

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

VLM-850/940/1050-72T Series



The VLM-850/940/1050-72T Series is an industrial-grade circular dot laser module featuring TTL modulation for fast and precise control. It delivers a high-quality laser spot with a circular dot size of less than 3 mm over a working range of 0 to 5 meters. Designed for robust performance, it integrates a precision glass lens and is housed in a durable stainless steel casing with an M12 x 68 mm form factor - ideal for demanding industrial environments.

FEATURES:

- Circular laser dot is less than 3 mm across 0~5 meters - ideal for accurate alignment and targeting.
- TTL modulation supported (CW to 10 kHz) for fast and stable output control.
- High-quality laser spot with precision glass optics.
- Rugged stainless steel housing ensures long-term reliability (10,000-hour lifespan).
- Two laser power output level: LPO - Class 1 laser product
LPA - Class 3R 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.

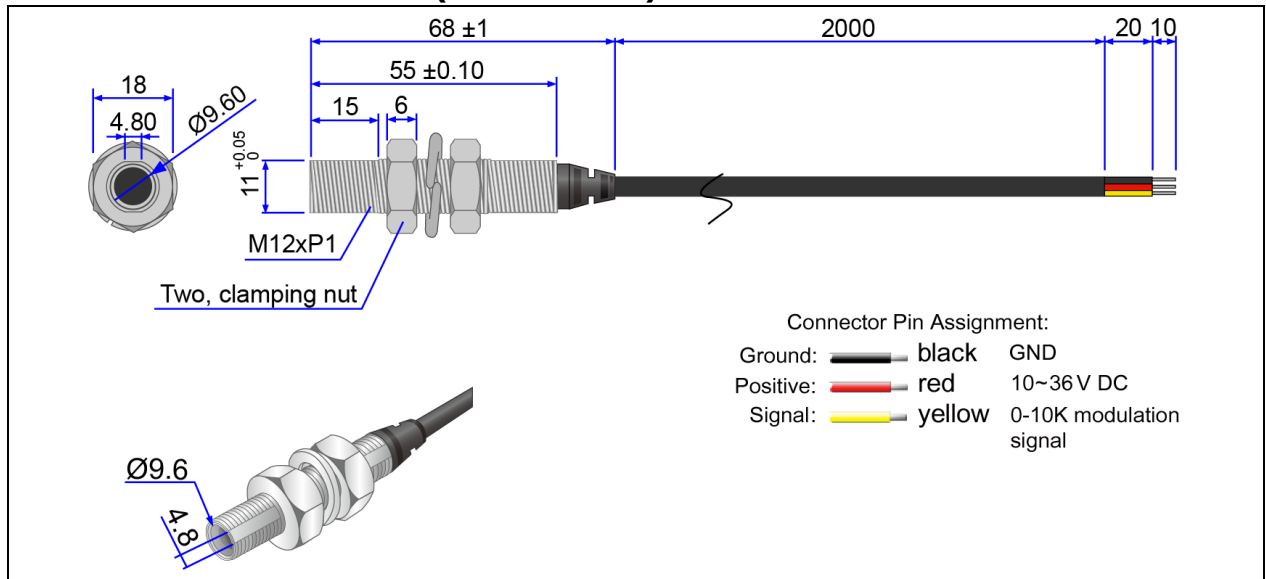
Typical Applications: Security and surveillance, 3D sensing, gesture recognition, consumer electronics (smartphones, AR/VR), covert eye-safe illumination.

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.

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OUTLINE DIMENSIONS (UNITS: mm)



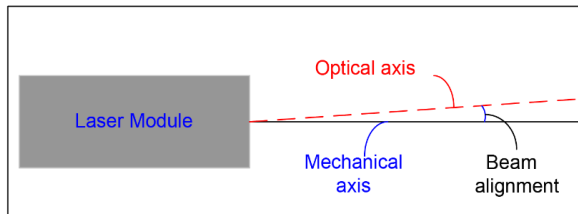
SPECIFICATIONS

Part Number		VLM-850-72T		VLM-940-72T		VLM-1050-72T	
		LPO	LPA	LPO	LPA	LPO	LPA
1	Spot Size	Less than Ø3mm @ 0~5M					
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 30mA at 24V					
6	Laser power output	Less than 0.7mW	Less than 3.5mW	Less than 1.1mW	Less than 6mW	Less than 1.5mW	Less than 10mW
7	Laser class	Class 1	Class 3R	Class 1	Class 3R	Class 1	Class 3R
8	Wavelength (λp)	840~865nm		930~950nm		1050~1075nm	
9	Collimating lens	Aspherical glass lens					
10	Output aperture	2mm					
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					
16	Housing material / Color	Stainless steel / Silver					
17	Potential of housing	Insulated					
18	Mod. Frequency range	0-10kHz					

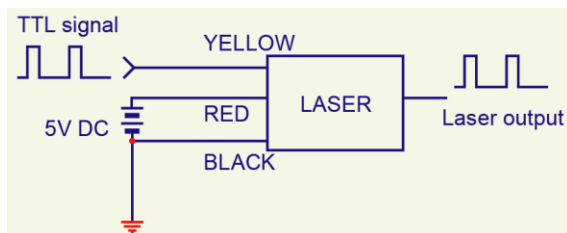
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19	Operation mode**	TTL(High on)***
20	EN input current	1 to 20mA
21	Electrostatic discharge (ESD)	30KV / Arc protection
22	Moisture sensitivity level (MSL)	Level 1 - acc to JEDEC J-STD-020E.
23	Protection circuit	Reversed supply circuit protection, 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	0~5 meters / 0~16 feet

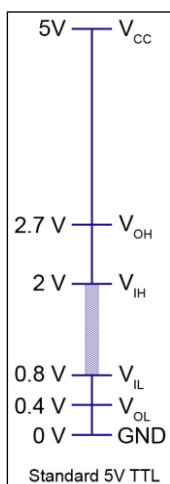
* Beam alignment:



** TTL Operation Function Diagram



*** TTL Level



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ORDER CODE

Order Code	Wavelength	Laser Power Output	Laser Class	Connection Type
VLM-850-72T LPA	850 nm	Less than 3.5mW	Class 3R	Lead Wire
VLM-850-72T LPO	850 nm	Less than 0.7mW	Class 1	Lead Wire
VLM-940-72T LPA	940 nm	Less than 6mW	Class 3R	Lead Wire
VLM-940-72T LPO	940 nm	Less than 1.1mW	Class 1	Lead Wire
VLM-1050-72T LPA	1050 nm	Less than 10mW	Class 3R	Lead Wire
VLM-1050-72T LPO	1050 nm	Less than 1.5mW	Class 1	Lead Wire

SAFETY LABEL

LPO:

CLASS I LASER PRODUCT

LPA:

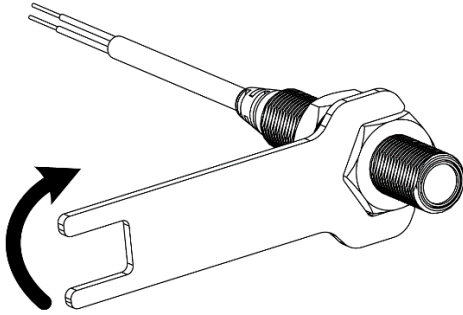


INSTALLATION

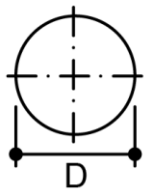
MOUNTING

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.

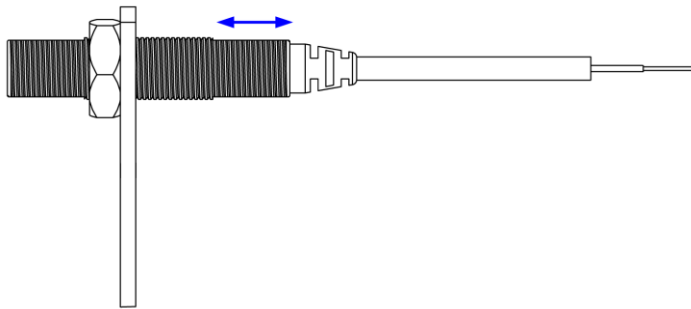


RECOMMENDED MOUNTING HOLE DIMENSIONS

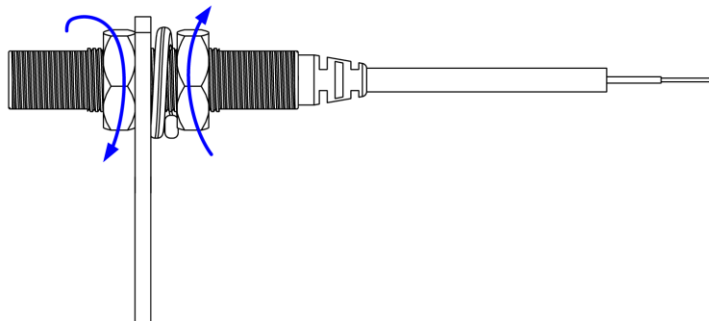


OUTER DIAMETER OF MODULE	M12
DIMENSION D	13 ^{+0.1} ₀ DIA.

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

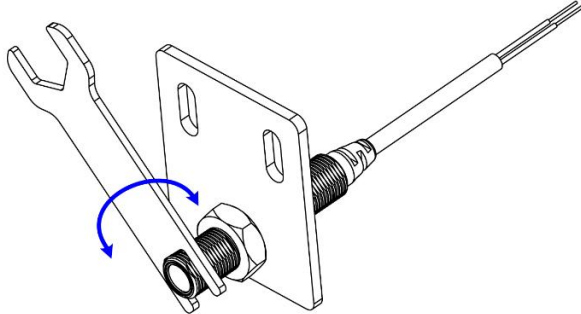


2. Next, tighten the nut with the washer on the plate.



INSTALLATION

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



INSTALLATION

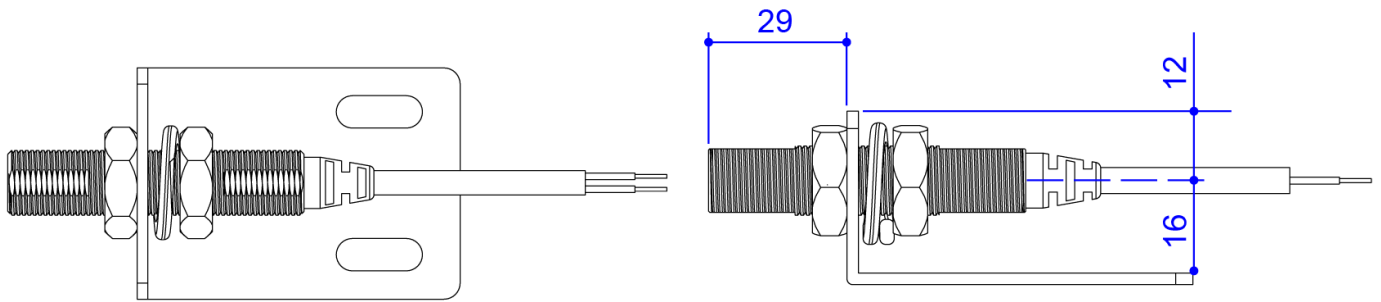


Fig.2 Demonstration with L shape plate (shape plate not included)

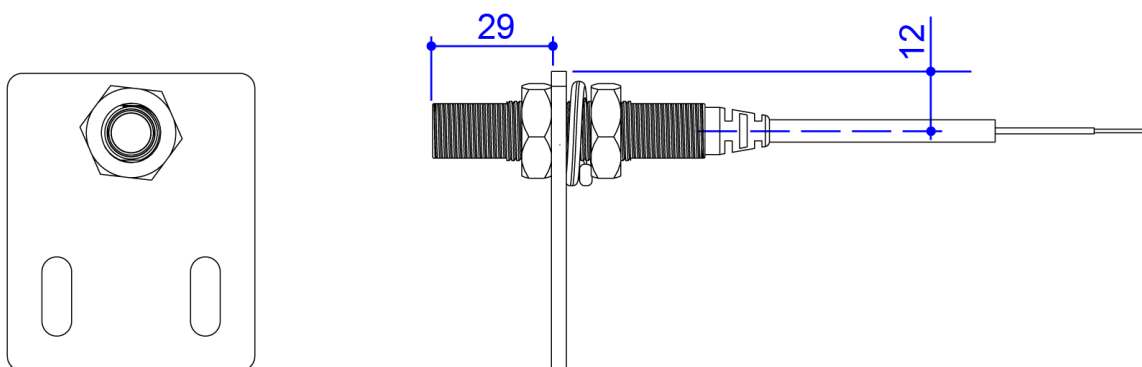


Fig.3 Demonstration with I shape plate (shape plate not included)