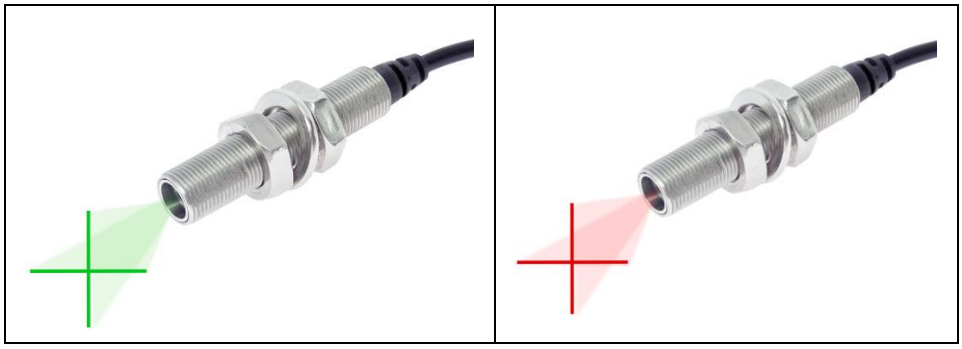
Quarton inc.

Premium Uniform Crosshair Laser Module with Various Fan Angles

68 series without TTL modulation / 69 series with TTL-modulation

VLM-520/650-68/69 Series



This advanced laser module features a newly developed high-precision glass crosshair lens with a range of fan angles, delivering sharp and uniform crosshair laser patterns. Encased in a durable stainless steel M12 housing, it offers reliable performance and easy installation for industrial and medical environments.
Designed as a visual aid for precise alignment and positioning, this module is ideal for machine vision, patient positioning, CNC milling, chassis alignment, quality control, textile processing, and the printing industry. Available in red and green wavelengths with focus distances of 1 meter and 5 meters.

Customized wavelengths and focus lengths available upon request.

FEATURES:

- Precision Optics - Integrated high-quality glass crosshair lens and collimating lens for sharp, consistent laser patterns.
- Wide Fan Angle Options - Choose from 2°, 5°, 15°, 30°, 45°, 60°, 75° to suit your application.
- Flexible Configurations - Available in red (645~665 nm) and green (515~530 nm) wavelengths with 1 meter and 5 meters focus distances.
- Without / With TTL-modulation: 68 series without modulation
  69 series with modulation
- Two power output level: Class 1 / Class 2 laser product
- Industrial-Grade Design - Rugged M12 x 68 mm (M12 x 2.677") stainless steel housing
- Wavelength : 520 series - 515~530 nm / 650 series - 645~665 nm
- 10~36 VDC operation.
- Connection type : Lead wire

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APPLICATIONS:

- **Machine Vision & Industrial Automation**
  Acts as a precise visual reference for alignment and inspection.
  Helps cameras or sensors locate target positions on parts or surfaces.
  Used in pick-and-place systems or robotic guidance.

- **CNC Milling & Chassis Alignment**
  Projects exact crosshairs for reference when aligning metal or mechanical parts before cutting or drilling.
  Ensures consistent positioning of workpieces in manufacturing and automotive assembly.

- **Patient Alignment in Medical Devices**
  Used in radiotherapy, diagnostic imaging, or surgical positioning systems to align patients precisely.
  Provides a visible, accurate reference on the body or imaging table.

- **Quality Control & Inspection**
  Assists in checking part alignment, position, or orientation during final product inspection.
  Crosshair projection makes it easy to visually verify tolerances.

- **Textile & Printing Industries**
  Ensures accurate fabric or label alignment on production lines.
  Prevents skewing or misprints during high-speed operations.

These modules are especially beneficial when:

- Precise targeting or centering is required
- Non-contact alignment is necessary
- Visual reference must remain sharp and consistent over a working distance

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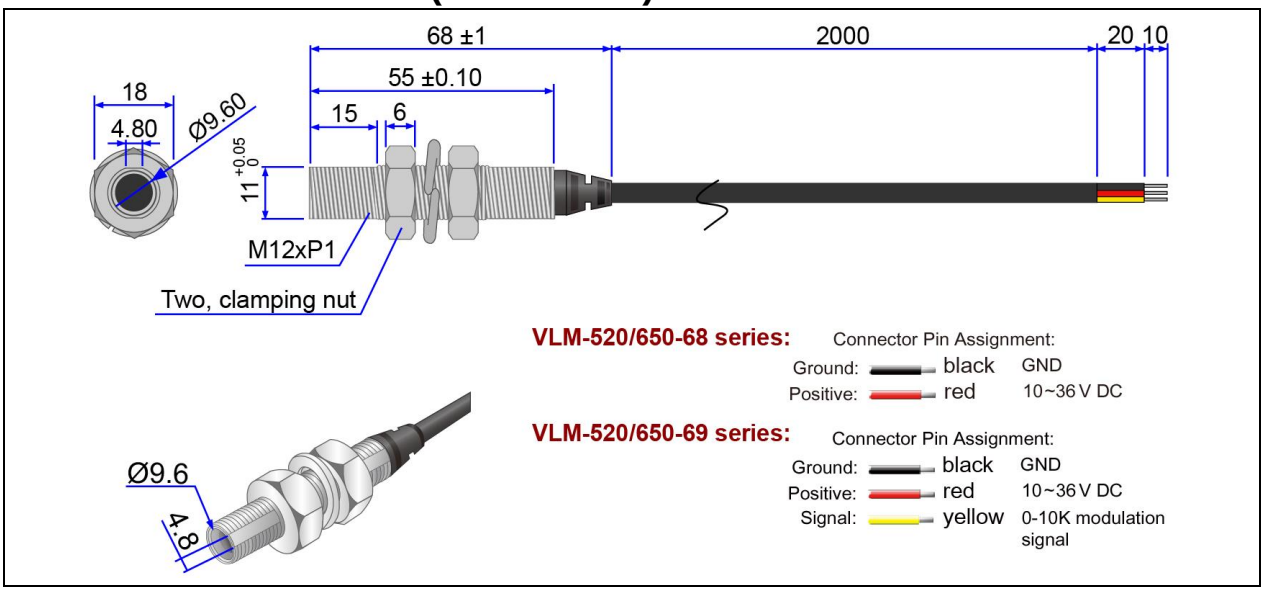
VLM-520/650-68/69 Series

OUTLINE DIMENSIONS (UNITS: mm)



SPECIFICATIONS

Part Number		VLM-520/650-68/69						
		LPO-		LPT-				
1	Fan angle (D)	2°	5°	15°	30°	45°	60°	75°
2	Focus length	1 meter		5 meters				
3	Fan angle / Laser line length	AS **TABLE A**						
4	Laser line width	AS **TABLE B**						
5	Recommended working range	AS **TABLE B**						
6	Modulation	68 series - without TTL modulation 69 series - with TTL modulation. High ON, 0-10K Hz						
7	Dimensions	M12 x 68 mm (M12 x 2.677")						
8	Weight	100±1g						
9	Operating voltage (Vop)	10~36 VDC						
10	Operating current (Iop)	Less than 20mA at 24V						
11	Optical power**	Less than 0.39mW		520 series - 7~9mW 650 series - 5~7mW				
12	Laser power output	Less than 0.39mW		Less than 1mW				
13	Laser class	Class 1		Class 2				
14	Wavelength (λp)	520 series - 515~530 nm / 650 series - 645~665 nm						
15	Collimating lens / Line generating lens	Aspherical glass lens						
16	Output aperture	8 mm						

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17	Beam shape	Crosshairs
18	Operating temp. range	-20°C ~+60°C
19	Storage temp. range	-20°C ~+85°C
20	Housing material / color	Stainless steel / Silver
21	Potential of housing	Insulated
22	Electrostatic discharge (ESD)	30KV
23	Moisture sensitivity level (MSL)	Level 1 - acc to JEDEC J-STD-020E.
24	Protection circuit	Reversed supply circuit protection, over-current protection, surge protection, Short circuit protection
25	Vibration resistance	10 to 55Hz,1.5mm amplitude for 2 hours each in X, Y and Z direction
26	Standard	IEC60825:2014
27	Wire type	UL-2464/22 AWG
28	Cable length	UL2464 D4.2,L=2000±30mm
29	Mount method	M12 screw
30	Mean time to failure (MTTF) 25°C	Above 10000 hrs
31	International Protection Marking	IP68
32	Application	Precision fine crosshairs for Machine vision, CNC milling.
33	Suggestion work distance	1~5 meters / 3~16 feet
34	Part No.	VLM-520/650-68/69 LPO/LPT-Dxx-Fyy 520 = green laser 650 = red laser 68 = without TTL modulation 69 = with TTL modulation LPO = Class 1 LPT = Class 2 D= Fan angle xx=2/5/15/30/45/60/75 F= Focus length yy=100(For D2&D5)/500(For D15, D30, D45, D60, D75) Example: VLM-520-68 LPO-D2-F100 VLM-650-69 LPT-D30-F500

** **Optical power is total power output measured at the aperture of the laser.**

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SAFETY PRECAUTIONS

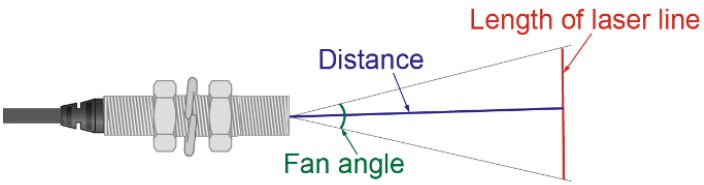
POWER SUPPLY -

Do not impose an excessive voltage on the laser module, otherwise it may be damaged. Do not impose AC current (100 to 380 V AC) on any DC module, otherwise it may be damaged.

SAFETY LABEL

CLASS I LASER PRODUCT

TABLE A: Laser Line Length Table:



Length of Laser Line:

Distance / Fan angle	100 cm (40 inch)	500 cm (197 inch)
2°	3.5 cm (1.37")	17.5 cm (6.89")
5°	10 cm (3.94")	50 cm (19.69")
15°	26.8 cm (10.55")	134 cm (52.76")
30°	55 cm (21.65")	275 cm (108.27")
45°	82 cm (32.28")	410 cm (161.4")
60°	116 cm (45.67")	580 cm (228.35")
75°	134 cm (52.75")	670 cm (263.78")

TABLE B: Recommended working range:

Focus on 100 cm:

Laser Line Width <1mm
Laser Line Width <2mm

Laser Fan Angle	Recommended Working Range(cm) 35 70 105 140 175
2°	0 - 57 / 57 - 124 / 124 - 173
5°	0 - 57 / 57 - 124 / 124 - 173

Focus on 500 cm:

Laser Line Width <2mm
Laser Line Width <3mm

Laser Fan Angle	Recommended Working Range(cm) 150 300 450 600 750
15°	20 - 600 / 600 - 800
30°	20 - 600 / 600 - 800
45°	20 - 600 / 600 - 800
60°	20 - 700 / - 800
75°	20 - 700 / - 800

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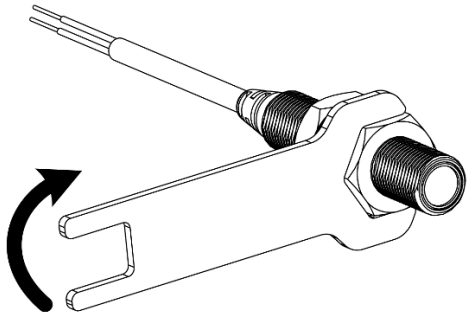
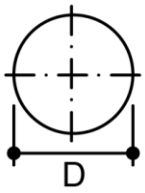
INSTALLATION

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.

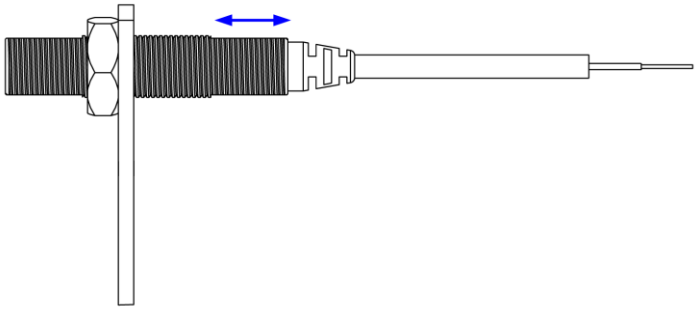


RECOMMENDED MOUNTING HOLE DIMENSIONS

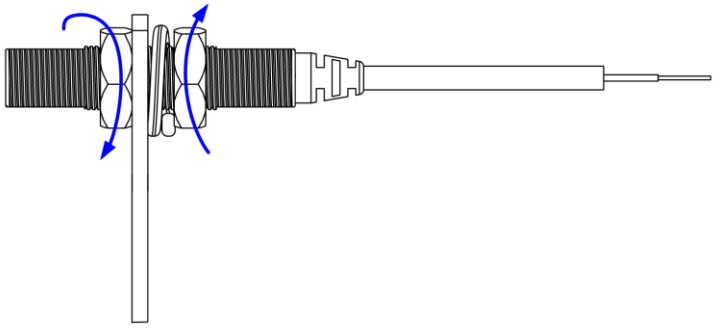


OUTER DIAMETER OF MODULE	M12
DIMENSION **D**	$13^{+0.1}_{0}$ DIA.

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



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



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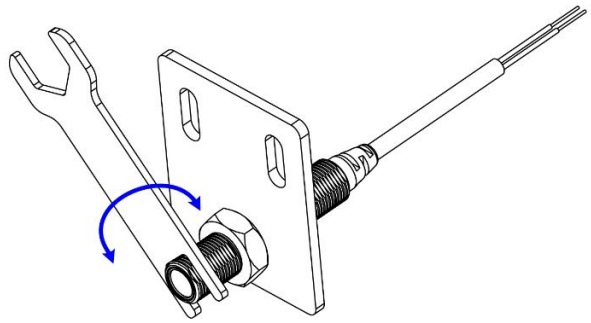
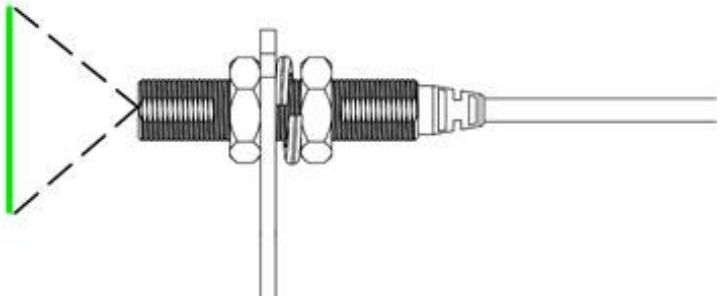
INSTALLATION

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



4. Lastly, check if the projected laser line is at the right position to your need.
   Rotate the laser module again if the laser line isn't aligned with your preferred position.



INSTALLATION

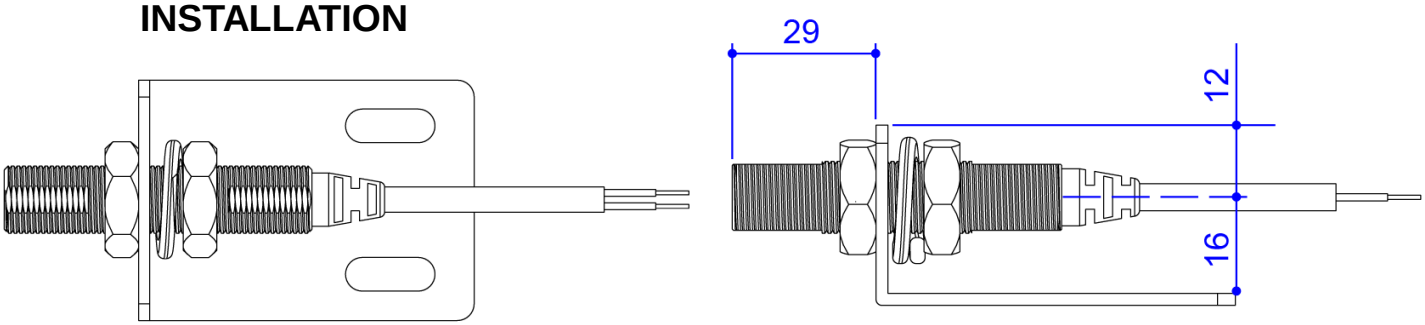


Fig.2 Demonstration with L shape plate (shape plate not included)

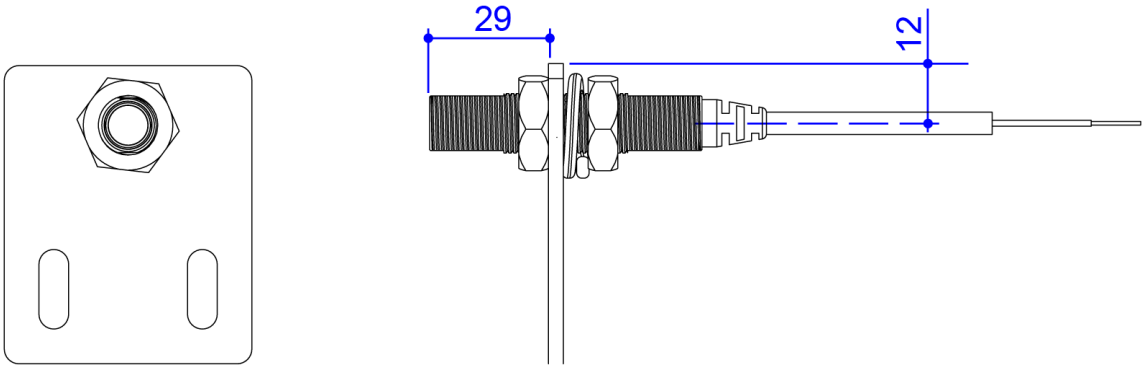


Fig.3 Demonstration with I shape plate (shape plate not included)

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