

Premium IR Laser Module with TTL Modulation and Ultra-Small Circular Laser Dot

VLM-850/940/1050-71 Series



The VLM-850/940/1050-71 Series features TTL modulation and delivers an ultra-small circular laser dot, making it ideal for high-precision targeting and alignment within a 1-meter range. Equipped with a high-precision glass lens, it is housed in a rugged stainless steel casing with an industry-standard M12 thread, ensuring reliable performance, easy installation, and seamless integration into industrial systems. The built-in TTL modulation function allows for fast and precise on/off control, making it suitable for automated and synchronized operations. Available in blue, green, red and IR wavelengths, the module offers selectable laser power output levels to meet different safety standards. Customized focus options within 1 meter are also available upon request.

FEATURES:

- Ultra-small circular laser dot optimized for precise alignment within 1 meter.
- Built-in TTL modulation (CW to 10 kHz) for fast and stable power control.
- Precision glass lens in a rugged stainless steel M12 x 68 mm housing.
- Custom focus within 1 meter available upon request.
- Laser power output level: Class 1 laser product
- Dimensions : M12 x 68 mm (M12 x 2.677")
- Wavelength : 850 / 940 / 1050nm
- 10~36 VDC operation.
- Connection type : Lead wire

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850 nm Laser (Near-IR): The most popular NIR wavelength. Invisible to the eye but highly compatible with silicon-based detectors, making it ideal for IR cameras and sensors.

Typical Applications: Night vision illumination, eye tracking, industrial sensing, biometric authentication, medical imaging devices.

940 nm Laser (Near-IR, Deep): Fully invisible to the human eye. Provides reduced interference with visible-light imaging systems and enhanced stealth operation.

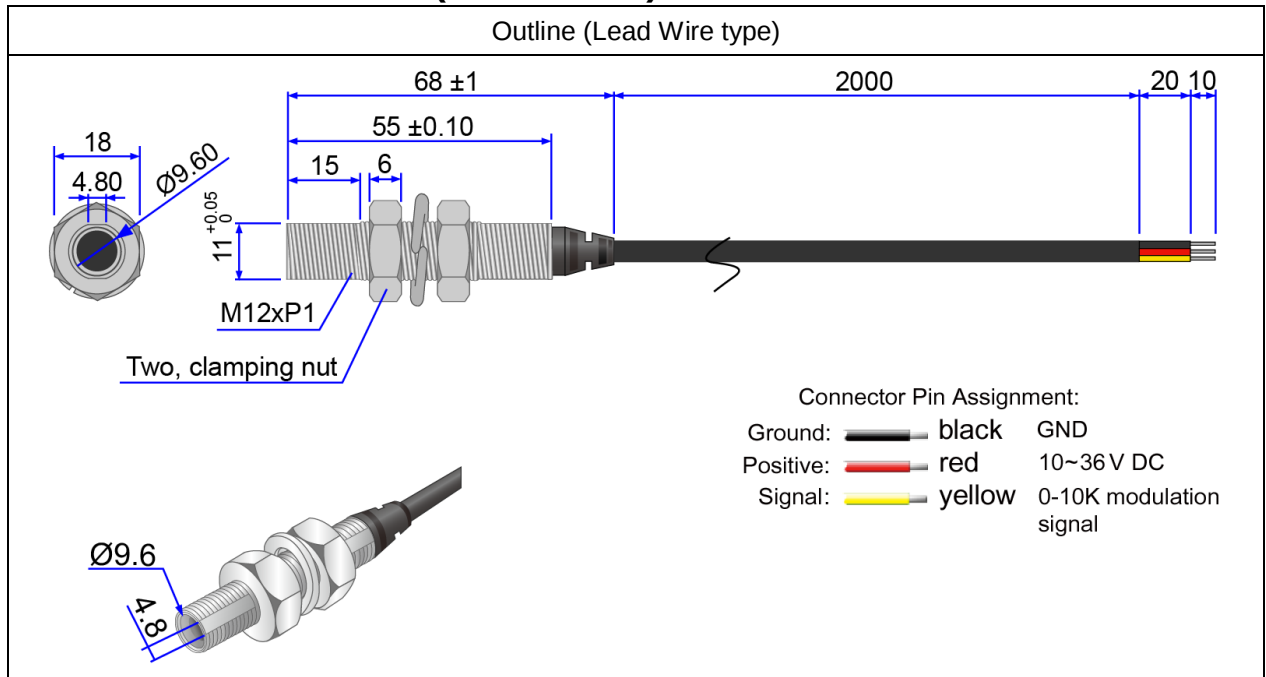
Typical Applications: Security and surveillance, 3D sensing, gesture recognition, consumer electronics (smartphones, AR/VR), covert eye-safe illumination.

1050 nm Laser (SWIR): Fully invisible, operating in the short-wave infrared (SWIR) band. Offers deeper penetration through materials such as silicon wafers, glass, and plastics, with reduced scattering—making it highly suitable for advanced inspection and imaging. Note: Detection requires InGaAs sensors, as standard silicon detectors are not compatible.

Typical Applications: Wafer and material inspection, spectroscopy, industrial sensing, and biomedical imaging.

VLM-850/940/1050-71 Series

OUTLINE DIMENSIONS (UNITS: mm)



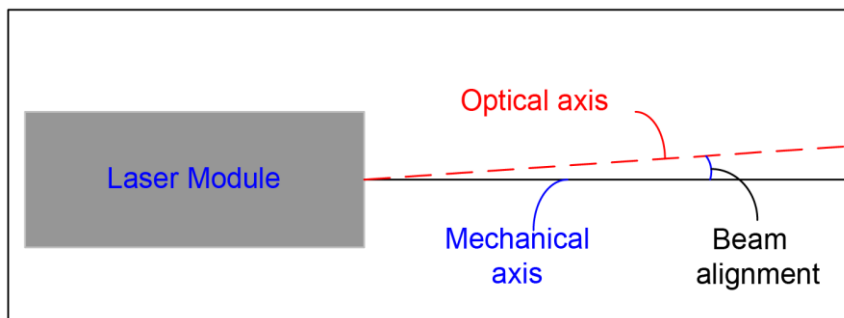
SPECIFICATIONS

Part Number		VLM-850-71	VLM-940-71	VLM-1050-71
		LPO		
1	Spot Size	< 1mm, From 0 to 50cm < 2mm, From 50cm to 90cm		
2	Dimensions	M12 x 68 mm (M12 x 2.677")		
3	Weight	100±1g		
4	Operating voltage (Vop)	10~36 VDC		
5	Operating current (Iop)	Less than 20mA at 24V		
6	Laser power output	Less than 0.7mW	Less than 1mW	Less than 1.5mW
7	Laser class	Class 1		
8	Wavelength (λp)	840~865nm	930~950nm	1050~1075nm
9	Collimating lens	Aspherical glass lens		
10	Output aperture	0.6mm		
11	Beam shape	Circular		
12	Divergence (Half Angle)	Less than 0.4 mRad		
13	Beam alignment*	Less than 3°		
14	Operating temp. range	-20°C ~+60°C		
15	Storage temp. range	-20°C ~+85°C		

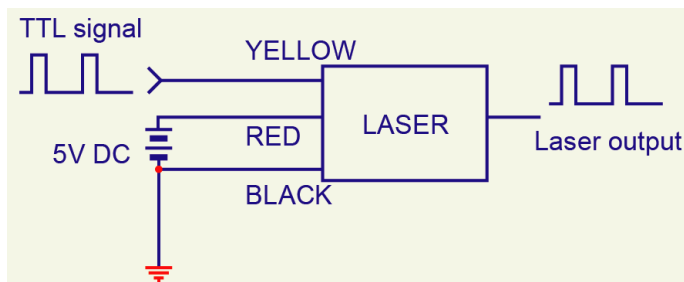
VLM-850/940/1050-71 Series

16	Housing material	Stainless steel
17	Potential of housing	Insulated
18	Mod. Frequency range	0-10kHz
19	Operation mode**	TTL(High on)***
20	EN input current	1 to 20mA
21	Electrostatic discharge (ESD)	30KV / Arc protection
22	Moisture sensitivity level (MSL)	Level 1 - acc to JEDEC J-STD-020E.
23	Protection circuit	Reversed supply circuit protection, over-current protection, surge protection, Short circuit protection
24	Vibration resistance	10 to 55Hz,1.5mm amplitude for 2 hours each in X, Y and Z direction
25	Standard	IEC60825:2014
26	Wire type	UL-2464/22 AWG
27	Cable length	UL2464 D4.2,L=2000±30mm
28	Mount method	M12 screw
29	Mean time to failure (MTTF) 25°C	10000 hrs
30	International Protection Marking	IP68
31	Application	Industrial alignment with modulation function
32	Suggestion work distance	0~0.9 meters / 0~3 feet

* Beam alignment:

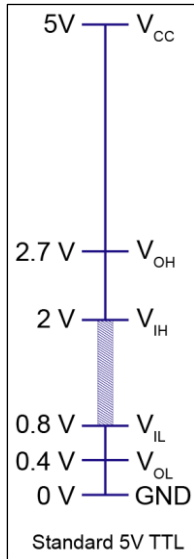


** TTL Operation Function Diagram



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*** TTL Level



ORDER CODE

Order Code	Wavelength	Laser Power Output	Laser Class	Connection Type
VLM-850-71 LPO	850 nm	Less than 0.7mW	Class 1	Lead Wire
VLM-940-71 LPO	940 nm	Less than 1mW	Class 1	Lead Wire
VLM-1050-71 LPO	1050 nm	Less than 1.5mW	Class 1	Lead Wire

SAFETY LABEL

LPO:

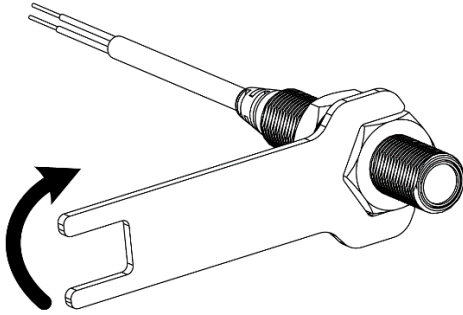
CLASS I LASER PRODUCT

INSTALLATION

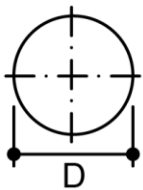
MOUNTING

The module must NOT be subjected to excessive shock with a hammer when it is installed, otherwise the module may be damaged or lose its water resistivity.

Do not tighten the nut with excessive force (Toque 30N.m). A washer must be used with the nut.

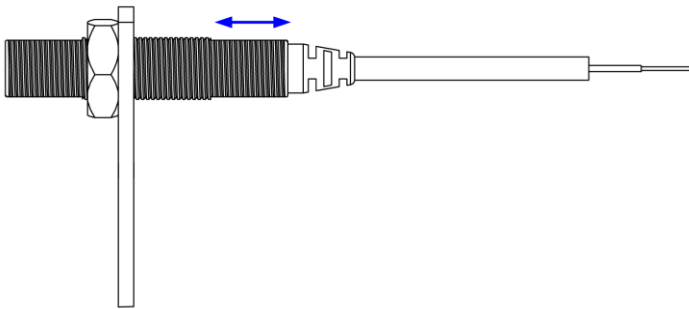


RECOMMENDED MOUNTING HOLE DIMENSIONS

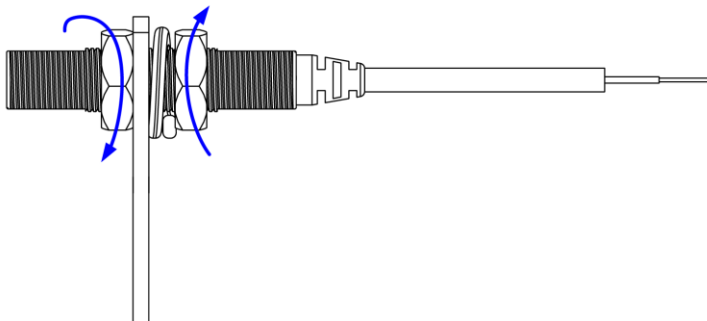


OUTER DIAMETER OF MODULE	M12
DIMENSION D	13 ^{+0.1} ₀ DIA.

1. First, move the laser module to your preferred position.

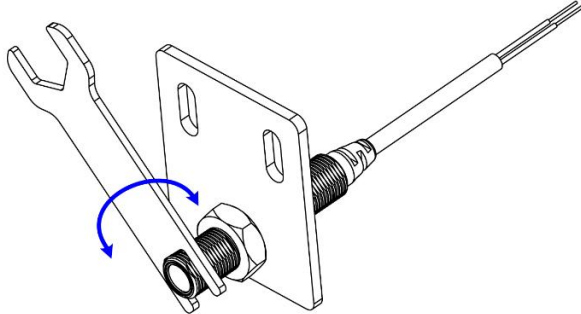


2. Next, tighten the nut with the washer on the plate.



INSTALLATION

3. Then, use the wrench to rotate the laser module, align the datum to your preferred position.



INSTALLATION

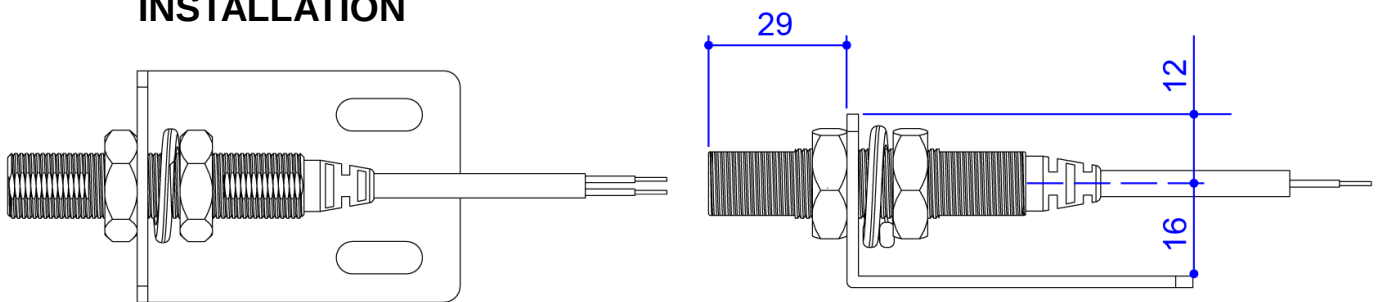


Fig.2 Demonstration with L shape plate (shape plate not included)

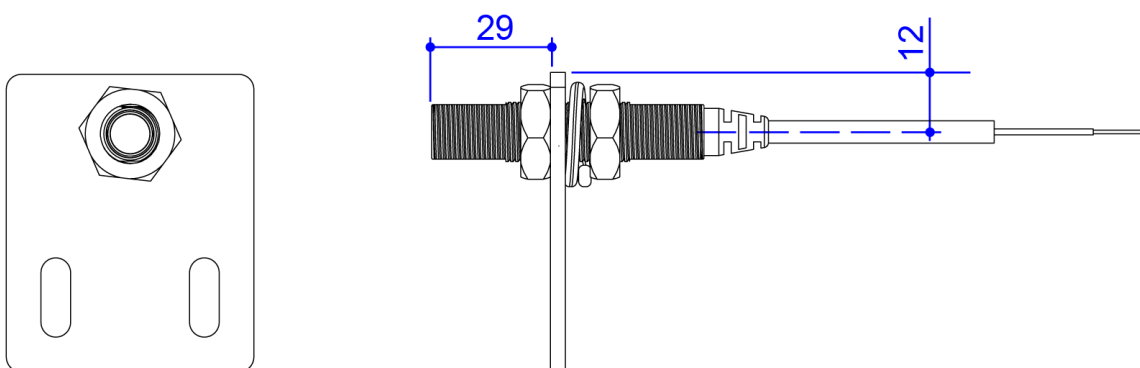


Fig.3 Demonstration with I shape plate (shape plate not included)