



Machine Vision Lyte-MV 2

The Lyte-MV 2 Range

The Lyte-MV 2 provides a reliable industrial light source for a wide range of machine vision applications including triangulation, 3D inspection and alignment. It features IP67 protection, a threaded barrel and the ability to operate from industrial voltage sources such as 24Vdc while still providing market leading modulation features. The Lyte-MV 2 DCLM has the ability to be controlled and programmed via a USB interface.

Available with powers up to 120mW in Red and Blue, 50mW in Green and 200mW in IR. An array of optical options including circular and elliptical spots, uniform lines and diffractive patterns. The Lyte-MV 2 also has a user adjustable focus control, to allow the user to optimize the focus via an external control ring. The threaded barrel allows the user to mount the laser to bulkheads and mounting blocks while ensuring continues heat sinking. This M18 threaded barrel makes it compatible with the majority of existing machine vision systems. The modulation options allow the user to synchronize the output or continuous the power output via TTL or analogue modulation.

Key Features:

- CW, Linear Analogue, PWM or TTL control
- M18 threaded body for simple and easy mounting
- IP67 rated, water and dust proof
- External, user adjustable focus without removing the line optics
- Excellent focus and line uniformity
- Powers up to 120mW in red and blue, 50mW in Green and 200mW in IR
- Wide range of uniform lines, dot optics and DOE patterns
- 5V to 30V supply
- Two year warranty

A comprehensive range of accessories including mounting clamps and rail systems, mains power supplies and laser safety and enhancement glass are also available to complement the Lyte-MV 2.



Selection Guide

This catalogue covers our complete Lyte-MV 2 range and is broken down into various sections. Please use the guide below to go straight to the relevant section.

Page	Section	Description
3	Specification - Red & IR Models	Full comprehensive specification for the Lyte-MV 2 in the red and IR wavelenghts.
4	Specification - Green Models	Full comprehensive specification for the Lyte-MV 2 in a Green wavelength.
5	Specification - Blue Models	Full comprehensive specification for the Lyte-MV 2 in the Blue wavelenghts.
6	Specification - DCLM Models	Full comprehensive specification for the DCLM version of theLyte-MV 2.
7	DCLM Information	Information on our DCLM version and the software.
8	Power Options - Line	A list of what powers and wavelengths are available with a uniform line.
9	Line Output Specification	Typical line intensity graph, focussing and depth-of-field characteristics.
10	Power Options - Spot	A list of what powers and wavelengths are available with a spot output.
10	Spot Output Specification	Typical spot characteristics information.
11	Modulation	Detailed explanation of each modulation function available.
12 - 13	Options & Accessories	Here you will find information on a variety of options and including.
14	Mechanical Dimensions	Detailed technical drawing of the Lyte-MV 2.

Specification - Red & IR Models

Mechanical Information				
Weight (grams)	98			
Diameter (mm)	19/M18			
Length (mm)	115 (Excluding Connector)			
Material	Hard Anodised Aluminium			
Isolated Body	Yes			
Input Method	4 pin Binder M8 Connector			
Inputs	Pin 1 - V+	Pin 2 - OV	Pin 3 - Control	Pin 4 - Enable
Optical Information				
Wavelength (nm)	635 to 980 & Custom Upon Request			
Power (mW)	Up to 200 as standard (Custom Upon Request)			
Driver Type	APC			
Power Stability (Over Temperature Range)	±1.75% #			
Optical Output Option	Spot, Uniform Line and Diffractive Projections			
Intensity Distribution (Uniform Line)	Uniform along length, Gaussian along width			
Uniformity (Uniform Line)	±25% (Over central 80% of the line)			
Fan Angles (°)	5, 10, 20, 30, 45, 60, 75			
Line Thickness	Refer to focus charts on product information			
Bore Sighting (mRad)	<4			
Focus Adjustment	External Focus Mechanism			
Environmental Information				
Operating Case Temperature (°C)	-10 to +45 (See Note 1)			
Storage Temperature (°C)	-10 to +80			
Ingress Protection	IP67			
Electrical Specifications		PWM	LC	
Input Voltage (Vdc)	5-30		5	
Operating Current (mA)	<250			
Reverse Polarity Protection	Yes			
Over Current Protection	Yes			
Modulation	CW, TTL/PWM		CW, Analogue	
Modulation Frequency (Khz)	500		DC to ≥300 (See Note 2)	
Linear Control Voltage Range (V)	N/A		0-1 (See Chart)	
Modulation Voltage Range (V)	TTL Low = Off TTL High = On		0-1	
Analogue/Linear Modulation (V)	N/A		0-1 Linear	
Rise/Fall Time (µs)	<0.5 (Diode Dependant)		N/A	
Enable Input	<0.4 = Off >2 = On			
Enable Input Speed (Hz)	N/A		~100	
NOTES				
NOTE 1: The operating case temperature range is depended on the laser diode fitted. The quoted information is the typical range. Some wavelengths and powers may have a wider operating temperature range. Please contact us for the temperature range for individual models.				
NOTE 2: The modulation bandwidth is depended on the laser diode fitted. The quoted information is the minimum range. Please contact us for the bandwidth for individual models.				
All Specifications are typical @ 25 °C				
# - Varies with diode power. This data is based upon on Lyte-MV 2 635nm, 5mW				

Specification - Green Models

Mechanical Information				
Weight (grams)	98			
Diameter (mm)	19/M18			
Length (mm)	115 (Excluding Connector)			
Material	Hard Anodised Aluminium			
Isolated Body	Yes			
Input Method	4 pin Binder M8 Connector			
Inputs	Pin 1 - V+	Pin 2 - OV	Pin 3 - Control	Pin 4 - Enable
Optical Information				
Wavelength (nm)	520			
Power (mW)	Up to 50 as standard (Custom Upon Request)			
Driver Type	APC			
Power Stability (Over Temperature Range)	<1% (@ a Fixed Temperature)			
Optical Output Option	Spot, Uniform Line and Diffractive Projections			
Intensity Distribution (Uniform Line)	Uniform along length, Gaussian along width			
Uniformity (Uniform Line)	±25% (Over central 80% of the line)			
Fan Angles (°)	5, 10, 20, 30, 45, 60, 75			
Line Thickness	Refer to focus charts on product information			
Bore Sighting (mRad)	<4			
Focus Adjustment	External Focus Mechanism			
Environmental Information				
Operating Case Temperature (°C)	-10 to +55 (See Note 1)			
Storage Temperature (°C)	-10 to +80			
Ingress Protection	IP67			
Electrical Specifications		PWM	LC	
Input Voltage (Vdc)	10-30		10 ±5%	
Operating Current (mA)	<200			
Reverse Polarity Protection	Yes			
Over Current Protection	Yes			
Modulation	CW, TTL/PWM		CW, Analogue	
Modulation Frequency (Khz)	DC to ≥300 (See Note 2)		DC to ≥200 (See Note 2)	
Linear Control Voltage Range (V)	N/A		0-1 (See Chart)	
Modulation Voltage Range (V)	<0.4 = Off >2 = On		0-1	
Analogue/Linear Modulation (V)	N/A		0-1 Linear	
Rise/Fall Time (µs)	<0.5 (Diode Dependant)		N/A	
Enable Input	<0.4 = Off >2 = On			
Enable Input Speed (Hz)	N/A		~100	
NOTES NOTE 1: The operating case temperature range is depended on the laser diode fitted. The quoted information is the typical range. Some wavelengths and powers may have a wider operating temperature range. Please contact us for the temperature range for individual models. NOTE 2: The modulation bandwidth is depended on the laser diode fitted. The quoted information is the minimum range. Please contact us for the bandwidth for individual models. All Specifications are typical @ 25 °C				

Specification - Blue Models

Mechanical Information				
Weight (grams)	98			
Diameter (mm)	19/M18			
Length (mm)	115 (Excluding Connector)			
Material	Hard Anodised Aluminium			
Isolated Body	Yes			
Input Method	4 pin Binder M8 Connector			
Inputs	Pin 1 - V+	Pin 2 - OV	Pin 3 - Control	Pin 4 - Enable
Optical Information				
Wavelength (nm)	405, 450 & Custom Upon Request			
Power (mW)	Up to 120 as standard (Custom Upon Request)			
Driver Type	APC or CC			
Power Stability	1% (At a fixed temperature)			
Optical Output Option	Spot, Uniform Line and Diffractive Projections			
Intensity Distribution (Uniform Line)	Uniform along length, Gaussian along width			
Uniformity (Uniform Line)	±25% (Over central 80% of the line)			
Fan Angles (°)	5, 10, 20, 30, 45, 60, 75			
Line Thickness	Refer to focus charts on product information			
Bore Sighting (mRad)	<4			
Focus Adjustment	External Focus Mechanism			
Environmental Information				
Operating Case Temperature (°C)	-10 to +45 (See Note 1)			
Storage Temperature (°C)	-10 to +80			
Ingress Protection	IP67			
Electrical Specifications		PWM	LC	
Input Voltage (Vdc)	10Vdc ±250mV			
Operating Current (mA)	<250			
Reverse Polarity Protection	Yes			
Over Current Protection	Yes			
Modulation	CW, TTL/PWM		CW, Analogue	
Modulation Frequency (Khz)	500		DC to ≥300 (See Note 2)	
Linear Control Voltage Range (V)	N/A		0-1 (See Chart)	
Modulation Voltage Range (V) *	TTL Low = Off TTL High = On		0-1	
Analogue/Linear Modulation (V)	N/A		0-1 Linear	
Rise/Fall Time (µs)	<0.5 (Diode Dependant)		N/A	
Enable Input	<0.4 = Off >2 = On			
Enable Input Speed (Hz)	~100			
NOTES NOTE 1: The operating case temperature range is depended on the laser diode fitted. The quoted information is the typical range. Some wavelengths and powers may have a wider operating temperature range. Please contact us for the temperature range for individual models. NOTE 2: The modulation bandwidth is depended on the laser diode fitted. The quoted information is the minimum range. Please contact us for the bandwidth for individual models. All Specifications are typical @ 25 °C				

Specification - DCLM Models

Mechanical Information				
Weight (grams)	98			
Diameter (mm)	19/M18			
Length (mm)	115 (Excluding Connector)			
Material	Hard Anodised Aluminium			
Isolated Body	Yes			
Connector Type	5 pin Binder M12 Connector			
Optical Information				
Wavelength (nm)	635 to 980 & Custom Upon Request			
Power (mW)	Up to 200 as standard (Custom Upon Request)			
Driver Type	APC			
Power Stability (Over Temperature Range)	±3%			
Optical Output Option	Spot, Uniform Line and Diffractive Projections			
Intensity Distribution (Uniform Line)	Uniform along length, Gaussian along width			
Uniformity (Uniform Line)	±25% (Over central 80% of the line)			
Fan Angles (°)	5, 10, 20, 30, 45, 60, 75			
Line Thickness	Refer to focus charts on product information			
Bore Sighting (mRad)	<4			
Focus Adjustment	External Focus Mechanism			
Environmental Information				
Operating Case Temperature (°C)	-10 to +45 (See Note 1)			
Storage Temperature (°C)	-10 to +80			
Ingress Protection	IP67			
Electrical Specifications				
Input Voltage (Vdc)	Standard USB 1.1 & 2 Specification			
Operating Current (mA)	<200			
Over Current Protection	Yes			
	Sine & Triangle Wave	TTL	PWM	Power Control
Typical Rise & Fall Time (µs) #	N/A	≤1.9	≤1.9	N/A
Frequency Range (Khz) #	DC to 420 (See Note 3)	DC to 357	49	N/A
Power Control Range (%)	N/A	N/A	N/A	5 to 100
Duty Cycle (%)	N/A	Fixed 50/50	Variable 0-100	N/A
Signal Amplitude (%)	5 to 95	N/A	N/A	N/A
NOTES				
NOTE 1: The operating case temperature range is depended on the laser diode fitted. The quoted information is the typical range. Some wavelengths and powers may have a wider operating temperature range. Please contact us for the temperature range for individual models.				
NOTE 2: The modulation bandwidth is depended on the laser diode fitted. The quoted information is the minimum range. Please contact us for the bandwidth for individual models.				
NOTE 3:				
# Varies with laser diode type and output power. This data is based on a DCLM Lyte-MV 2 660nm, 35mW				
All Specifications are typical @ 25 °C				

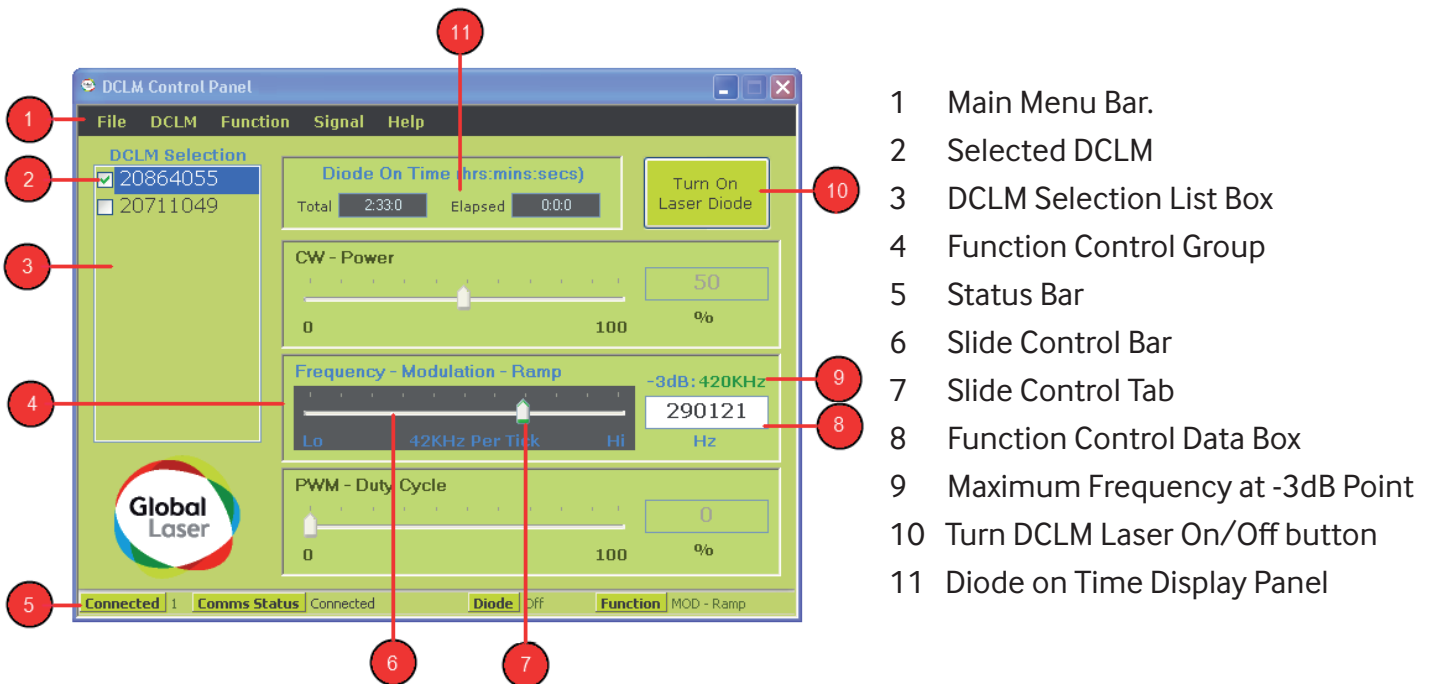
DCLM

Lyte-MV 2 DCLM

The laser can be powered via a USB port on a computer or USB hub without the need for any external power supply. The included software provides a user friendly graphical interface. This allows the user to control of the level of laser output powered from factory power set to off. Alternatively the output can be modulated via a sine or triangle wave with the signal type or modulation frequency simply controlled via a menu in the control software which programs an on board function generator. The output can also be switched on and off via TTL or PWM with the frequency and duty cycle all controlled from the software. PWM can also be used at a fixed frequency with the duty cycle also controlled from the software.

Lyte-MV 2 DCLM: User Interface

The user interface is the central point where you can control and operate the DCLM. The image below shows the control panel and the information that can be displayed.



Dynamic Link Library (DLL)

For customer wishing to interface the Lyte-MV 2 DCLM with their own software, we have developed a DLL for this purpose. The DLL is compatible with Windows XP/Vista & 7 in both 32 & 64 bit versions. It is included on the Software CD that is supplied with the laser. For more information please refer to the DCLM DLL Userguide.

Power Options - Line

Below is a table of our standard wavelengths and powers for the Lyte-MV 2 with a uniform line lens. Please contact us if your requirements are not covered by any of these.

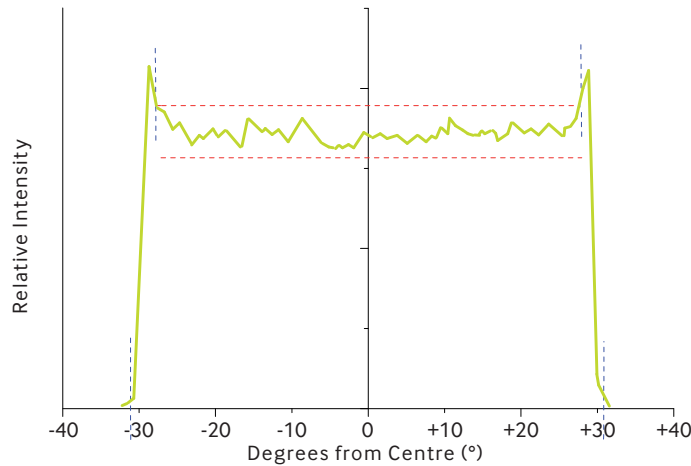
Wavelength	Diode Power (mW)
405nm	20, 40, 120
450nm	80
520nm	5, 10, 20, 50
635nm	1, 5, 10, 15, 40
650/660nm	1, 5, 10, 20, 35, 50, 100, 120
670nm	1, 5, 10
685nm	20, 50
785nm	1, 5, 20
808nm	200
850nm	5, 30, 50
905nm	10
980nm	50
Custom	Please call or e-mail with your requirements

NOTES
Wavelength tolerance can vary typically by ± 10 nm.
Power levels refer to the maximum diode output power. Output power will vary depending on optical configuration.
Not all wavelengths and powers are available with all lens options or driver PCB options.

Line Output Specification

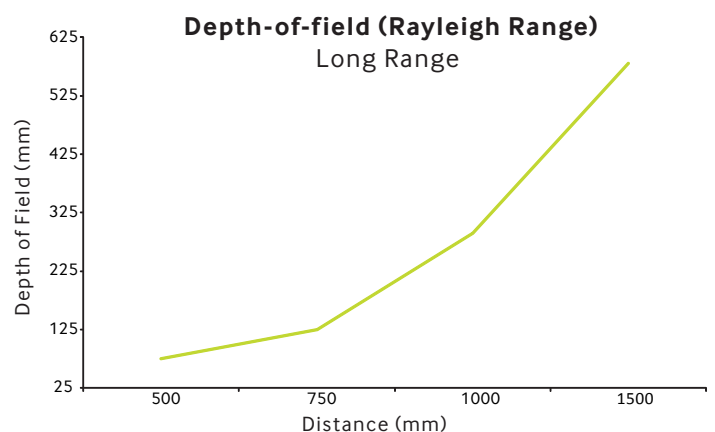
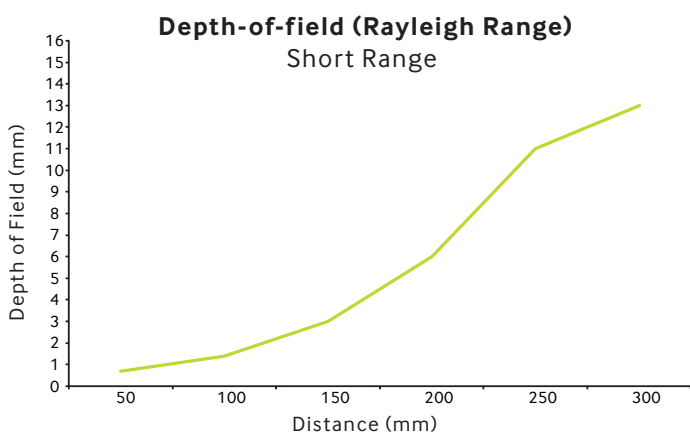
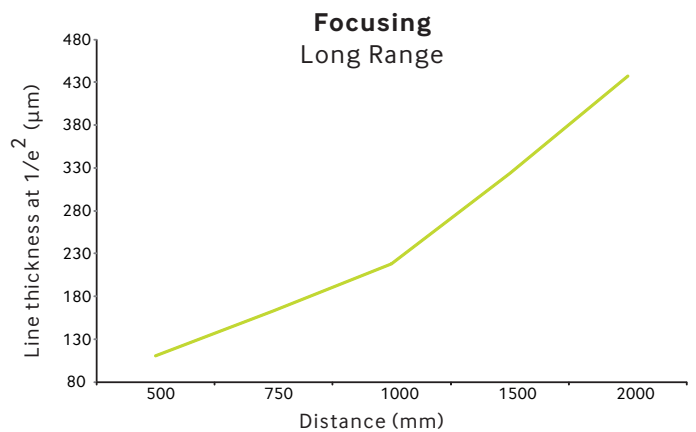
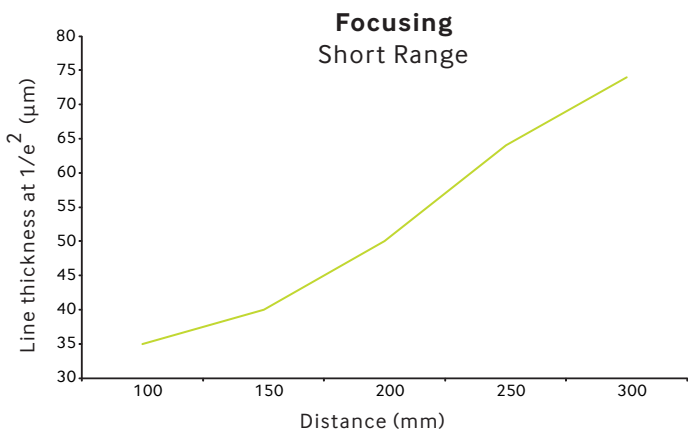
Uniform Intensity

The profile below shows the typical intensity along the length of the line. The uniform power distribution in the centre with sharp ends makes this laser suitable for use with a wide range of commercial CCD cameras. The Lyte-MV 2 achieves a standard uniformity of $\pm 25\%$. Higher uniformity options are available, please call with your request.



Focusing and depth-of-field characteristics

The following charts show the typical focusing and depth-of-field performance of the Lyte-MV 2. The focus charts indicate the minimum line thickness (at $1/e^2$) achievable for a specific projection distance. The depth-of-field is defined as the distance between two points either side of the pre-set focus at which the line width increases by a factor of $\sqrt{2}$.



Power Options - Spot

Below is a table of our standard wavelengths and powers for the Lyte-MV2 with a spot output. Please contact us if your requirements are not covered by any of these.

Wavelength	Diode Power (mW)	
	Elliptical Spot	Circular Spot
405nm	15, 30, 85	3, 7, 20
450nm	50	10
520nm	5, 20, 35	1, 5, 10
635nm	1, 5, 10, 15, 30	1, 3, 7
650/660nm	1, 5, 25, 35, 75, 90	1, 5, 10, 20
670nm	1, 5	1
685nm	20, 35	1, 5
785nm	1, 5, 35	1, 5
808nm	100	25
850nm	5, 20, 30	1, 5
905nm	5	1
980nm	30	5
Custom	Please call or e-mail with your requirements	

NOTES
Wavelength tolerance can vary typically by $\pm 10\text{nm}$.
Power levels refer to the maximum diode output power. Output power will vary depending on optical configuration.
Not all wavelengths and powers are available with all lens options or driver PCB options.

Spot Output Specification

Two standard user adjustable collimating lens type are available. These are as follows:-

Elliptical Dot: Produces an elliptical collimated beam or focussed spot

Circular Dot: Produces a circular collimated beam or focussed spot

	Elliptical Spot	Circular Spot
Minimum Focus Distance (mm)	20	
Spot Size at Nearest Focus ($\text{Q}1\text{e}^2$)	<35	<45
Beam Divergence (mRad)	<0.25	<0.5
Beam Size at Exit (mm) ($\text{Q}1\text{e}^2$)	6.3 by 2.4	1.8

NOTES
All spot size information was measured at 635nm
Not all wavelengths and powers are available with all lens options or driver PCB options.

Modulation

The Lyte-MV 2 range of lasers has two options of modulation available. These are Linear Control and Pulse Width Modulation.

Version: Linear Control **LC**

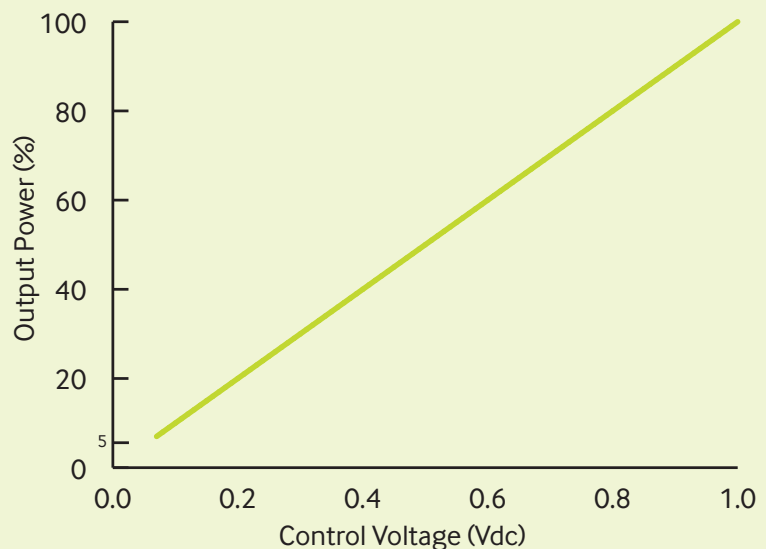
Intensity Control Function

This function allows the user to adjust the output power via the control lead. It can be linearly controlled from the maximum factory set power to off.

Power Adjustment Chart

0 V = Off

1 V = Max Power



Modulation & Synchronization

The laser may be modulated or synchronised to a camera by using an external signal. (Voltage range 0 to 1Vdc)

Frequency Range of Lyte-MV 2 = DC to 300kHz *

Please note: Intensity control and modulation functions may be used together.

** = Measured at 90% modulation depth, sine wave to -3dB*

Version: Pulse Width Modulation **PWM**

The Digital TTL driver board allows the unit to be gated on and off, or pulse-width modulated at TTL voltage levels via the control lead. Two versions are available either non-inverting TTL or inverting TTL. For non-inverting TTL Low = off and TTL high = on and vice versa for the inverted model.

Lyte-MV 2

Rise Time: < 0.5 μ s (Typically)

Fall Time: < 0.5 μ s (Typically)

Options & Accessories

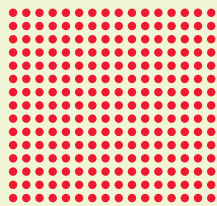
The Lyte-MV 2 has a wide range of options to suit a variety of applications. These options include projection optics, power supplies, rail systems and laser safety glasses.

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.



Circle with center dot



Dot Array



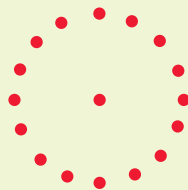
Dot Lines



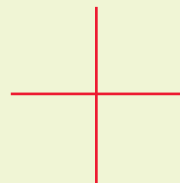
Viewfinders



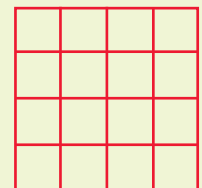
Multiple Lines



Dot Circle



Cross



Grids

Mounting Clamps

The heavy duty mounting clamp allows the Lyte-MV 2 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. For more information on any of the options please refer to the Accessories Datasheet.



Heavy Duty Mounting Clamp



Magnetic Mounting Base

Power Supplies and Leads

For users that require an off the shelf power supply a 110/240 Vac power adaptor is available. For more information on any of the options please refer to the Accessories Datasheet. A range of power leads are also available ranging in length from 2 to 10 meters. Custom lengths are available upon request.



110 / 240 Vac Power adaptor



Power Leads

Laser Safety Glasses

To compliment the Lyte-MV 2 range there are a number of laser safety glasses, below is an example of some of the available glasses. For more information on any of the options please refer to the Laser Safety Glasses Datasheet.



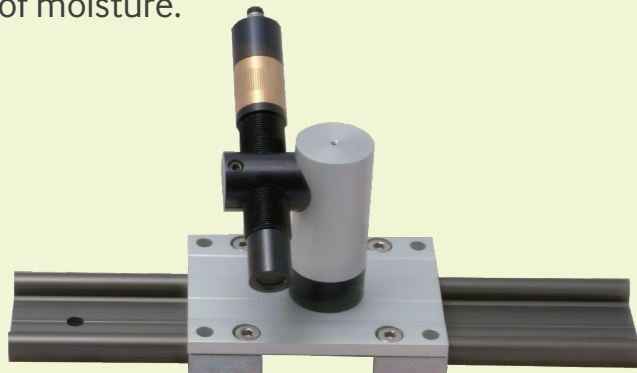
DIA - Protection against Red
50mW



AL3 - Protection against Green
50mW

Mounting Rails

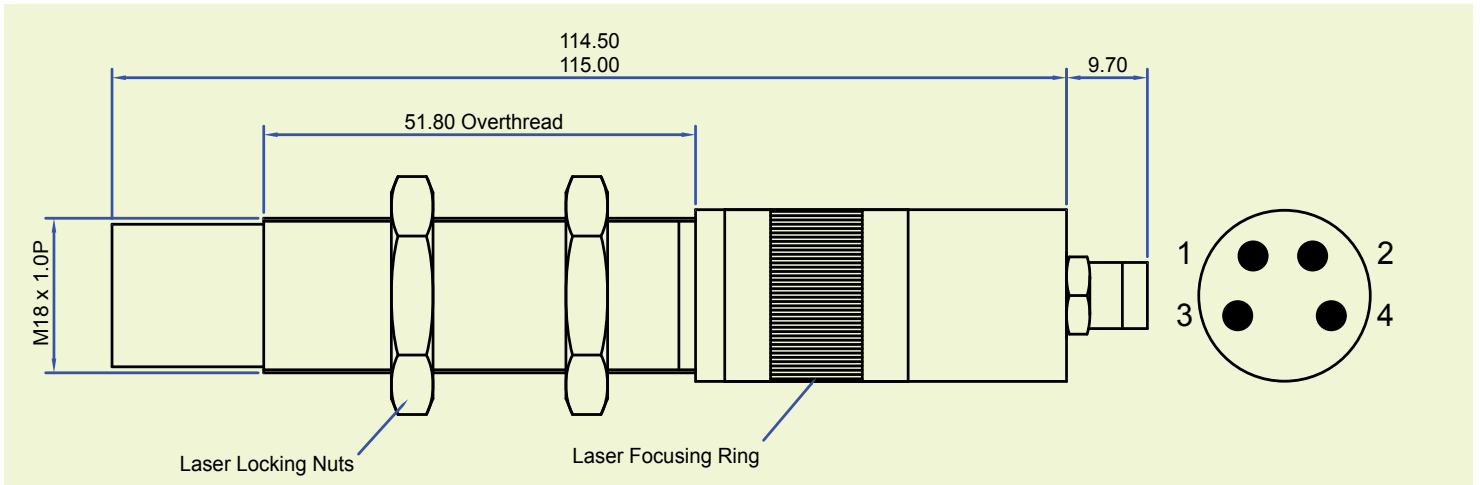
Options range from the simple slide rail system where carriages can be moved by hand and locked into position, to computer controlled, motor driven systems. All systems incorporate long life/ low friction polymer bearings which are self lubricating, removing the need for messy dirt, attracting oils and greases. All rail systems are also available in stainless steel. This makes the systems ideal for aggressive environments with high levels of dirt and dust or areas subject to wash down or high levels of moisture.



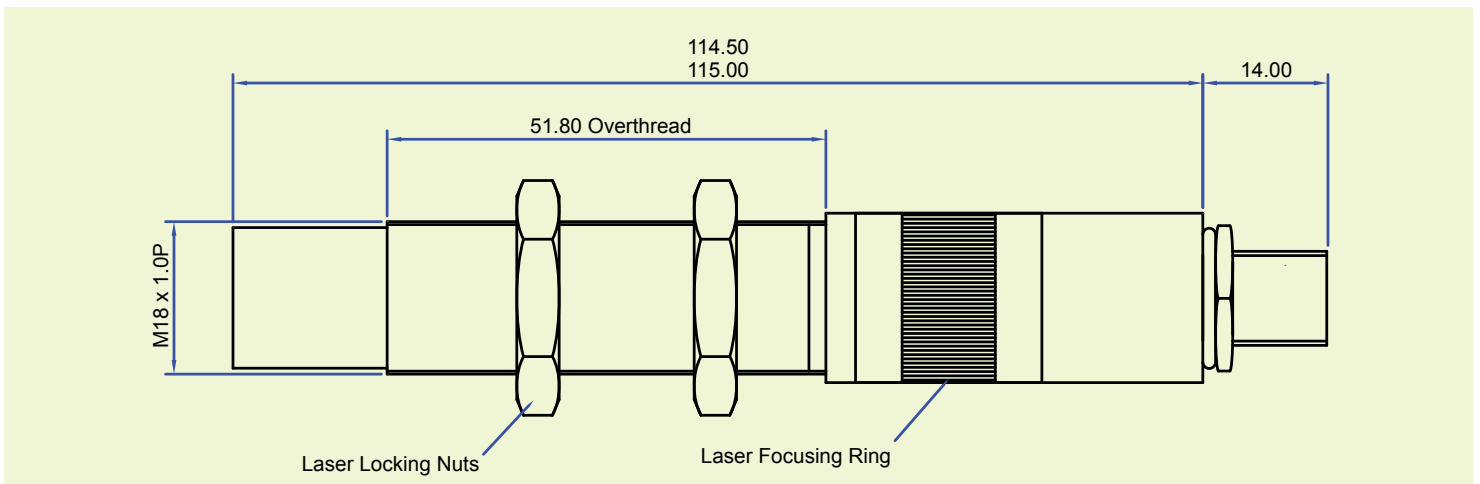
Rail and Mounting Clamp

Mechanical Dimensions

Lyte-MV 2/BlueLyte-MV2 Outline



Lyte-MV DCLM 2 Outline



Drawings are 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 rights to change descriptions and specifications without notice.

