


 PART NUMBER 0638L-11A  
 ITEM NAME 638 NM LASER (DIODE; FREE-SPACE)

## PRODUCT DATASHEET



### DESCRIPTION

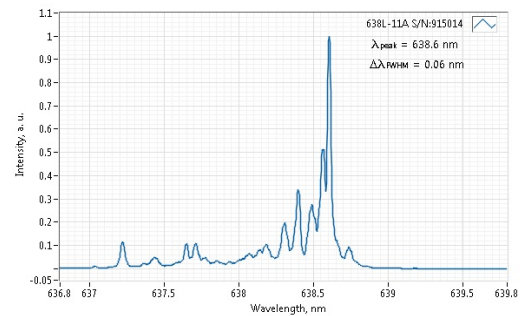
638 nm is one of the key wavelengths in fluorescence imaging and flow cytometry. Laser diode based model emits red radiation with high wall plug efficiency, high wavelength and power stability, high polarization contrast and up to 10 MHz modulation frequency. A 200 mW laser diode at 638 nm is used in this module and we leave some headroom for an extended lifetime. Slight wavelength tunability is also possible with an inbuilt TEC. 5 VDC power 638 nm module is very convenient for integration into battery powered laser devices as well as scientific setups.

### SPECIFICATIONS

Last edited on: 24 January 2019

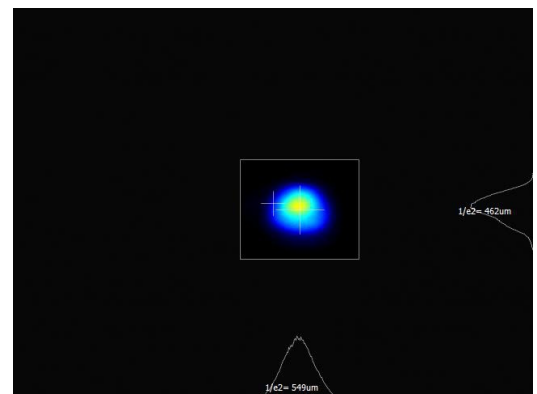
Parameter	Minimum Value	Typical Value	Maximum Value
Central Wavelength, nm	635	638	641
Longitudinal modes	-	multimode	-
Spectral line width FWHM, nm	-	0.7	1
Output power, mW	-	180 <sup>1</sup>	-
Power stability, % (RMS, 8 hrs)	-	0.2 <sup>2</sup>	1
Power stability, % (peak-to-peak, 8 hrs)	-	2 <sup>3</sup>	3
Noise, % (RMS, 20 Hz to 20 MHz)	-	0.25 <sup>4</sup>	0.6
Transversal modes	-	TEM <sub>00</sub>	-
Beam Diameter at Aperture (1/e <sup>2</sup> ), mm	-	1	-
Beam divergence (full angle), mrad	-	1.1	-
M <sup>2</sup> horizontal axis	-	1.1	1.4
M <sup>2</sup> vertical axis	-	1.2	1.5
M <sup>2</sup> effective	-	1.2	1.5
Polarization direction	-	Horizontal <sup>5</sup>	-
Polarization contrast	1000	2000	5000
Control interface type	-	UART/USB	-
Operation mode	-	APC (CW)	-
Modulation bandwidth, MHz	-	optional <sup>6</sup>	-
Input voltage, VDC	4.8	5	5.3
External power supply requirement	-	+5 V DC, 1.5 A	-
Dimensions, mm	-	50 x 30 x 18 <sup>7</sup>	-
Beam height from the base, mm	9.9	10.4	10.9
Heat-sinking requirement, °C/W	-	1	-

### TYPICAL SPECTRUM



Typical spectrum of 0638 nm diode laser. Measured with 20 pm resolution.

### TYPICAL NEAR FIELD



Typical near field (0.45 m from output aperture) beam profile. Non-circularized beam of a 0638 nm direct diode laser.

### TYPICAL FAR FIELD

Optimum heatsink temperature, °C	15	20	30
Warm up time, mins (cold start)	0.1	10	1
Temperature stabilization	-	Yes	-
Overheat protection	-	Yes	-
Storage temperature, °C (non-condensing)	-10	-	50
Net weight, kg	0.4	2	10
Max. power consumption, W	0.1	0.12	0.14
Warranty, months (op. hrs)	-	14 (10000) <sup>8</sup>	-
RoHS	-	Yes	-
CE compliance	-	- General Product Safety Directive (GPSD) 2001/95/EC - (EMC) Directive 2004/108/EC	-
Laser Safety Class	-	3B	-
OEM lasers are not compliant with	-	IEC60825-1:2014 (compliant using additional accessories)	-
Country of origin	-	Lithuania	-

<sup>1</sup> The optical power can be tuned from virtually 0% to 100%. However, other specifications, such as central wavelength, power stability, noise, polarization ratio, beam shape, quality and circularity are not guaranteed at power levels other than factory preset power. Significantly worse power stability is to be expected at very low power levels, e.g. <3% from specified nominal power.

<sup>2</sup> Long term power test is carried out using an optical power meter with an input bandwidth of 10 Hz. Actual measurement rate has a period of about 20 seconds to 1 minute.

<sup>3</sup> Long term power test is carried out using an optical power meter with an input bandwidth of 10 Hz. Actual measurement rate has a period of about 20 seconds to 1 minute.

<sup>4</sup> Noise level is measured with a fast photodiode connected to an oscilloscope. The overall system bandwidth is from 2 kHz to 20 MHz.

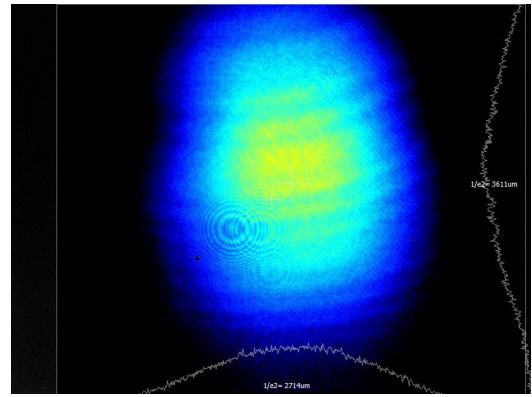
<sup>5</sup> For lasers without integrated optical isolators.

<sup>6</sup> TTL digital modulation up to 10 MHz.

<sup>7</sup> Excluding control interface pins and an output window/fiber assembly.

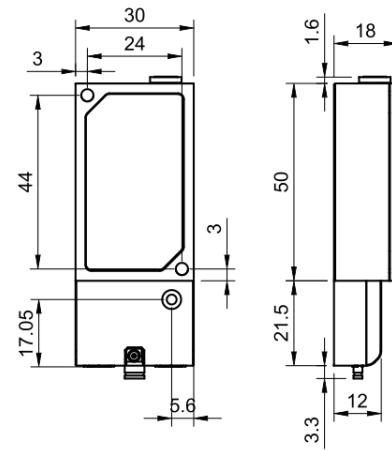
<sup>8</sup> Whichever occurs first. The laser has an integrated operational hours counter.

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



Typical far field (2.75 m from output aperture) beam profile. Non-circularized beam of a 0638 nm direct diode laser.

## DRAWING



Matchbox (with breakout-box) dimensions