

SFP (small form-factor pluggable) optics offer the same options found in traditional fixed optical transceivers. There are multimode optics, singlemode optics, varying data rates, and a range of power budgets (dB ratings for distance support). MSA compliant optics also support digital diagnostics for real time digital measurements of transmitted and received optical power levels and internal temperature. Still others can be used for specific wavelengths as defined by the ITU for coarse wavelength division multiplexing (CWDM), and some are available as single strand optics for bi-directional wavelength division multiplexing (BWDM). This wide range of features enable service providers to meet diverse network needs while keeping the cost of spares inventory down.



- Supported distances up to 120km
- RoHS 5 Compliant
- MSA Compliant
- Multi-rate support
- Singlemode, Multimode, Bi-directional and CWDM

Telco Systems rigorously tests all SFP optics to ensure that they meet performance and reliability requirements based on the supported platforms.

All optics comply with Requirements to Reduce Hazardous Substances (RoHS 5) and are fully warranted for up to 1 year.

MULTIMODE

Part #	Connector	Wavelength	Digital Diagnostics	Temperature	Data Rate	Receive Power Input		Transmit Power Output		Minimum Link Budget	Distance	Fiber Type	Supported Platforms
						MIN	MAX (Saturation)	MIN	MAX				
O280-M2	LC	1310nm	No	70	155 Mbps	-32 dBm	-14 dBm	-19 dBm	-14 dBm	13 dB	2 Km	62.5/125µm or 50/125µm multimode	R821-xx R861-xx R380-xx T5C Series T-Marc 25x T-Marc 280 T-Marc 3x0 T-Metro GW232
O292-M5	LC	1310nm	No	70	50 Mbps to 700 Mbps	-26 dBm	-12 dBm	-20 dBm	-14 dBm	6 dB	500 m @ 622Mbps 2km @ 155Mbps	62.5/125µm or 50/125µm multimode	R821-xx R861-xx R380-xx"
O211-M5	LC	850 nm	No	70	1.06 Gbps to 1.25 Gbps	-17 dBm	-3 dBm	-9.5 dBm	-4 dBm	6 dB	500 m	62.5/125µm or 50/125µm multimode	R851-xx R861-xx R153-xx R752-xx R380-xx
O221-M5	LC	850 nm	Yes	-20 to 85	1.06 Gbps to 2.125 Gbps	-18 dBm	-3 dBm	-9 dBm	-3 dBm	9 dB	500 m	62.5/125µm or 50/125µm multimode	R851-xx R861-xx R153-xx R752-xx R380-xx

MULTI-RATE SINGLEMODE

Part #	Connector	Wavelength	Digital Diagnostics	Temperature	Data Rate	Receive Power Input		Transmit Power Output		Minimum Link Budget	Distance	Fiber Type	Supported Platforms
						MIN	MAX (Saturation)	MIN	MAX				
O2A3-10	LC	1310nm	Yes	-40 to 85	155 Mbps to 2.67 Gbps	-18 dBm	0 dBm	-9.5 dBm	-3 dBm	8.5 dB	10 Km	9/125µm singlemode	R821-xx R851-xx R861-xx R153-xx R752-xx R380-xx
O283-20	LC	1310nm	Yes	70	155 Mbps	-28 dBm	-8 dBm	-15 dBm	-8 dBm	13 dB	20 Km	9/125µm singlemode	R821-xx R861-xx R380-xx
O293-20	LC	1310nm	Yes	-40 to 85	155 Mbps to 622 Mbps	-28 dBm	-8 dBm	-15 dBm	-8 dBm	13 dB	20 Km	9/125µm singlemode	R821-xx R861-xx R380-xx
O281-40	LC	1310nm	Yes	70	155 Mbps	-34 dBm	-10 dBm	-5 dBm	0 dBm	29 dB	40 Km	9/125µm singlemode	R821-xx R861-xx R380-xx
O281-80	LC	1550nm	Yes	70	155 Mbps	-34 dBm	-3 dBm	-5 dBm	0 dBm	29 dB	80 Km	9/125µm singlemode	R821-xx R861-xx R380-xx

MULTI-RATE SINGLEMODE BWDM

Part #	Connector	Wavelength	Digital Diagnostics	Temperature	Data Rate	Receive Power Input		Transmit Power Output		Minimum Link Budget	Distance	Fiber Type	Supported Platforms
						MIN	MAX (Saturation)	MIN	MAX				
O383-20-31	SC	"1310nm TX 1550nm RX"	Yes	70	155 Mbps	-28 dBm	-8 dBm	-14 dBm	-8 dBm	14 dB	20 Km	9/125µm singlemode	R821-xx R861-xx R380-xx T5C Series T-Marc 25x T-Marc 280 T-Marc 3x0 T-Metro GW232
O383-20-55	SC	"1550nm TX 1310nm RX"	Yes	70	155 Mbps	-28 dBm	-8 dBm	-14 dBm	-8 dBm	14 dB	20 Km	9/125µm singlemode	R821-xx R861-xx R380-xx T5C Series T-Marc 25x T-Marc 280 T-Marc 3x0 T-Metro GW232

O383-40-31	SC	"1310nm TX 1550nm RX"	Yes	70	155 Mbps	-33 dBm	-8 dBm	-8 dBm	-3 dBm	25 dB	40 Km	9/125µm singlemode	R821-xx R861-xx R380-xx T5C Series T5C-XG T-Marc 25x T-Marc 280 T-Marc 3x0
O383-40-55	SC	"1550nm TX 1310nm RX"	Yes	70	155 Mbps	-33 dBm	-8 dBm	-8 dBm	-3 dBm	25 dB	40 Km	9/125µm singlemode	R821-xx R861-xx R380-xx T5C Series T5C-XG T-Marc 25x T-Marc 280 T-Marc 3x0
O383-120-51	SC	"1510nm TX 1590nm RX"	Yes	70	155 Mbps	-34 dBm	-8 dBm	-2 dBm	3 dBm	31 dB	120 Km	9/125µm singlemode	R821-xx R861-xx R380-xx
O383-120-59	SC	"1590nm TX 1510nm RX"	Yes	70	155 Mbps	-34 dBm	-8 dBm	-2 dBm	3 dBm	31 dB	120 Km	9/125µm singlemode	R821-xx R861-xx R380-xx

GIGABIT SINGLEMODE

Part #	Connector	Wavelength	Digital Diagnostics	Temperature	Data Rate	Receive Power Input		Transmit Power Output		Minimum Link Budget	Distance	Fiber Type	Supported Platforms
						MIN	MAX (Saturation)	MIN	MAX				
O211-10	LC	1310nm	Yes	70	1.06 Gbps to 1.25 Gbps	-21 dBm	-3 dBm	-9.5 dBm	-3 dBm	11.5 dB	10 Km	9/125µm singlemode	R851-xx R861-xx R153-xx R752-xx R380-xx
O221-10	LC	1310nm	Yes	-40 to 85	1.06 Gbps to 1.25 Gbps	-21 dBm	-3 dBm	-9.5 dBm	-3 dBm	11.5 dB	10 Km	9/125µm singlemode	R851-xx R861-xx R153-xx, R752-xx R380-xx
O211-25	LC	1310nm	Yes	70	1.06 Gbps to 1.25 Gbps	-22 dBm	-3 dBm	-8 dBm	-3 dBm	14 dB	25 Km	9/125µm singlemode	R851-xx R861-xx R153-xx R752-xx R380-xx
O211-40	LC	1550nm	Yes	70	1.06 Gbps to 1.25 Gbps	-24 dBm	-3 dBm	-5 dBm	0 dBm	19 dB	40 Km	9/125µm singlemode	R851-xx R861-xx R153-xx R752-xx R380-xx

O211-70	LC	1550nm	Yes	70	1.06 Gbps to 1.25 Gbps	-24 dBm	-3 dBm	0 dBm	5 dBm	24 dB	70 Km	9/125µm singlemode	R851-xx R861-xx R153-xx R752-xx R380-xx T5C Series T-Marc 25x T-Marc 280 T-Marc 3x0
O211-1A	LC	1550nm	Yes	70	1.06 Gbps to 1.25 Gbps	-32 dBm	-3 dBm	0 dBm	5 dBm	32 dB	100 Km	9/125µm singlemode	R851-xx R861-xx R153-xx R752-xx R380-xx

GIGABIT SINGLEMODE BWDM

Part #	Connector	Wavelength	Digital Diagnostics	Temperature	Data Rate	Receive Power Input		Transmit Power Output		Minimum Link Budget	Distance	Fiber Type	Supported Platforms
						MIN	MAX (Saturation)	MIN	MAX				
O311-10-31	SC	"1310nm TX 1490nm RX"	Yes	70	1.25 Gbps	-22 dBm	-3 dBm	-9 dBm	-3 dBm	13 dB	10 Km	9/125µm singlemode	R851-xx R861-xx R153-xx R752-xx R380-xx
O311-10-49	SC	"1490nm TX 1310nm RX"	Yes	70	1.25 Gbps	-22 dBm	-3 dBm	-9 dBm	-3 dBm	13 dB	10 Km	9/125µm singlemode	R851-xx R861-xx R153-xx R752-xx R380-xx
O311-40-31	SC	"1310nm TX 1490nm RX"	Yes	70	1.25 Gbps	-23 dBm	-3 dBm	-3 dBm	2 dBm	20 dB	40 Km	9/125µm singlemode	R851-xx R861-xx R153-xx R752-xx R380-xx
O311-40-49	SC	"1490nm TX 1310nm RX"	Yes	70	1.25 Gbps	-23 dBm	-3 dBm	-3 dBm	2 dBm	20 dB	40 Km	9/125µm singlemode	R851-xx R861-xx R153-xx R752-xx R380-xx
O311-120-51	SC	"1510nm TX 1590nm RX"	Yes	70	1.25 Gbps	-33 dBm	-9 dBm	-2 dBm	3 dBm	31 dB	120 Km	9/125µm singlemode	R851-xx R861-xx R153-xx R752-xx R380-xx
O311-120-59	SC	"1590nm TX 1510nm RX"	Yes	70	1.25 Gbps	-33 dBm	-9 dBm	-2 dBm	3 dBm	31 dB	120 Km	9/125µm singlemode	R851-xx R861-xx R153-xx R752-xx R380-xx

GIGABIT SINGLEMODE CWDM (80km)

Part #	Connector	Wavelength	Digital Diagnostics	Temperature	Data Rate	Receive Power Input		Transmit Power Output		Minimum Link Budget	Distance	Fiber Type	Supported Platforms
						MIN	MAX (Saturation)	MIN	MAX				
O411-80-31 through O411-80-61	LC	1310nm through 1610nm	Yes	70	1.06 Gbps to 1.25 Gbps	-24 dBm	-3 dBm	0 dBm	5 dBm	24 dB	80 Km	9/125µm singlemode	R851-xx, R861-xx, R153-xx, R752-xx, R380-xx T5C Series T5C-XG T-Marc 25x T-Marc 3x0

GIGABIT SINGLEMODE CWDM (120km)

Part #	Connector	Wavelength	Digital Diagnostics	Temperature	Data Rate	Receive Power Input		Transmit Power Output		Minimum Link Budget	Distance	Fiber Type	Supported Platforms
						MIN	MAX (Saturation)	MIN	MAX				
O411-120-31 through O411-120-61	LC	1310nm through 1610nm	Yes	70	1.25 Gbps	-36 dBm	-10 dBm	3 dBm	6 dBm	39 dB	120 Km	9/125µm singlemode	R851-xx R861-xx R153-xx R752-xx R380-xx

MULTI-RATE (45M to 155M) SINGLEMODE CWDM (80km)

Part #	Connector	Wavelength	Digital Diagnostics	Temperature	Data Rate	Receive Power Input		Transmit Power Output		Minimum Link Budget	Distance	Fiber Type	Supported Platforms
						MIN	MAX (Saturation)	MIN	MAX				
O483-80-47 through O483-80-61	LC	1470nm through 1610nm	Yes	70	45 Mbps to 155 Mbps	-34 dBm	-8 dBm	-5 dBm	0 dBm	29 dB	80 Km	9/125µm singlemode	R821-xx R861-xx R380-xx

MULTI-RATE (100M to 2.G) SINGLEMODE CWDM (40km)

Part #	Connector	Wavelength	Digital Diagnostics	Temperature	Data Rate	Receive Power Input		Transmit Power Output		Minimum Link Budget	Distance	Fiber Type	Supported Platforms
						MIN	MAX (Saturation)	MIN	MAX				
O413-40-31 through O413-40-61	LC	1310nm through 1610nm	Yes	70	100 Mbps to 2.7 Gbps	-20 dBm	0 dBm	0 dBm	5 dBm	20 dB	40 Km	9/125µm singlemode	R821-xx R851-xx R861-xx R153-xx R752-xx R380-xx

MULTIRATE (100M to 2.G) SINGLEMODE CWDM (80km)

Part #	Connector	Wavelength	Digital Diagnostics	Temperature	Data Rate	Receive Power Input		Transmit Power Output		Minimum Link Budget	Distance	Fiber Type	Supported Platforms
						MIN	MAX (Saturation)	MIN	MAX				
O413-80-47 through O413-80-61	LC	1470nm through 1610nm	Yes	70	100 Mbps to 2.7 Gbps	-28 dBm	-6 dBm	-2 dBm	3 dBm	26 dB	80 Km	9/125µm singlemode	R821-xx R851-xx R861-xx R153-xx R752-xx R380-xx

NOTE:

All values and calculations are based on minimum requirements to achieve distance. In most cases higher power budgets and further distances can be achieved with specifically engineered topologies and network applications.

NOTE:

Typical fiber calculations use the following formula for **singlemode** fiber at the 1550nm wavelength:

$[\# \text{ of Km} \times .25 \text{ db}] + [\# \text{ of connectors} \times .75 \text{ db}] + [\# \text{ of splices} \times .1 \text{ db}] = \text{Total power budget}$ (Choose a SFP/XFP that supports at least this total)

How to interpret SFP part numbers:

Function

- 0 -
- 1 - w/Diagnostics
- 2 - Multi-rate
- 3 - Multi-rate w/Diagnostics

Wavelength

- xx - CWDM middle 2#s of wavelength
- xx - DWDM wavelength group #
- 31 - 1310
- 49 - 1490
- 55 - 1550
- 59 - 1590

O X X X - Y Y Y - Z Z

Product Family

- O - Optics

Media Type / Distance

- 00 - Copper 100 meters
- M2 - Multimode 2km
- M5 - Multimode 500m
- 10 - Singlemode 10km
- 25 - Singlemode 25km
- 40 - Singlemode 40km
- 80 - Singlemode 80km
- 1A - Singlemode 100km
- 120 - Singlemode 120km
- xxL - LC connector for BWDM

Form Factor

- 0 -
- 1 - GBIC
- 2 - SFP
- 3 - BWDM - SFP
- 4 - CWDM - SFP
- 5 - DWDM - SFP

Speed

- 0 -
- 1 - 1 Gbps
- 2 - 2 Gbps
- 3 - 10 Gbps
- 4 -
- 5 -
- 6 -
- 7 -
- 8 - OC-3
- 9 - OC-12
- A - OC-48
- B -



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