

RLT-M Series

0.5W to 10W Raman Fiber Laser Modules

For Telecom Applications

Main Features:

- ✓ *1100nm to 1700nm Wavelength Choices*
- ✓ *Up to 10 Watts Output Optical Power*
- ✓ *Telecom Grade Reliability*
> 1,000,000 Hours MTTF
- ✓ *Highest Electrical to Optical Efficiency*
- ✓ *Unique Thermal Budget*
- ✓ *Wide Operating Temperature Range*
- ✓ *Compact Rugged Module Package*
- ✓ *Very Cost Effective Solutions*



Applications:

- ✓ *Remote Fiber Amplifier Pumping*
- ✓ *Distributed Raman Amplification*
- ✓ *Repeaterless Submarine and Very Long Span Systems*
- ✓ *Ultra-broadband Amplifiers*

The RLT Series Raman Fiber Lasers are proven high reliability optical sources optimized for Telecom applications. They operate with 1,000,000Hrs MTTF reliability in any wavelength from 1100nm to 1700nm with output powers of up to 10W CW. These lasers are manufactured using IPG's world leading high power pump diode lasers which operate over the widest temperature range without requiring thermoelectric coolers (TEC), thus providing unequalled reliability. The lasers are being deployed in demanding ultra long haul DWDM transmission systems to provide distributed Raman amplification and remote pumping of Erbium Doped Fiber Amplifiers (EDFAs).

Raman Fiber Lasers offer a superior pump source over other techniques such as frequency multiplexed single mode laser diode combiners by virtue of proven high reliability, cost, efficiency and watt class powers. Linear polarization and higher power outputs, up to 50 watts, are available on request.

These modules are offered with analog or smart digital control options.

Common Parameters

RLT Series Raman Lasers consist of two components – an Ytterbium Fiber Laser and a Raman wavelength shifter. The Ytterbium Laser is a telecom-grade version of the IPG PYL Series Single Mode Fiber Laser operating at wavelengths between 1050nm and 1120nm. The Raman shifter employs two advanced technologies in a cascaded Raman resonator cavity: Bragg fiber gratings and WDM couplers. The resonator efficiently converts the input pump laser wavelength to the chosen output wavelength. An example could be 1064nm to 1480nm. The output is single mode and ran-

domly polarized. Typically there is a >30dB fiber isolator at the output.

All RLT Series Raman Lasers incorporate IPG Photonics advanced high power MBE laser pump diodes, operating at a 965nm nominal wavelength to pump the Ytterbium Laser Pump. The pump diodes have >2,000,000 Hrs MTTF at a temperature of 25°C. All pump diodes are subjected to intensive stress testing prior to installation.

Typical Specifications

Parameters	Unit	RLT-1-XXXX*	RLT-3-XXXX*	RLT-5-XXXX*
Mode of operation		CW	CW	CW
Polarization		random	random	random
Central emission wavelength	nm	1420, 1425, 1440, 1455, 1480		
Nominal output power	W	1	3	5
Output power tunability	%	10-100	10-100	10-100
Output power instability:long term (over 8 hrs)	%	1	1	1
Emission bandwidth	nm			
3dB (FWHM)		<1	<1.5	<2
10dB		<1.5	<2	<2.5
Suppression ratio	dB			
1050-1440		20	20	20
1500-1700		>50	>50	>50
In band power	%	97	97	95
Operating voltage, (DC)	V	12	24	24
Maximum power consumption (at 20°C)	W	<15	<30	<50
General Parameters				
Dimensions	Version 1	mm	180x145x40	180x145x40
	Version 2	mm	230x180x25	230x180x25
	Version 3 with heatsink	mm	200x140x38	200x140x38
Case temperature		°C	-5 to +70	-5 to +70

* Desired Wavelength to be specified in place of XXXX from the range 1100-1700nm. Other desired power levels can be specified.

Options

- Wavelength Selection
- Linear Polarization
- Output Power up to 20W CW
- Analog or Digital Control
- Output Termination
- Packaging



NOTE: Performance & size can be matched to the customers requirements. Contact IPG with your requirements.

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