

Integrated Optics, UAB Company code: 302833442 VAT No: LT100007179012 https://integratedoptics.com info@integratedoptics.com



PART NUMBER 0633L-11A ITEM NAME 633 NM LASER (VBG DIODE; FREE-SPACE)

PRODUCT DATASHEET

DESCRIPTION

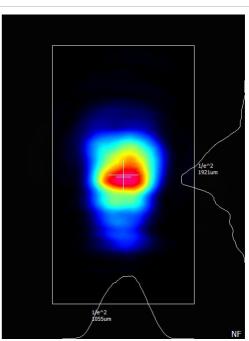
No description given

SPECIFICATIONS

Specifications updated: 18 August 2020

Value Value Central Wavelength, nm 630 633 637 Longitudinal modes - Multiple - Spectral line width FWHM, nm 0.02 0.7 1 Output power, mW - 100 1 110 Power stability, % (RMS, 8 hrs) 0.01 0.03 2 0.25 Power stability, % (peak-to-peak, 8 hrs) 0.05 0.15 3 1 Noise, % (RMS, 20 Hz to 20 MHz) 0.05 0.25 4 0.6 Transversal modes - TEM00 - Beam width (1/e2), mm - 1.5 1.3 Beam height (1/e2), mm - 1.2 1.8 Horizontal beam divergence, mrad - 1.2 1.5 Vertical beam divergence, mrad - 0.4 0.8 M² official axis - 1.2 1.4 M² official axis - 1.3 1.6 M² official axis - 1.3 1.6 Polarization direction - Horizontal 6 -	SELOII IOATIONS	Орсоню	ations appeared. 10 A	ugust 2020
Longitudinal modes	Parameter		Typical Value	Maximun Value
Spectral line width FWHM, nm 0.02 0.7 1 Output power, mW - 100 ¹ 110 Power stability, % (RMS, 8 hrs) 0.01 0.03 ² 0.25 Power stability, % (peak-to-peak, 8 hrs) 0.05 0.15 ³ 1 Noise, % (RMS, 20 Hz to 20 MHz) 0.05 0.25 ⁴ 0.6 Transversal modes - TEM00 - Beam width (1/e2), mm - 1.5 1.3 Horizontal beam divergence, mrad - 1.2 1.8 Horizontal beam divergence, mrad - 0.4 0.8 M² vertical axis - 1.2 1.4 M² vertical axis - 1.2 1.4 M² vertical axis - 1.3 1.6 M² effective - 1.3 1.6 Polarization direction - Horizontal 6 - Polarization contrast 1000 2000 5000 Control interface type - UART 7 - Operation mode - <t< td=""><td>Central Wavelength, nm</td><td>630</td><td>633</td><td>637</td></t<>	Central Wavelength, nm	630	633	637
Output power, mW - 100 ¹ 110 Power stability, % (RMS, 8 hrs) 0.01 0.03 ² 0.25 Power stability, % (peak-to-peak, 8 hrs) 0.05 0.15 ³ 1 Noise, % (RMS, 20 Hz to 20 MHz) 0.05 0.25 ⁴ 0.6 Transversal modes - TEM00 - Beam width (1/e2), mm - 1.5 1.3 Beam height (1/e2), mm - 1.2 1.8 Horizontal beam divergence, mrad - 0.4 0.8 Merical beam divergence, mrad - 0.4 0.8	Longitudinal modes	-	Multiple	-
Power stability, % (RMS, 8 hrs) 0.01 0.03 2 0.25 Power stability, % (peak-to-peak, 8 hrs) 0.05 0.15 3 1 Noise, % (RMS, 20 Hz to 20 MHz) 0.05 0.25 4 0.6 Transversal modes - TEM00 - Beam width (1/e2), mm - 1.5 1.3 Beam height (1/e2), mm - 1.2 1.8 Horizontal beam divergence, mrad - 0.4 0.8 M² horizontal axis - 1.2 1.4 M² vertical beam divergence, mrad - 0.4 0.8 M² horizontal axis - 1.2 1.4 M² vertical axis - 1.3 1.6 M² effective - 1.3 1.6 Polarization direction - Horizontal 6 - Polarization contrast 1000 2000 5000 Control interface type - UART 7 - Operation mode - APC (CW) - Modulation bandwidth, MHz -	Spectral line width FWHM, nm	0.02	0.7	1
Power stability, % (peak-to-peak, 8 hrs)	Output power, mW	-	100 ¹	110
Noise, % (RMS, 20 Hz to 20 MHz) 0.05 0.25 ⁴ 0.6 Transversal modes - TEM00 - Beam width (1/e2), mm - 1 ⁵ 1.3 Beam height (1/e2), mm - 1.2 1.8 Horizontal beam divergence, mrad - 1.2 1.5 Vertical beam divergence, mrad - 0.4 0.8 M² horizontal axis - 1.2 1.4 M² vertical axis - 1.3 1.6 M² effective - 1.3 1.6 Polarization direction - Horizontal ⁶ - Polarization contrast 1000 2000 5000 Control interface type - UART ⁷ - Operation mode - APC (CW) - Modulation bandwidth, MHz - 10 ⁸ - Input voltage, VDC 4.8 5 5.3 External power supply requirement - +5 V DC, 1.5 A - Dimensions, mm - 50 x 30 x	Power stability, % (RMS, 8 hrs)	0.01	0.03 ²	0.25
Transversal modes - TEM00 - Beam width (1/e2), mm - 1 5 1.3 Beam height (1/e2), mm - 1.2 1.8 Horizontal beam divergence, mrad - 1.2 1.5 Vertical beam divergence, mrad - 0.4 0.8 M² horizontal axis - 1.2 1.4 M² vertical axis - 1.3 1.6 M² effective - 1.3 1.6 Polarization direction - Horizontal 6 - Polarization contrast 1000 2000 5000 Control interface type - UART 7 - Operation mode - APC (CW) - Modulation bandwidth, MHz - 10 8 - 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 9 - Beam height from the base, mm 9.9 10.4	Power stability, % (peak-to-peak, 8 hrs)	0.05	0.15 ³	1
Beam width (1/e2), mm - 1 5 1.3 Beam height (1/e2), mm - 1.2 1.8 Horizontal beam divergence, mrad - 1.2 1.5 Vertical beam divergence, mrad - 0.4 0.8 M² horizontal axis - 1.2 1.4 M² vertical axis - 1.3 1.6 M² effective - 1.3 1.6 Polarization direction - Horizontal 6 - Polarization contrast 1000 2000 5000 Control interface type - UART 7 - Operation mode - APC (CW) - Modulation bandwidth, MHz - 10 8 - 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 9 - Beam height from the base, mm 9.9 10.4 10.9 Heat-sinking requirement, ?° C/W -	Noise, % (RMS, 20 Hz to 20 MHz)	0.05	0.25 4	0.6
Beam height (1/e2), mm - 1.2 1.8 Horizontal beam divergence, mrad - 1.2 1.5 Vertical beam divergence, mrad - 0.4 0.8 M ² horizontal axis - 1.2 1.4 M ² vertical axis - 1.3 1.6 M ² effective - 1.3 1.6 Polarization direction - Horizontal 6 - Polarization contrast 1000 2000 5000 Control interface type - UART 7 - Operation mode - APC (CW) - Modulation bandwidth, MHz - 10 8 - 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 9 - Beam height from the base, mm 9.9 10.4 10.9 Heat-sinking requirement, ?° C/W - <1 - <1 - <0 Warm up time, mins (cold start) 0.1 0.5 3 Temperature stabilization - Internal TEC - External fan control - No 10	Transversal modes	-	TEM00	-
Horizontal beam divergence, mrad - 1.2 1.5 Vertical beam divergence, mrad - 0.4 0.8 M ² horizontal axis - 1.2 1.4 M ² vertical axis - 1.3 1.6 M ² effective - 1.3 1.6 Polarization direction - Horizontal 6 - Polarization contrast 1000 2000 5000 Control interface type - UART 7 - Operation mode - APC (CW) - Modulation bandwidth, MHz - 10 8 - 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 9 - Beam height from the base, mm 9.9 10.4 10.9 Heat-sinking requirement, ?°C/W - <1 - <1 - <0 Optimum heatsink temperature, °C 15 20 40 Warm up time, mins (cold start) 0.1 0.5 3 Temperature stabilization - Internal TEC - External fan control - No 10	Beam width (1/e2), mm	-	1 ⁵	1.3
Vertical beam divergence, mrad - 0.4 0.8 M ² horizontal axis - 1.2 1.4 M ² vertical axis - 1.3 1.6 M ² effective - 1.3 1.6 Polarization direction - Horizontal 6 - Polarization contrast 1000 2000 5000 Control interface type - UART 7 - Operation mode - APC (CW) - Modulation bandwidth, MHz - 10 8 - 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 9 - Beam height from the base, mm 9.9 10.4 10.9 Heat-sinking requirement, ? ° C/W - <1	Beam height (1/e2), mm	-	1.2	1.8
M ² horizontal axis - 1.2 1.4 M ² vertical axis - 1.3 1.6 M ² effective - 1.3 1.6 Polarization direction - Horizontal ⁶ - Polarization contrast 1000 2000 5000 Control interface type - UART ⁷ - Operation mode - APC (CW) - Modulation bandwidth, MHz - 10 ⁸ - 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 ⁹ - Beam height from the base, mm 9.9 10.4 10.9 Heat-sinking requirement, ? ° C/W - <1	Horizontal beam divergence, mrad	-	1.2	1.5
M ² vertical axis - 1.3 1.6 M ² effective - 1.3 1.6 Polarization direction - Horizontal 6 - Polarization contrast 1000 2000 5000 Control interface type - UART 7 - Operation mode - APC (CW) - Modulation bandwidth, MHz - 10 8 - 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 9 - Beam height from the base, mm 9.9 10.4 10.9 Heat-sinking requirement, ?°C/W - <1	Vertical beam divergence, mrad	-	0.4	0.8
M ² effective - 1.3 1.6 Polarization direction - Horizontal 6 - Polarization contrast 1000 2000 5000 Control interface type - UART 7 - Operation mode - APC (CW) - Modulation bandwidth, MHz - 10 8 - 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 9 - Beam height from the base, mm 9.9 10.4 10.9 Heat-sinking requirement, ?°C/W - <1	M ² horizontal axis	-	1.2	1.4
Polarization direction - Horizontal ⁶ - Polarization contrast 1000 2000 5000 Control interface type - UART ⁷ - Operation mode - APC (CW) - Modulation bandwidth, MHz - 10 ⁸ - 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 ⁹ - Beam height from the base, mm 9.9 10.4 10.9 Heat-sinking requirement, ?°C/W - <1	M ² vertical axis	-	1.3	1.6
Polarization contrast 1000 2000 5000 Control interface type - UART 7 - Operation mode - APC (CW) - Modulation bandwidth, MHz - 10 8 - 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 9 - Beam height from the base, mm 9.9 10.4 10.9 Heat-sinking requirement, ?°C/W - <1	M ² effective	-	1.3	1.6
Control interface type - UART 7 - Operation mode - APC (CW) - Modulation bandwidth, MHz - 10 8 - 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 9 - Beam height from the base, mm 9.9 10.4 10.9 Heat-sinking requirement, ?°C/W - <1	Polarization direction	-	Horizontal ⁶	-
Operation mode - APC (CW) - Modulation bandwidth, MHz - 10 8 - 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 9 - Beam height from the base, mm 9.9 10.4 10.9 Heat-sinking requirement, ?°C/W - <1	Polarization contrast	1000	2000	5000
Modulation bandwidth, MHz - 10 8 - 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 9 - Beam height from the base, mm 9.9 10.4 10.9 Heat-sinking requirement, ?°C/W - <1	Control interface type	-	UART ⁷	-
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 9 - Beam height from the base, mm 9.9 10.4 10.9 Heat-sinking requirement, ?°C/W - <1	Operation mode	-	APC (CW)	-
External power supply requirement - +5 V DC, 1.5 A - Dimensions, mm - 50 x 30 x 18 9 - Beam height from the base, mm 9.9 10.4 10.9 Heat-sinking requirement, ?°C/W - <1	Modulation bandwidth, MHz	-	108	-
Dimensions, mm - 50 x 30 x 18 9 - Beam height from the base, mm 9.9 10.4 10.9 Heat-sinking requirement, ?°C/W - <1 -	Input voltage, VDC	4.8	5	5.3
Beam height from the base, mm 9.9 10.4 10.9 Heat-sinking requirement, ?°C/W - <1	External power supply requirement	-	+5 V DC, 1.5 A	-
Heat-sinking requirement, ?°C/W - <1 - Optimum heatsink temperature, °C 15 20 40 Warm up time, mins (cold start) 0.1 0.5 3 Temperature stabilization - Internal TEC - External fan control - No 10 -	Dimensions, mm	-	50 x 30 x 18 ⁹	-
Optimum heatsink temperature, °C 15 20 40 Warm up time, mins (cold start) 0.1 0.5 3 Temperature stabilization - Internal TEC - External fan control - No 10 -	Beam height from the base, mm	9.9	10.4	10.9
Warm up time, mins (cold start) O.1 O.5 3 Temperature stabilization - Internal TEC - No 10 - No 10	Heat-sinking requirement, ?°C/W	-	<1	-
Temperature stabilization - Internal TEC - External fan control - No 10 -	Optimum heatsink temperature, °C	15	20	40
External fan control - No ¹⁰ -	Warm up time, mins (cold start)	0.1	0.5	3
	Temperature stabilization	-	Internal TEC	-
Overheat protection - Yes -	External fan control	-	No ¹⁰	-
	Overheat protection	-	Yes	-

TYPICAL NEAR FIELD



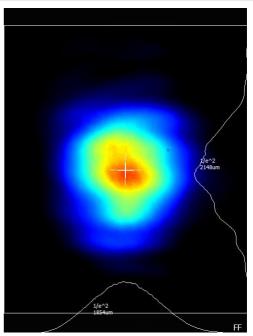
Typical near field (0.45 m from output aperture) beam profile. Noncircularized beam of a 0633 nm direct diode laser.

Storage temperature, ?°C (non-condensing)	-10	-	50
Net weight, kg	0.1	0.12	0.13
Max. power consumption, W	0.4	2	10
Warranty, months (op. hrs)	-	14 (10000) ¹¹	-
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	-

¹ 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.

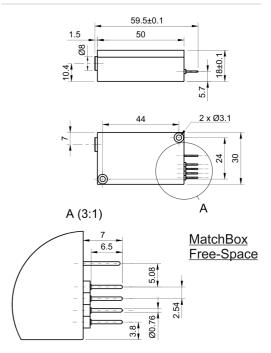
Note: Product specifications are subject to change without prior notice to improve reliability, function or design or otherwise.

TYPICAL FAR FIELD



Typical far field (1 m from output aperture) beam profile. Non-circularized beam of a 0633 nm direct diode laser.

DRAWING



²The 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.

 $^{^3}$ The long term power test is carried out at constant laser body temperature (+/-0.1 $^{\circ}$ 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.

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

 $^{^{5}\,\}mathrm{Beam}$ width and height are measured at 0.45 m from output aperture.

⁶ For lasers without integrated optical isolators.

 $^{^{7}}$ Break-out-boxes AM-C8 and AM-C3 can be used for conversion of UART communication to either USB or RS232.

⁸TTL digital modulation up to 10 MHz.

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

¹⁰ This function can be enabled in hardware only if the fast modulation option is disabled. The customer must specify this before ordering the laser.

¹¹ Whichever occurs first. The laser has an integrated operational hours counter.