



RLM Series

Raman Fiber Laser Modules



 Applications

- ▶ Remote Fiber Amplifier Pumping
- ▶ Distributed Raman Amplification
- ▶ Repeaterless Submarine/ Long Span Systems
- ▶ Ultra-broadband Amplifiers

 Features

- ▶ 1100-1700 nm Wavelength Choices
- ▶ Up to 30 W Output Optical Power
- ▶ Telecom Grade Reliability
- ▶ Rugged Compact Module Packaging
- ▶ Single-mode Fiber Output

IPG Photonics’ RLM Series Raman Fiber Lasers were developed specifically to meet the rapidly growing demand in universal sources that could provide any wavelength within the 1100-1700 nm range with output power up to 30 W CW. These pumps are ideal for applications requiring a compact, high power, single-mode source such as telecom, medical and industrial to a variety of laboratory test and measurement and scientific applications.

Raman Fiber Lasers offer a superior pump source over other techniques such as frequency multiplexed single-mode laser diode combiners by virtue of their cost, efficiency and ease of achieving high power. Emission wavelengths can be selected anywhere in the range from 1100-1700 nm. Linear polarization and higher output power, up to 30 watts, are available on request.

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Optical Characteristics

	RLM-1-XXXX ²	RLM-5-XXXX ²	RLM-10-XXXX ²
Mode of Operation	CW		
Polarization ¹	Random		
Nominal Output Power, W	1	5	10
Output Power Tunability, %	10-100		
Output Power Instability: Long Term (over 8 hrs), %	1	1	2
Emission Bandwidth, nm 3 dB (FWHM)	<1	<2	<3
10 dB	<1.5	<3	<4
Central Emission Wavelength, nm	1455		
Suppression Ratio, dB 1050-1440	20		
1500-1700	>50		
In Band Power, %	97	97	95
Operating Voltage (DC)	12	12	12 or 24
Max. Power Consumption (at 20°C), W	<20	<50	<85

¹Linear Polarization is available on request

²Desired wavelength to be specified in place of XXXX from the range 1100-1700 nm

General Characteristics

Dimensions, mm	220 x 160 x 35
Ambient Operational Temperature Range, °C	Standard: 0 to +55; Extended: -20 to +65

IPG Photonics' RLM Series Raman Fiber Lasers consist of two components- a Ytterbium Fiber Laser and a Raman wavelength shifter. The Ytterbium Laser is a telecom-grade version of IPG's YLP Series Single-mode Fiber Laser operating at wavelengths between 1050-1120 nm. The Raman shifter employs the advanced technology of a cascaded Raman resonator utilizing Bragg fiber gratings. The resonator efficiently converts the input pump laser wavelength to the chosen output wavelength; for example, 1064 nm converts to 1480 nm. The output is single-mode and randomly polarized. High power rated WDM couplers are configured to allow multiplexing of output wavelengths and any additional laser and signal wavelengths of the system. All RLM Series Raman Lasers incorporate IPG's advanced high power MBE laser pump diodes, operating at a 965 nm nominal wavelength to pump the Ytterbium Laser Pump. The pump diodes have >1,000,000 hours MTTF at 25°C. All pump diodes are subjected to intensive stress testing prior to installation.

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