



PART NUMBER 0405L-23A
ITEM NAME 405 NM SLM LASER

PRODUCT DATASHEET



DESCRIPTION

Single-Mode (SM) fiber-coupled SLM or single-frequency 405 laser is distinguished by a very good beam quality and homogeneity. Highly stable mechanical design and precision control electronics render this laser as unmatched value for holography and other applications requiring high coherence length and superior beam quality.

By default, this type of laser is built with FC/APC connector, but other fiber terminations are available upon request. Details about non-standard connector and the fiber used with it should be discussed with the Integrated Optics sales team.

Note:

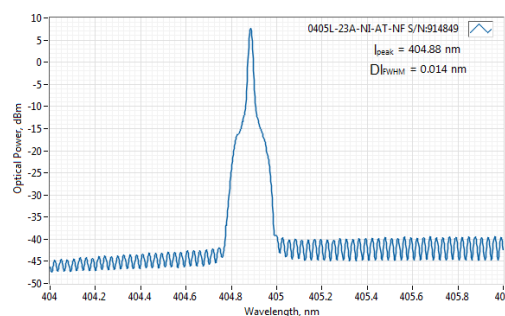
Back-reflections to the laser can cause spectral widening or even a COD (Catastrophic Optical Damage) of laser diode facet. In optical systems with significant back-reflections (e.g. more than 0.5%), the laser must be protected by using an optical isolator with at least 20 dB isolation. Typical applications include interferometry, confocal microscopy (especially working with reflective samples), etc. Failure to comply with these requirements will render the warranty void.

SPECIFICATIONS

Specifications updated: 3 June 2024

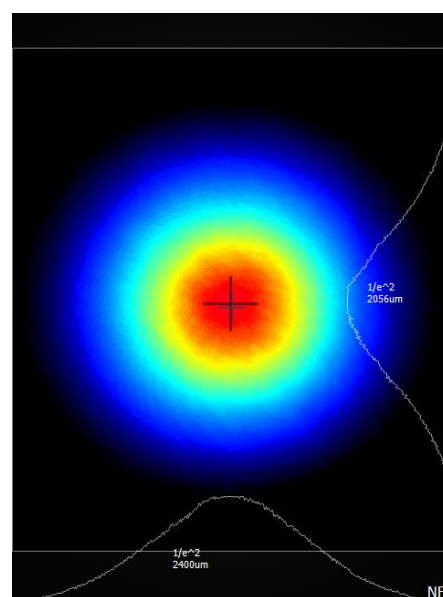
Parameter	Minimum Value	Typical Value	Maximum Value
Central wavelength, nm	404.5	405	405.4
Spectral line width FWHM, MHz	-	20 ¹	60
Output power, mW	-	20 ²	-
Power stability, % (RMS, 8 hrs)	0.02	0.1 ³	0.5
Power stability, % (peak-to-peak, 8 hrs)	0.1	1 ⁴	2.5
Intensity noise, % (RMS, 20 Hz to 20 MHz)	0.1	0.2 ⁵	0.6
Side-mode suppression ratio (SMSR), dB	-	50	-
Longitudinal modes	-	Single	-
Transversal modes	-	TEM00	-
Fiber	-	S405-XP	-
Fiber length, m	0.95	1	1.1
Control interface type	-	UART ⁶	-
Operation mode	-	APC (CW) ⁷	-
Modulation bandwidth, MHz	-	N/A ⁸	-
Input voltage, VDC	4.8	5	5.3
Input current, A	-	1.5	-
Max. power consumption, W	0.4	2	10
Heat-sinking requirement, °C/W	-	1	-
Optimum heatsink temperature, °C	18	25	32
Warm up time, mins (cold start)	0.2	1	2
Temperature stabilization	-	Internal TEC	-
External fan control	-	Yes	-

TYPICAL SPECTRUM



Typical spectrum of 0405 nm diode laser. Measured with 10 pm resolution.

TYPICAL NEAR FIELD



Overheat protection	-	Yes	-
Storage temperature, °C (non-condensing)	-10	-	50
Dimensions (WxDxH), mm	-	50 x 30 x 18 ⁹	-
Net weight, kg	0.1	0.12	0.14
Laser safety class	-	3B	-
RoHS	-	Yes	-
CE compliance	-	- General Product Safety Directive (GPSD) 2001/95/EC - (EMC) Directive 2004/108/EC	-
OEM lasers are not compliant with	-	IEC60825-1:2014 (compliant using additional accessories)	-
Warranty, months (op. hrs)	-	14 (10000) ¹⁰	-
Country of origin	-	Lithuania	-
Spectral line width FWHM, pm	-	0.01 ¹¹	0.03

¹ Measured with a scanning Fabry-Perot interferometer having 7.5 Mhz resolution, with scanning frequency of about 10 Hz. Interferometer testing is not provided for each laser being manufactured, the standard test is OSA measurement with 20-30 pm resolution instead.

² The output power of SLM lasers shall not be tuned and SLM performance is not guaranteed at power ratings other than factory preset. However, the power setting capability is not disabled. External attenuators are recommended instead.

³ The long term power test is carried out at constant laser body temperature (+/-0.1 °C) using an optical power meter with an input bandwidth of 10 Hz. The actual measurement rate has a period of about 20 seconds to 1 minute.

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⁵ Noise level is measured with a fast photodiode connected to an oscilloscope. The overall system bandwidth is from 2 kHz to 20 MHz.

⁶ Break-out-boxes AM-C8 and AM-C3 can be used for conversion of UART communication to either USB or RS232.

⁷ APC - Automatic Power Control.

⁸ SLM lasers shall not be modulated - use external modulators instead.

⁹ Excluding control interface pins and an output window/fiber assembly.

¹⁰ Whichever occurs first. The laser has an integrated operational hours counter.

¹¹ Converted from bandwidth value.

Note: Product specifications are subject to change without prior notice to improve reliability, function or design or otherwise.

DRAWING

