Quarton inc.

Economical Laser

VLM-635/650-03 Series

	
Lead Wire Type	Connector Type

FEATURES:

- Designed and manufactured in Taiwan, ensuring superior quality and durability.
- Economical Red Dot Laser: A cost-effective solution for consumer-grade applications such as positioning, measuring, pointing, and laser sighting devices.
- Wavelength : 635 / 650 nm
- Laser power output : LPO - Class 1 – less than 0.39mW
  LPT - Class 2 – less than 1mW
  LPA - Class 3R – less than 2.5mW.
- Operating Voltage: 2.6~6 Volts
- Beam Divergence (Full Angle): 0.6 mRad
- Dimensions: D7 x L21 mm (D0.276 x L0.827 inches)
- Despite being an economical solution for generator applications, it incorporates an industrial-grade high-performance design. Mean Time to Failure (MTTF): 5,000 hours at 77°F (25°C).
- Compact module with integrated an Aspherical plastic collimating lens, laser diode, and Auto-Power-Control (APC) driver circuit for consistent and safe laser output.

The 635/650 nm red laser operates in the red portion of the visible spectrum, where the human eye is less sensitive compared to green light. While it is not as bright or visible as green lasers, the 635/650 nm red laser offers several advantages, including lower cost, easier manufacturing, and lower power consumption. These characteristics make it ideal for battery-operated devices and applications in low-light conditions or indoor environments. Here's an overview of its characteristics and typical applications:

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Wavelength Characteristics:

- 650 nm Red Light: At 650 nm, red lasers are less visible to the human eye compared to green lasers, as the human eye has a lower sensitivity to red wavelengths. This makes red lasers ideal for applications where high visibility is not crucial but where energy efficiency and cost are important.
- Lower Cost and Power Consumption: Red lasers are typically more affordable and require less power, making them ideal for battery-powered devices that need to operate for extended periods without frequent recharging or replacement of batteries.

Typical Applications:

- **Economical Red Dot Laser:**
  Low-Cost Solution: The VLM-635/650 series red laser is often used in economical red dot laser modules for positioning, measuring, pointing, and laser sighting devices. Its relatively low cost makes it a popular choice for consumer-grade products, such as laser pointers, laser levels, and other alignment tools. The red laser's performance in low-light or indoor conditions makes it ideal for these everyday applications.
- **Wood Processing:**
  The 635/650 nm red laser is used in the wood processing industry for tasks like cutting, engraving, and marking. Although not as visible in bright environments as green lasers, red lasers perform well in controlled indoor settings and offer a cost-effective solution for precision work on wood products.
- **Metal Processing:**
  Metal processing applications also benefit from the use of 635/650 nm red lasers for marking, cutting, and welding tasks. The red laser is ideal for metalworkers who need to make precise marks or cuts in low-light conditions or controlled environments where visibility isn’t as critical.
- **Stone Processing:**
  In stone processing, red lasers are utilized for cutting, engraving, and shaping stone materials. The affordability and low power consumption of the 650 nm laser make it suitable for operations where precision and efficiency are important, especially in indoor workshops or environments.
- **Textile Industry:**
  The textile industry uses the 635/650 nm red laser for pattern cutting, aligning materials, and engraving fabric. Its low cost and reliable performance in indoor environments make it a common choice for tasks like marking fabric patterns and ensuring accurate cuts in textile manufacturing.

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- **Food Industry:**
  The food industry employs red lasers for inspection, sorting, and processing. For example, red lasers are used to mark packaging, check product orientation, or inspect food items. The low cost and ease of use make it a practical choice for high-throughput food processing environments.
- **Automotive Industry:**
  In the automotive industry, the 635/650 nm red laser is used for alignment, measurement, and sighting in the assembly and manufacturing of vehicles. Its low power consumption is particularly beneficial in battery-operated alignment systems, and it is often used for measuring the placement of car components during assembly.
- **Medical Science:**
  Red lasers at 635/650 nm are used in medical applications such as diagnostic equipment, low-level laser therapy (LLLT), and certain surgical procedures. Their low power consumption and affordability make them suitable for devices like laser pointers used in diagnostic tests, as well as non-invasive therapies that benefit from lower visibility and precision.

Summary:

The 635/650 nm red laser offers a cost-effective, low-power solution for a variety of applications across different industries, including wood processing, metal and stone processing, textile manufacturing, food processing, automotive manufacturing, and medical science. Its lower visibility to the human eye and excellent performance in low-light conditions or indoor environments make it ideal for consumer-grade positioning tools, measuring devices, and alignment systems. Its affordability and energy efficiency make it a popular choice for battery-operated devices and systems where high-visibility is not essential.

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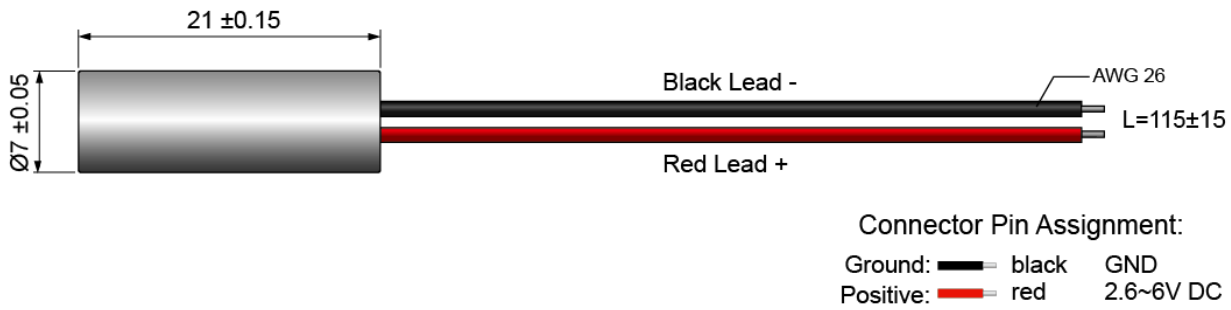
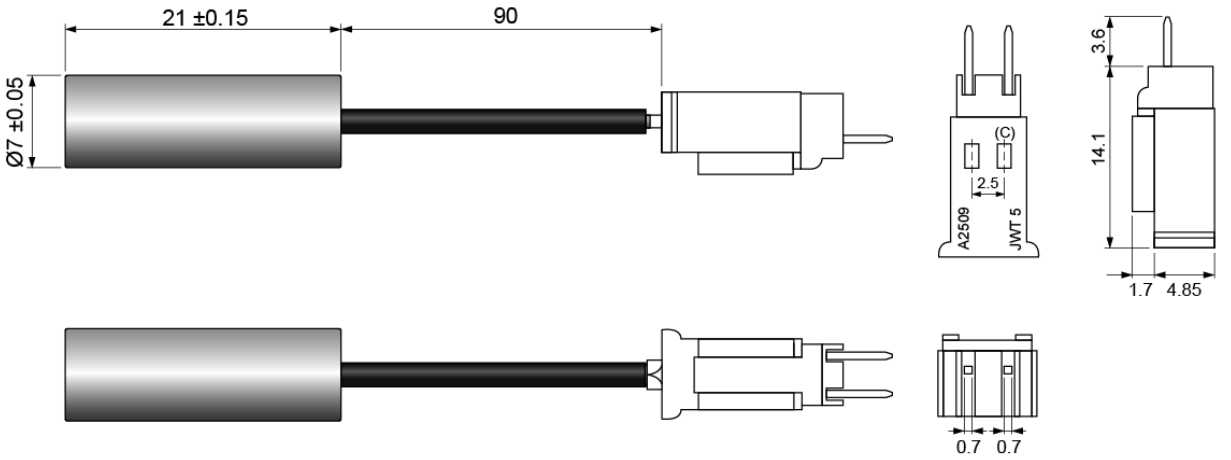
OUTLINE DIMENSIONS (UNITS: mm)

Outline (Lead Wire type)



Outline (Connector type)



SPECIFICATIONS

SPECIFICATIONS		VLM-635/650-03					
		LPO	**LPT**	**LPA**	**CPO**	**CPT**	**CPA**
1	Dimensions	Ø7 x 21 mm (Ø0.276" x 0.827")					
2	Operating voltage (Vop)	2.6~6 VDC					
3	Operating current (Iop)	Less than 35mA		Less than 50mA	Less than 35mA		Less than 50mA
4	Laser power output	Less than 0.39mW	Less than 1mW	Less than 2.5mW	Less than 0.39mW	Less than 1mW	Less than 2.5mW
5	Laser class	Class 1	Class 2	Class 3R	Class 1	Class 2	Class 3R
6	Wavelength at peak emission (λp)	635 series - 630~645nm, 650 series - 645~665nm					
7	Collimating lens	Aspherical plastic lens					
8	Output aperture	3mm					
9	Beam shape	Ellipse					

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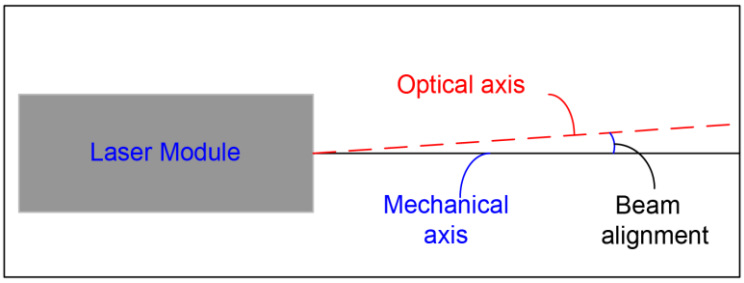
10	Spot size	4±1 mm @ 5M	
11	Divergence (Full Angle)	0.6 mRad	
12	Beam alignment*	Less than 3°	
13	Operating temp. range**	+15°C ~+30°C (Room Temperature)	
14	Storage temp. range	-20°C ~+65°C	
15	Housing material	Stainless steel	
16	Potential housing***	VDD(+)	
17	Electrostatic discharge (ESD)	20KV	
18	Moisture sensitivity level (MSL)	Level 1 - acc to JEDEC J-STD-020E.	
19	Protection circuit	Reversed supply circuit protection, over-current protection, surge protection, short circuit protection	
20	Vibration resistance	10 to 55Hz,1.5mm amplitude for 2 hours each in X, Y and Z direction	
21	Standard	IEC60825:2014	
22	Connection type	1007-26 AWG	2509 connector
23	Cable length	115±15mm	90±15mm
24	Mean time to failure (MTTF) 25°C	5000hrs	
25	Application	Economic type	
26	Suggestion work distance	1~10 meters / 3~40 feet	

* Beam alignment:



** Operation temperature: it 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.

*** Laser module housing is an electrical positive surface, it is imperative that contact between the laser module and the machine be avoided. This is to prevent damage from the machine electrical leakage. Surge protected power supply to the laser module is strongly recommended.

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ORDER CODE

Order Code	Wavelength	Laser Power Output	Laser Class	Connection Type
VLM-635-03 LPA	635 nm	Less than 2.5mW	Class 3R	Lead Wire
VLM-635-03 LPT	635 nm	Less than 1mW	Class 2	Lead Wire
VLM-635-03 LPO	635 nm	Less than 0.39mW	Class 1	Lead Wire
VLM-635-03 CPA	635 nm	Less than 2.5mW	Class 3R	Connector
VLM-635-03 CPT	635 nm	Less than 1mW	Class 2	Connector
VLM-635-03 CPO	635 nm	Less than 0.39mW	Class 1	Connector
VLM-650-03 LPA	650 nm	Less than 2.5mW	Class 3R	Lead Wire
VLM-650-03 LPT	650 nm	Less than 1mW	Class 2	Lead Wire
VLM-650-03 LPO	650 nm	Less than 0.39mW	Class 1	Lead Wire
VLM-650-03 CPA	650 nm	Less than 2.5mW	Class 3R	Connector
VLM-650-03 CPT	650 nm	Less than 1mW	Class 2	Connector
VLM-650-03 CPO	650 nm	Less than 0.39mW	Class 1	Connector

SAFETY LABEL