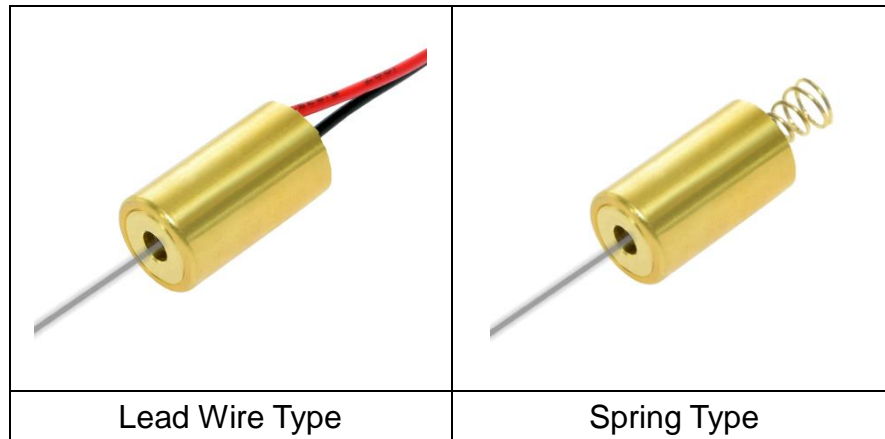


## IR Industrial Use Laser

### VLM-780-01 Series



#### FEATURES:

- Designed and manufactured in Taiwan, ensuring exceptional quality and durability.
- 780nm Near-infrared (NIR), slightly visible to the human eye under certain conditions but mostly appears faint red.
- This module is an industrial-grade product that integrates an aspherical plastic collimating lens, a laser diode, and an APC driver circuit into a compact and durable solid brass housing.
- Operating Voltage: 2.6-6 VDC
- Wavelength : 780 nm
- Laser power output : LPA - Class 3R – less than 3mW
- LPT - Class 1 – less than 0.7mW.
- Beam Divergence (Full Angle): 0.5 mRad
- Dimensions: D10.5 x L18.4 mm (D0.413 x L0.724 inches).
- Compact design with an integrated Auto-Power-Control (APC) driver circuit for safe and consistent laser output.

#### Wavelength Characteristics:

- Near-Infrared (NIR): The 780 nm wavelength lies in the near-infrared range, which is just beyond the visible spectrum. It can be faintly perceived as red by the human eye under certain circumstances but generally operates in the infrared region, making it invisible in normal lighting conditions.
- Faint Red Appearance: While it's primarily NIR, the 780 nm wavelength may appear as a faint red light in low-light environments, especially in low-power lasers.

## VLM-780-01 Series

### FEATURES:

- **Optical Communication:**

The 780 nm laser is commonly used in fiber optic communication systems, where it serves as a light source for transmitting data through optical fibers. Its wavelength is well-suited for communication applications because it strikes a balance between minimal absorption and low attenuation in the fiber optic medium, making data transmission efficient.

- **Barcode Scanners:**

Older barcode scanners often utilize 780 nm laser modules. The wavelength is effective for reading barcodes, especially in older systems. These lasers work by shining light on the barcode, and the reflected light is then interpreted to decode the information.

- **CD/DVD Players:**

Optical drives, such as CD/DVD players, use 780 nm lasers to read and write data on the optical discs. The wavelength is effective for interacting with the data layers of the discs, enabling the reading of information encoded in the form of pits and lands on the disc surface.

- **Spectroscopy:**

In spectroscopy, the 780 nm laser is used for molecular and atomic studies. It can be employed in Raman spectroscopy and absorption spectroscopy, as certain molecules and compounds exhibit specific absorption characteristics at this wavelength. This makes it useful for analyzing material properties and chemical compositions.

- **Medical Applications:**

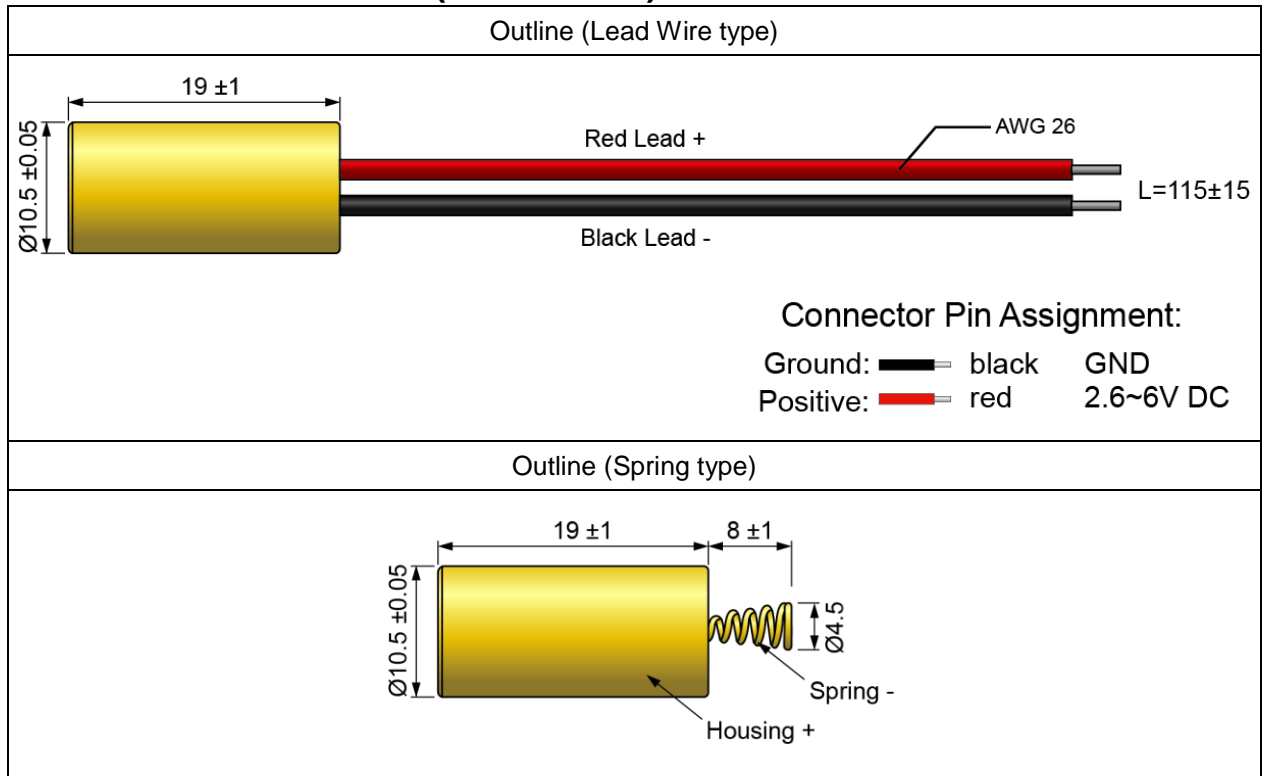
Low-Level Laser Therapy (LLLT): The 780 nm laser is sometimes used in medical diagnostics and low-level laser therapy. In LLLT, the laser's wavelength is beneficial for promoting tissue healing and reducing inflammation in conditions like chronic pain, arthritis, or wound healing. Its ability to penetrate the skin without damaging tissues makes it valuable in non-invasive treatments.

### Summary:

The 780 nm laser module is widely used in fields like optical communication, barcode scanning, optical storage devices (CD/DVD players), spectroscopy, and medical treatments. Its near-infrared properties make it ideal for applications requiring precise, low-visibility light, and its relatively low cost and efficiency in certain environments have contributed to its broad adoption in various industries.

## VLM-780-01 Series

### OUTLINE DIMENSIONS (UNITS: mm)



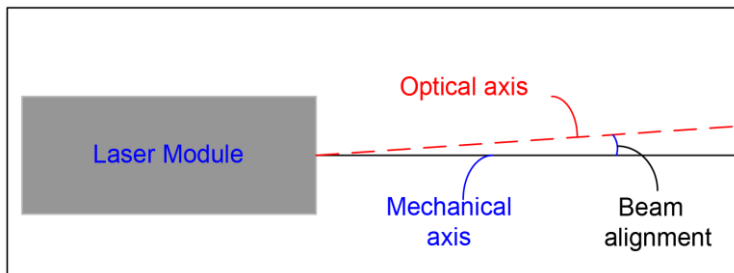
### SPECIFICATIONS

SPECIFICATIONS		VLM-780-01			
		LPT	LPA	SPT	SPA
1	Dimensions	Ø10.5 x 19 mm (Ø0.413" x 0.748")			
2	Weight	10±1g			
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	Less than 0.7mW	Less than 3mW
6	Laser class	Class 1	Class 3R	Class 1	Class 3R
7	Wavelength at peak emission (λp)	770~795nm			
8	Collimating lens	Aspherical plastic lens			
9	Output aperture	5mm			
10	Beam shape	Ellipse			
11	Spot size	5±1 mm @ 5M			
12	Divergence (Full Angle)	0.5 mRad			
13	Beam alignment*	Less than 3°			
14	Operating temp. range**	+10°C ~+40°C			

## VLM-780-01 Series

15	Storage temp. range	-20°C ~+65°C	
16	Housing	Brass	
17	Potential of housing***	VDD(+)	
18	Electrostatic discharge (ESD)	30KV	
19	Moisture sensitivity level (MSL)	Level 1 - acc to JEDEC J-STD-020E.	
20	Protection circuit	Reversed supply circuit protection, over-current protection, surge 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	Spring
24	Cable length	115±15mm	8±1mm
25	Mean time to failure (MTTF) 25°C	10000hrs	
26	Application	General purpose	
27	Suggestion work distance	1~30 meters / 3~100 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.

## VLM-780-01 Series

### ORDER CODE

Order Code	Wavelength	Laser Power Output	Laser Class	Connection Type
VLM-780-01 LPA	780 nm	Less than 3mW	Class 3R	Lead Wire
VLM-780-01 LPT	780 nm	Less than 0.7mW	Class 1	Lead Wire
VLM-780-01 SPA	780 nm	Less than 3mW	Class 3R	Spring
VLM-780-01 SPT	780 nm	Less than 0.7mW	Class 1	Spring

### SAFETY LABEL

CLASS I LASER PRODUCT

