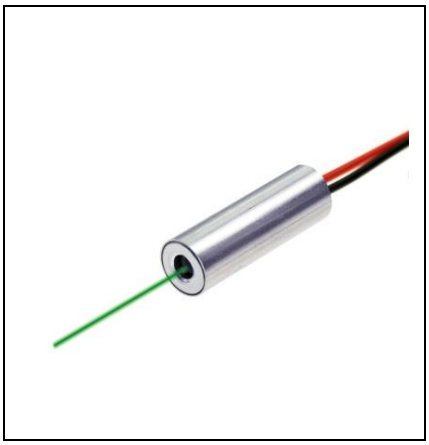
Quarton inc.

Economical Green Dot Laser

VLM-520-03 Series



FEATURES:

- Designed and manufactured in Taiwan, ensuring superior quality and durability.
- Economical Direct Green Dot Laser: A cost-effective solution for consumer-grade applications such as positioning, measuring, pointing, and laser sighting devices.
- Wavelength: 520 nm
- Laser power output : LPT - Class 2 – less than 1mW.
  LPO - Class 1 – less than 0.39mW
- Operating Voltage: 7-10 VDC
- Beam Divergence (Full Angle): 0.6 mRad
- Dimensions: D7 x L21 mm (D0.276 x L0.827 inches)
- Wide Temperature Range: Powered by a direct green laser diode, this module offers reliable operation across a broad temperature range.
- Despite being an economical solution for laser 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 520 nm green laser is highly visible to the human eye, appearing 5 to 10 times brighter than red lasers at the same power. This makes it ideal for applications that require high visibility, particularly in daylight or outdoor environments. Its brightness and excellent visibility make it particularly useful for tasks that demand long-distance range and precise alignment. Here's an overview of its characteristics and key applications:

Quarton inc.

VLM-520-03 Series

Wavelength Characteristics:

- 520 nm Green Light: Green lasers at 520 nm are significantly more visible due to the human eye's sensitivity to green wavelengths. This makes them brighter and easier to see, especially under daylight or bright environmental conditions.
- High Visibility: Due to their increased brightness, 520 nm lasers provide high contrast, which makes them perfect for long-distance visibility and precise alignment in a variety of industrial and consumer-grade applications.

Typical Applications:

- **Economical Green Dot Laser Module:**
  Low-Cost Solution: The VLM-520-03 series green laser is an affordable option for consumer-grade positioning, measuring, pointing, and laser sighting devices. Its high visibility makes it ideal for these applications, allowing users to clearly see and utilize the laser beam for accurate work. It's used in entry-level or everyday devices that require precise alignment, such as laser levels and measurement tools.
- **Wood Processing:**
  In the wood processing industry, green lasers are used for cutting, engraving, and alignment. Their bright and visible beam ensures accurate positioning and precision during tasks like wood cutting or laser engraving, even in environments with ambient lighting.
- **Metal Processing:**
  Green lasers at 520 nm are also used in metal processing for marking, cutting, and welding. The increased visibility allows operators to make precise cuts and markings on metals, even in environments with challenging lighting conditions. The higher brightness improves productivity and safety.
- **Stone Processing:**
  The stone processing industry benefits from the high visibility of the 520 nm green laser in applications such as cutting, engraving, and shaping stone materials. The laser's precision and brightness allow for detailed work, ensuring that designs and cuts are accurately made on hard stone surfaces.
- **Textile Industry:**
  In the textile industry, green lasers are used for cutting patterns, aligning materials, and engraving designs on fabrics or textiles. The laser's bright visibility ensures that workers can make precise cuts and alignments during manufacturing or design processes.
- **Food Industry:**
  The food industry utilizes the 520 nm green laser for applications like inspection, sorting, and processing. It is used in systems for weighing, sorting products, or marking packaging with precise logos, barcodes, or expiration dates. The laser's bright visibility ensures accuracy and ease of use in fast-paced environments.

VLM-520-03 Series

- **Automotive Industry:**
  In the automotive industry, green lasers are used for alignment, measurement, and welding tasks during the assembly and manufacturing of vehicles. Their high visibility makes them ideal for precise component placement, measurement, and quality control.
- **Medical Science:**
  Medical applications also benefit from the 520 nm green laser, particularly in surgical procedures, diagnostic equipment, and optical treatments. The high visibility and precision of the laser make it useful in procedures where accurate targeting is critical, such as in eye surgery, physical therapy treatments, or laser scanning for diagnostics.

Summary:

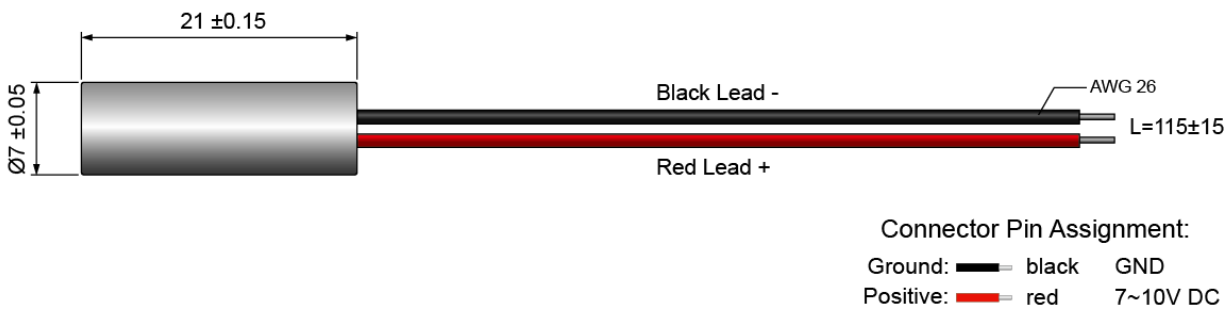
The 520 nm green laser is highly valued across various industries for its exceptional visibility, precision, and long-distance range. It offers an economical solution for a wide range of applications, including positioning, measuring, pointing, and laser sighting devices, as well as wood, metal, and stone processing, textile manufacturing, and automotive production. Its use in the medical field further highlights its importance in areas requiring high precision and visibility. The high brightness of green light allows for effective operation in daylight and outdoor environments, providing significant advantages in industries requiring accuracy and ease of use.

Quarton inc.

VLM-520-03 Series

OUTLINE DIMENSIONS (UNITS: mm)

Outline (Lead Wire type)



SPECIFICATIONS

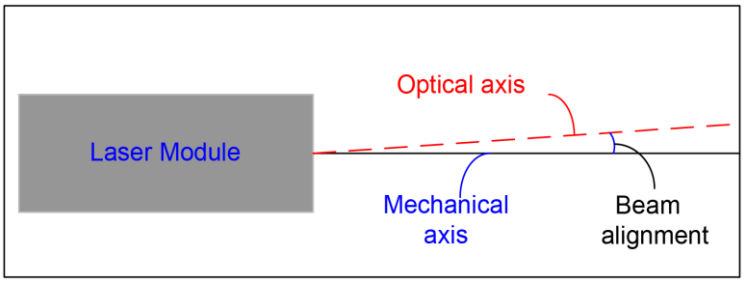
SPECIFICATIONS		VLM-520-03	
		LPO	**LPT**
1	Dimensions	Ø7 x 21 mm (Ø0.276" x 0.827")	
2	Weight	4±1g	
3	Operating voltage (Vop)	7~10 VDC	
4	Operating current (Iop)	Less than 80mA	
5	Laser power output	Less than 0.39mW	Less than 1mW
6	Laser class	Class 1	Class 2
7	Wavelength at peak emission (λp)	505~530nm	
8	Collimating lens	Aspherical plastic lens	
9	Output aperture	3mm	
10	Beam shape	Ellipse	
11	Spot size	Less than 4mm @ 5M	
12	Divergence (Full Angle)	0.6 mRad	
13	Beam alignment*	Less than 3°	
14	Operating temp. range**	+15°C ~+30°C (Room Temperature)	
15	Storage temp. range	-20°C ~+65°C	
16	Housing material	Stainless steel	
17	Potential housing***	VDD(+)	
18	Electrostatic discharge (ESD)	20KV	
19	Moisture sensitivity level (MSL)	Level 1 - acc to JEDEC J-STD-020E.	

Quarton inc.

VLM-520-03 Series

20	Protection circuit	Reversed supply circuit protection, over-current protection, surge protection, Short circuit protection
21	Vibration resistance	10 to 55Hz,1.5mm amplitude for 2 hours each in X, Y and Z direction
22	Standard	IEC60825:2014
23	Wire type	1007-26AWG
24	Cable length	115±15mm
25	Mean time to failure (MTTF) 25°C	5000hrs
26	Application	Economic type
27	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.

ORDER CODE

Order Code	Wavelength	Laser Power Output	Laser Class	Connection Type
VLM-520-03 LPT	520 nm	Less than 1mW	Class 2	Lead Wire
VLM-520-03 LPO	520 nm	Less than 0.39mW	Class 1	Lead Wire

SAFETY LABEL

CLASS I LASER PRODUCT