

Product Overview

If you
connect
people,
you create
the future.



Standard Transceiver Products

ProLabs offers an extensive range of optical and copper transceivers to fit your requirements. All transceivers are standards based and comply with the MSA (Multi-Source Agreement). Transceivers range from 100BASE-FX to 100Gb and cover optical and copper transceivers such as GBIC, SFP, Xena, X2, XFP, SFP+, QSFP+ and CFP.

	Product Type	Form Factor	Data Rate	Media Type (Fiber Type, Copper etc)	Reach
SFP 100M	SFP-FE-T	SFP	125M	Copper	100m
	SFP-GE-100FX	SFP	125M	Multimode	2km
	SFP-FE-100FX	SFP	125M	Multimode	2km
	SFP-FE-100LX	SFP	125M	Singlemode	15km
	SFP-FE-100EX	SFP	125M	Singlemode	40km
	SFP-FE-100ZX	SFP	125M	Singlemode	80km
1G STM/OC	SFP-OC3-MM	SFP	155M	Multimode	2km
	SFP-OC3-SR	SFP	155M	Singlemode	2km
	SFP-OC3-IR1	SFP	155M	Singlemode	15km
	SFP-OC3-LR1	SFP	155M	Singlemode	40km
	SFP-OC3-LR2	SFP	155M	Singlemode	80km
	SFP-OC12-MM	SFP	622M	Multimode	2km
	SFP-OC12-SR	SFP	622M	Singlemode	2km
	SFP-OC12-IR1	SFP	622M	Singlemode	15km
	SFP-OC12-LR1	SFP	622M	Singlemode	40Km
	SFP-OC12-LR2	SFP	622M	Singlemode	80Km
	SFP-OC48-SR	SFP	2.5G	Singlemode	2km
	SFP-OC48-IR1	SFP	2.5G	Singlemode	15km
	SFP-OC48-LR1	SFP	2.5G	Singlemode	40km
	SFP-OC48-LR2	SFP	2.5G	Singlemode	80km
GBIC 1G	GBIC-1G-T	GBIC	1.25G	Copper	100m
	GBIC-1G-SX	GBIC	1.25G	Multimode	550m
	GBIC-1G-LX	GBIC	1.25G	Singlemode	10km
	GBIC-1G-EX	GBIC	1.25G	Singlemode	40km
	GBIC-1G-XD	GBIC	1.25G	Singlemode	50km
	GBIC-1G-ZX	GBIC	1.25G	Singlemode	80km
	GBIC-1G-EZX	GBIC	1.25G	Singlemode	120km
SFP 1G	SFP-1G-T	SFP	1.25G	Copper	100m
	SFP-1G-SX	SFP	1.25G	Multimode	550m
	SFP-1G-SX+	SFP	1.25G	Multimode	2km
	SFP-1G-LX	SFP	1.25G	Singlemode	10km
	SFP-1G-EX	SFP	1.25G	Singlemode	40km
	SFP-1G-XD	SFP	1.25G	Singlemode	50km
	SFP-1G-ZX	SFP	1.25G	Singlemode	80km
	SFP-1G-EZX	SFP	1.25G	Singlemode	120km
	SFP-1G-EZX-160KM	SFP	1.25G	Singlemode	160km
	CBXx-1Gxx40	SFP	1.25G	Singlemode	40km
	CBXx-1Gxx80	SFP	1.25G	Singlemode	80km



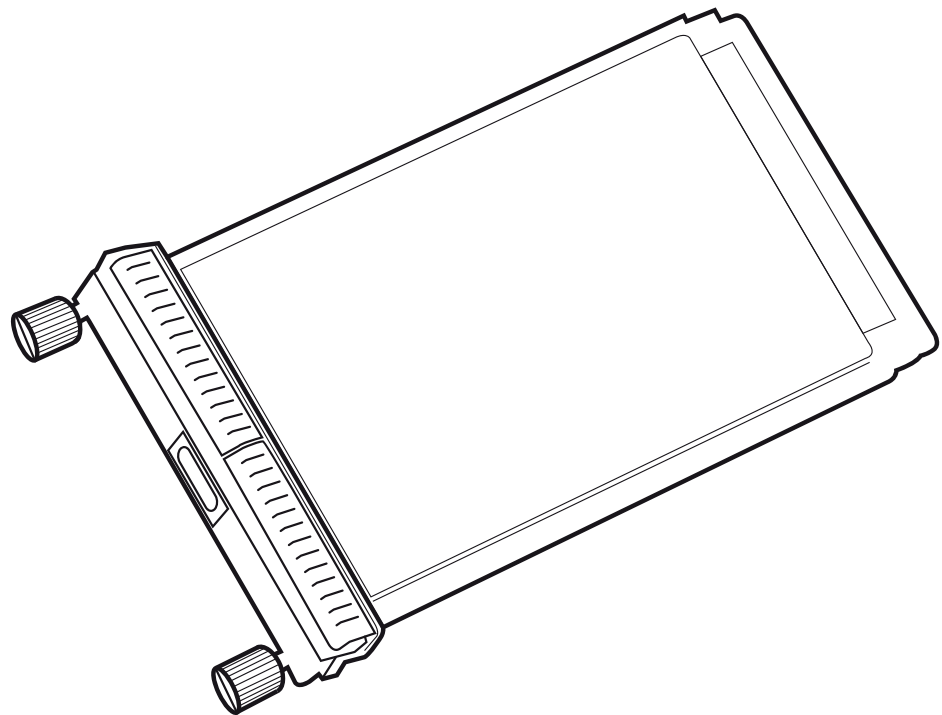
Standard Transceiver Products Continued...

	Product Type	Form Factor	Data Rate	Media Type (Fiber Type, Copper etc)	Reach
SFP + 10G	SFP-10G-T	SFP+	10G	Copper	30m
	SFP-10G-LRM	SFP+	10G	Multimode	220m
	SFP-10G-SR	SFP+	10G	Multimode	300m
	SFP-10G-LR-Lite	SFP+	10G	Multimode	2km
	SFP-10G-LR	SFP+	10G	Singlemode	10km
	SFP-10G-ER	SFP+	10G	Singlemode	40km
	SFP-10G-ZR	SFP+	10G	Singlemode	80km
XFP 10G	XFP-10G-SR	XFP	10G	Multimode	300m
	XFP-10G-LR	XFP	10G	Singlemode	10km
	XFP-10G-ER	XFP	10G	Singlemode	40km
	XFP-10G-ZR	XFP	10G	Singlemode	80km
X2 10G	X2-10G-SR	X2	10G	Multimode	300m
	X2-10G-LRM	X2	10G	Multimode	2km
	X2-10G-LR	X2	10G	Singlemode	10km
	X2-10G-ER	X2	10G	Singlemode	40Km
	X2-10G-ZR	X2	10G	Singlemode	80Km
	X2-10G-CX4	X2	10G	CX4	15m
XENPAK	XENPAK-10G-SR	Xenpak	10G	Multimode	300m
	XENPAK-10G-LR	Xenpak	10G	Singlemode	10km
	XENPAK-10G-ER	Xenpak	10G	Singlemode	40km
	XENPAK-10G-ZR	Xenpak	10G	Singlemode	80km
SFP+ 16G FC	SFP-16GFC-SW	SFP+	16G	Multimode	300m
	SFP-16GFC-LW	SFP+	16G	Singlemode	10km
SFP+ 8G FC	SFP-8G-SR	SFP+	8.5G	Multimode	300m
	SFP-8G-LR	SFP+	8.5G	Singlemode	10km
	SFP-8G-LR30	SFP+	8.5G	Singlemode	25km
	SFP-8G-ER	SFP+	8.5G	Singlemode	40km
	SFP-8G-ZR	SFP+	8.5G	Singlemode	80km
SFP+ 4G FC	SFP-4G-SW	SFP+	4.25G	Multimode	300m
	SFP-4G-LW	SFP+	4.25G	Singlemode	10km
	SFP-4G-ER	SFP+	4.25G	Singlemode	40km
	SFP-4G-ZR	SFP+	4.25G	Singlemode	80km
QSFP+	QSFP-40G-SR4	QSFP+	40G	Multimode	100m
	QSFP-40G-CSR4	QSFP+	40G	Multimode	300m
	QSFP-40G-IR4	QSFP+	40G	Singlemode	2km
	QSFP-40G-LR4	QSFP+	40G	Singlemode	10km
	QSFP-40G-ER4L	QSFP+	40G	Singlemode	30km
	QSFP-40G-PSM-LR4	QSFP+	40G	Singlemode	10km
	QSFP-40G-LX4	QSFP+	40G	MMF/SMF	150m/2km

Standard Transceiver Products Continued...



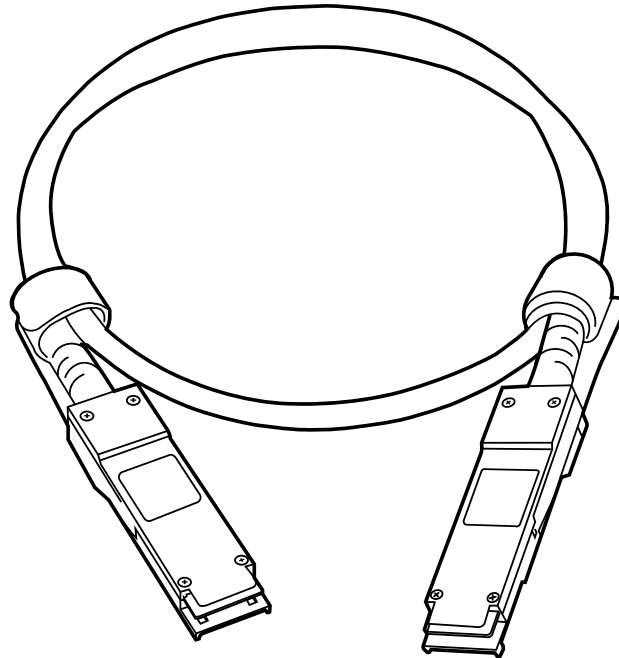
	Product Type	Form Factor	Data Rate	Media Type (Fiber Type, Copper etc)	Reach
QSFP28	QSFP28-100G-SR4	QSFP28	100G	Multimode	100m
	QSFP28-100G-PSM4	QSFP28	100G	Singlemode	2km
	QSFP28-100G-CWDM4	QSFP28	100G	Singlemode	2km
	QSFP28-100G-CWDM4-LITE-C	QSFP28	100G	Singlemode	500m
	QSFP28-100G-LR4	QSFP28	100G	Singlemode	10km
	QSFP28-100G-LR4-DML	QSFP28	100G	Singlemode	10km
	QSFP28-100G-ER4L	QSFP28	100G	Singlemode	30km
CFP	CFP-100G-SR10-C	CFP	100G	Multimode	100m
	CFP-100G-LR4-C	CFP	100G	Singlemode	10km
CFP2	CFP2-100G-LR4-C	CFP2	100G	Singlemode	10km
CFP4	CFP4-100G-LR4-C	CFP4	100G	Singlemode	10km



An introduction and Comparison of Direct Attach Cables, Active Copper Cables and Active Optical Cables



Cables are often used for data centre short reach interconnects. They are terminated with transceiver-style plugs to be used in the same ports where optical transceiver are used. Protocol independent, they can support Ethernet, Infiniband or Fibre channel.



Product Family	Product Type	Form Factor	Data Rate
DAC	SFP-H10GB-CUxM	SFP+	10G
DAC	SFP-H10GB-ACUxM	SFP+	10G
DAC	QSFP-H40G-CUxM	QSFP	40G
DAC	QSFP-H40G-ACUxM	QSFP	40G
DAC	QSFP28-4XSFP28-DAC-xM	QSFP / SFP	40G / 4x10G
DAC	QSFP28-100G-DAC-xM	QSFP28	100G
DAC	QSFP28-4XSFP28-DAC-xM	QSFP28/SFP28	100G / 4x25G
AOC	SFP-10G-AOCxM	SFP+	10G
AOC	QSFP-H40G-AOCxM	QSFP	40G
AOC	QSFP-4SFP10G-AOCxM	QSFP+ / SFP	40G / 4x10G
AOC	QSFP28-100G-AOC-xM	QSFP28	100G
AOC	QSFP28-4XSFP28-AOC-xM	QSFP28/SFP28	100G / 4x25G

Bi-Directional Transceiver Products



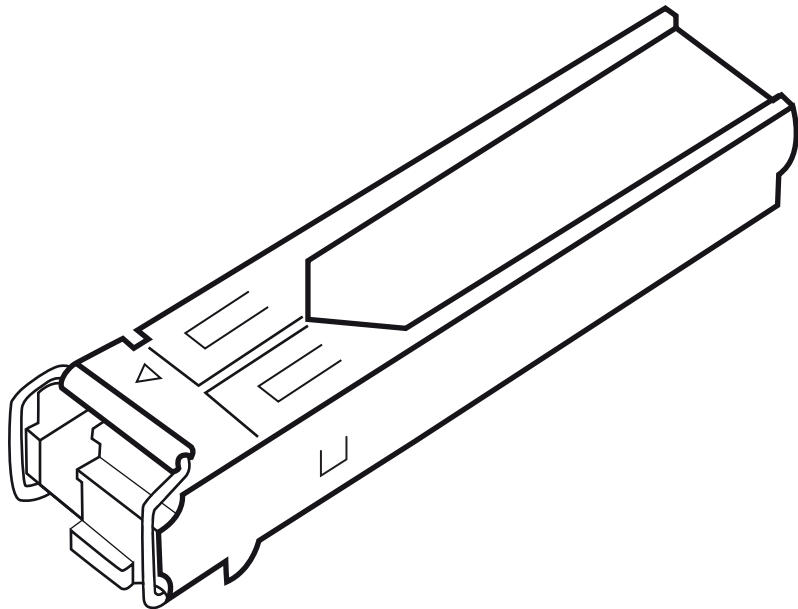
The primary difference between bi-directional transceivers and traditional duplex optic transceivers is that bidirectional use two different wavelengths of light to combine and separate data transmitted over a single fibre. Bi-directional transceivers must be deployed in matched pairs, tuned to match the expected wavelength of the transmitter and receiver that they will be transmitting data from or to.

	Product Type	Form Factor	Data Rate	Wavelength	Reach
CSFP	CSFP-20KM-OPT1	SFP	1.25G	Singlemode	20km
	CSFP-20KM-OPT2	SFP	1.25G	Singlemode	20km
FTTH/PON	GPON-OLT-B+	SFP	2.5G/1.25G	Singlemode	40km
	GPON-OLT-C+	SFP	2.5G/1.25G	Singlemode	40km
	XGPON-SFP/XLT-OLT	SFP+/XFP	10G/2.5G	Singlemode	20km
	XGSPON-XFP-OLT	XFP	10G	Singlemode	20km
	10GEPON-OLT-DR-PR30	XFP	10G/10G/1.25G	Singlemode	20km
	10GEPON-SFP/XFP-PR40	SFP+/XFP	10G/10G/1.25G	Singlemode	20km
	GPON-ONUS	SFP	1.25G/2.5G	Singlemode	20km
	EPON-ONUS	SFP	1.25G	Singlemode	20km
	EPON-ONU	SFP	1.25G	Singlemode	20m
	10GEPON-SFP-ONU-PR30	SFP+	1.25G/10G/10G	Singlemode	20km
SFP+10G	SFP-10G-BX-U-20KM	SFP+	10G	Singlemode	20km
	SFP-10G-BX-D-20KM	SFP+	10G	Singlemode	20km
	SFP-10G-BX-U-40KM	SFP+	10G	Singlemode	40km
	SFP-10G-BX-D-40KM	SFP+	10G	Singlemode	40km
	SFP-10G-BX-U-60KM	SFP+	10G	Singlemode	60km
	SFP-10G-BX-D-60KM	SFP+	10G	Singlemode	60km
	SFP-10G-BX-U-80KM	SFP+	10G	Singlemode	80km
	SFP-10G-BX-D-80KM	SFP+	10G	Singlemode	80km
XFP	XFP-10G-BX-U-20KM	XFP	10G	Singlemode	20km
	XFP-10G-BX-D-20KM	XFP	10G	Singlemode	20km
	XFP-10G-BX-D-40KM	XFP	10G	Singlemode	40km
	XFP-10G-BX-U-40KM	XFP	10G	Singlemode	40km
	XFP-10G-BX-U-60KM	XFP	10G	Singlemode	60km
	XFP-10G-BX-D-60KM	XFP	10G	Singlemode	60km
	XFP-10G-BX-U-80KM	XFP	10G	Singlemode	80km
	XFP-10G-BX-D-80KM	XFP	10G	Singlemode	80km
SFP 1G	SFP-1G-BX-U-20KM	SFP	1.25G	Singlemode	20km
	SFP-1G-BX-D-20KM	SFP	1.25G	Singlemode	20km
	SFP-1G-BX-U-40KM	SFP	1.25G	Singlemode	40km
	SFP-1G-BX-D-40KM	SFP	1.25G	Singlemode	40km
	SFP-1G-BX-U-60KM	SFP	1.25G	Singlemode	60km
	SFP-1G-BX-D-60KM	SFP	1.25G	Singlemode	60km
	SFP-1G-BX-U-80KM	SFP	1.25G	Singlemode	80km
	SFP-1G-BX-D-80KM	SFP	1.25G	Singlemode	80km
	SFP-1G-BX-U-110KM	SFP	1.25G	Singlemode	110km
SFP-1G-BX-D-110KM	SFP	1.25G	Singlemode	110km	

Bi-Directional Transceiver Products continued...



	Product Type	Form Factor	Data Rate	Wavelength	Reach
SFP 1G	SFP-1G-BX-U35-20KM	SFP	1.25G	Singlemode	20km
	SFP-1G-BX-D53-20KM	SFP	1.25G	Singlemode	20km
	SFP-1G-BX-U35-40KM	SFP	1.25G	Singlemode	40km
	SFP-1G-BX-D53-40KM	SFP	1.25G	Singlemode	40km
	SFP-1G-BX-U35-60KM	SFP	1.25G	Singlemode	60km
	SFP-1G-BX-D53-60KM	SFP	1.25G	Singlemode	60km
	SFP-1G-BX-D-20KM-I-SC	SFP	1.25G	Singlemode	20km
SFP STM/OC	SFP-OC3-BXU-20KM	SFP	155m	Singlemode	20km
	SFP-OC3-BXD-20KM	SFP	155m	Singlemode	20km
	SFP-OC3-BXU-40KM	SFP	155m	Singlemode	40km
	SFP-OC3-BXD-40KM	SFP	155m	Singlemode	40km
SFP 100M	SFP-FE-100BX-U	SFP	125m	Singlemode	20km
	SFP-FE-100BX-D	SFP	125m	Singlemode	20km
	SFP-FE-100BX40-U	SFP	125m	Singlemode	40km
	SFP-FE-100BX40-D	SFP	125m	Singlemode	40km



WDM Transceiver Products



Multiplexing offers the customer a high density, scalable fibre solution. Rather than investing in more fibre, it allows an increase in the fibre bandwidth by carrying multiple signals down an individual fibre connection.

	Product Type	Form Factor	Media Type	Reach
GBIC 1G	GBIC-1G-ZX-CWDM-XXXX	GBIC	Singlemode	80km
	GBIC-1G-EZX-CWDM-XXXX	GBIC	Singlemode	120km
SFP 1G	SFP-1G-ZX-CWDM-XXXX	SFP	Singlemode	80km
	SFP-1G-EZX-CWDM-XXXX	SFP	Singlemode	120km
	SFP-1G-EZX-CWDM-160KM-XXXX	SFP	Singlemode	160km
	CBXx-1Gxx40	SFP	Singlemode	40km
	CBXx-1Gxx80	SFP	Singlemode	80km
SFP STM/ OC	SFP-OC3-LR2-CWDM-XXXX	SFP	Singlemode	80km
	SFP-OC12-LR2-CWDM-XXXX	SFP	Singlemode	80km
	SFP-OC48-LR1-CWDM-XXXX	SFP	Singlemode	40km
	SFP-OC48-LR2-CWDM-XXXX	SFP	Singlemode	80km
	SFP-OC48-LR2-DWDM.XX.XX	SFP	Singlemode	80km
SFP Fibre Channel	CWDM-4GFC-ER-XXXX	SFP	Singlemode	40km
	DWDM-4GFC-ER-XX.XX	SFP	Singlemode	40km
	CWDM-4GFC-ZR-XXXX	SFP	Singlemode	80km
	DWDM-4GFC-ZR-XX.XX	SFP	Singlemode	80km
	CWDM-SFP8G-LR-XXXX	SFP+	Singlemode	10km
	CWDM-SFP8G-ER-XXXX	SFP+	Singlemode	40km
	DWDM-SFP8G-ER-XX.XX	SFP+	Singlemode	40km
	CWDM-SFP8G-ZR-XXXX	SFP+	Singlemode	80km
	DWDM-SFP8G-ZR-XXXX	SFP+	Singlemode	80km
SFP+ 10G	CWDM-SFP10G-LR-XXXX	SFP+	Singlemode	10km
	CWDM-SFP10G-ER-XXXX	SFP+	Singlemode	40km
	DWDM-SFP10G-ER-XX.XX	SFP+	Singlemode	40km
	CWDM-SFP10G-ZR-XXXX	SFP+	Singlemode	80km
	CBXx-10Gxx40 40KM	SFP+	Singlemode	40km
X2	CWDM-X2-ER-XXXX	X2	Singlemode	40km
	DWDM-X2-ER-XX.XX	X2	Singlemode	40km
	CWDM-X2-ZR-XXXX	X2	Singlemode	80km
	DWDM-X2-ZR-XX.XX	X2	Singlemode	80km
Xenpak	CWDM-XENPAK-ER-XXXX	XENPAK	Singlemode	40km
	DWDM-XENPAK-ER-XX.XX	XENPAK	Singlemode	40km
	CWDM-XENPAK-ZR-XXXX	XENPAK	Singlemode	80km
	DWDM-XENPAK-ZR-XX.XX	XENPAK	Singlemode	80km
XFP	CWDM-XFP-ER-XXXX	XFP	Singlemode	40km
	DWDM-XFP-ER-XX.XX	XFP	Singlemode	40km
	CWDM-XFP-ZR-XXXX	XFP	Singlemode	80km
	DWDM-XFP-ZR-XX.XX	XFP	Singlemode	80km



WDM Part Number Nomenclature

Wavelength division multiplexers (WDM) are electronic devices that combine light signals with different wavelengths, coming from different fibres, onto a single fibre. They are a cost-effective method to expand the capacity of existing fibre optic cables. WDMs use current electronics and fibres, sharing fibres by transmitting different channels at different wavelengths (colours) of light.

CWDM: Coarse Wavelength Division Multiplexing, the channels are spaced by 20nm (2500GHz), uses wavelengths from 1270nm to 1610nm, maximum 18 channels.

DWDM: Dense Wavelength Division Multiplexing, the channels are separated by 0.8nm (100GHz grid) or 0.4nm (50GHz grid), more than 100 channels can be allocated in the "C-band" (1530nm-1565nm) and "L-band".

CWDM Products

Example part code: ONS-SE-GE-XXXX-C, 1000BASE-CWDM SFP, 1470-1610nm, 80km.

The XXXX represents the CWDM wavelength from the table below:
(As defined by ITU G.694.2).

Channel	Chosen Wavelength	Part Code Value (XXXX)				HD CWDM		10G
			10K Reach	40K Reach	80K Reach	10K Reach	10K Reach	10K Reach
27	1271	1270	X	X		X		X
29	1291	1290	X	X		X		X
31	1311	1310	X	X		X		X
33	1331	1330	X	X		X		X
35	1351	1350	X			X		X
37	1371	1370	X			X		
39	1391	1390	X			X		
41	1411	1410	X			X		X
43	1431	1430	X			X		
45	1451	1450	X			X		
47	1471	1470	X	X	X		X	
49	1491	1490	X	X	X		X	
51	1511	1510	X	X	X		X	
53	1531	1530	X	X	X		X	
55	1551	1550	X	X	X		X	
57	1571	1570	X	X	X		X	
59	1591	1590	X	X	X		X	
61	1611	1610	X	X	X		X	



DWDM Products



DWDM 100GHZ DWDM Channels.

Channel No.	Frequency (GHz)	Wavelength (nm)	ProLabs 'ref number'	Band name	Wavelength	Descriptions
1	190,100	1577.03	77.03	O-band	1260-1360nm	Original band, PON upstream
2	190,200	1576.2	76.2	E-band	1360-1460nm	water peak band
3	190,300	1575.37	75.37	S-band	1460-1530nm	PON downstream
4	190,400	1574.54	74.54	C-band	1530-1565nm	lowest attenuation, original DWDM band, compatible with fibre amplifiers, CATV
5	190,500	1573.71	73.71	L-band	1565-1625nm	low attenuation, expanded DWDM band
6	190,600	1572.89	72.89	U-band	1625-1675nm	Ultra-long wavelength
7	190,700	1572.06	72.06			
8	190,800	1571.24	71.24			
9	190,900	1570.42	70.42			
10	191,000	1569.59	69.59			
11	191,100	1568.11	68.11			
12	191,200	1567.95	67.95			
13	191,300	1567.13	67.13			
14	191,400	1566.31	66.31			
15	191,500	1565.5	65.5			
16	191,600	1564.68	64.68			
17	191,700	1563.86	63.86			
18	191,800	1563.05	63.05			
19	191,900	1562.23	62.23			
20	192,000	1561.42	61.42			
21	192,100	1560.61	60.61			
22	192,200	1559.79	59.79			
23	192,300	1558.98	58.98			
24	192,400	1558.17	58.17			
25	192,500	1557.36	57.36			
26	192,600	1556.56	56.56			
27	192,700	1555.75	55.75			
28	192,800	1554.94	54.94			
29	192,900	1554.13	54.13			
30	193,000	1553.33	53.33			
31	193,100	1552.52	52.52			
32	193,200	1551.72	51.72			
33	193,300	1550.92	50.92			
34	193,400	1550.12	50.12			
35	193,500	1549.32	49.32			
36	193,600	1548.52	48.52			
37	193,700	1547.72	47.72			

DWDM Products continued...



Channel No.	Frequency (GHz)	Wavelength (nm)	ProLabs 'ref number'	Band name	Wavelength	Descriptions
39	193,900	1546.12	46.12			
40	194,000	1545.32	45.32			
41	194,100	1544.53	44.53			
42	194,200	1543.73	43.73			
43	194,300	1542.94	42.94			
44	194,400	1542.14	42.14			
45	194,500	1541.35	41.35			
46	194,600	1540.56	40.56			
47	194,700	1539.77	39.77			
48	194,800	1538.98	38.98			
49	194,900	1538.19	38.19			
50	195,000	1537.4	37.4			
51	195,100	1536.61	36.61			
52	195,200	1535.82	35.82			
53	195,300	1535.04	35.04			
54	195,400	1534.25	34.25			
55	195,500	1533.47	33.47			
56	195,600	1532.68	32.68			
57	195,700	1531.9	31.9			
58	195,800	1531.12	31.12			
59	195,900	1530.33	30.33			
60	196,000	1529.55	29.55			
61	196,100	1528.77	28.77			
62	196,200	1527.99	27.99			
63	196,300	1527.22	27.22			
64	196,400	1526.44	26.44			
65	196,500	1525.66	26.44			
66	196,600	1524.89	24.89			
67	196,700	1524.11	24.11			
68	196,800	1523.34	23.34			
69	196,900	1522.56	22.56			
70	197,000	1521.79	21.79			
71	197,100	1521.02	21.02			
72	197,200	1520.25	20.25			





Vendor Coding Options

We compatibility test our transceivers with all switches and carry out regular testing according to the latest IOS/software releases. Our product is designed and tested to conform to the MSA standard (Multi-Source Agreement) in accordance with physical dimensions, voltages, and lasers power (db budget). It is backed with a limited lifetime warranty offering reassurance to anyone that uses these products.

- ADTRAN
- ADVA
- ALCATEL LUCENT
- ALLIED TELESIS
- ARISTA NETWORKS
- ARUBA
- ASANTE
- AVAYA/NORTEL
- BLACKBOX
- BROCADE_FOUNDRY
- BTI
- CALIX
- CHECKPOINT
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