



**Versatile Module**

# Versatile Module (VM)

The Versatile Module (VM) from Global Laser provides a high quality and cost effective OEM solution to a wide range of applications including machine vision, inspection, alignment and positioning.

The VM is 11mm in diameter and features diode powers up to 5mW in both green (515nm) and red (635, 650nm) wavelengths. The green model emits light that appears more than 2X brighter to the human eye than the equivalent power in 635nm. As a result, you're more likely to see these projections against dark materials, in high ambient light levels, or from long distances. The module housing is electrically isolated, and the internal electronics benefit from reverse polarity protection. An A/R coated user adjustable collimating lens produces an elliptical output beam which can be focused to produce fine spots. An optional TTL enable input is also available.

Further versatility is provided by the wide range of external optics which simply screw into the front of the laser diode module, allowing the user to quickly and efficiently switch from one projection to another. The range of external optics includes gaussian lines, homogeneous lines, crosses and a wide range of diffractive patterns.



*VM fitted with Projection Lens*

# Specifications

	515nm	635nm	650nm
<b>Mechanical Information</b>			
Mass (grams)	8		
Dimensions (mm)	Ø11.00 x 37.00		
Housing	Anodised Aluminium		
Isolated Body	Yes		
Lead Length (mm)	215		
Connector Type	Flying Leads		
Input Leads	Red, Black & Optional Blue		
<b>Optical Information</b>			
Wavelength (nm)	515	635	650
Output Power (mW)	1 & 5	1 & 3	1 & 3
Power Stability Over Temperature (Typ)*		≤6%*	
Beam Size at Aperture (mm)	5 x 2		
Beam Divergence (Typ) (mRad)*	<0.5		
Bore Sighting (mrad)	≤10		
User Adjustable Focus	Yes		
<b>Environmental Information</b>			
Operating Case Temperature (°C)	-10 to +55	-10 to +45	
Storage Temperature (°C)	-10 to +85		
Operating Humidity (%RH)	90 non condensing		
MTTF @ 25°C (hrs)	≥40,000	≥30,000	≥100,000
<b>Electrical Specifications</b>			
Red Lead (Vdc)	10 ±5%	+3.5 to +5.0	
Black Lead (V)	0		
Blue Lead (TTL Input) (Optional)	TTL Low = Off TTL High = On		
Frequency Range (KHz)*	≤10	≤1	
Typical Rise & Fall Time (µs)	0.6**	1	
Reverse Polarity	Yes		
Operating Current (mA)***	60	35	25
NOTES * Typical value, varies with laser module. Call us for individual data. ** Measured @ 10kHz *** Conservative value All specifications are typical @ 25°C			

# Lens Options

## Homogeneous Optics

Homogeneous line optics produce a line with a Gaussian intensity distribution across its width and a homogeneous intensity distribution along its length. The homogeneous distribution consists of many gaussian beams combined. This produces a line with high uniformity intensity at shorter working distances, however, this uniformity will decrease over longer working distances due to the effects of divergence. For the best result it is recommended that the line is set perpendicular to the eclipse of the output beam of the laser diode module. The homogeneous cross optic works on the same principle, but with two lines, one perpendicular to the other.

Pattern	Fan Angle
Lines	4.2°
	18°
	33°
	40°
	60°
	90°
	105°
Cross	60°

## Gaussian Line Optics

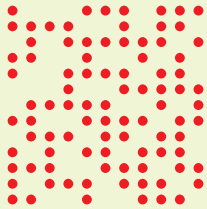
Gaussian line optics produce a line with gaussian distribution in both axis. This results in a line with high intensity in the centre of the line and decreased intensity towards the ends of the line. The long line + dot consists of a gaussian line with a centre gaussian dot. This is very useful for alignment and positioning of buttons/button holes in the textile industry.

Pattern	Fan Angle
L4 Line	8°
L8 Line	16°
Long Line + Dot	100°

# Options & Accessories

## Projection Options

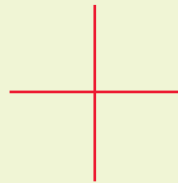
A range of diffractive optical elements (DOE) are available to provide various patterns such as crosses, circles and dot matrix for applications such as 3D mapping, surface texture analysis, alignment and general machine vision applications. Please see the Projection Lens Datasheet for further information.



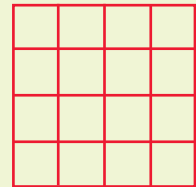
Random Pattern



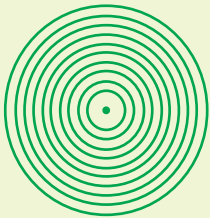
Homogenous,  
Gaussian & Dot Lines



Cross



Grids



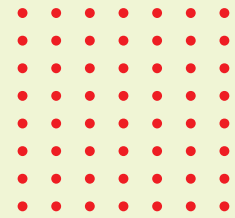
Solid Circles, Dot  
Circles & Multiple Rings



Viewfinders



Multiple Lines



Dot Array

## Heavy Duty Mounting Clamp

The heavy duty mounting clamp allows the VM range to be securely fixed at any required direction or angle. The base plate has a series of threaded holes which allows the clamp to be fixed directly onto a machine or workbench. An optional magnetic base is also available.



## Pillow Block Bearing Mount

The pillow block bearing mount contains a spherical rolling element that serves as a rotational bearing. Enables quick adjustment of the direction of the VM range in one quick and easy movement without the need for an Allen key. The bearing also provides enough friction to keep the pointing direction stable.



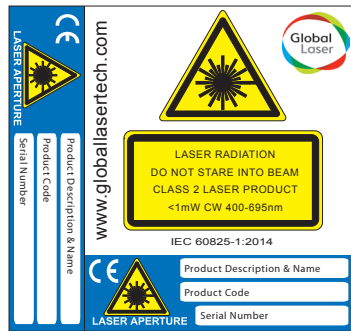
## MK1 Mounting Kit

The laser clamp rotates horizontally through 360° and vertically through 180° and the mounting post allows vertical movement. The mounting clamp is compatible with Global Laser's mounting brackets and is supplied with two different lengths of machine screws to increase the range of mounting surfaces which can be utilized.

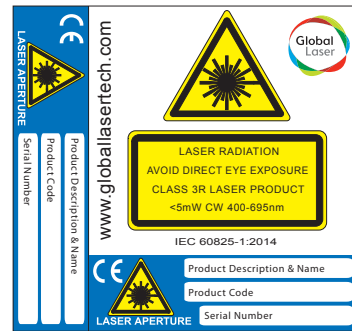


# Laser Safety

Our lasers are compliant to IEC 60825-1:2014 standards. The lasers fall within one of the following classifications depending on power and wavelength. Examples of the labels are below.



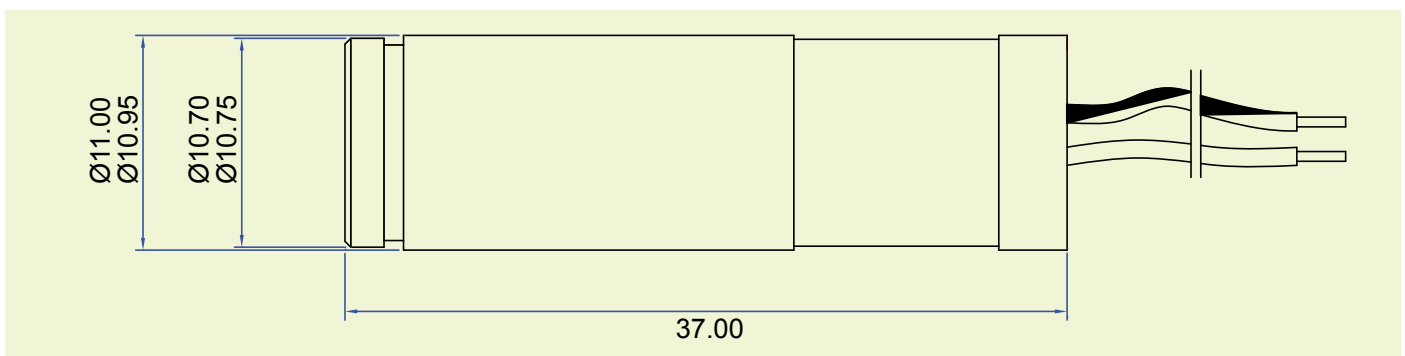
Class 2 Label



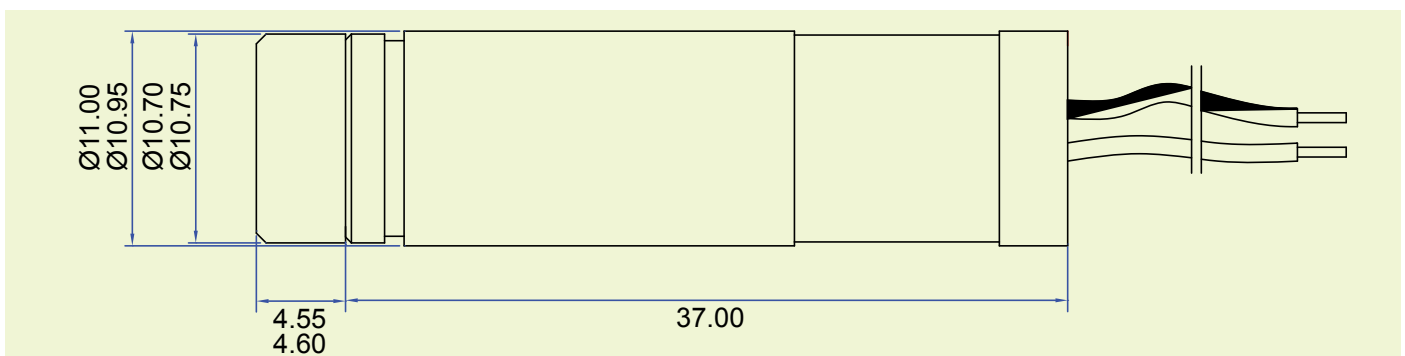
Class 3R Label

# Mechanical Dimensions

## VM Outline



## VM Fitted With External Optic



*Drawings not to scale*

