



# Lyte-MV 24V Digital Userguide

## Product Overview

Thanks for purchasing the Lyte-MV, a laser diode module emitting a uniform (non-Gaussian) and well-defined line with a user-adjustable focus. Its ability to evenly illuminate objects across along the entire length of the line allows the Lyte-MV to be used successfully with industrial CCD and CMOS cameras in inspection, measurement, and control systems.

An innovative approach to structured illumination, you can easily interchange line-generating optics (LGO) and diffractive optical elements (DOE) by hand. The resulting line, shape, or pattern can assist in general machine vision and can also be used to align, position, and target objects in the automotive, aerospace, ceramics, timber, and packaging industries.

A TTL modulation input allows you to drive your laser using a digital voltage signal. You can then change the mark-to-space ratio to control the mean intensity of the output beam, modulate the laser with coded information, or synchronise the laser with an external measurement device such as a machine vision camera.

Recommended for industrial environments and demanding applications, the Lyte-MV is vibration-tested between 10-500 Hz and temperature-cycled between -20°C to +50°C. It also conforms to European EMC standards EN61000-6-4 and EN61000-6-2. Heavy duty mounting clamps, rails, and waterproof housing are also available.

If you have any problems or require help when using a Lyte-MV module then please contact us through [sales@globallasertech.com](mailto:sales@globallasertech.com) or call your local representative.



# Product Operation

## A: CW Mode

To operate the laser in CW mode the Red, Black and Blue Leads should be connected in the following way. If you have purchased a DNI (Digital non-Inverted) model, connect the yellow lead to supply. If you have purchased the DI (Digital Inverted) model connect the yellow lead to 0 volts.

Pin	Lead	Red & IR Models	Green Models
1	Red	+5 Vdc to +30 Vdc	+10 Vdc to +30 Vdc
2	Black	0 Vdc	
3	Yellow	Supply (DNI Models)	
		0 Volts (DI Models)	
4	Blue	V Supply if not using as enable switch	

## B: TTL Mode

The Lyte-MV digital version allows the unit to be gated on and off, or pulse-width modulated at TTL voltage levels via the yellow control lead. The standard version (DNI) offers non inverting TTL where an input signal of  $<0.4V$  = off and  $>2V$  = on and vice versa for the inverted (DI) model. The frequency bandwidth typically falls between 100kHz - 1MHz and varies between Lyte-MV models.

Pin	Lead	Red & IR Models	Green Models
1	Red	+5 Vdc to +30 Vdc	+10 Vdc to +30 Vdc
2	Black	0 Vdc	
3	Yellow	Input TTL Signal	
4	Blue	V Supply if not using as enable switch	

## C. Blue Lead (Enable Switch)

An on/off switch function is available via the blue wire. Applying 0V will switch the laser off whilst applying V supply leaves the laser on. This function can be used as a safety interlock or enable switch typically required in laser safety systems. A TTL switch can also be utilised via this lead. TTL High = on and TTL Low = off. Maximum frequency is typically 100Hz. If not using this function please connect the lead to the V supply or the laser will not switch on.

# Mounting

The lifetime and stability of your laser can be optimised when mounted on a suitable heat sink. This allows the case temperature to be kept within its specified range. Failure to properly heat sink your laser device could result in shortened lifetime or failure of the diode. As a general guideline, the lifetime of a laser diode decreases by a factor of two (approx.) for every 10°C increase in operating temperature.

The Lyte-MV is compatible with the 19mm Heavy Duty Clamp (with/without magnetic base) supplied by Global Laser.

## **A. Mounting the Lyte-MV in the Heavy Duty Mounting Clamp (See Drawing B)**

1. Secure the clamp to a surface. There are two methods:
  - a. Screw an M5 stud to the bottom of the base, or
  - b. Remove the base by removing 2 x grub screw B with the supplied Allen key, then thread an M5 cap screw through the top of the base. Then re-attach the base to the body of the clamp
2. Loosen Allen screw A with the supplied Allen key
3. Slide your laser into the mounting hole and then tighten Allen screw A
4. Loosen grub screw A
5. Adjust the vertical angle of your laser and then tighten grub screw A
6. Loosen 2 x grub screw B. This will allow the main body of the mount to be rotated independently of the base
7. Adjust the horizontal angle of your laser and then tighten 2 x grub screw B

## **B. Mounting the Lyte-MV in the Heavy Duty Mounting Clamp with Magnetic Base (See Drawings B&C)**

1. Secure the magnetic base to the Heavy Duty Clamp
  - a. Screw the stud on the top of the magnetic base into the centre hole at the bottom of the Heavy Duty Clamp
2. Remove the keeper from the magnetic base and place on a ferrous surface
3. Loosen Allen screw A with the supplied Allen key
4. Slide your laser into the mounting hole and then tighten Allen screw A
5. Loosen grub screw A
6. Adjust the vertical angle of your laser and then tighten grub screw A
7. Loosen 2 x grub screw B. This will allow the main body of the mount to be rotated independently of the base
8. Adjust the horizontal angle of your laser and then tighten 2 x grub screw B

# Cleaning The Optics

Please place the protective cap over the aperture when the laser is not in use to reduce optical contamination. Optional waterproof housing for the Lyte-MV is also available from Global Laser for applications in the vicinity of cutting fluids, moisture, and high levels of dust.

If the laser pattern becomes fuzzy or unclear, please check the following:

1. Remove LGO/DOE

- a. LGOs can be cleaned with an optical cloth, lens cleaning kit, or sterile dry air/nitrogen.
- b. DOEs should only be cleaned with sterile dry air or nitrogen. The use of any other cleaning methods will damage the grating.

2. Check the laser is in focus.

3. The collimating lens inside the laser barrel can be cleaned with dry air.

## Focus Adjustment

The laser will have been focussed and tested at the working distance requested at the time of order. If you did not specify a distance it will be focused at 300mm (11.81 inches).

Should you need to adjust the focus (alter the line thickness) please follow the simple instructions below:

1. Slacken the four M2.5 grub screws, which secure the prism lens/ interchangeable patterns optic using the Allen key supplied.

2. Remove the prism lens assembly.

3. Insert focus key into laser barrel and align with focus control grooves.

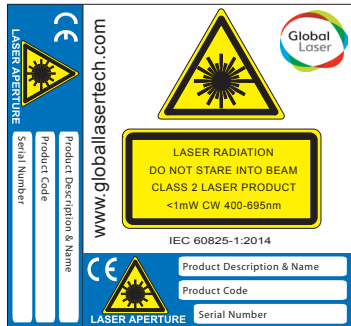
4. Turn the focus key to project the smallest spot at the required working distance.

5. Re-fit the line optics and align the ridge of the line lens to the major axis of the laser beam. Make minor adjustments via the four M2.5 grub screws to achieve an optimum line.

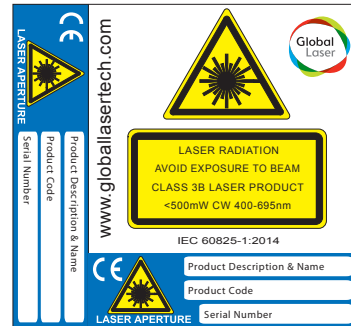
6. If pattern optics are being re-fitted, simply re-fit and rotate to achieve the desired projection then tighten the M2.5 grub screws.

# Safety & Classification

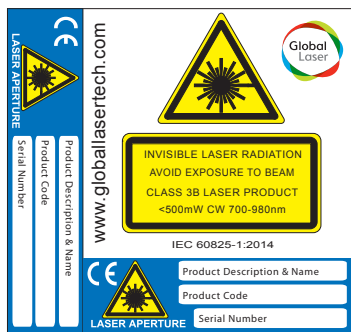
These modules are intended for incorporation into customer equipment. They are classified in accordance with IEC60825-1 2014, which should be consulted prior to designing or using any laser product. The following labels are supplied for attachment to the customer's equipment, but responsibility for compliance with the standard remains with the user.



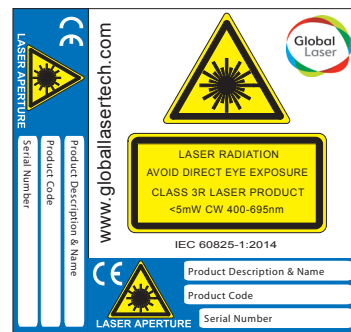
Class 2 Laser Label



Class 3B Laser Label



Class 3B IR Laser Label



Class 3R Laser Label

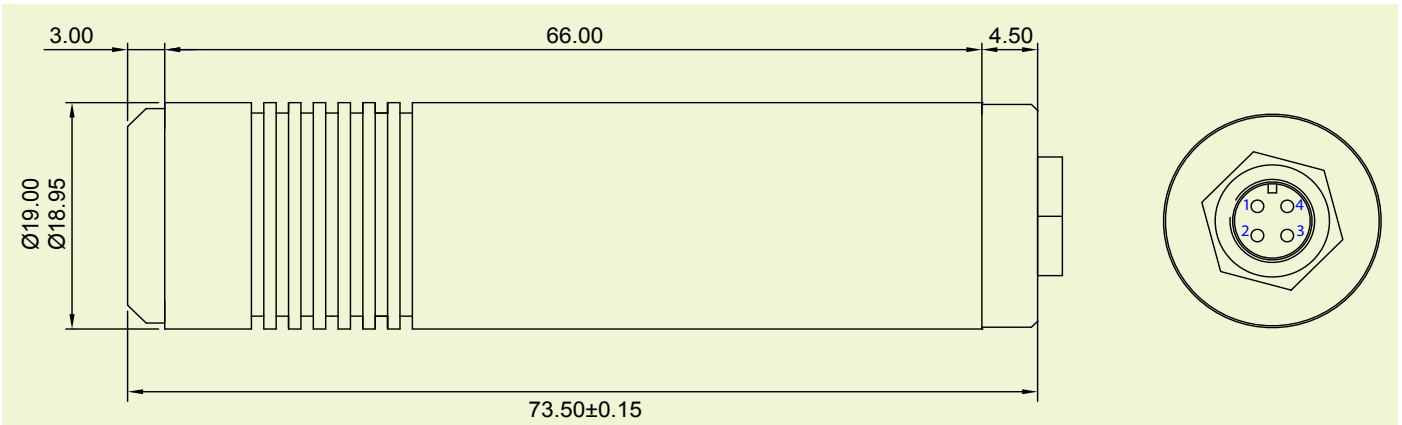
# Warranty & Repair

If your product develops a fault within 24 months from the date of purchase Global Laser will repair / replace the product. If you wish to return a faulty product contact your local representative or Global Laser to obtain a RMA (Return Material Authorisation code) and return to the address below:

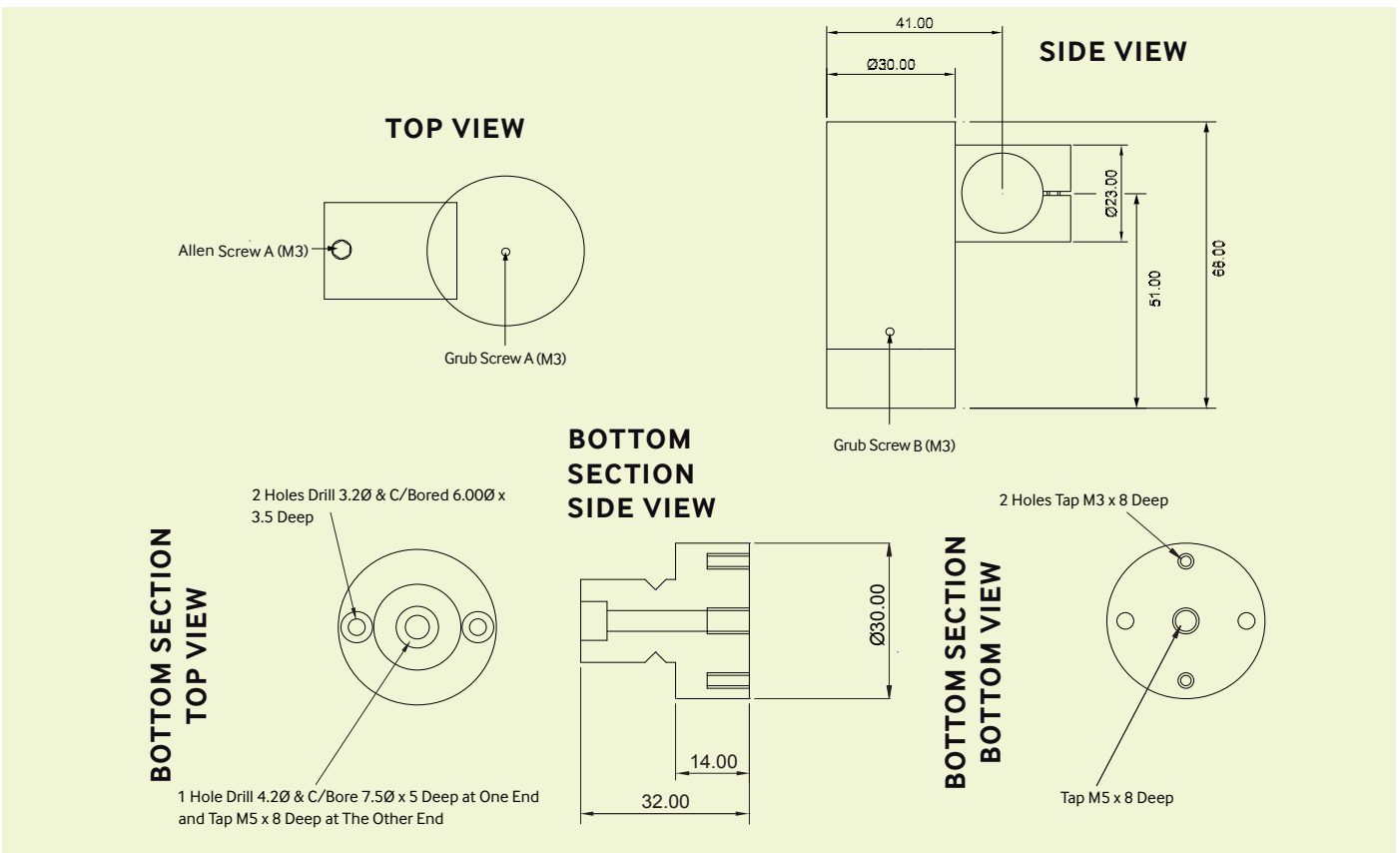
Global Laser Ltd  
Units 9-10  
Roseheyworth Business Park  
Abertillery  
Gwent, NP13 1SP  
United Kingdom

# Diagrams

## A) Lyte-MV Outline

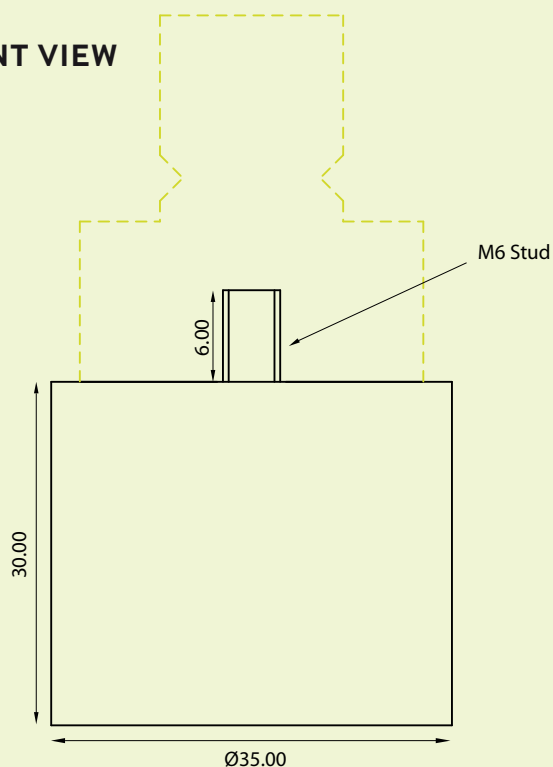


## B) Heavy Duty Mounting Clamp



## C) Magnetic Base

### FRONT VIEW



*Drawings not to scale*

For further information about any of our products please contact your local distributor or you can contact Global Laser in the UK. Your Local Distributor is:

Please Note: Global Laser reserve the right to change descriptions and specifications without notice.



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