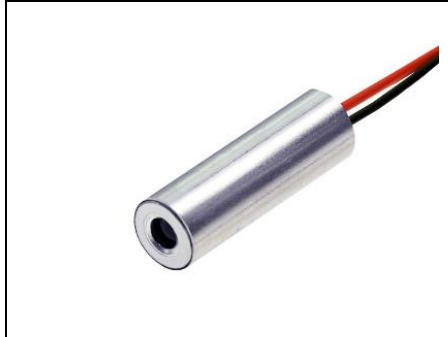


IR Economical Laser

VLM-780-03 Series



FEATURES:

- Designed and manufactured in Taiwan, ensuring superior quality and durability.
- Economical IR Dot Laser: A cost-effective solution for consumer-grade applications such as positioning, measuring, pointing, and laser sighting devices.
- Wavelength: 780 nm
- Laser power output: LPT - Class 1 – less than 0.7mW
LPA - Class 3R – less than 3mW.
- Operating Voltage: 2.6-6 VDC
- Beam Divergence (Full Angle): 0.6 mRad
- Dimensions: D7 x L21 mm (D0.276 x L0.827 inches)
- Despite being an economical solution for laser 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 780 nm laser operates in the near-infrared (NIR) spectrum, which is just beyond the visible range. This wavelength is slightly visible to the human eye under certain conditions, typically appearing as a faint red light, though it is mostly invisible in standard lighting conditions. This laser's characteristics make it ideal for a range of applications that require low visibility and precision. Below are some common applications:

Wavelength Characteristics:

- Near-Infrared (NIR): The 780 nm wavelength lies in the near-infrared range, making it invisible to the naked eye under normal circumstances. However, under low-light conditions, it may appear as a faint red glow due to the human eye's ability to detect some wavelengths in the infrared spectrum.
- Faint Red Appearance: Although it's primarily NIR, it can be slightly visible in dim environments, providing a subtle, low-light effect in certain applications.

VLM-780-03 Series

Typical Applications:

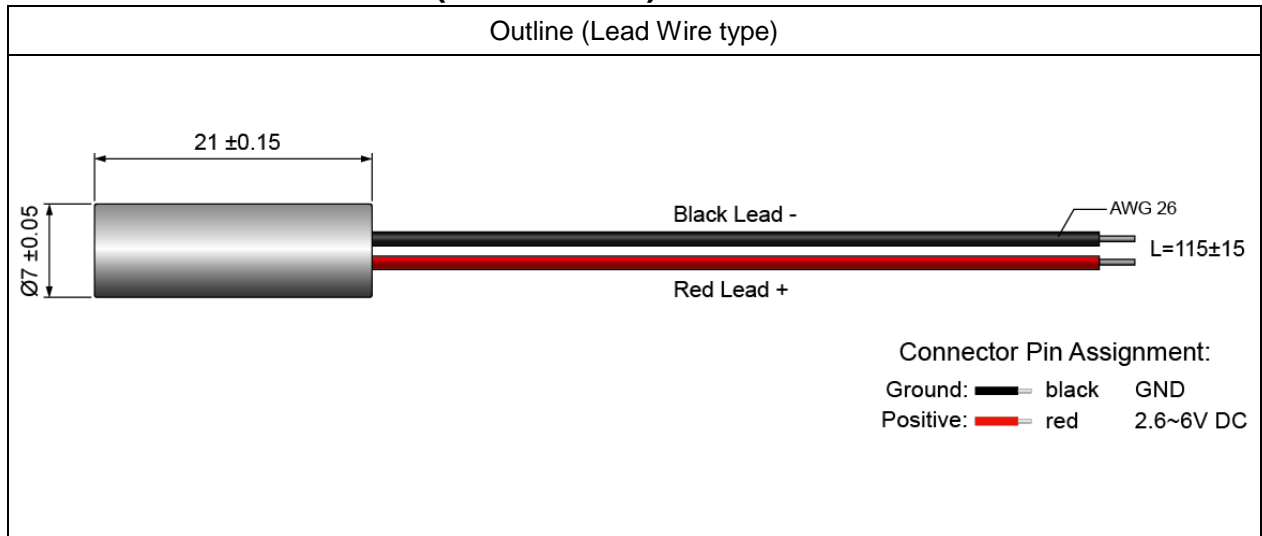
- **Optical Communication:**
The 780 nm laser is often used in fiber optic communication systems. It serves as a light source for transmitting data through optical fibers, particularly in early optical communication technologies. This wavelength offers low attenuation and is efficient for data transmission over long distances in telecommunications and networking.
- **Barcode Scanners:**
In barcode scanners, the 780 nm laser is commonly used for scanning barcodes. The laser is employed to illuminate the barcode, and the reflected light is detected by a sensor to decode the information. The wavelength is effective for use in both handheld and stationary barcode scanners, particularly in environments where low visibility is not an issue.
- **CD/DVD Players:**
The 780 nm laser is crucial in optical drives like CD/DVD players. It is used to read and write data to optical discs by interacting with the data encoded in the form of pits and lands. The laser's specific wavelength is ideal for reading the data layer in optical media, allowing the device to accurately access and store information.
- **Spectroscopy:**
In spectroscopy, the 780 nm wavelength is used for various types of molecular and atomic studies. It can be employed in techniques like Raman spectroscopy or absorption spectroscopy to study material properties and chemical compositions. Some molecules have specific absorption or scattering properties at this wavelength, making it useful in scientific analysis.
- **Medical Applications:**
The 780 nm laser is used in medical applications such as diagnostics and low-level laser therapy (LLLT). In diagnostics, this laser is used in imaging systems and diagnostic tools that require NIR light for better penetration into tissues. For LLLT, it is used to promote healing, reduce pain, and stimulate tissue regeneration by interacting with cells in a non-invasive manner.

Summary:

The 780 nm laser operates in the near-infrared spectrum, making it slightly visible as a faint red light and ideal for a variety of applications that require low visibility and precision. Key uses include optical communication systems, barcode scanners, CD/DVD players, spectroscopy, and medical applications such as diagnostics and low-level laser therapy. Its ability to transmit data efficiently and interact with materials makes it indispensable in both consumer electronics and scientific fields.

VLM-780-03 Series

OUTLINE DIMENSIONS (UNITS: mm)



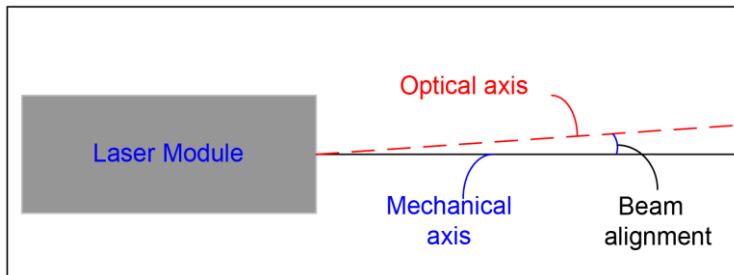
SPECIFICATIONS

SPECIFICATIONS		VLM-780-03	
		LPT	LPA
1	Dimensions	$\varnothing 7 \times 21$ mm ($\varnothing 0.276" \times 0.827"$)	
2	Weight	4 ± 1 g	
3	Operating voltage (Vop)	2.6~6 VDC	
4	Operating current (Iop)	Less than 40mA	
5	Laser power output	Less than 0.7mW	Less than 3mW
6	Laser class	Class 1	Class 3R
7	Wavelength at peak emission (λ_p)	770~795nm	
8	Collimating lens	Aspherical plastic lens	
9	Output aperture	3mm	
10	Beam shape	Ellipse	
11	Spot size	6 ± 1 mm @ 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	Stainless steel	
17	Potential of housing***	VDD(+)	
18	Electrostatic discharge (ESD)	20KV	
19	Moisture sensitivity level (MSL)	Level 1 - acc to JEDEC J-STD-020E.	

VLM-780-03 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	Connection type	1007-26 AWG
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-780-03 LPA	780 nm	Less than 3mW	Class 3R	Lead Wire
VLM-780-03 LPT	780 nm	Less than 0.7mW	Class 1	Lead Wire

SAFETY LABEL

CLASS I LASER PRODUCT

