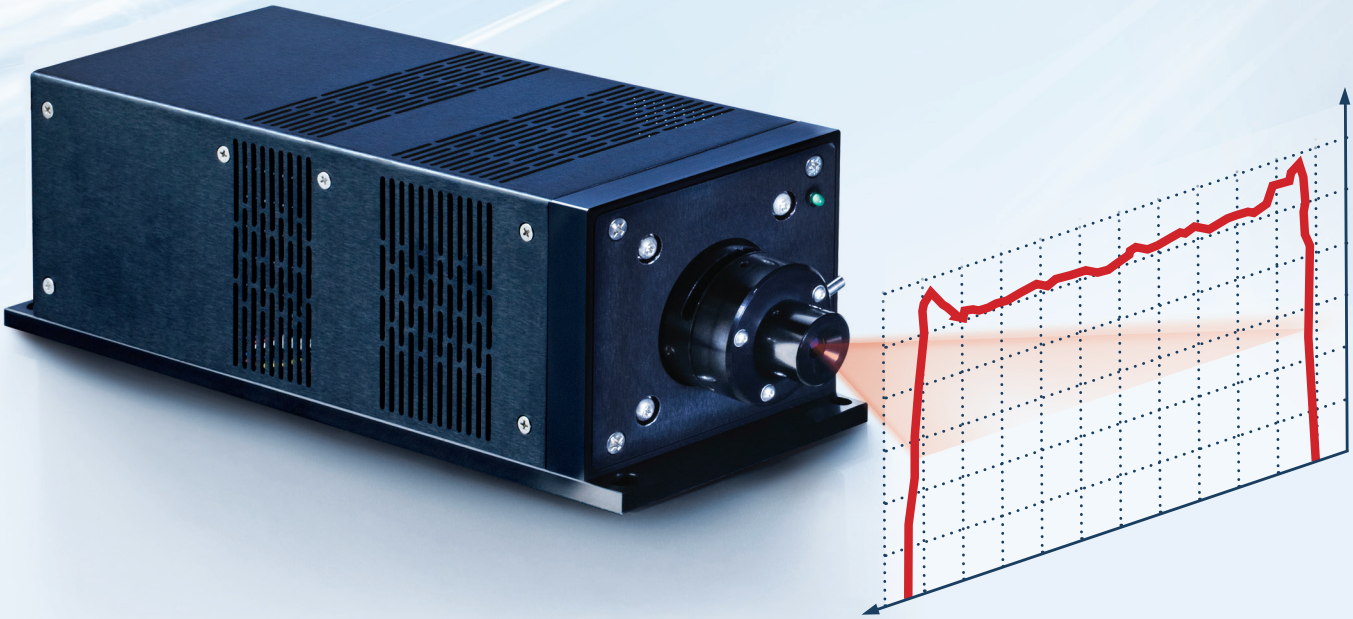
Osela Inc.

STRUCTURED LIGHT AND
LASER BEAM SHAPING SOLUTIONS

FIRELINE LASER

TEC High Power Direct Semiconductor pattern generator provides high reliability with superior beam shaping for high signal to noise industrial applications.



FEATURES

- High Power, up to 15 Watt
- Superior beam shaping
- Externally focusable
- High pointing and focus stability
- Integrated monitoring and modulation features

APPLICATIONS

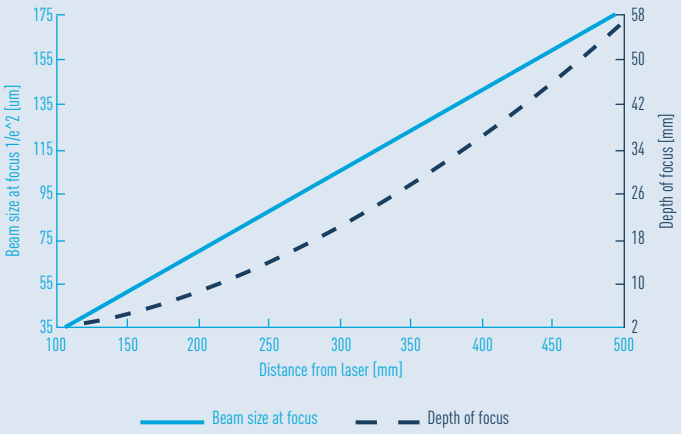
- 3D Machine Vision
- Outdoor Industrial Inspection
- Rail and Road Inspection

LASER DIODE MODELS AND FOCUSING OPTIONS

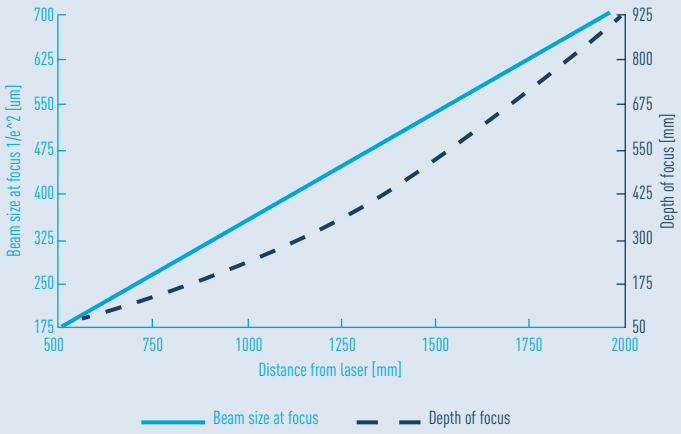
At Osela we provide many different focusing options giving you the flexibility to choose the one that best suits your application. The Fireline laser is free focusable externally without removing any optics. From the graphs below, note the beam size and Depth of Focus (DOF) values and then multiply by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

Example: From the graphs at 400 mm working distance, Focus = 140µm, DOF = 36 mm. Then for Laser Model 808nm 10W the line thickness at focus for OPTION A will be 124.6um (i.e. 140 um x 0.89). Its depth of focus will be 21.24mm (i.e. 36mm x 0.59).

SHORT RANGE



LONG RANGE



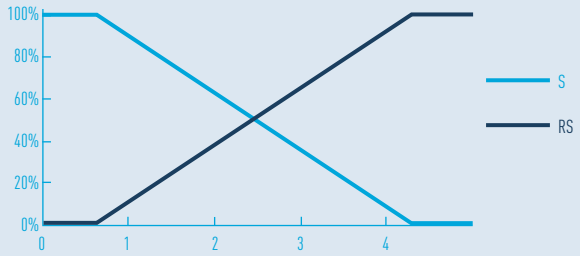
DIODE MODEL			FOCUSING & DOF OPTIONS AND CONSTANT					
WAVELENGTH (nm)	DIODE POWER (W)	WAVELEGNTH TOLERENCE (nm)	TYPE A		TYPE C		TYPE D	
			K_{FOCUS}	K_{DOF}	K_{FOCUS}	K_{DOF}	K_{FOCUS}	K_{DOF}
670	1.5	± 10	0.68	0.42	0.39	0.13	0.99	0.89
808	5	± 3	0.89	0.59	0.50	0.19	1.29	1.25
	8	± 3	0.89	0.59	0.50	0.19	1.29	1.25
	10	± 3	0.89	0.59	0.50	0.19	1.29	1.25
	15	± 3	0.83	0.51	0.47	0.16	1.20	1.08

MODULATION

The Fireline can be modulated by an external 0 to 5V signal on PIN#2 of DB15 Connector. The **S type** modulation comes by default.

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

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



FIRELINE SINGLE LINE GENERATOR

FIG 1 - INTENSITY DISTRIBUTION ALONG THE LINE

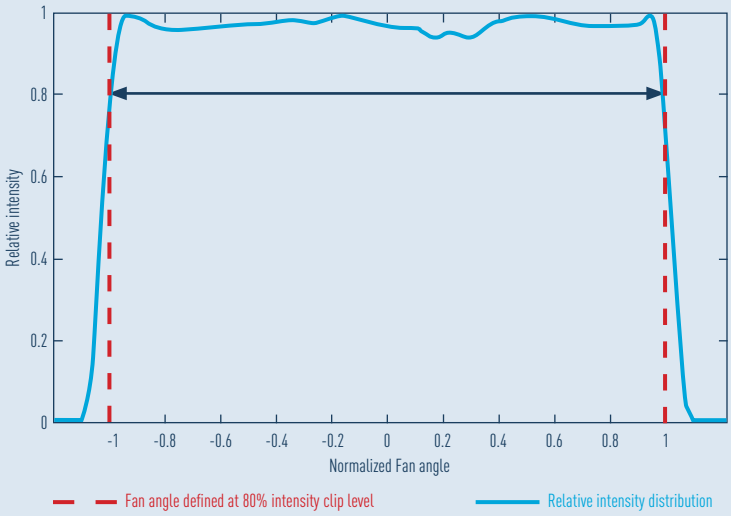
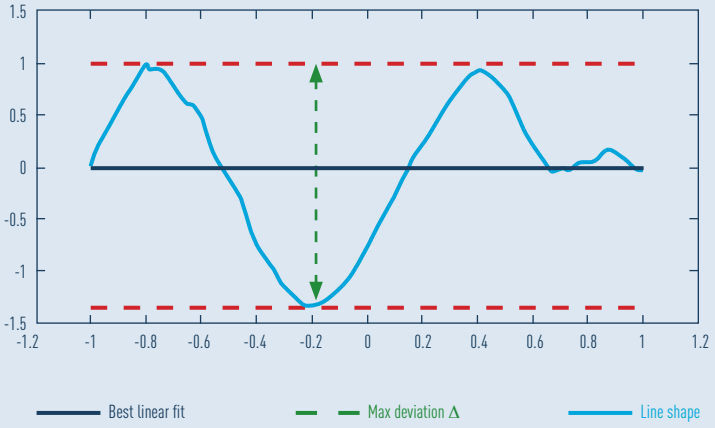


FIG 2 - LINE STRAIGHTNESS

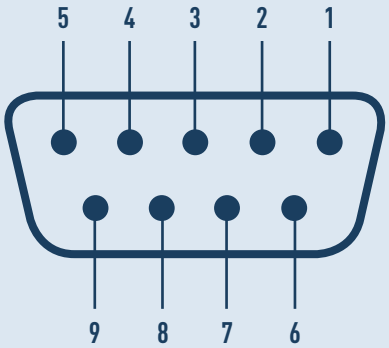


SPECIFICATIONS

SPECIFICATIONS		VALUES
Uniformity (line intensity distribution along the line)[1]	$\frac{Imax - Imin}{Imax + Imin}$	≤30%[2] (≤25% (typical)
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)[1]	$\frac{\Delta}{L \text{ (line lenght)}}$	≤0.1%
Fan angle		10 to 75° [3] +1.0, -2° FA <60 °

[1] Uniformity and straightness are measured at 80% of the fan angle.
[2] Some diode may be ≤35%.
[3] Available Fan Angle (°) 10, 15, 20, 30, 38, 45, 60, 75, custom upon demand.

DB9 PINOUT

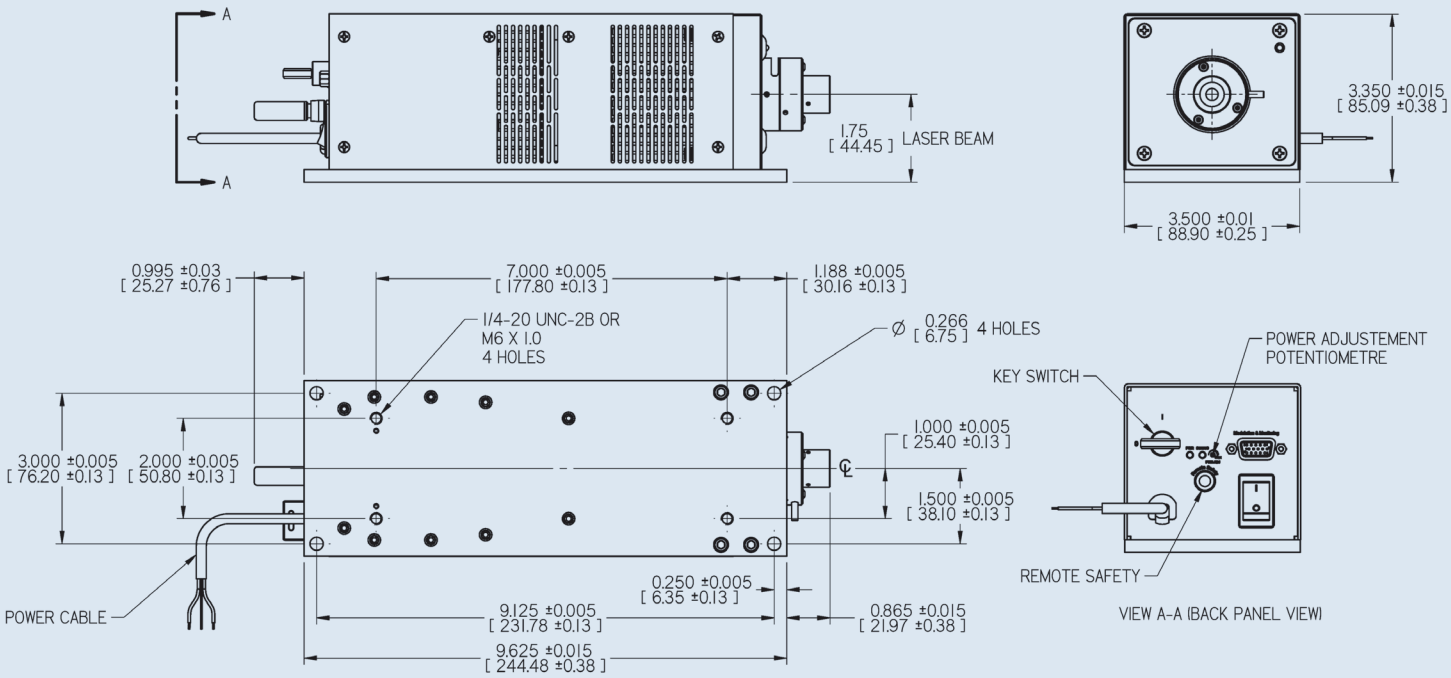


1. GND
2. Temperature Board
3. SDA
4. SCL
5. NC
6. Laser diode temperature monitoring
7. Laser diode current monitoring
8. Laser power monitoring
9. Modulation

SPECIFICATIONS

Bore sight (mrad)	< 3 mrad
Wavelength Drift	≈ 0.1 nm over entire operating temperature
Pointing Stability	< 6 µrad/°C
Modulation Rise/Fall time	< 10µ 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	12V DC
Working Temp Range	-10 to to +50 °C
Weight	< 1.8 kg
Power Supply Cable	18 inches 3 conductors Alpha wire 5610B2001, with flying leads
ESD Protection	Level 4

MECHANICAL SPECIFICATIONS



ORDERING CODE

FL -	XXX	-	XXX	-	X	X	-	XX	-	XXX-XX
	Wavelength		**Diode Power**		**Electronic**	**Focusing Option**		**Fan Angle**		**Multi beams**
	see table		see table		S	A				(Optional)
					RS	C		15, 20		Refer to the
					T	D		30, 38		Multi-dots and
					RT			45, 60		Multi-Lines
								75		page