Lyte-MV Analogue Userguide Red & IR Versions

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.

An analogue (LC) circuit allows you to linearly control the continuous output power by applying 0 to 1 V. You can also externally modulate the laser using an arbitrary signal with a frequency up to 500 kHz and amplitude between 0 to 1 V (within the limits of the diode's maximum rise and fall time).

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 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:

Pin	Lead	Lyte-MV Red & IR Versions
1	**Red**	+5 Vdc (±10%)
2	**Black**	0 Vdc
3	**Yellow**	Not Connected
4	**Blue**	V Supply if not using as enable switch

If you have purchased a Lyte-MV with a 5V PS-1 power supply, please follow the below instructions:

1. Connect the Lyte-MV to the PS-1 using the supplied cable.
2. Connect the IEC plug to PS-1 power adapter.
3. Insert the IEC plug into a mains socket.
4. Switch on the power supply at the mains socket or via an optional key switch requested at point of order.

B: Linear Modulation Function

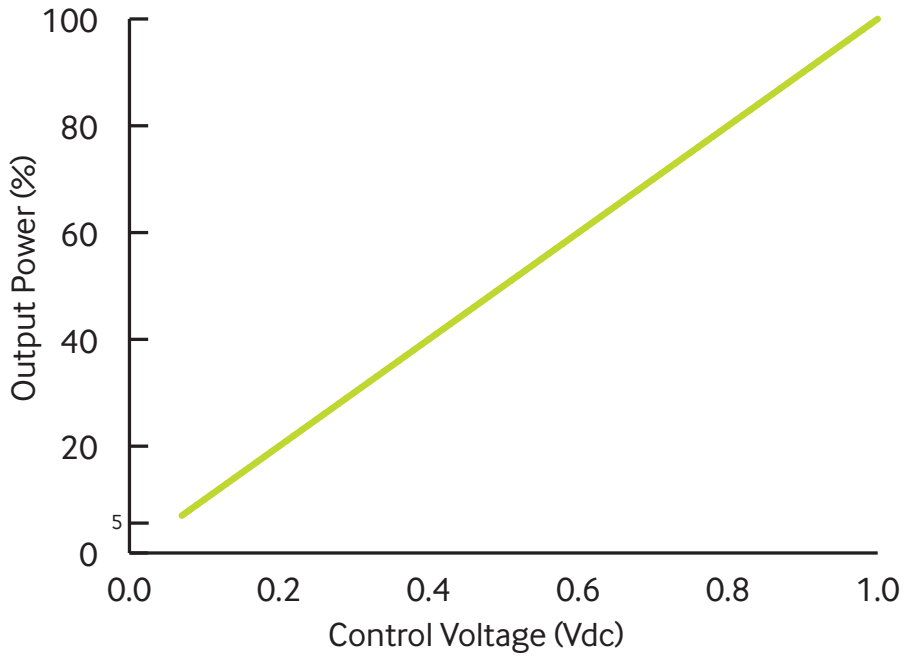
To linearly modulate the laser using an arbitrary signal of up to 500kHz and an amplitude between 0 - 1 Vdc, please connect the leads as below:

Pin	Lead	Lyte-MV Red & IR Versions
1	**Red**	+5 Vdc (±10%)
2	**Black**	0 Vdc
3	**Yellow**	Input Modulation Signal 0 to +1 Vdc
4	**Blue**	V Supply if not using as enable switch

C. Linear Intensity Control

To linearly control the output power, connect the leads as in the below table. Apply 0V to the yellow lead to turn the laser off and 1V to generate maximum power. Please see the linear intensity graph for further details.

Pin	Lead	Lyte-MV Red & IR Versions
1	Red	+5 Vdc (±10%)
2	Black	0 Vdc
3	Yellow	Input Control Voltage 0 to +1 Vdc
4	Blue	V Supply if not using as enable switch



D: Setting the Output Power via a Resistor

The control wire has a 10k Ohm input impedance connected to an internal 1V source which is used as the reference for the factory set power. Measuring the voltage between the Yellow and Black wires with a high (>10M Ohm) impedance voltmeter, will give a reading of 1 V ± 2%. Connecting a 10k Ohm resistance between the Yellow and Black wires will result in the reading falling to 0.5V and the light output falling to half the factory set power. Other outputs between 0 and the factory set power can be achieved with a single resistor Rx by using the formula:

Where Po is the required power output as Pfs is the factory set power

$$RX = \frac{Po^* 10K}{PFs - Po}$$

Enable Switch (Blue Lead)

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 100 Hz. 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

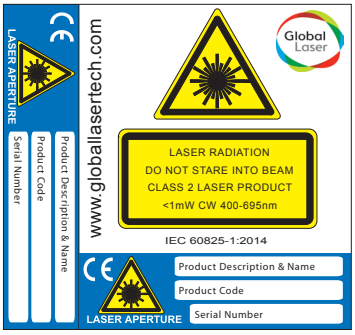
The laser will have been focussed and tested at the working distance requested at the time of order. If you did not specify a distance it will be focused at 300mm (11.81 inches).

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

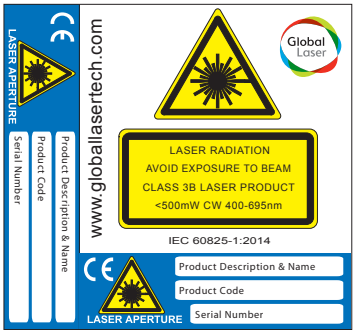
1. Slacken the four M2.5 grub screws, which secure the prism lens/ interchangeable patterns optic using the Allen key supplied.
2. Remove the prism lens assembly.
3. Insert focus key into laser barrel and align with focus control groves.
4 .Turn the focus key to project the smallest spot at the required 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

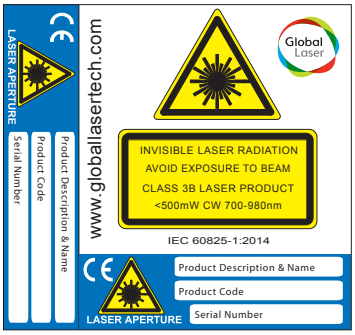
These modules are intended for incorporation into customer equipment. They are classified in accordance with IEC60825-1 2014, which should be consulted prior to designing or using any laser product. The following labels are supplied for attachment to the customer's equipment, but responsibility for compliance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



Class 2 Laser Label



Class 3B Laser Label



Class 3B IR Laser Label

Class 3R Laser Label

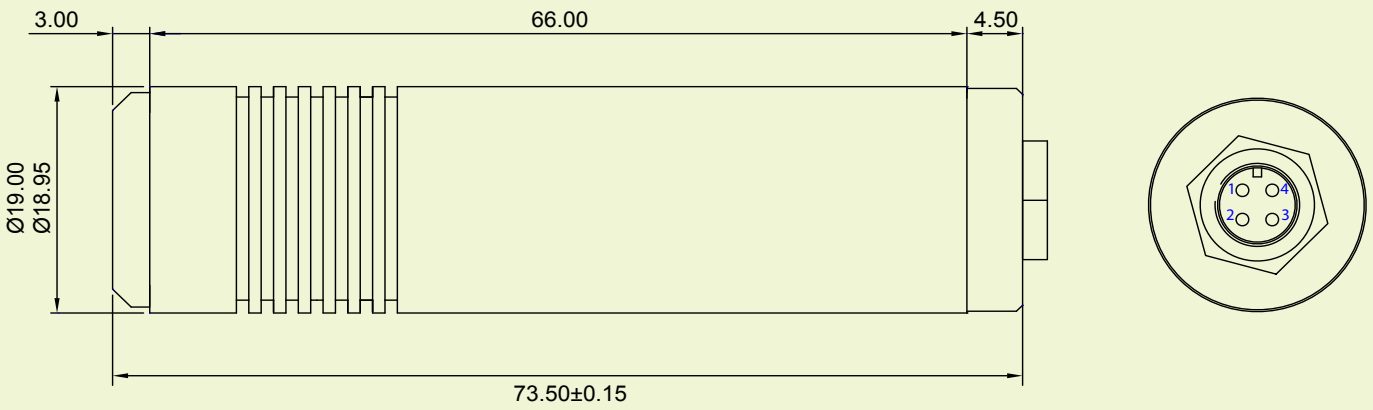
Warranty & Repair

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:

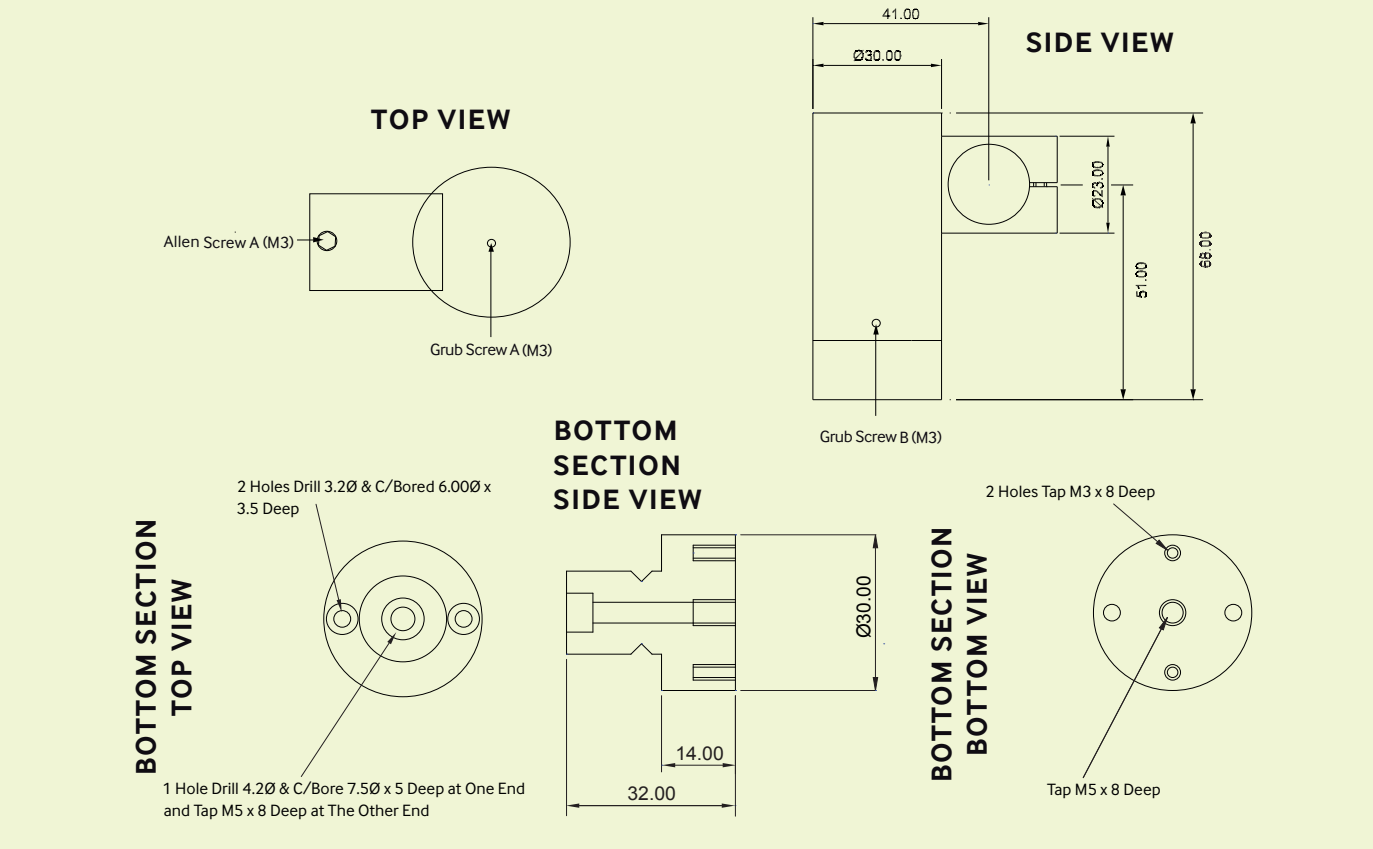
Global Laser Ltd
Units 9-10
Roseheyworth Business Park
Abertillery
Gwent, NP13 1SP
United Kingdom

Diagrams

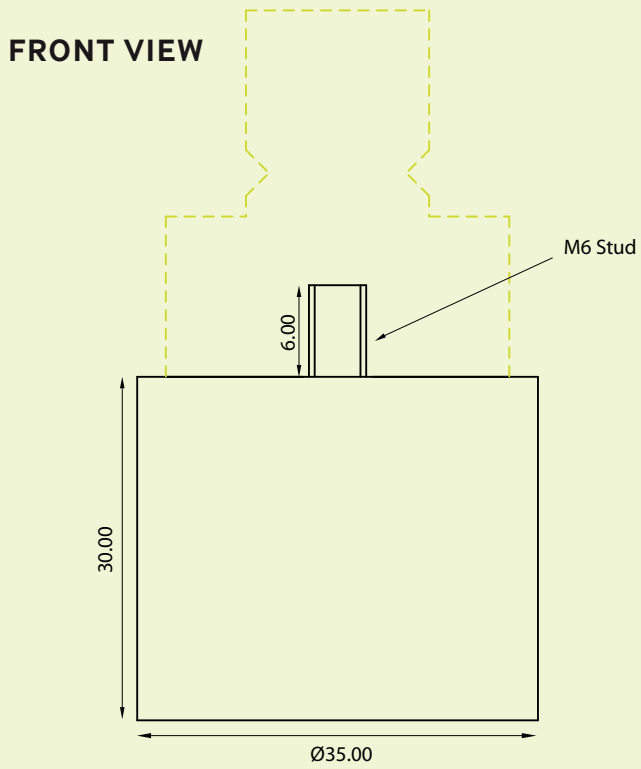
A) Lyte-MV Outline



B) Heavy Duty Mounting Clamp



C) Magnetic Base



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.

ISO9001 Certified

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