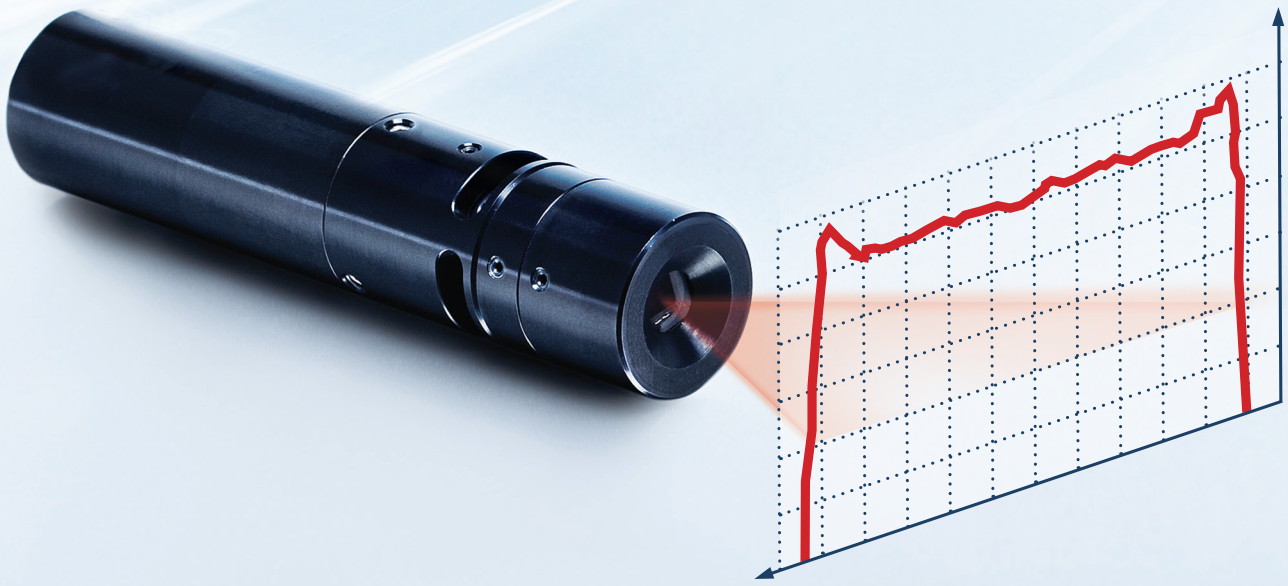
Osela Inc.

STRUCTURED LIGHT AND
LASER BEAM SHAPING SOLUTIONS

STREAMLINE LASER

High performance, high reliability, and superior beam shaping capabilities in a self contained laser module for 3D structured light applications.



FEATURES

- Superior beam shaping (single or multiline)
- Externally focusable
- High Pointing and Focus stability
- ESD, Overvoltage & Over temperature protected
- Up to 2 year warranty

APPLICATIONS

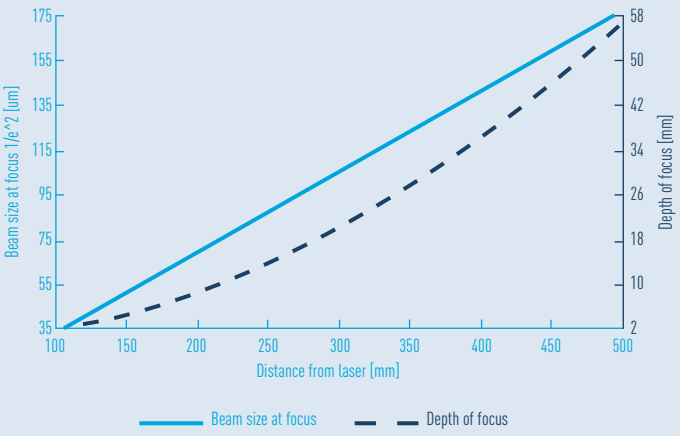
- 3D Machine Vision
- Industrial Inspection
- Bio-Medical
- Structured lighting

LASER DIODE MODELS AND FOCUSING OPTIONS

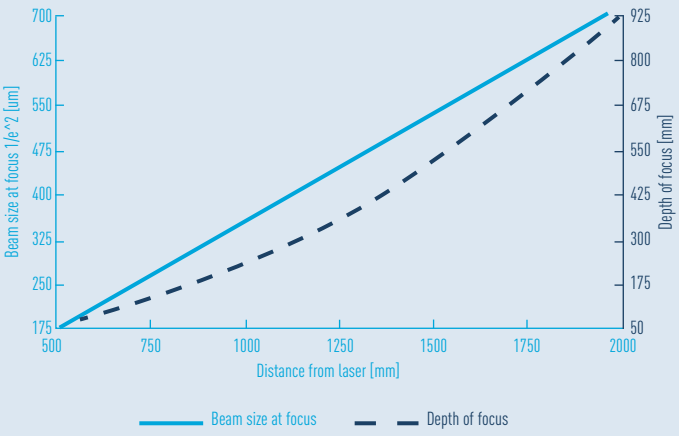
At Osela we provide many different focusing options giving you the flexibility to choose the one that best suits your application. The Streamline laser is free focusable externally without removing any optics. From the graphs below, note the beam size and Depth of Focus (DOF) values and then multiply by the K constants for the laser diode model and focus option of choice (A, B, C, D or E).

Example: From the graphs at 400 mm working distance, Focus = 140µm, DOF = 36 mm. Than for Laser Model 660 nm 130 mW the line thickness at focus for OPTION A will be 212um (i.e.140 um x 1.52). Its depth of focus will be 88.92mm (i.e. 36mm x 2.47).

SHORT RANGE



LONG RANGE



DIODE MODEL				FOCUSING & DOF OPTIONS AND CONSTANT									
WAVELENGTH (nm)	DIODE POWER (mW)	WAVELEGNTH TOLERENCE (nm)	OPERATING CURRENT[2] (mA)	A		B		C		D		E	
				K_{FOCUS}	K_{DOF}	K_{FOCUS}	K_{DOF}	K_{FOCUS}	K_{DOF}	K_{FOCUS}	K_{DOF}	K_{FOCUS}	K_{DOF}
405[1]	35	+5/-5	50	0.68	0.80	1.65	4.74	0.28	0.13	0.98	1.69	2.39	10.00
	100	+10/-5	70	0.64	0.72	1.46	3.74	0.26	0.12	0.93	1.52	2.12	7.88
450[1]	100	+10/-10	100	0.66	0.69	1.95	6.00	—	—	0.96	1.45	2.83	12.65
520[1]	50	+10/-5	145	0.74	0.75	2.80	10.77	0.41	0.24	1.07	1.58	4.06	22.69
635	5	+5/-5	50	0.79	0.70	2.58	7.44	0.45	0.22	1.15	1.47	3.75	15.67
	10	+8/-4	60	0.96	1.02	2.58	7.44	0.54	0.32	1.39	2.15	3.75	15.67
640	25	+3/-10	90	0.96	1.02	2.29	5.86	0.54	0.32	1.39	2.15	3.33	12.35
	45, 80	+5/-5	120, 185	0.96	1.02	2.06	4.73	0.54	0.32	1.39	2.15	2.99	9.98
	150	+3/-8	185	0.65	0.47	1.88	3.93	0.37	0.15	0.94	0.99	2.74	8.28
650	5	+10/-5	48	0.73	0.56	2.38	6.09	0.41	0.18	1.05	1.19	3.46	12.84
	10	+10/-5	55	0.73	0.56	2.26	5.46	0.41	0.18	1.05	1.19	3.27	11.51
660	35	+5/-10	100	0.95	0.96	2.52	6.84	0.53	0.30	1.37	2.02	3.66	14.41
	50, 100	+5/-5	125,175	1.52	2.47	2.14	4.92	0.85	0.41	2.20	5.22	3.11	10.37
	130	+5/-5	200	1.52	2.47	2.14	4.92	0.85	0.41	2.20	5.22	3.11	10.37
690	35	+5/-10	95	1.15	1.36	2.62	7.10	0.47	0.23	1.66	2.87	3.80	14.96
	50	+10/-10	150	1.09	1.22	2.11	4.63	0.44	0.20	1.58	2.57	3.07	9.75
785	75, 120	+10/-10	150, 200	1.57	2.23	2.83	7.25	0.64	0.37	2.28	4.71	4.11	15.27
810	150	-0.6	230	1.52	2.03	3.29	9.46	0.62	0.34	2.21	4.27	4.77	19.94
830	50, 100	+10/-10	115, 135	1.19	1.21	3.00	7.66	0.67	0.38	1.73	16.14	4.35	16.14
	200	+10/-10	240	1.03	0.91	3.37	9.72	0.58	0.29	1.50	1.93	4.90	20.48

[1] 9 to 30V operation

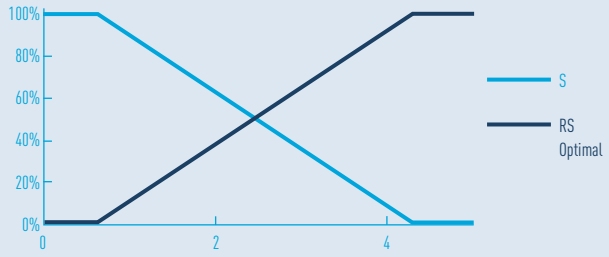
[2] Measured at 25°C at operating voltage of 5V for ≥635nm and 12V for 405, 450 and 520nm models)

MODULATION

The Streamline laser can be modulated by an external 0 to 5V external signal through the white wire. The **S type** modulation is included by default with the Streamline Module.

FUNCTION	CODE	ON	OFF
TTL	T	0 to 2V	3 to 5V
Reverse TTL	RT	3 to 5V	0 to 2V

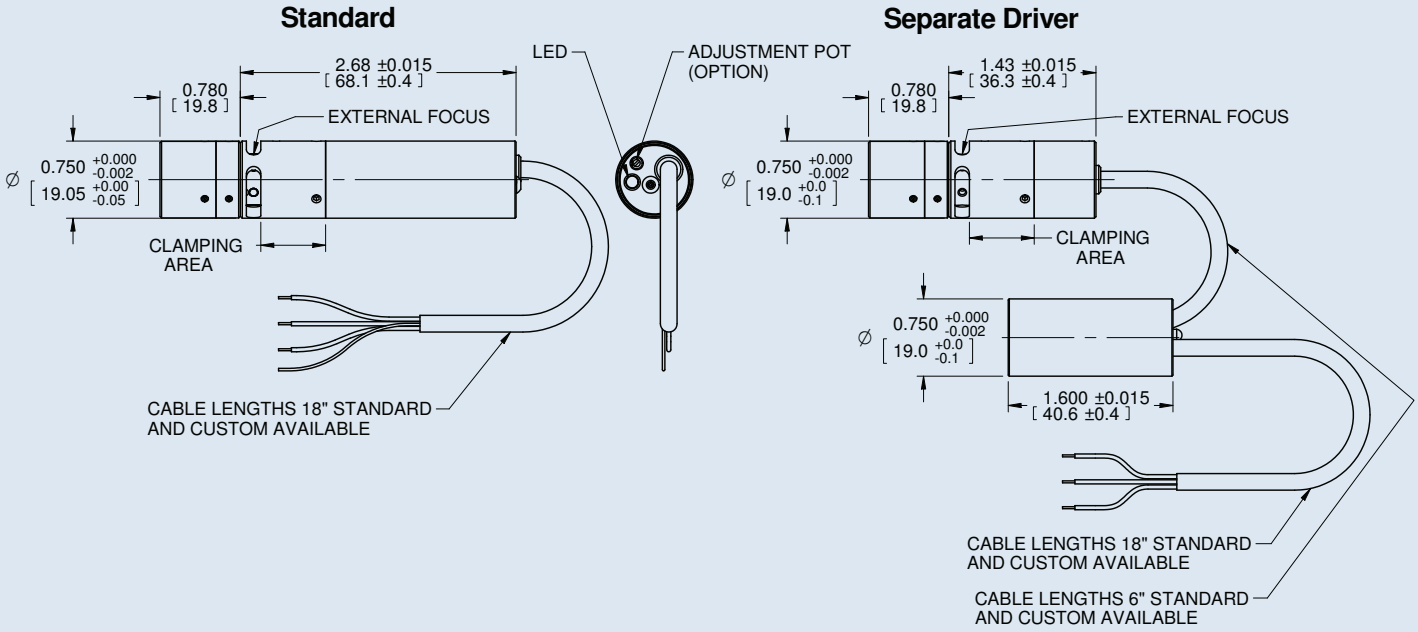
Note: One modulation input needs to be selected, S (default), RS, T or RT



SPECIFICATIONS

Bore sight (mrad)	< 3 mrad
Wavelength Drift	≈ 0.25 nm/ degC
Pointing Stability	< 6 µrad/°C
Modulation Rise/Fall time	< 5µ sec, 100% modulation depth (10 Kohm input impedance)
Protections (Built in)	ESD, Over voltage (up to 30 VDC), Over-temp Shutoff (> 50 deg C)
Long term Power stability (8 hours)	< 3 %, 2 minute warm up time
Operating Voltage	5 ± 0.5VDC, 4.5 to 30V Optional (9-30V for < 635 nm)
Working Temp Range	-10 to to +50 °C (housing)
Weight	< 50 g
Power Supply Cable	18 inches 3 conductors Belden 9533, with flying leads
ESD Protection	Level 4
Shock Tolerance	30g, 6ms, functional

MECHANICAL SPECIFICATIONS



STREAMLINE SINGLE LINE GENERATOR

FIG 1 - INTENSITY DISTRIBUTION ALONG THE LINE

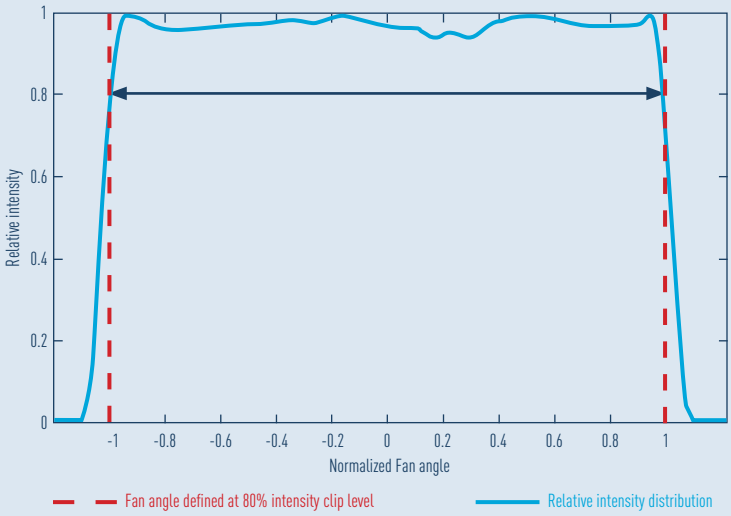
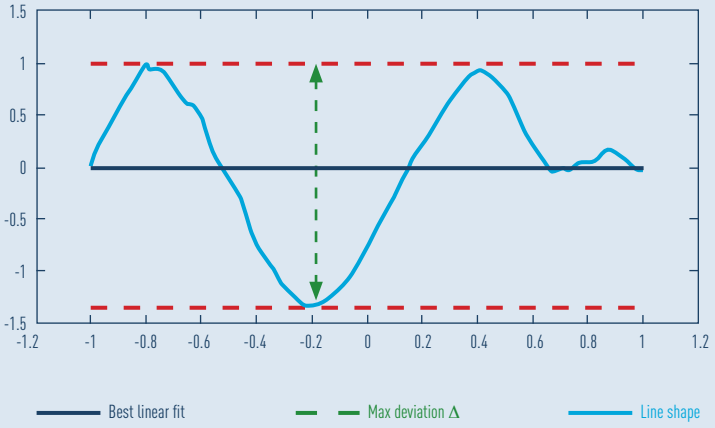


FIG 2 - LINE STRAIGHTNESS



SPECIFICATIONS

SPECIFICATIONS		VALUES
Uniformity (line intensity distribution along the line)[2]	$\frac{Imax - Imin}{Imax + Imin}$	20% (typical) ≤7.5%[1]
Relative intensity clip that define the fan angle		80%
Contained energy In the fan angle	$\frac{\text{Energy in fan angle}}{\text{total energy}}$	≥95%
Line Straightness (deviation from the best linear fit)[2]	$\frac{\Delta}{L \text{ (line lenght)}}$	≤0.1% ≤0.05%[1]
Fan angle		1 to 90° [3]
Fan angle tolerance (line diverging angle from the tip of the laser)		+1.0/-0.5° (FA <30 °) +1.5/-0.5° (FA ≥30°)

[1] For SL *Plus* (see Streamline *PLUS* datasheet).
[2] Uniformity and straightness are measured at 80% of the fan angle (100% for SL *Plus*).
[3] Available Fan Angle (°) 1, 5, 10, 15, 20, 30, 38, 45, 60, 75, 90 custom upon demand.

ORDERING CODE

SL	-	XXX Wavelength	-	XXX Diode Power	-	X Electronic	X Focusing Option	-	XX Fan Angle	-	XXX-XX Multi beams	-	XXXXX Option
		see table		see table		S	A		1, 5, 10		(Optional)		SD
						RS	B		15, 20		Refer to the		24V
						T	C		30, 38		Multi-dots and		
						RT	D		45, 60		Multi-Lines		
							E		75, 90		page		