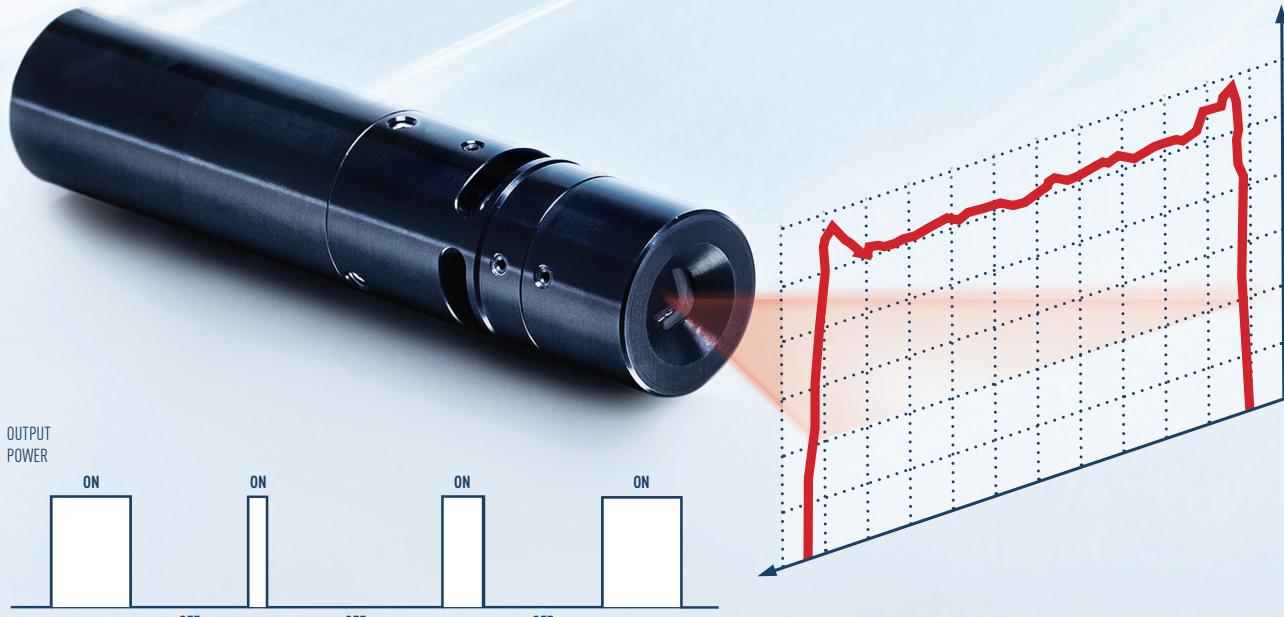




STRUCTURED LIGHT AND
LASER BEAM SHAPING SOLUTIONS

SL PULSED POWER LASER

High power, small package laser projector providing high intensity illumination in pulsed operation for footprint sensitive 3D structured light applications.



FEATURES

- Pulse mode: 450, 640 and 808nm up to 1W
- Selectable enable and disable time with duty cycle up to 40%
- Integrated Microchip pulse guard for second level protection
- Single or multiline
- Over-temperature protected

APPLICATIONS

- 3D structured lighting
- Outdoor Industrial Inspection
- Rail and Road inspection
- High Signal to noise ratio applications

MICRO CONTROLLED DUTY CYCLE LASER

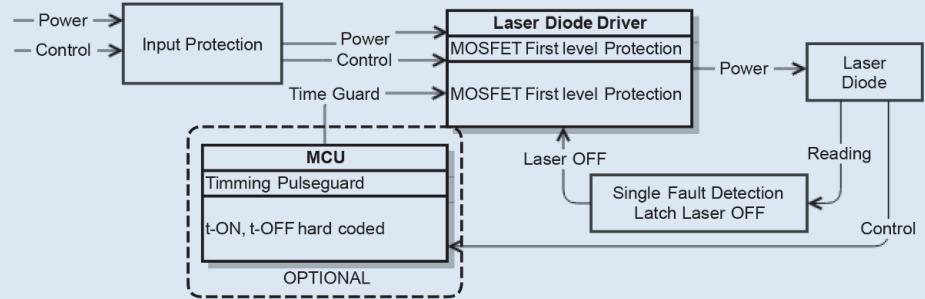
The SL PULSED POWER is capable of providing the highest power in the smallest footprint in the industry. Having an incorporated microcontroller allows for a factory set programmed operation time (maximum laser enable time and minimum laser disable time) for providing high intensity illumination during a period of time while maintaining acceptable heat dissipation. The user simply needs to provide a digital modulation signal to synchronize the enable time and disable time of the laser emission.

PARAMETER	MIN	MAX
Factory pre-set Maximum laser enable time (FE)	100 μ sec	200msec
Factory pre-set Minimum laser disable time (FD)	Depend maximum duty cycle for the diode selected ¹	Unlimited (but not suitable)
User Maximum laser enable time	100 μ sec	Value of FE
User Minimum laser disable time	Value of FD	Unlimited

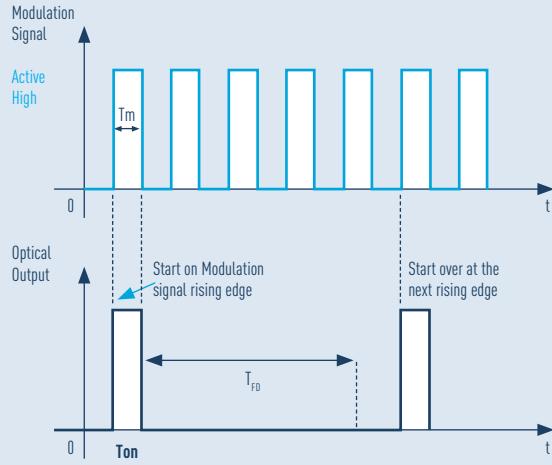
¹ Please refer to the laser diode list. Duty cycle is calculated by:

$$\text{Duty cycle (\%)} = \frac{\text{Maximum laser enable time}}{\text{Maximum laser enable time} + \text{Minimum laser disable time}} \times 100$$

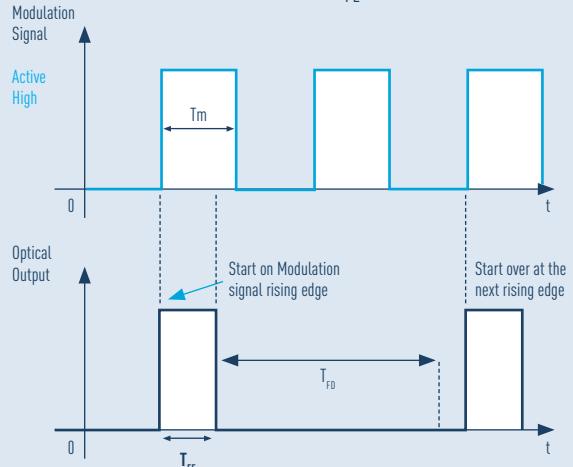
FONCTIONAL BLOCK DIAGRAM



If $T_m \leq T_{FE}$
 $\rightarrow T_{on} = T_m$



If $T_m > T_{FE}$
 $\rightarrow T_{on} = T_{FE}$



T_m = Modulation input timing
 T_{on} = Actual ON time of laser

T_{FE} = Factory pre-set maximum laser enable time
 T_{fd} = Factory pre-set minimum laser disable time

MODULATION

The SL PULSED POWER can be modulated by an external active high signal (via white wire).

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

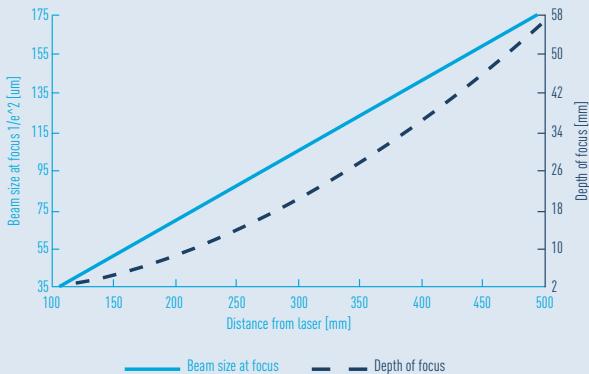
LASER DIODE MODELS AND FOCUSING OPTIONS

At Osela we provide many different focusing options giving you the flexibility to choose the one that best suits your application. The SLP 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, C, D, or H).

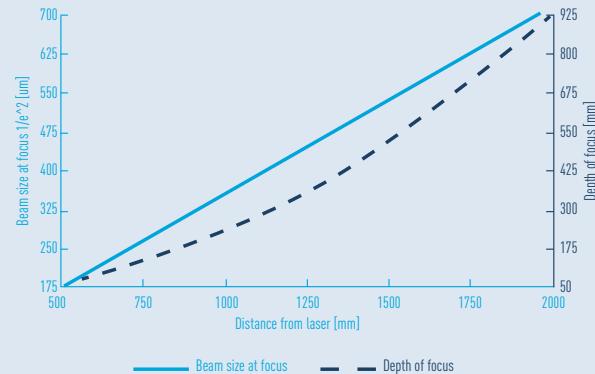
Example: From the graphs at 400 mm working distance, Focus = 140 μ m, DOF = 36 mm. Then for Laser Model 810nm 500 mW the line thickness at focus for OPTION A will be 116.2 μ m (i.e. 140 μ m x 0.83). Its depth of focus will be 18.36mm (i.e. 36mm x 0.51).

DIODE MODEL				FOCUSING & DOF OPTIONS AND CONSTANT							
WAVELENGTH (nm)	DIODE POWER (mW)	MAXIMUM DUTY CYCLE	WAVELENGTH TOLERANCE (nm)	TYPE A		TYPE C		TYPE D		TYPE H	
				K_{FOCUS}	K_{DOF}	K_{FOCUS}	K_{DOF}	K_{FOCUS}	K_{DOF}	K_{FOCUS}	K_{DOF}
640	500	20%	± 5 nm	0.65	0.40	0.37	0.13	0.95	0.85	1.21	1.37
808	500	40%	± 5 nm	0.83	0.51	0.47	0.16	1.2	1.08	1.53	1.73
	1000	20%	± 5 nm	0.83	0.51	0.47	0.16	1.2	1.08	1.53	1.73
450 ¹	500	30%	± 10 nm	0.64	0.65	0.36	0.21	Call		Call	
	1000	15%	± 10 nm	0.64	0.65	0.36	0.21	Call		Call	

SHORT RANGE



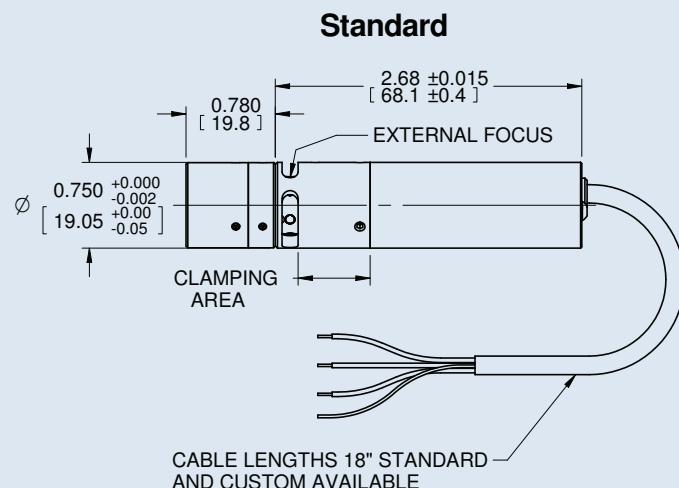
LONG RANGE



SPECIFICATIONS

Bore sight (mrad)	< 3 mrad
Wavelength Drift	≈ 0.25 nm/ degC
Pointing Stability	< 6 μ rad/°C
Modulation Rise/Fall time	<7 μ 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 \pm 0.5VDC (6.5V for 450nm)
Working Temp Range	-10 to +50 °C (housing)
Weight	< 50 g
Power Supply Cable	Belden 9533
ESD Protection	Level 4
Shock Tolerance	30g, 6ms, functional

MECHANICAL SPECIFICATIONS



¹ 6.5V operation. External power supply available.

STREAMLINE SINGLE LINE GENERATOR

FIG 1 - INTENSITY DISTRIBUTION ALONG THE LINE

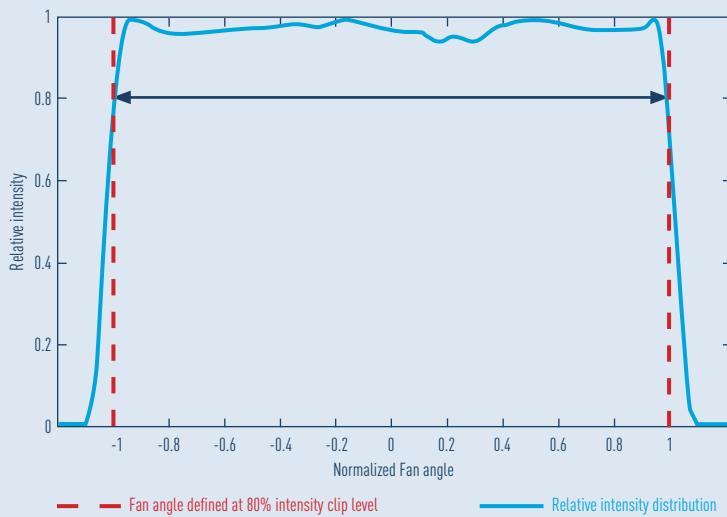
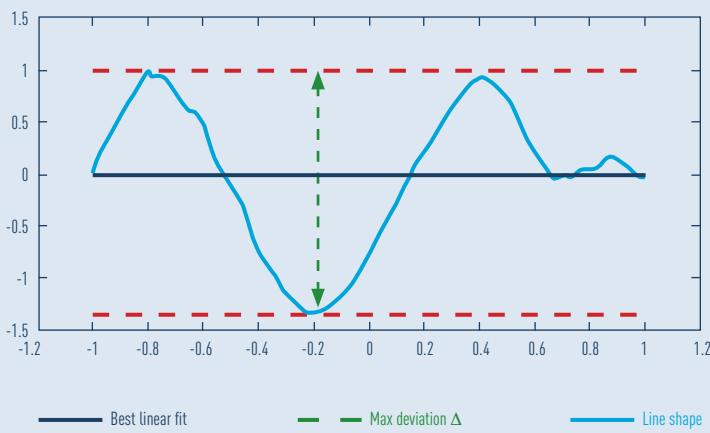


FIG 2 - LINE STRAIGHTNESS



SPECIFICATIONS

SPECIFICATIONS		VALUES
Uniformity (line intensity distribution along the line) ¹	$\frac{I_{\max} - I_{\min}}{I_{\max} + I_{\min}}$	30% (typical) (15% optional)
Relative intensity clip that define the fan angle		80%
Contained energy In the fan angle	$\frac{\text{Energy in fan angle}}{\text{total energy}}$	$\geq 95\%$
Line Straightness (deviation from the best linear fit) ¹	$\frac{\Delta}{L \text{ (line lenght)}}$	$\leq 0.1\%$ $\leq 0.05\%$
Fan angle		1 to 75° ²
Fan angle tolerance (line diverging angle from the tip of the laser)		+1.0/-2° (FA < 60 °)

¹ Uniformity and straightness are measured at 80% of the fan angle.

² Available Fan Angle (°) 1, 5, 10, 15, 20, 30, 38, 45, 60, 75 custom upon demand.

ORDERING CODE

SLP	-	XXX	-	XXX	-	RT	X	-	XX	-	XXX-XX	-	Enable (FE)
		Wavelength		Diode Power		Electronic	Focusing Option		Fan Angle		Multi beams		Disable (FD)
	-	640	-	500	-		A	-	5, 10	-	(Optional)	-	In msec
	-	808	-	500, 1000	-		C	-	15, 20	-	Refer to the	-	ex:
	-	450	-	500, 1000	-		D	-	30, 38	-	Multi-Lines	-	8/100
	-		-		-		H	-	45, 60	-	page	-	