

Optical Modules for the PRO Series

► WDM B Series • LS DFB Series • CWDM Series • OSW Series



Laser Source for Telecom Applications

Modules are interchangeable between all PRO Series chassis for flexible test setups. Each module will be automatically identified by the chassis.

Laser Series for Telecom Applications

WDM B Series Laser Source Modules consist of a DFB laser diode with an isolator and sophisticated drive electronics for power/wavelength stabilization and tuning.

The WDM B Series modules are available for CW operation at all wavelengths on the ITU-grid from 1454 nm to 1625 nm at various output powers up to 50 mW. The 10 mW C- and L-Band can be optionally directly modulated at 2.5 Gb/s.

The careful circuit design assures unbeatable stability in wavelength and power. The wavelength of each laser source module can be tuned over ± 0.85 nm (± 1.25 nm optionally) with a resolution of 1 pm. All DWDM modules are equipped with an adjustable coherence

control function featuring sinusoidal, square wave, noise or triangular FM modulation. The laser power can be modulated between 0.02 and 50 kHz with the internal, freely adjustable sine/square/triangular oscillator. All laser modules can be modulated synchronously by an external TTL signal with up to 10 kHz.

The WDM B Series modules can be supplied with polarization maintaining panda fibers and oriented connectors. Manufacturers of telecom laser diodes in 14-Pin BFY package may provide their own laser diodes for integration. Please contact Tektronix for ordering information.

For applications where a defined input polarization is required the PRO 8000 chassis equipped with WDM B Series laser source modules is ideally complemented by the 19 in. rack mountable 8-Channel manual polarization controller POL 8000-8.

► Features & Benefits

WDM B 8000 Series Laser Sources For WDM Applications

Great Wavelength and Power Stability for Good Tests

Versatile Coherence Control to Control the Laser Line Width

CW DFB Laser Modules on the 50 GHz ITU-T Grid Across S-, C- and L-Bands

CW Operation with 10 or 20 mW in S-, C- and L-Bands and 40 or 50 mW in the C-Band

Direct Modulation up to 2.5 Gb/s for 10 mW C- and L-Band Modules

Wide Power Range up to 10 dB

Precise Wavelength Tuning up to ± 1.25 nm

Equipped With Aligned Polarization Maintaining Optical Fiber

LS DFB Series Laser Sources For Telecom Applications

1310 nm, 1475 nm, 1550 nm and 1600 nm with ± 20 nm Wavelength Tolerance

Outstanding Wavelength and Power Stability

A Variety of Modulation Options

CWDM Modules For Coarse WDM Applications

DFB Lasers at the CWDM Grid with 10 or 20 mW

Direct Modulation up to 2.5 Gb/s for 10 mW Modules

Multipoint Optical Switches OSW Series

Extremely Reliable, Low Insertion, Fast MEMS Switches

1x2, 2x2, 1x4 and 1x8 Configuration for a Wide Variety of Test Setups

► Applications

WDM Laser Comb for Optical Network Testing

Optical Sources for WDM Components Testing like EDFA's

Cost-efficient Test Signal Routing in Branching Test Beds

COMPUTING

COMMUNICATIONS

VIDEO

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LS B 80000 Series DFB Series Laser Series

These modules apply to all applications with narrow laser line width, but only moderate center wavelength tolerance requirements, e.g., optical supervisory channels. Users can select from various optical output powers at center wavelengths of 1310 nm, 1475 nm, 1550 nm and 1600 nm.

CWDM Series Laser Sources

CWDM Series DFB Laser Source Modules are designed for test purposes at the CWDM wavelength grid for metro and access networks with wide channel spacings and are available with 10 mW or 20 mW output power. The 10 mW modules can be directly modulated at 2.5 Gb/s.

Multiport Optical Switches OSW Series

With the optical switch modules OSW Series the user can selectively distribute the test signals in complex test setups for cost efficient use of the laser source equipment. The modularity of 1x2, 1x4, 1x8 and 2x2 switches allows flexible routing paths. The bi-directional, ultra-fast and highly reliable switch modules are designed for low insertion loss with excellent repeatability.

POL 8000-8 Manual Polarization Controller

The POL 8000-8 is a 19 in. rack mountable box with 8 polarization controllers for 8 light channels based on coiled, birefringent single mode fiber (Lefevre loops). Due to the three stage design any input polarization state can be transformed to any output polarization state. The control is enabled by three independent turn knobs at the front for each channel.

► Characteristics

Characteristics of the Optical Modules

► WDM B 81475-xx, WDM B 81550-xx, WDM B 81600-xx

All technical data valid for 23 °C ±5 °C and 45% ±15% relative humidity

	Center Wavelength at 50 GHz spacing*1	Output Power	Isolation
S-Band	1454 to 1527 nm	10 and 20 mW	30 dB
C-Band	1527 to 1565 nm	10, 20, 40, 50 mW	40 dB
L-Band	1565 to 1615 nm	10 and 20 mW	30 dB
L+-Band	1615 to 1650 nm	10 and 20 mW	30 dB
Tuning Range of Wavelength		±0.85 nm/±1.25 nm optional	
Wavelength Accuracy		for 10 and 20 mW: typical ±10 pm/<±25 pm for 40 and 50 mW <±50 pm	
Wavelength Stability, typical		<2 pm/24 h	
Wavelength Resolution		1 pm	
Absolute/Relative Output Power Accuracy		0.6 dB/0.4 dB	
Stability of Optical Output Power		<2/5/10 m dB over 15 s/15 min/24 h	
Output Power Attenuation Range*2		10 dB	
Output Power Resolution		0.01 dB	
Side Mode Suppression Ratio (SMSR)*3		>40 dB, >45 dB typical	
Relative Intensity Noise (RIN)		typical -145 dB/√Hz	
Line Width		Coherence control off: <10 MHz; Coherence control on: typical up to 1 GHz adjustable	
Internal Analog Modulation*4 not for WDM 80000-xxD Modules		sine, square, pulse, noise, triangle	
Frequency Range For Internal Analog Modulation		0.02 to 50 kHz; 0.02 to 5 kHz for WDM B 81xxx-10D	
Modulation Depth*5		0.1 to 100%	
Synchronous TTL Modulation*6,*7		DC – 10 kHz	
Direct Modulation		2.5 Gb/s at 10 mW power for WDM B 81xxx-10D	
Modulation Input		SMA	

*1 Selectable according to ITU grid, others on request.

*2 Wider range on request.

*3 At P_{max}.

*4 Triangular modulation optional.

*5 Depending on modulation form and operating conditions.

*6 External input synchronous for all modules at the rear of chassis.

*7 For modules WDM 80000-xxD the frequency is limited to 1 kHz.

► LS B 80000 DFB-xx Series

All technical data valid for 23 °C ±5 °C and 45% ±15% relative humidity

Center Wavelengths	1310 nm	1475 nm	1550 nm	1600 nm
Output Power	10 mW	10/20 mW	10/20/40/50 mW	10/20 mW
Center Wavelength Tolerance	±20 nm			
Wavelength Stability (typical)	<0.01 nm/24 h			
Setting Range of Laser Temperature	~ ±0.5 °C			
Stability of Optical Output Power	<0.01 dB over 24 h			
Spectral Line Width	typical <30 MHz			
TTL Modulation* ⁸	DC – 10 kHz			
Analog Modulation Input* ⁹	DC – 50 kHz			
Analog Input Impedance	10 kΩ			
RF Modulation Frequency Range* ^{9,*10}	0.2 to 500 MHz			
RF Input Impedance	50 Ω			
Modulation Input (Analog/Bias-T)	BNC/SMA			
Ext. TTL Trigger Input/Output* ¹¹	BNC/BNC			
Optical Output* ¹²	FC/APC			

*⁸External input synchronous for all modules at the rear of chassis.

*⁹Either analog or RF modulation only.

*¹⁰Integrated Bias-T only for some laser types possible.

*¹¹At the rear of the chassis.

*¹²Others upon request.

► CWDM 8000 Series

All technical data valid for 23 °C ±5 °C and 45% ±15% relative humidity

Center Wavelengths	1470, 1490, 1510, 1530, 1550, 1570, 1590, 1610 nm
Output Power	10 or 20 mW
Center Wavelength Tolerance	±3 nm/±1 nm Option
Direct Modulation	2.5 Gb/s at 10 mW power for CWDM 8000-10D
Other Specs	(see WDM B 80000-xx)

► General data for WDM B 80000 Series, CWDM 8000 Series, LS B 80000 Series

Operating Temperature	0 to +35 °C, noncondensing
Storage Temperature	-40 to +60 °C
Warm-up Time For Rated Accuracy	15 min
Optical Output	FC/APC
Fiber* ¹³	SMF or PMF (Option)
Width	1-slot
Weight	<0.5 kg
Laser Safety Class	1 M

*¹³PMF Option not for CWDM 8000 Series.

Optical Modules for the PRO Series

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► Multiport Optical Switches OSW 8000 Series

The technical data are valid at 23 ±5 °C and 45 ±15% relative humidity

OSW Module	OSW 8108	OSW 8104	OSW 8102	OSW 8202
Switching Configuration	1x8	1x4	1x2	2x2
Insertion Loss* ¹⁴				
Typical	1.6 dB	1.2 dB	0.7 dB	0.7 dB
Maximum	<2.6 dB	<2.1 dB	<1.5 dB	<1.5 dB
Crosstalk Minimum	-60 dB	-60 dB	-50 dB	-50 dB
PDL* ¹⁵	<0.2 dB	<0.15 dB	<0.1 dB	<0.15 dB
Return Loss	-45 dB	-50 dB	-50 dB	-50 dB
Repeatability	±0.01 dB			
Switching Time	typ. 0.5 ms/<1 ms			
Wavelength Range	1240 to 1610 nm			
Input Power Maximum	+17 dBm			
Lifetime	No wear out measurable (MEMS technology)			
Connectors	FC/APC			
Operating Temperature	0 to +60 °C			
Storage Temperature	-40 °C to +70 °C			
Width	1-slot			
Weight	<0.5 kg			

*¹⁴Including connectors.

*¹⁵Measured at 1550 nm.

► 8-fold Polarization control box POL 8000-8

The technical data are valid at 23 ±5 °C and 45 ±15% humidity)

	POL 8000-8
Wavelength Range	1450 to 1620 nm
Extinction Ratio (typical)* ¹⁶	35 dB
Insertion Loss (typical)* ¹⁷	≤1 dB
Connectors* ¹⁸	FC/APC or E2000/HRL
Dimensions (W x H x D)	445 x 425 x 65 mm ³
Weight	6.5 kg

*¹⁶Measured at 1550 nm.

*¹⁷Including connectors.

*¹⁸Either at front panel or at rear panel.

► Ordering Information

DWDM Laser Source Modules

WDM B 81475-10 – S-Band (1454 to 1527 nm, 50 GHz channel spacing) 10 mW, Isolator, FC/APC Connector.

WDM B 81475-20 – S-Band (1454 to 1527 nm, 50 GHz channel spacing) 20 mW, Isolator, FC/APC Connector.

WDM B 81550-10 – C-Band (1527 to 1565 nm, 50 GHz Channel Spacing) 10 mW, Isolator, FC/APC Connector.

WDM B 81550-10D – C-Band (1527 to 1565 nm, 50 GHz channel spacing) 10 mW, Isolator, FC/APC Connector for 2.5 Gb/s direct modulation.

WDM B 81550-20 – C-Band (1527 to 1565 nm, 50 GHz channel spacing) 20 mW, Isolator, FC/APC Connector.

WDM B 81550-40 – C-Band (1527 to 1565 nm, 50 GHz channel spacing) 40 mW, Isolator, FC/APC Connector.

WDM B 81550-50 – C-Band (1527 to 1565 nm, 50 GHz channel spacing) 50 mW, Isolator, FC/APC Connector.

WDM B 81600-10 – L-Band (1565 to 1625 nm, 50 GHz channel spacing) 10 mW, Isolator, FC/APC Connector.

WDM B 81600-10D – L-Band (1565 to 1625 nm, 50 GHz channel spacing) 10 mW, Isolator, FC/APC Connector For 2.5 Gb/s direct modulation.

WDM B 81600-20 – L-Band (1565 to 1625 nm, 50 GHz channel spacing) 20 mW, Isolator, FC/APC Connector.

WDM B 80000 – Module without Laser Diode (BFY Laser to be supplied by the customer).

WDM Module Options

WDM S-TUNE – Wavelength tuning range 2.5 nm (± 1.25 nm).

WDM PMF – Polarization maintaining fiber output with PM orientation.

WDM TRI – Additional internal triangle modulation.

CWDM Test Source Modules

CWDM 8000-10 – CWDM DFB Source, wavelength tolerance ± 3 nm 10 mW, FC/APC.

CWDM 8000-10D – CWDM DFB Source, wavelength tolerance ± 3 nm 10 mW, FC/APC; for 2.5 Gb/s direct modulation.

CWDM 8000-20 – CWDM DFB Source, wavelength tolerance ± 3 nm 20 mW, FC/APC.

CWDM 8000-20D – CWDM DFB Source, wavelength tolerance ± 3 nm 20 mW, FC/APC; for 2.5 Gb/s direct modulation.

610 – 1470 nm wavelength for CWDM 8000 Module.

630 – 1490 nm wavelength for CWDM 8000 Module.

650 – 1510 nm wavelength for CWDM 8000 Module.

710 – 1530 nm wavelength for CWDM 8000 Module.

730 – 1550 nm wavelength for CWDM 8000 Module.

810 – 1570 nm wavelength for CWDM 8000 Module.

830 – 1590 nm wavelength for CWDM 8000 Module.

850 – 1610 nm wavelength for CWDM 8000 Module.

CWDM Options

Opt. CWDM SEL-1 – Wavelength selection ± 1 nm instead of ± 3 nm.

Opt. CWDM SEL-2 – Wavelength selection ± 2 nm instead of ± 3 nm.

LS DFB Laser Source Modules

LS B 81310 DFB-10 – 1310 nm DFB Module, 10 mW, Isolator, FC/APC Connector.

LS B 81475 DFB-10 – 1475 nm DFB Module, 10 mW, Isolator, FC/APC Connector.

LS B 81475 DFB-20 – 1475 nm DFB Module, 20 mW, Isolator, FC/APC Connector.

LS B 81550 DFB-10 – 1550 nm DFB Module, 10 mW, Isolator, FC/APC Connector.

LS B 81550 DFB-20 – 1550 nm DFB Module, 20 mW, Isolator, FC/APC Connector.

LS B 81550 DFB-40 – 1550 nm DFB Module, 40 mW, Isolator, FC/APC Connector.

LS B 81550 DFB-50 – 1550 nm DFB Module, 50 mW, Isolator, FC/APC Connector.

LS B 81600 DFB-10 – 1600 nm DFB Module, 10 mW, Isolator, FC/APC Connector.

LS B 81600 DFB-20 – 1600 nm DFB Module, 20 mW, Isolator, FC/APC Connector.

LS-BIAS-T-RF – Analog Modulation Input 0.2 to 500 MHz (limited warranty for Laser Diode).

MOD-LF – Analog modulation input 0 to 50 kHz.

LS PMF – Polarization maintaining fiber output with PM orientation.

Connector Options for

WDM B 80000, CWDM 80000-xxx and LS B 80000

FC/PC – FC/PC Connector instead of FC/APC Connector.

SC/APC – SC Connector, angle polished instead of FC/APC Connector.

SC/PC – SC Connector instead of FC/APC Connector.

E2000 – E-2000 Connector instead of FC/APC Connector.

E2000/HRL – E-2000 Connector, angle polished instead of FC/APC Connector.

DIN – DIN Connector instead of FC/APC Connector.

DIN/HRL – DIN Connector, angle polished instead of FC/APC Connector.

FC/APC SHUT – Protection Shutter at the optical output with FC/APC Connector.

FC/PC SHUT – Protection Shutter at the optical output with included FC/PC Connector instead of FC/APC Connector.

PIG 8000 – 1 m, 900 μ m pigtail without connector.

OSW 8000 Optical Switch Modules

OSW 8102 – 1x2 Optical Switch, FC/APC Connector.

OSW 8104 – 1x4 Optical Switch, FC/APC Connector.

OSW 8108 – 1x8 Optical Switch, FC/APC Connector.

OSW 8202 – 2x2 Optical Switch, FC/APC Connector.

POL 8000-8 Polarization Controller

POL 8000-8 – 8-fold Polarization Controller (fiber loops) in 19 in. Housing.

POL-FC/APC-F – FC/APC Connectors at the front of POL 8000-8.

POL-FC/APC-R – FC/APC Connectors at the rear of POL 8000-8.

POL-E-2000/HRL-R – E-2000/HRL Connectors at the rear of POL 8000-8.

Service Options for DWDM Modules

CAL DWDM – Recalibration of a WDM B 80000 module.

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► Table 1xxx: Order Codes for S-Band Frequencies (THz)/Wavelengths (nm)

Code Freq.	Wavelength	Code Freq.	Wavelength	Code Freq.	Wavelength
6000	206.75 / 1450.02	6051	204.20 / 1468.13	6102	201.65 / 1486.70
6001	206.70 / 1450.37	6052	204.15 / 1468.49	6103	201.60 / 1487.07
6002	206.65 / 1450.73	6053	204.10 / 1468.85	6104	201.55 / 1487.43
6003	206.60 / 1451.08	6054	204.05 / 1469.21	6105	201.50 / 1487.80
6004	206.55 / 1451.43	6055	204.00 / 1469.57	6106	201.45 / 1488.17
6005	206.50 / 1451.78	6056	203.95 / 1469.93	6107	201.40 / 1488.54
6006	206.45 / 1452.13	6057	203.90 / 1470.29	6108	201.35 / 1488.91
6007	206.40 / 1452.48	6058	203.85 / 1470.65	6109	201.30 / 1489.28
6008	206.35 / 1452.83	6059	203.80 / 1471.01	6110	201.25 / 1489.65
6009	206.30 / 1453.19	6060	203.75 / 1471.37	6111	201.20 / 1490.02
6010	206.25 / 1453.54	6061	203.70 / 1471.74	6112	201.15 / 1490.39
6011	206.20 / 1453.89	6062	203.65 / 1472.10	6113	201.10 / 1490.76
6012	206.15 / 1454.24	6063	203.60 / 1472.46	6114	201.05 / 1491.13
6013	206.10 / 1454.60	6064	203.55 / 1472.82	6115	201.00 / 1491.50
6014	206.05 / 1454.95	6065	203.50 / 1473.18	6116	200.95 / 1491.88
6015	206.00 / 1455.30	6066	203.45 / 1473.54	6117	200.90 / 1492.25
6016	205.95 / 1455.66	6067	203.40 / 1473.91	6118	200.85 / 1492.62
6017	205.90 / 1456.01	6068	203.35 / 1474.27	6119	200.80 / 1492.99
6018	205.85 / 1456.36	6069	203.30 / 1474.63	6120	200.75 / 1493.36
6019	205.80 / 1456.72	6070	203.25 / 1474.99	6121	200.70 / 1493.73
6020	205.75 / 1457.07	6071	203.20 / 1475.36	6122	200.65 / 1494.11
6021	205.70 / 1457.43	6072	203.15 / 1475.72	6123	200.60 / 1494.48
6022	205.65 / 1457.78	6073	203.10 / 1476.08	6124	200.55 / 1494.85
6023	205.60 / 1458.13	6074	203.05 / 1476.45	6125	200.50 / 1495.22
6024	205.55 / 1458.49	6075	203.00 / 1476.81	6126	200.45 / 1495.60
6025	205.50 / 1458.84	6076	202.95 / 1477.17	6127	200.40 / 1495.97
6026	205.45 / 1459.20	6077	202.90 / 1477.54	6128	200.35 / 1496.34
6027	205.40 / 1459.55	6078	202.85 / 1477.90	6129	200.30 / 1496.72
6028	205.35 / 1459.91	6079	202.80 / 1478.27	6130	200.25 / 1497.09
6029	205.30 / 1460.27	6080	202.75 / 1478.63	6131	200.20 / 1497.46
6030	205.25 / 1460.62	6081	202.70 / 1479.00	6132	200.15 / 1497.84
6031	205.20 / 1460.98	6082	202.65 / 1479.36	6133	200.10 / 1498.21
6032	205.15 / 1461.33	6083	202.60 / 1479.73	6134	200.05 / 1498.59
6033	205.10 / 1461.69	6084	202.55 / 1480.09	6135	200.00 / 1498.96
6034	205.05 / 1462.05	6085	202.50 / 1480.46	6136	199.95 / 1499.34
6035	205.00 / 1462.40	6086	202.45 / 1480.82	6137	199.90 / 1499.71
6036	204.95 / 1462.76	6087	202.40 / 1481.19	6138	199.85 / 1500.09
6037	204.90 / 1463.12	6088	202.35 / 1481.55	6139	199.80 / 1500.46
6038	204.85 / 1463.47	6089	202.30 / 1481.92	6140	199.75 / 1500.84
6039	204.80 / 1463.83	6090	202.25 / 1482.29	6141	199.70 / 1501.21
6040	204.75 / 1464.19	6091	202.20 / 1482.65	6142	199.65 / 1501.59
6041	204.70 / 1464.55	6092	202.15 / 1483.02	6143	199.60 / 1501.97
6042	204.65 / 1464.90	6093	202.10 / 1483.39	6144	199.55 / 1502.34
6043	204.60 / 1465.26	6094	202.05 / 1483.75	6145	199.50 / 1502.72
6044	204.55 / 1465.62	6095	202.00 / 1484.12	6146	199.45 / 1503.10
6045	204.50 / 1465.98	6096	201.95 / 1484.49	6147	199.40 / 1503.47
6046	204.45 / 1466.34	6097	201.90 / 1484.86	6148	199.35 / 1503.85
6047	204.40 / 1466.70	6098	201.85 / 1485.22	6149	199.30 / 1504.23
6048	204.35 / 1467.05	6099	201.80 / 1485.59	6150	199.25 / 1504.60
6049	204.30 / 1467.41	6100	201.75 / 1485.96	6151	199.20 / 1504.98
6050	204.25 / 1467.77	6101	201.70 / 1486.33	6152	199.15 / 1505.36

► Table 1xxx: Order Codes for S-Band Frequencies (THz)/Wavelengths (nm) (continued)

Code Freq.	Wavelength	Code Freq.	Wavelength	Code Freq.	Wavelength
6153	199.10 / 1505.74	6172	198.15 / 1512.96	6191	197.20 / 1520.25
6154	199.05 / 1506.12	6173	198.10 / 1513.34	6192	197.15 / 1520.63
6155	199.00 / 1506.49	6174	198.05 / 1513.72	6193	197.10 / 1521.02
6156	198.95 / 1506.87	6175	198.00 / 1514.10	6194	197.05 / 1521.40
6157	198.90 / 1507.25	6176	197.95 / 1514.49	6195	197.00 / 1521.79
6158	198.85 / 1507.63	6177	197.90 / 1514.87	6196	196.95 / 1522.18
6159	198.80 / 1508.01	6178	197.85 / 1515.25	6197	196.90 / 1522.56
6160	198.75 / 1508.39	6179	197.80 / 1515.63	6198	196.85 / 1522.95
6161	198.70 / 1508.77	6180	197.75 / 1516.02	6199	196.80 / 1523.34
6162	198.65 / 1509.15	6181	197.70 / 1516.40	6200	196.75 / 1523.72
6163	198.60 / 1509.53	6182	197.65 / 1516.78	6201	196.70 / 1524.11
6164	198.55 / 1509.91	6183	197.60 / 1517.17	6202	196.65 / 1524.50
6165	198.50 / 1510.29	6184	197.55 / 1517.55	6203	196.60 / 1524.89
6166	198.45 / 1510.67	6185	197.50 / 1517.94	6204	196.55 / 1525.27
6167	198.40 / 1511.05	6186	197.45 / 1518.32	6205	196.50 / 1525.66
6168	198.35 / 1511.43	6187	197.40 / 1518.71	6206	196.45 / 1526.05
6169	198.30 / 1511.81	6188	197.35 / 1519.09	6207	196.40 / 1526.44
6170	198.25 / 1512.19	6189	197.30 / 1519.48	6208	196.35 / 1526.83
6171	198.20 / 1512.58	6190	197.25 / 1519.86		

► Table 2xxx: Order Codes for C-Band Frequencies (THz)/Wavelengths (nm)

Code Freq.	Wavelength	Code Freq.	Wavelength	Code Freq.	Wavelength	Code Freq.	Wavelength
7000	196.30 / 1527.22	7024	195.10 / 1536.61	7048	193.90 / 1546.12	7072	192.70 / 1555.75
7001	196.25 / 1527.60	7025	195.05 / 1537.00	7049	193.85 / 1546.52	7073	192.65 / 1556.15
7002	196.20 / 1527.99	7026	195.00 / 1537.40	7050	193.80 / 1546.92	7074	192.60 / 1556.55
7003	196.15 / 1528.38	7027	194.95 / 1537.79	7051	193.75 / 1547.32	7075	192.55 / 1556.96
7004	196.10 / 1528.77	7028	194.90 / 1538.19	7052	193.70 / 1547.72	7076	192.50 / 1557.36
7005	196.05 / 1529.16	7029	194.85 / 1538.58	7053	193.65 / 1548.11	7077	192.45 / 1557.77
7006	196.00 / 1529.55	7030	194.80 / 1538.98	7054	193.60 / 1548.51	7078	192.40 / 1558.17
7007	195.95 / 1529.94	7031	194.75 / 1539.37	7055	193.55 / 1548.91	7079	192.35 / 1558.58
7008	195.90 / 1530.33	7032	194.70 / 1539.77	7056	193.50 / 1549.32	7080	192.30 / 1558.98
7009	195.85 / 1530.72	7033	194.65 / 1540.16	7057	193.45 / 1549.72	7081	192.25 / 1559.39
7010	195.80 / 1531.12	7034	194.60 / 1540.56	7058	193.40 / 1550.12	7082	192.20 / 1559.79
7011	195.75 / 1531.51	7035	194.55 / 1540.95	7059	193.35 / 1550.52	7083	192.15 / 1560.20
7012	195.70 / 1531.90	7036	194.50 / 1541.35	7060	193.30 / 1550.92	7084	192.10 / 1560.61
7013	195.65 / 1532.29	7037	194.45 / 1541.75	7061	193.25 / 1551.32	7085	192.05 / 1561.01
7014	195.60 / 1532.68	7038	194.40 / 1542.14	7062	193.20 / 1551.72	7086	192.00 / 1561.42
7015	195.55 / 1533.07	7039	194.35 / 1542.54	7063	193.15 / 1552.12	7087	191.95 / 1561.83
7016	195.50 / 1533.47	7040	194.30 / 1542.94	7064	193.10 / 1552.52	7088	191.90 / 1562.23
7017	195.45 / 1533.86	7041	194.25 / 1543.33	7065	193.05 / 1552.93	7089	191.85 / 1562.64
7018	195.40 / 1534.25	7042	194.20 / 1543.73	7066	193.00 / 1553.33	7090	191.80 / 1563.05
7019	195.35 / 1534.64	7043	194.15 / 1544.13	7067	192.95 / 1553.73	7091	191.75 / 1563.45
7020	195.30 / 1535.04	7044	194.10 / 1544.53	7068	192.90 / 1554.13	7092	191.70 / 1563.86
7021	195.25 / 1535.43	7045	194.05 / 1544.92	7069	192.85 / 1554.54	7093	191.65 / 1564.27
7022	195.20 / 1535.82	7046	194.00 / 1545.32	7070	192.80 / 1554.94	7094	191.60 / 1564.68
7023	195.15 / 1536.22	7047	193.95 / 1545.72	7071	192.75 / 1555.34		

Optical Modules for the PRO Series

► WDM B Series • LS DFB Series • CWDM Series • OSW Series

► Table 3xxx: Order Codes for L-Band Frequencies (THz)/Wavelengths (nm)

Code Freq.	Wavelength	Code Freq.	Wavelength	Code Freq.	Wavelength
8000	191.55 / 1565.09	8048	189.15 / 1584.95	8096	186.75 / 1605.31
8001	191.50 / 1565.50	8049	189.10 / 1585.36	8097	186.70 / 1605.74
8002	191.45 / 1565.90	8050	189.05 / 1585.78	8098	186.65 / 1606.17
8003	191.40 / 1566.31	8051	189.00 / 1586.20	8099	186.60 / 1606.60
8004	191.35 / 1566.72	8052	188.95 / 1586.62	8100	186.55 / 1607.04
8005	191.30 / 1567.13	8053	188.90 / 1587.04	8101	186.50 / 1607.47
8006	191.25 / 1567.54	8054	188.85 / 1587.46	8102	186.45 / 1607.90
8007	191.20 / 1567.95	8055	188.80 / 1587.88	8103	186.40 / 1608.33
8008	191.15 / 1568.36	8056	188.75 / 1588.30	8104	186.35 / 1608.76
8009	191.10 / 1568.77	8057	188.70 / 1588.73	8105	186.30 / 1609.19
8010	191.05 / 1569.18	8058	188.65 / 1589.15	8106	186.25 / 1609.62
8011	191.00 / 1569.59	8059	188.60 / 1589.57	8107	186.20 / 1610.06
8012	190.95 / 1570.01	8060	188.55 / 1589.99	8108	186.15 / 1610.49
8013	190.90 / 1570.42	8061	188.50 / 1590.41	8109	186.10 / 1610.92
8014	190.85 / 1570.83	8062	188.45 / 1590.83	8110	186.05 / 1611.35
8015	190.80 / 1571.24	8063	188.40 / 1591.26	8111	186.00 / 1611.79
8016	190.75 / 1571.65	8064	188.35 / 1591.68	8112	185.95 / 1612.22
8017	190.70 / 1572.06	8065	188.30 / 1592.10	8113	185.90 / 1612.65
8018	190.65 / 1572.48	8066	188.25 / 1592.52	8114	185.85 / 1613.09
8019	190.10 / 1577.03	8067	188.20 / 1592.95	8115	185.80 / 1613.52
8020	190.55 / 1573.30	8068	188.15 / 1593.37	8116	185.75 / 1613.96
8021	190.50 / 1573.71	8069	188.10 / 1593.79	8117	185.70 / 1614.39
8022	190.45 / 1574.13	8070	188.05 / 1594.22	8118	185.65 / 1614.83
8023	190.40 / 1574.54	8071	188.00 / 1594.64	8119	185.60 / 1615.26
8024	190.35 / 1574.95	8072	187.95 / 1595.06	8120	185.55 / 1615.70
8025	190.30 / 1575.37	8073	187.90 / 1595.49	8121	185.50 / 1616.13
8026	190.25 / 1575.78	8074	187.85 / 1595.91	8122	185.45 / 1616.57
8027	190.20 / 1576.20	8075	187.80 / 1596.34	8123	185.40 / 1617.00
8028	190.15 / 1576.61	8076	187.75 / 1596.76	8124	185.35 / 1617.44
8029	190.05 / 1577.44	8077	187.70 / 1597.19	8125	185.30 / 1617.88
8030	190.60 / 1572.89	8078	187.65 / 1597.62	8126	185.25 / 1618.31
8031	190.00 / 1577.86	8079	187.60 / 1598.04	8127	185.20 / 1618.75
8032	189.95 / 1578.27	8080	187.55 / 1598.47	8128	185.15 / 1619.19
8033	189.90 / 1578.69	8081	187.50 / 1598.89	8129	185.10 / 1619.62
8034	189.85 / 1579.10	8082	187.45 / 1599.32	8130	185.05 / 1620.06
8035	189.80 / 1579.52	8083	187.40 / 1599.75	8131	185.00 / 1620.50
8036	189.75 / 1579.93	8084	187.35 / 1600.17	8132	184.95 / 1620.94
8037	189.70 / 1580.35	8085	187.30 / 1600.60	8133	184.90 / 1621.38
8038	189.65 / 1580.77	8086	187.25 / 1601.03	8134	184.85 / 1621.81
8039	189.60 / 1581.18	8087	187.20 / 1601.46	8135	184.80 / 1622.25
8040	189.55 / 1581.60	8088	187.15 / 1601.88	8136	184.75 / 1622.69
8041	189.50 / 1582.02	8089	187.10 / 1602.31	8137	184.70 / 1623.13
8042	189.45 / 1582.44	8090	187.05 / 1602.74	8138	184.65 / 1623.57
8043	189.40 / 1582.85	8091	187.00 / 1603.17	8139	184.60 / 1624.01
8044	189.35 / 1583.27	8092	186.95 / 1603.60	8140	184.55 / 1624.45
8045	189.30 / 1583.69	8093	186.90 / 1604.03	8141	184.50 / 1624.89
8046	189.25 / 1584.11	8094	186.85 / 1604.46	8142	184.45 / 1625.33
8047	189.20 / 1584.53	8095	186.80 / 1604.88		

Contact Tektronix:

ASEAN / Australasia / Pakistan (65) 6356 3900

Austria +43 2236 8092 262

Belgium +32 (2) 715 89 70

Brazil & South America 55 (11) 3741-8360

Canada 1 (800) 661-5625

Central Europe & Greece +43 2236 8092 301

Denmark +45 44 850 700

Finland +358 (9) 4783 400

France & North Africa +33 (0) 1 69 86 80 34

Germany +49 (21) 94 77 400

Hong Kong (852) 2585-6688

India (91) 80-2275577

Italy +39 (02) 25086 1

Japan 81 (3) 3448-3111

Mexico, Central America & Caribbean 52 (55) 56666-333

The Netherlands +31 (0) 23 569 5555

Norway +47 22 07 07 00

People's Republic of China 86 (10) 6235 1230

Poland +48 (0) 22 521 53 40

Republic of Korea 82 (2) 528-5299

Russia, CIS & The Baltics +358 (9) 4783 400

South Africa +27 11 254 8360

Spain +34 (91) 372 6055

Sweden +46 8 477 6503/4

Taiwan 886 (2) 2722-9622

United Kingdom & Eire +44 (0) 1344 392400

USA 1 (800) 426-2200

USA (Export Sales) 1 (503) 627-1916

For other areas contact Tektronix, Inc. at: 1 (503) 627-7111

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