	Data	10 Gbps	Transceiver	Singlemode	SFP+	CWDM	1270nm/1330nm	DFB	1	1	PIN	-15	-15	0.5
SFP-TR10-1330-ER-WDM	Data	10 Gbps	Transceiver	Singlemode	SFP+	CWDM	1330nm/1270nm	DFB	1	1	PIN	-15	-15	0.5
SFP-TR10-1270-UER-WDM	Data	10 Gbps	Transceiver	Singlemode	SFP+	CWDM	1270nm/1330nm	DFB	1	1	APD	-20	-20	-6
SFP-TR10-1330-UER-WDM	Data	10 Gbps	Transceiver	Singlemode	SFP+	CWDM	1330nm/1270nm	DFB	1	1	APD	-20	-20	-6
XFP-1310-DP	Data	10 Gbps	Transceiver	Singlemode	XFP	Standard	1310nm	DFB	-6	-3	PIN	-14	-14	1
XFP-1550-EA	Data	10 Gbps	Transceiver	Singlemode	XFP	Standard	1550nm	EML	0	0	APD	-24	-24	-7
XFP-xxxx-EP-C	Data	10 Gbps	Transceiver	Singlemode	XFP	CWDM	1470nm-1610nm	EML	0	0	PIN	-16	-16	-2
XFP-xxxx-EA-C	Data	10 Gbps	Transceiver	Singlemode	XFP	CWDM	1470nm-1610nm	EML	0	0	APD	-24	-24	-7
XFP-xx-EP-D	Data	10 Gbps	Transceiver	Singlemode	XFP	DWDM	Channel: 17-59 1563.86nm- 1530.33nm	EML	-1	0	PIN	-16	-16	-16
XFP-xx-EA-D	Data	10 Gbps	Transceiver	Singlemode	XFP	DWDM	Channel: 17-59 1563.86nm- 1530.33nm	EML	-1	0	APD	-24	-24	-7

Model	Application			Technology Type		
	Video/Data	Rate	Type	Type	Connectivity	Distance
SFP-10GE-RJ45	Data	1 Gbps	Transceiver	SFP	RJ45	100m
SFP-10GE-01	Data	10 Gbps	Transceiver	SFP+	Twin-ax	1m
SFP-10GE-03	Data	10 Gbps	Transceiver	SFP+	Twin-ax	3m
SFP-10GE-05	Data	10 Gbps	Transceiver	SFP+	Twin-ax	5m
SFP-10GE-07	Data	10 Gbps	Transceiver	SFP+	Twin-ax	7m
SFP-10GE-10	Data	10 Gbps	Transceiver	SFP+	Twin-ax	10m



SFP OPTIONS		SFP Transmitters													SFP+ Transmitters													XFP Transmitters												
Type	Max. Rate	SFP Transmitters			SFP Receivers			SFP Transmitters			SFP+ Transmitters			SFP+ Transmitters			SFP+ Transmitters			SFP+ Transmitters			XFP Transmitters																	
		W	S	C	D	V	W	D	V	W	D	V	W	D	V	W	D	V	W	D	V	W	D	V	W	D	V	W	D	V	W									
Ventura Sonet 1 SDH VPDH	VS901-SED-03																																							
	VS9155-AM	W																																						
	VS9155-AD						R																																	
	VS901-SED-12																																							
	VS811-SHM-48																																							
	VS811-SHD-48																																							
	VS861-SM-192																																							
	VS861-SD-192																																							
	Ventura IP/Ethernet	VS721-SFP-TRX	W																																					
		VS722-SFP-TRX																																						
VS901-IED-GE-LXP																																								
VS901-ZOIED																																								
VS902-1GE																																								
VS906-AA																																								
VS906-DA																																								
VS906-E1																																								
VS906-T1																																								
VS906-MADI																																								
10Gbps	VS906-AM-GE																																							
	VS906-AD-GE																																							
	VS906-AM-GE-2																																							
	VS906-AM-GE-4																																							
	VS906-AD-GE-2																																							
	VS906-AD-GE-4																																							
	VS954-AID-GE																																							
	VS954-AIE-GE																																							
	VS902-10GE																																							

LEGEND

- W = WDM Standard Wideband 1310nm / 1550nm
- C = CWDM option
- D = DWDM option
- E = Electrical Applications
- R = Receiver
- S = Short range
- M = Built in WDM
- Not supported or recommended



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