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PART NUMBER 0405L-24A
ITEM NAME 405 NM SLM LASER

PRODUCT DATASHEET

DESCRIPTION

Single-frequency (SLM) 405 nm lasers are widely used in compact Raman spectrometers. Small footprint and +5VDC (USB typical) operating voltage is exactly what's needed for handheld portable devices. Integrated precision driver electronics ensure low-noise and stable operation throughout the wide temperature range. 405 violet radiation features high energy photons, therefore much lower power is enough for efficient excitation of fluorescence or Raman scattering.

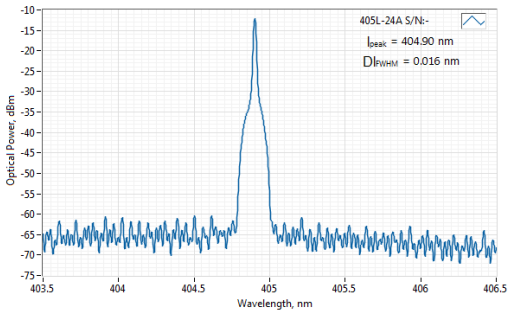
By default, this type of laser is built with FC/APC connector, but other fiber terminations are available upon request. Details about non-standard connector and the fiber used with it should be discussed with the Integrated Optics sales team.

SPECIFICATIONS

Specifications updated: *25 January 2024*

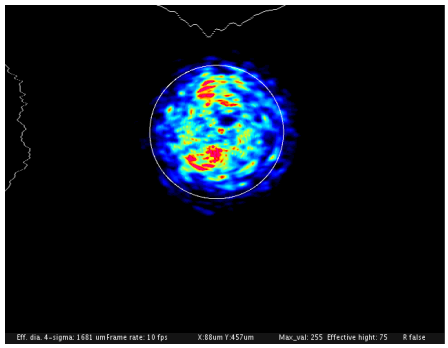
Parameter	Minimum Value	Typical Value	Maximum Value
Central wavelength, nm	404.5	405	405.4
Spectral line width FWHM, MHz	-	20 [1]	60
Output power, mW	-	40 [2]	-
Power stability, % (RMS, 8 hrs)	0.02	0.1 [3]	0.5
Power stability, % (peak-to-peak, 8 hrs)	0.1	1 [4]	2.5
Intensity noise, % (RMS, 20 Hz to 20 MHz)	0.1	0.2 [5]	0.6
Side-mode suppression ratio (SMSR), dB	-	50	-
Longitudinal modes	-	Single	-
Transversal modes	-	Multiple	-
Fiber	-	FG105UCA	-
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	-
Overheat protection	-	Yes	-

TYPICAL SPECTRUM



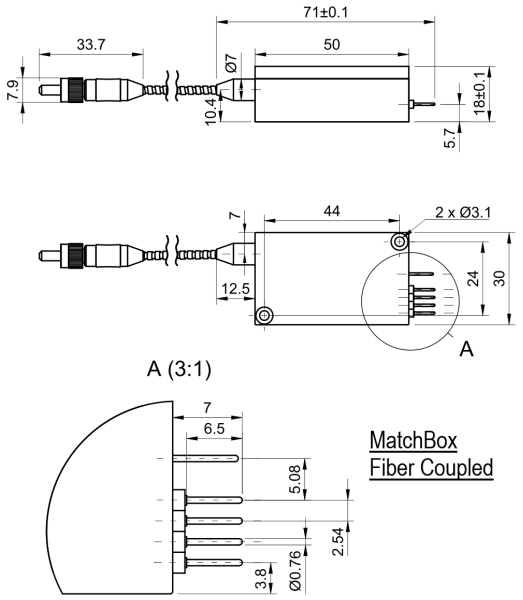
Typical spectrum of 0405 nm diode laser. Measured with 10 pm resolution.

TYPICAL NEAR FIELD



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

DRAWING



[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.