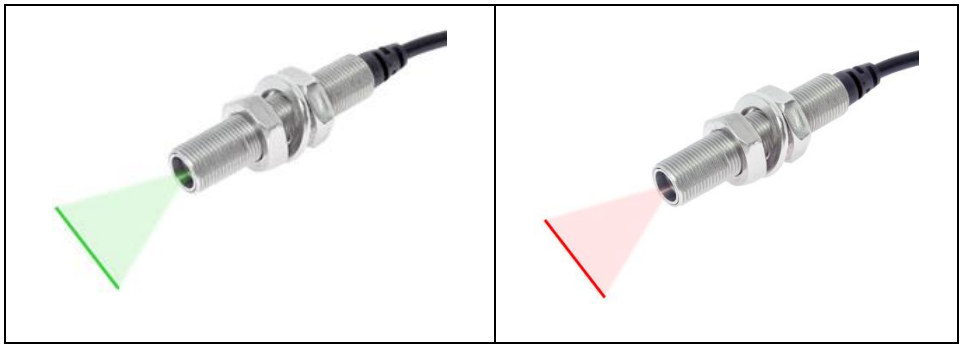
Quarton inc.

Uniform Line Laser Module with Various Fan Angles and (66 series) without / (67 series) with TTL-modulation

VLM-520/635-66/67 Series



The newly developed glass line lens come with various fan angles and they produce high quality uniform laser line in a robust stainless housing, ideal for automation, machine vision, image processing, digital data acquisition, counting, precision 3D scanner and science & medical application. They are available at 10 cm, 20 cm, 40 cm and 90 cm focus length, red & green wavelength to cover within 1 meter range task. For customized focus length or wavelength, please contact us.

FEATURES:

- Built with high precision glass line lens and glass laser collimating lens.
- Fan Angle : 5°
- Focus range: 10cm, 20cm, 40cm, 90cm, customized focus length are available by request.
- Customized focus within 1 meter available please direct contact us.
- Power output level: Class I laser product
- Dimensions : M12 x 68 mm (M12 x 2.677")
- Wavelength : 510~530 nm
- 10~36 VDC operation.
- Connection type : Lead wire

APPLICATIONS: ideal for

- Machine vision.
- Automation industry.
- Image processing.
- Medical & Science.
- Scanning.
- Precision 3D scanner.
- Counting.
- Measurement.

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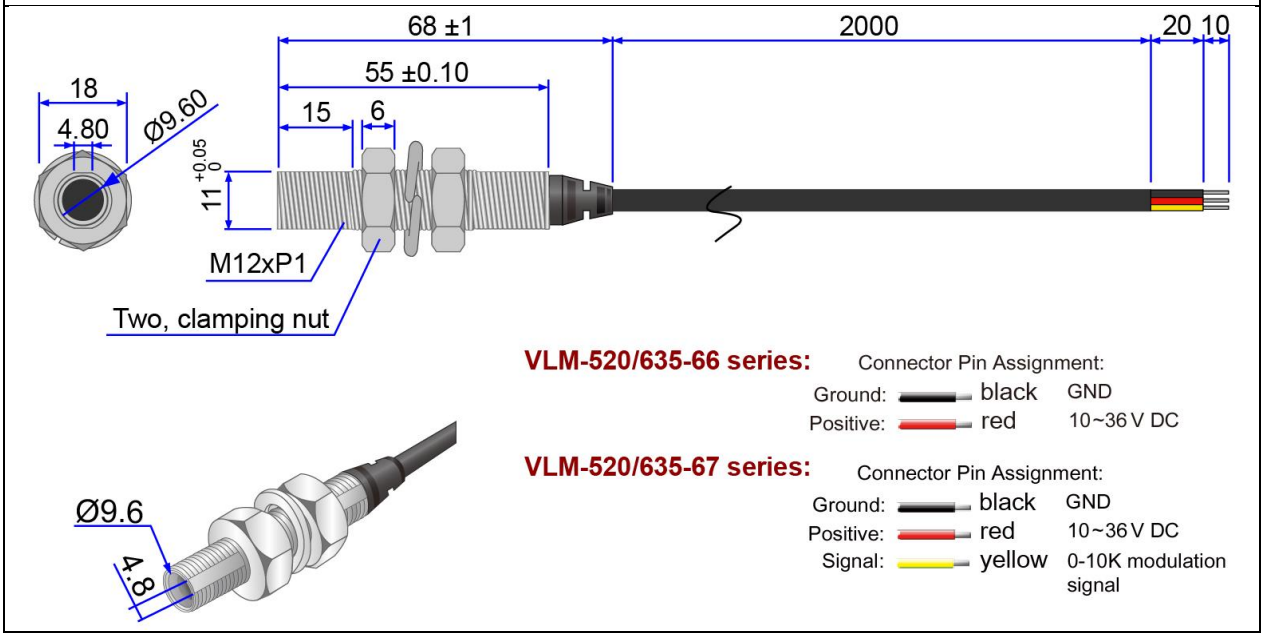
OUTLINE DIMENSIONS (UNITS: mm)

Outline (Lead Wire type)



SPECIFICATIONS

Part Number		**VLM-520/635-66/67 LPO-**
1	Fan angle* (D)	5° / 10° / 15° / 20° / 30° / 45° / 60° / 110° **(15% tolerance)**
2	Focus length	10 cm / 20 cm / 40 cm / 90 cm
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	66 series - without TTL modulation 67 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**	520 series - Less than 10mW 635 series - Less than 5mW
12	Laser class	Class I
13	Wavelength (λp)	520 series - 515~530 nm / 635 series - 630~665 nm
14	Collimating lens / Line generating lens	Aspherical glass lens
15	Output aperture	5 mm

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VLM-520/635-66/67 Series

16	Beam shape	Line
17	Laser line accuracy	40”(±1mm@5M)
18	Operating temp. range***	-20°C ~+60°C
19	Storage temp. range	-20°C ~+85°C
20	Housing material	Stainless steel
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 line for Automation, Machine vision and Medical
33	Suggestion work distance	0~1.2 meters / 0~4 feet
34	Part No.	VLM-520/635-66/67 LPO-Dxx-Fyy 520 = green laser 635 = red laser 66 = without TTL modulation 67 = with TTL modulation D= Fan angle xx=5/10/15/20/30/45/60/110 F= Focus length yy=10/20/40/90 Example: VLM-520-66 LPO-D30-F20 VLM-635-67 LPO-D10-F90

* **The fan angle has a tolerance of 15%.**

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

*** **Operation temperature means within this temperature range, the laser spot/line will not be affected to change the spot size/line width. It can still work over this range, but the laser spot size or laser line width will be larger.**

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SAFETY PRECAUTIONS

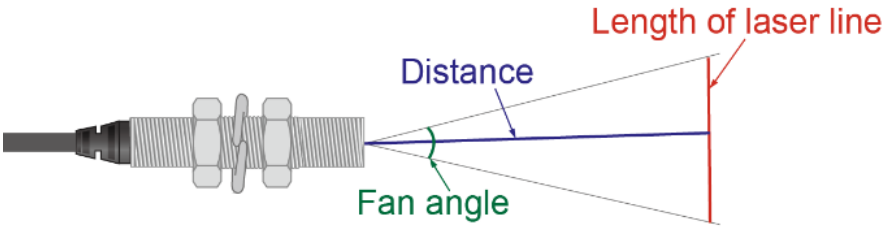
POWER SUPPLY -

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: (15% tolerance)



Length of Laser Line:

Distance / Fan angle	10 cm (4 inch)	20 cm (8 inch)	40 cm (16 inch)	100 cm (40 inch)
5°	1 cm (0.39″)	2 cm (0.79″)	4 cm (1.57″)	10 cm (3.94″)
10°	1.8cm (0.71″)	3.6 cm (1.42″)	7.2 cm (2.83″)	18 cm (7.1″)
15°	2.8 cm (1.1″)	5.6 cm (2.2″)	11 cm (4.33″)	26.8 cm (10.55″)
20°	3.5 cm (1.38″)	7.6 cm (2.99″)	15 cm (5.91″)	36 cm (14.17″)
30°	5.6 cm (2.2″)	11.2 cm (4.41″)	22 cm (8.66″)	55 cm (21.65″)
45°	8.5 cm (3.35″)	17 cm (6.69″)	34 cm (13.39″)	82 cm (32.28″)
60°	11.8 cm (4.65″)	24 cm (9.45″)	48 cm (18.9″)	116 cm (45.67″)
110°	30 cm (11.81″)	60 cm (23.62″)	115 cm (45.28″)	300 cm (118.11″)

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TABLE B: Recommended working range:

Focus at 10 cm:

Working range: 6.5 - 21cm (2.6"- 8.3")

Best at: 6.5 - 16cm (2.6"- 6.3")

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

Laser Fan Angle	Recommended Working Range(cm) 5 10 15 20 25
5°	6.5 - 16 -21
10°	8 - 15 -19
15°	6- 8 - 15 -19
20°	4- 7 - 16 -21.5
30°	4- 6 - 14.5 -21
45°	0- 5.5 - 15 -19
60°	0- 7 - 14.5 -20
110°	0- 7 - 16.5 -22.5

Focus at 20 cm:

Working range: 12.5 - 26cm (4.9"- 10")

Best at: 15 - 23cm (5.9"- 9")

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

Laser Fan Angle	Recommended Working Range(cm) 10 15 20 25 30
5°	12.5- 15 - 23 -26
10°	10- 14 - 22 -26
15°	10- 14.5 - 22 -26
20°	10- 14.5 - 23 -27
30°	10- 14 - 22 -26
45°	9- 13 - 24 -34
60°	11- 15 - 23.5 -32
110°	8- 12.5 - 23 -30

Focus at 40 cm:

Working range: 11 - 75cm (4.3"- 29.5")

Best at: 20.5 - 57cm (8"- 22.5")

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

Laser Fan Angle	Recommended Working Range(cm) 15 30 45 60 75
5°	11- 20.5 - 57 -75
10°	11.5- 22 - 47.5 -61.5
15°	7- 21 - 53 -64
20°	6- 21 - 54 -68
30°	5- 21 - 54 -68
45°	4- 22 - 56 -69
60°	3- 20 - 58 -72
110°	3- 21 - 58 -82

Focus at 90 cm:

Working range: 29 - 109cm (11.4"- 43")

Best at: 45 - 91cm (17.7"- 35.8")

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

Laser Fan Angle	Recommended Working Range(cm) 40 65 90 115 140
5°	29- 45 - 91 -109
10°	35- 57 - 119 -146
15°	31- 57 - 119 -140
20°	31- 59 - 122 -142
30°	42- 60 - 114 -144
45°	40- 55 - 120 -139
60°	35- 56 - 116 -145
110°	38- 60 - 106 -134

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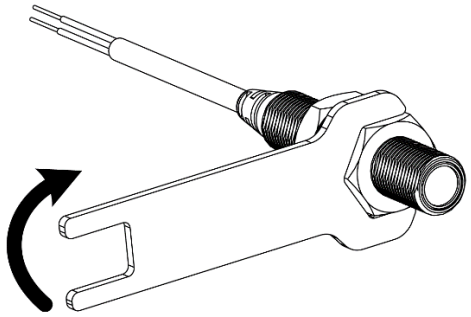
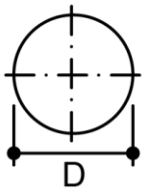
INSTALLATION

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.

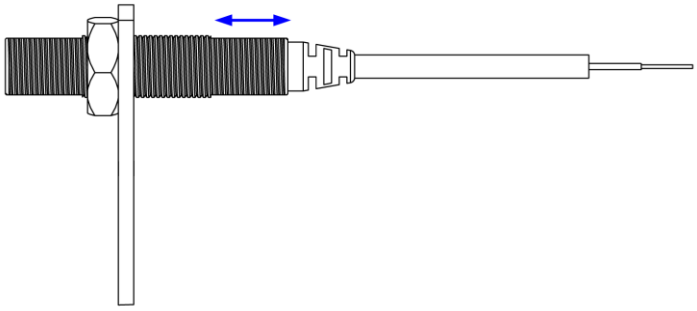


RECOMMENDED MOUNTING HOLE DIMENSIONS

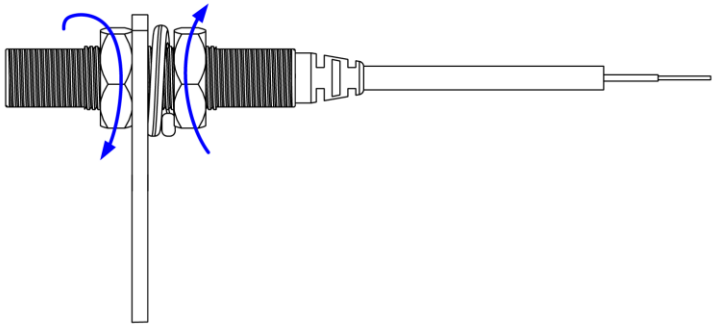


OUTER DIAMETER OF MODULE	M12
DIMENSION **D**	$13^{+0.1}_{0}$ DIA.

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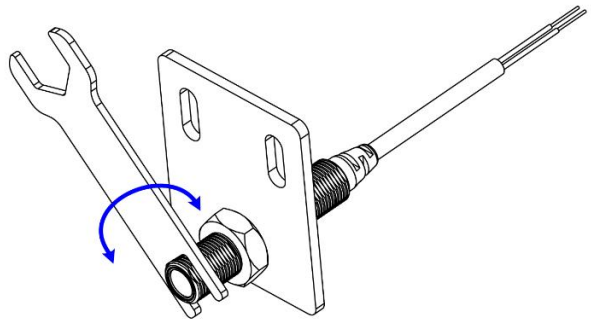
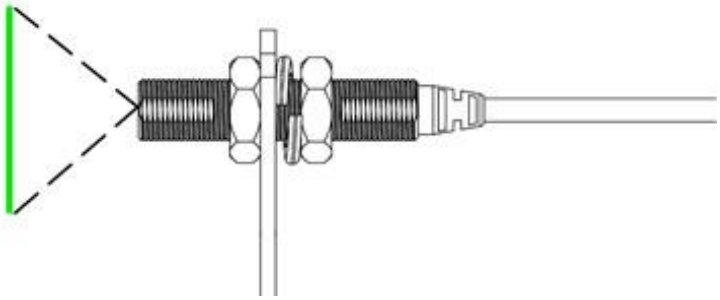
3. Then, use the wrench to rotate the laser module, align the datum to your preferred position.



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

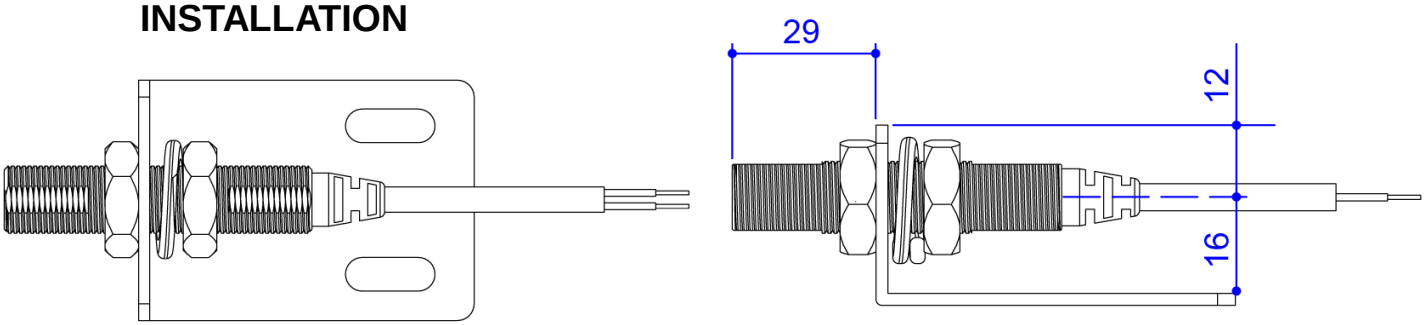


Fig.2 Demonstration with L shape plate (shape plate not included)

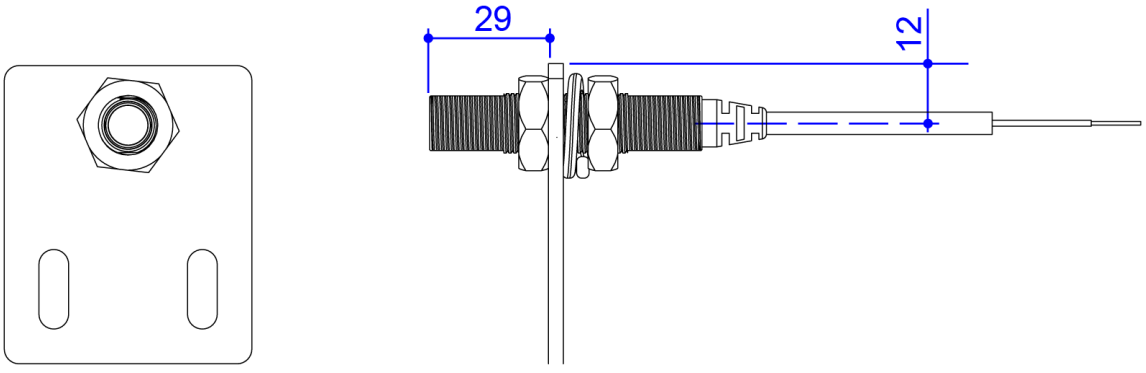


Fig.3 Demonstration with I shape plate (shape plate not included)

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