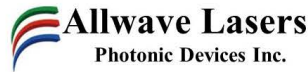


C+L Band Narrow Linewidth Laser Module



C+L Band Narrow Linewidth Laser Module Datasheet

1. Product Information

Product Description: The narrow linewidth laser module integrates cooled external cavity diode laser and thermally-tuned FP filters to achieve single-mode operation at selectable wavelength. Narrow linewidth Laser Module has excellent optical performance in terms of high output power stability, high side-mode-suppression ratio (SMSR), ultra-narrow laser linewidth, low relative intensity noise (RIN), and high stable wavelength accuracy. We have options of SM fibers and PM fibers. The products are Telcordia GR-468 qualified, and in compliance with RoHS requirement.

Applications:

- Interferometric fiber optic sensing
- Brillouin Distributed Temperature and Strain Sensors (DTSS)
- LIDAR
- Optical Test and Instrumentation

Features:

- High output power ($\geq 30\text{mW}$)
- Center wavelength: C/L-band, ITU-T DWDM 50 GHz
- Very narrow linewidth and low RIN
- Wavelength tunability and Direct power modulation
- High stability, compact planar mechanical design

Reliability: Telcordia GR-468. RoHS



2. Performance Specifications

Absolute Maximum Ratings

Stresses in excess of the absolute maximum ratings can cause permanent damage to the device. These are absolute stress ratings only. Functional operation of the device is not implied at these or any other conditions in excess of those given in the operational sections of the data sheet. Exposure to absolute maximum ratings for extended periods can adversely affect device reliability.

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Storage Temperature	T _s	-	-40	-	+85	°C
Operating Case Temperature	T _{op}	-	0	-	+50	°C

Electrical Characteristics

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Operating Voltage	V	-	-	5	-	V
Power Consumption	P	@25°C		≤6		W
Max Power Consumption	P _{max}	@0~50°C		≤10		W

Optical Characteristics (at 25 °C laser temperature)

Parameter	Symbol	Condition	Min.	Typical	Max.	Unit
Center Wavelength	λ_c	TL=15~35°C CW	Shown in section 4			nm
Peak Optical Output Power	P _o	-	30	-	-	mW

Spectral Linewidth	LW	Full width, half maximum (FWHM)	-	-	50	KHz
Side-mode Suppression Ratio	SMSR	CW	40	55	-	dB
Optical Isolation	-	-	35	-	-	dB
Relative Intensity Noise	RIN	CW, P ₀ = 30mW	-	-	-155	dB
Polarization Extinction Ratio	PER	-	20			dB /Hz
Voltage Supply	V _{CC}	-	4.75	5	5.25	V
Power Short-term Stability	P _{SS}	Operating case temperature: 0~50°C	≤0.01			dB@15min.
Power Long-term Stability	P _{SL}		≤0.03			dB@8h.
Wavelength Short-term Stability	λ _{SS}		≤5			pm@15min.
Wavelength Long-term Stability	λ _{SL}		≤10			pm@8h.
Dimension	L×W×H	-	116×63×21.5			mm

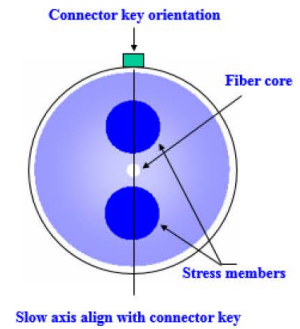
Interface Connector

No.	Type
1	FC/APC Adaptor
2	Mini USB
3	Power supply: +5V/3A

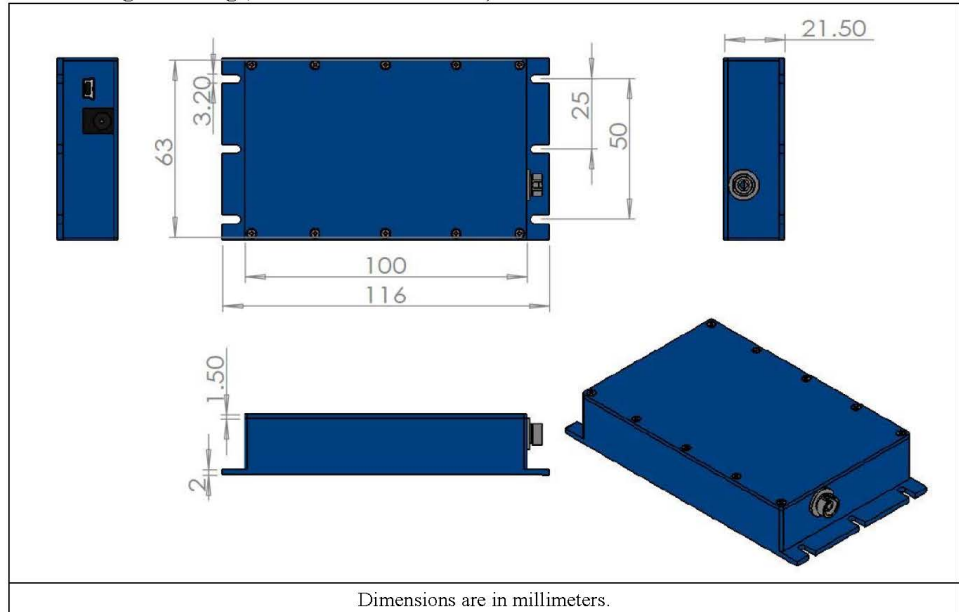
Fiber Pigtail Specifications

Parameters	Description
Fiber Type	PMF-1550
Jacket Type	900μm loose tube
Connector Type	FC/APC

Note: The PM fiber and the connector key are aligned to the slow axis



3. Package Drawing (Mechanical Dimensions):



4. Wavelength Code and Center Wavelength list as below:

Channel	Wavelength Code	Center Wavelength			Unit
		Min.	Typical	Max.	
H60	1529.16	1528.96	1529.16	1529.36	nm
C60	1529.55	1529.35	1529.55	1529.75	nm
H59	1529.94	1529.74	1529.94	1530.14	nm
C59	1530.33	1530.13	1530.33	1530.53	nm
H58	1530.72	1530.52	1530.72	1530.92	nm
C58	1531.12	1530.92	1531.12	1531.32	nm
H57	1531.51	1531.31	1531.51	1531.71	nm
C57	1531.90	1531.70	1531.90	1532.10	nm
H56	1532.29	1532.09	1532.29	1532.49	nm
C56	1532.68	1532.48	1532.68	1532.88	nm
H55	1533.07	1532.87	1533.07	1533.27	nm
C55	1533.47	1533.27	1533.47	1533.67	nm
H54	1533.86	1533.66	1533.86	1534.06	nm
C54	1534.25	1534.05	1534.25	1534.45	nm
H53	1534.64	1534.44	1534.64	1534.84	nm
C53	1535.04	1534.84	1535.04	1535.24	nm
H52	1535.43	1535.23	1535.43	1535.63	nm
C52	1535.82	1535.62	1535.82	1536.02	nm

H51	1536.22	1536.02	1536.22	1536.42	nm
C51	1536.61	1536.41	1536.61	1536.81	nm
H50	1537.00	1536.80	1537.00	1537.20	nm
C50	1537.40	1537.20	1537.40	1537.60	nm
H49	1537.79	1537.59	1537.79	1537.99	nm
C49	1538.19	1537.99	1538.19	1538.39	nm
H48	1538.58	1538.38	1538.58	1538.78	nm
C48	1538.98	1538.78	1538.98	1539.18	nm
H47	1539.37	1539.17	1539.37	1539.57	nm
C47	1539.77	1539.57	1539.77	1539.97	nm
H46	1540.16	1539.96	1540.16	1540.36	nm
C46	1540.56	1540.36	1540.56	1540.76	nm
H45	1540.95	1540.75	1540.95	1541.15	nm
C45	1541.35	1541.15	1541.35	1541.55	nm
H44	1541.75	1541.55	1541.75	1541.95	nm
C44	1542.14	1541.94	1542.14	1542.34	nm
H43	1542.54	1542.34	1542.54	1542.74	nm
C43	1542.94	1542.74	1542.94	1543.14	nm
H42	1543.33	1543.13	1543.33	1543.53	nm
C42	1543.73	1543.53	1543.73	1543.93	nm
H41	1544.13	1543.93	1544.13	1544.33	nm
C41	1544.53	1544.33	1544.53	1544.73	nm
H40	1544.92	1544.72	1544.92	1545.12	nm
C40	1545.32	1545.12	1545.32	1545.52	nm
H39	1545.72	1545.52	1545.72	1545.92	nm
C39	1546.12	1545.92	1546.12	1546.32	nm
H38	1546.52	1546.32	1546.52	1546.72	nm
C38	1546.92	1546.72	1546.92	1547.12	nm
H37	1547.32	1547.12	1547.32	1547.52	nm
C37	1547.72	1547.52	1547.72	1547.92	nm
H36	1548.11	1547.91	1548.11	1548.31	nm
C36	1548.51	1548.31	1548.51	1548.71	nm
H35	1548.91	1548.71	1548.91	1549.11	nm
C35	1549.32	1549.12	1549.32	1549.52	nm
H34	1549.72	1549.52	1549.72	1549.92	nm
C34	1550.12	1549.92	1550.12	1550.32	nm
H33	1550.52	1550.32	1550.52	1550.72	nm
C33	1550.92	1550.72	1550.92	1551.12	nm
H32	1551.32	1551.12	1551.32	1551.52	nm
C32	1551.72	1551.52	1551.72	1551.92	nm
H31	1552.12	1551.92	1552.12	1552.32	nm
C31	1552.52	1552.32	1552.52	1552.72	nm

H30	1552.93	1552.73	1552.93	1553.13	nm
C30	1553.33	1553.13	1553.33	1553.53	nm
H29	1553.73	1553.53	1553.73	1553.93	nm
C29	1554.13	1553.93	1554.13	1554.33	nm
H28	1554.54	1554.34	1554.54	1554.74	nm
C28	1554.94	1554.74	1554.94	1555.14	nm
H27	1555.34	1555.14	1555.34	1555.54	nm
C27	1555.75	1555.55	1555.75	1555.95	nm
H26	1556.15	1555.95	1556.15	1556.35	nm
C26	1556.55	1556.35	1556.55	1556.75	nm
H25	1556.96	1556.76	1556.96	1557.16	nm
C25	1557.36	1557.16	1557.36	1557.56	nm
H24	1557.77	1557.57	1557.77	1557.97	nm
C24	1558.17	1557.97	1558.17	1558.37	nm
H23	1558.58	1558.38	1558.58	1558.78	nm
C23	1558.98	1558.78	1558.98	1559.18	nm
H22	1559.39	1559.19	1559.39	1559.59	nm
C22	1559.79	1559.59	1559.79	1559.99	nm
H21	1560.20	1560.00	1560.20	1560.40	nm
C21	1560.61	1560.41	1560.61	1560.81	nm
H20	1561.01	1560.81	1561.01	1561.21	nm
C20	1561.42	1561.22	1561.42	1561.62	nm
H19	1561.83	1561.63	1561.83	1562.03	nm
C19	1562.23	1562.03	1562.23	1562.43	nm
H18	1562.64	1562.44	1562.64	1562.84	nm
C18	1563.05	1562.85	1563.05	1563.25	nm
H17	1563.45	1563.25	1563.45	1563.65	nm
C17	1563.86	1563.66	1563.86	1564.06	nm
H16	1564.27	1564.07	1564.27	1564.47	nm
C16	1564.68	1564.48	1564.68	1564.88	nm
H15	1565.09	1564.89	1565.09	1565.29	nm
C15	1565.50	1565.30	1565.50	1565.70	nm
H14	1565.90	1565.70	1565.90	1566.10	nm
C14	1566.31	1566.11	1566.31	1566.51	nm
H13	1566.72	1566.52	1566.72	1566.92	nm
C13	1567.13	1566.93	1567.13	1567.33	nm
C11	1568.77	1568.57	1568.77	1568.97	nm
H10	1569.18	1568.98	1569.18	1569.38	nm
C10	1569.59	1569.39	1569.59	1569.79	nm
H09	1570.01	1569.81	1570.01	1570.21	nm
C09	1570.42	1570.22	1570.42	1570.62	nm
H08	1570.83	1570.63	1570.83	1571.03	nm

C08	1571.24	1571.04	1571.24	1571.44	nm
H07	1571.65	1571.45	1571.65	1571.85	nm
C07	1572.06	1571.86	1572.06	1572.26	nm
H06	1572.48	1572.28	1572.48	1572.68	nm
C06	1572.89	1572.69	1572.89	1573.09	nm
H05	1573.30	1573.10	1573.30	1573.50	nm
C05	1573.71	1573.51	1573.71	1573.91	nm
H04	1574.13	1573.93	1574.13	1574.33	nm
C04	1574.54	1574.34	1574.54	1574.74	nm
H03	1574.95	1574.75	1574.95	1575.15	nm
C03	1575.37	1575.17	1575.37	1575.57	nm
H02	1575.78	1575.58	1575.78	1575.98	nm
C02	1576.20	1576.00	1576.20	1576.40	nm
H01	1576.61	1576.41	1576.61	1576.81	nm
C01	1577.03	1576.83	1577.03	1577.23	nm
Q00	1577.44	1577.24	1577.44	1577.64	nm
L00	1577.86	1577.66	1577.86	1578.06	nm
Q99	1578.27	1578.07	1578.27	1578.47	nm
L99	1578.69	1578.49	1578.69	1578.89	nm
Q98	1579.10	1578.90	1579.10	1579.30	nm
L98	1579.52	1579.32	1579.52	1579.72	nm
Q97	1579.93	1579.73	1579.93	1580.13	nm
L97	1580.35	1580.15	1580.35	1580.55	nm
Q96	1580.77	1580.57	1580.77	1580.97	nm
L96	1581.18	1580.98	1581.18	1581.38	nm
Q95	1581.60	1581.40	1581.60	1581.80	nm
L95	1582.02	1581.82	1582.02	1582.22	nm
Q94	1582.44	1582.24	1582.44	1582.64	nm
L94	1582.85	1582.65	1582.85	1583.05	nm
Q93	1583.27	1583.07	1583.27	1583.47	nm
L93	1583.69	1583.49	1583.69	1583.89	nm
Q92	1584.11	1583.91	1584.11	1584.31	nm
L92	1584.53	1584.33	1584.53	1584.73	nm
Q91	1584.95	1584.75	1584.95	1585.15	nm
L91	1585.36	1585.16	1585.36	1585.56	nm
Q90	1585.78	1585.58	1585.78	1585.98	nm
L90	1586.20	1586.00	1586.20	1586.40	nm
Q89	1586.62	1586.42	1586.62	1586.82	nm
L89	1587.04	1586.84	1587.04	1587.24	nm
Q88	1587.46	1587.26	1587.46	1587.66	nm
L88	1587.88	1587.68	1587.88	1588.08	nm
Q87	1588.30	1588.10	1588.30	1588.50	nm

L87	1588.73	1588.53	1588.73	1588.93	nm
Q86	1589.15	1588.95	1589.15	1589.35	nm
L86	1589.57	1589.37	1589.57	1589.77	nm
Q85	1589.99	1589.79	1589.99	1590.19	nm
L85	1590.41	1590.21	1590.41	1590.61	nm
Q84	1590.83	1590.63	1590.83	1591.03	nm
L84	1591.26	1591.06	1591.26	1591.46	nm
Q83	1591.68	1591.48	1591.68	1591.88	nm
L83	1592.10	1591.90	1592.10	1592.30	nm
Q82	1592.52	1592.32	1592.52	1592.72	nm
L82	1592.95	1592.75	1592.95	1593.15	nm
Q81	1593.37	1593.17	1593.37	1593.57	nm
L81	1593.79	1593.59	1593.79	1593.99	nm
Q80	1594.22	1594.02	1594.22	1594.42	nm
L80	1594.64	1594.44	1594.64	1594.84	nm
Q79	1595.06	1594.86	1595.06	1595.26	nm
L79	1595.49	1595.29	1595.49	1595.69	nm
Q78	1595.91	1595.71	1595.91	1596.11	nm
L78	1596.34	1596.14	1596.34	1596.54	nm
Q77	1596.76	1596.56	1596.76	1596.96	nm
L77	1597.19	1596.99	1597.19	1597.39	nm
Q76	1597.62	1597.42	1597.62	1597.82	nm
L76	1598.04	1597.84	1598.04	1598.24	nm
Q75	1598.47	1598.27	1598.47	1598.67	nm
L75	1598.89	1598.69	1598.89	1599.09	nm
Q74	1599.32	1599.12	1599.32	1599.52	nm
L74	1599.75	1599.55	1599.75	1599.95	nm
Q73	1600.17	1599.97	1600.17	1600.37	nm
L73	1600.60	1600.40	1600.60	1600.80	nm
Q72	1601.03	1600.83	1601.03	1601.23	nm
L72	1601.46	1601.26	1601.46	1601.66	nm
Q71	1601.88	1601.68	1601.88	1602.08	nm
L71	1602.31	1602.11	1602.31	1602.51	nm
Q70	1602.74	1602.54	1602.74	1602.94	nm
L70	1603.17	1602.97	1603.17	1603.37	nm
Q69	1603.60	1603.40	1603.60	1603.80	nm
L69	1604.03	1603.83	1604.03	1604.23	nm
Q68	1604.46	1604.26	1604.46	1604.66	nm
L68	1604.88	1604.68	1604.88	1605.08	nm
Q67	1605.31	1605.11	1605.31	1605.51	nm
L67	1605.74	1605.54	1605.74	1605.94	nm
Q66	1606.17	1605.97	1606.17	1606.37	nm

L66	1606.60	1606.40	1606.60	1606.80	nm
Q65	1607.04	1606.84	1607.04	1607.24	nm

5. Test Report: The test report should be provided when the products are delivered. Following characteristic test data should be included: Optical Output Power, Center Wavelength, P-I curve, PER, Spectral Linewidth.

6. Packaging: Vacuumize anti-static plastic package. Following items should be indicated on the outer packaging surface: Product Name, Product Number, Serial Number.

7. Ordering Information:

NLLM-	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Wavelength		Power	Typ. Linewidth	Connector		
	1607.04:1607.04nm		10mW	30K	FC/UPC		
		20mW	50K	FC/APC		
NLLM-	1550.12: 1550.12nm		30mW				
						
	1529.16: 1529.16nm						
Example of Ordering Form: NLLM-1550.12-30mW-50K-FC/APC							
NLLM-	1550.12		30mW	50K	FC/APC		
	1550.12nm		30mW	50K	FC/APC		

-----End-----