Global Laser

iMATRONIC

A Global Laser Brand

LDM150, Sigma, LDM115, LDL175, LCG115 & LLM115
Laser Modules

iMATRONIC

Imatronic is a family of industry-standard laser diode modules from Global Laser. The ruggedised metallic housing of the Imatronic lasers contain the optical and electrical components that you need to safely and accurately project a dot, line, cross, or more complex patterns in a range of applications.

A line or cross optic is available with certain Imatronic models (XXX115) to help in alignment, positioning, or targeting applications. Additionally, a wide range of diffractive optical elements (DOE) can be installed (LDM115 only) to assist in 3D mapping, surface texture analysis, and general machine vision.

Highly reliable in nature, you'll benefit from a long product lifetime and reduced likelihood of diode failure (that is, below the diode MTTF) due to an electrically isolated module housing and reverse polarity protected driver board.

Imatronic lasers can be fitted with a TTL modulation input allowing 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 photodetector or camera.

Wavelengths of blue (405, 450nm), green (520nm), red (635, 650, 670nm), and near-infra-red (780, 850nm) are available with output powers up to 5mW. The green Imatronic models emit 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.

Made-to-order or off-the-shelf, Imatronic lasers are typically available with a short lead time. Please contact your local representative or Global Laser directly for a custom solution not found in the product matrix included in this datasheet.

Selection Guide

This catalogue covers the complete Imatronic range and is broken down into various sections. Please use the guide below to go straight to the relevant section.

Product Overview

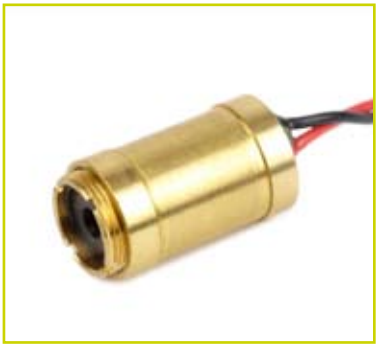
LDM150 (Dot Projection)

Diameter : 7mm

Length : 25mm

The LDM150 is an extremely compact laser module with a housing diameter of only 7mm. Available in wavelengths of 520nm, 635nm and 650nm with power up to 5mW as standard, it also features the benefits of an isolated housing. A user adjustable plastic aspheric lens produces an elliptical output beam. An optional TTL enable input is also available. The LDM150 has the smallest housing diameter in the lmatronic range and is suited for applications where space is critical and a cost effective solution is required.

Sigma (Dot Projection)



Diameter : 10.4mm

Length : 16.5mm

The Sigma laser is a compact 10.4mm diameter, brass body laser diode module available in wavelengths of 520nm, 635nm and 650nm with power up to 5mW as standard. A plastic aspheric lens with user adjustable focus produces an elliptical output beam. An optional TTL enable input is also available. The Sigma has the smallest housing length in the lmatronic range making it suitable for applications with tight space constraints.

LDM115 (Dot Projection)

Diameter : 11mm

Length : 37mm

The LDM115 is an 11mm diameter laser module available in wavelengths of 405, 450, 520, 635, 650, 670, 780 & 850nm with powers up to 5mW as standard. It also features the electrically isolated housing and user adjustable focus. As a further enhancement the LDM115 can be installed with a TTL input. A choice of two collimating lenses are offered. The "G" model uses a glass lens with an elliptical output beam. The "P" model uses a plastic lens which produces a circular output beam. Optional line generating optics (LGO) and diffractive optical elements (DOE) are also available. See page 8 and 10 for more information.

LDL175 (Dot Projection)

Diameter : 25mm

Length : 58mm or 67mm

The LDL175 laser module is a stand-alone compact laser system, available in 520, 635, 650, 670, 780 & 850nm with powers up to 5mW. It has an industry standard DC power jack input for 10 ±5% Vdc (green) or 3.5 to 5 Vdc (red & IR) and can be supplied with a universal power supply which runs on 100-240Vac input. A glass lens with a user-adjustable focus and elliptical output is fitted as standard. Alternatively, a plastic lens producing a circular output beam can be fitted. It features an on/off switch, LED indicator and safety shutter. The NIR & IR versions also feature an interlock and delay switch. The LDL175 is designed for industrial, laboratory and educational use.

LCG115 (Cross Projection)

Diameter : 11mm

Length : 37mm

The LCG is an 11mm diameter laser module with an internal cross generator which produces a Gaussian cross with a typical fan angle of 30°. The angle between the lines may also be adjusted to any value between 0° and 90°. It is available in wavelengths of 520nm and 635nm with powers up to 5mW. It also features electrically isolated housing and user adjustable focus. An optional TTL enable input is also available.

LLM115 (Line Projection)

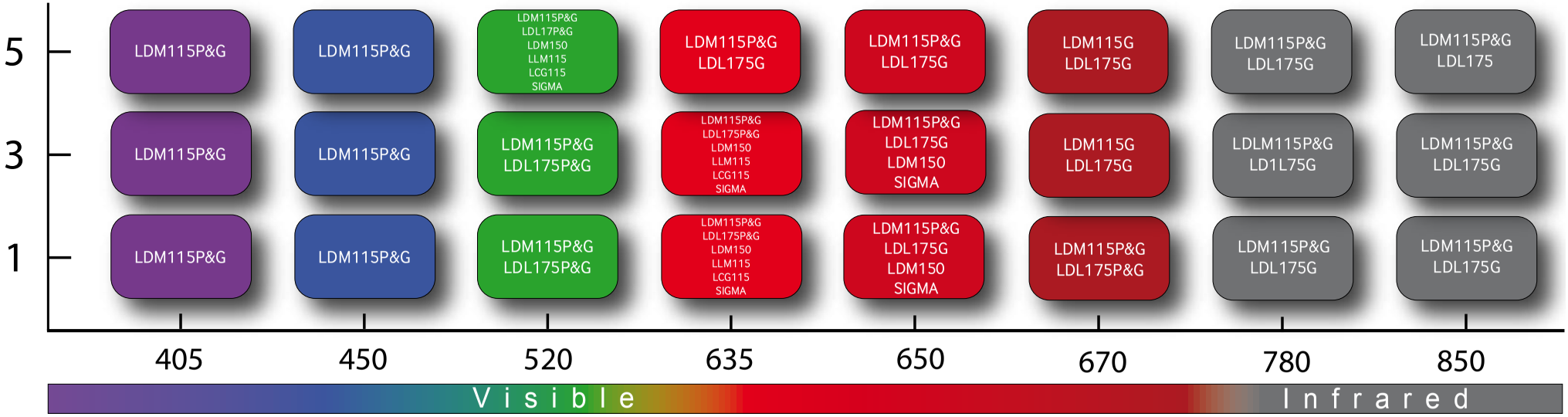
Diameter : 11mm

Length : 37mm

The LLM is an 11mm diameter laser module with an internal line generator which produces a Gaussian line with a typical fan angle of 54°. It is available in wavelengths of 520nm and 635nm with powers up to 5mW. It also features the electrically isolated housing and user adjustable focus. An optional TTL enable input is also available.

Product Matrix

Below is a table of our standard wavelengths and powers for the Imatronic range. Please contact us if your requirements are not covered by any of these.



NOTES
Wavelength tolerance can vary typically by ±10nm.

Specification

	SIGMA	LDM150	LDL175
Mechanical Specification			
Mass (grams)	8	3	55
Dimensions (mm)	10.41 x 16.5	7 x 27.4	Visible - 25 x 58 NIR & IR - 25 x 67
Housing Material	Brass	Anodised Aluminium	Anodised Aluminium
Isolated Body	Yes	Yes	Yes
Input Lead	Red Lead: (+Ve) Black Lead: (0V) Blue Lead: Optional TTL	Red Lead: (+Ve) Black Lead: (0V) Blue Lead: Optional TTL	1 via DC Jack Centre Pin: (+Ve) Outer: (0V)
Lead Length (mm)	205	220	n/a
Optical Options			
G Lens	No	No	Yes
P Lens	No	No	Yes
A Lens	No	Yes	No
Sigma Lens	Yes	No	No
Line Generating Optic (LGO)	No	No	No
Internal Line Optic (54° Fan Angle)	No	No	No
Internal Cross Optic (30° Fan Angle)	No	No	No
Environmental Information			
Operating Case Temperature (°C)	-10 to +45*	-10 to +45*	-10 to +45*
Storage Temperature (°C)	-10 to +85	-10 to +85	-10 to +85
Operating Humidty (%RH)	90	90	90
Dynamic Output			
Frequency Range	≤1Khz (red models) ≤10Khz (green model)	≤1Khz (red models) ≤10Khz (green model)	N/A
Electrical Specification			
Input Voltage +Ve (Vdc)	+3.5 to +5.0 (red models) +10 ±5% (green model)	+3.5 to +5.0 (red models) +10 ±5% (green model)	+3.5 to +5.0 (red & IR models) +10 ±5% (green model)
Input Voltage GND (Vdc)	0	0	0
TTL Input	Off < 50mV on > 2.0V	Off < 50mV on > 2.0V	n/a
TTL Modulation	n/a	n/a	n/a
Reverse Polarity Protection	Yes	Yes	Yes
Typical Operating Current @ 25°C (mA)	20 to 60*	20 to 60*	20 to 90*
Connector Type	Flying Leads	Flying Leads	DC Jack
Optional Mains Adaptor	No	No	Yes

NOTES

**Varies with models. Please call us for individual data.*

Specification

	LLM115	LCG115	LDM115
Mechanical Specification			
Mass (grams)	9	9	G Lens 9.5 P Lens 10.5
Dimensions (mm)	11 x 37	11 x 37	G Lens 11 x 37 P Lens 11 x 47
Housing Material	Anodised Aluminium	Anodised Aluminium	Anodised Aluminium
Isolated Body	Yes	Yes	Yes
Input Leads	Red Lead: (+Ve) Black Lead: (0V) Blue Lead: Optional TTL Input	Red Lead: (+Ve) Black Lead: (0V) Blue Lead: Optional TTL Input	Red Lead: (+Ve) Black Lead: (0V) Yellow Lead: Optional TTL Modulation
Lead Length (mm)	230	230	215
Optical Options			
G Lens	No	No	Yes
P Lens	No	No	Yes
A Lens	No	No	No
Sigma Lens	No	No	No
Line Generating Optic (LGO)	No	No	Yes
Internal Line Optic (54° Fan Angle)	Yes	No	No
Internal Cross Optic (30° Fan Angle)	No	Yes	No
Environmental Information			
Operating Case Temperature (°C)	-10 to +45*	-10 to +45*	-10 to +45*
Storage Temperature (°C)	-40 to +85	-40 to +85	-40 to +85
Operating Humidity (%RH)	90	90	90
Dynamic Output			
Frequency Range	≤1Khz (red models) ≤10Khz (green model)	≤1Khz (red models) ≤10Khz (green model)	≤300Khz (red & IR models) ≤10Khz (green model) n/a (blue models)
Electrical Specification			
Input Voltage +Ve (Vdc)	+3.5 to +5.0 (red models) +10 ±5% (green model)	+3.5 to +5.0 (red models) +10 ±5% (green model)	+3.5 to +5.0 (red & IR models) +10 ±5% (blue & green model)
Input Voltage GND (Vdc)	0	0	0
TTL Input	Off < 50mV on > 2.0V	Off < 50mV on > 2.0V	n/a
TTL Modulation	n/a	n/a	Off < 50mV on > 2.0V
Reverse Polarity Protection	Yes	Yes	Yes
Typical Operating Current @ 25°C (mA)	20 to 60*	20 to 60*	20 to 140*
Connector Type	Flying Leads	Flying Leads	Flying Leads
Optional Mains Adaptor	No	No	No

NOTES

**Varies with models. Please call us for individual data.*

Optical Information

Lens Information

The Imatronic laser modules are available in the following lens types.

G Lens Type	Glass Lens The glass lens is a high quality lens producing fine spots. The lens provides high stability over extremes of temperature and is immune to damages such as scratches
P Lens Type	Plastic Lens The long focus plastic lens with a low numerical aperture yields good quality circular collimated beams over larger distances.
A Lens Type	Aspheric Plastic Lens High performance general purpose lens producing good quality spots. Suitable for the range of small body modules only (LDM150 only).

	G Lens	P Lens	A Lens	Sigma
Focus Range	35mm to infinity	150mm to infinity	50mm to infinity	35mm to infinity
Beam Size @ Aperture (mm)	4 x 2*	5 x 5*	3 x 1*	4 x 1*
Beam Divergence (mrad)	<0.5	<0.5	<0.5	<1.2
Bore Sighting (mrad)	<25	<25	<25	<25
Minumum Spot Size (µm)	<25	<50	<40	<40

NOTES

**Varies with models. Please call us for individual data.*

Optional Line Generating Optics (LDM115 Only)

LGO's are designed to simply slip over the end of the LDM115 and are secured in place by tighening a small locking screw. The focus position of the line is adjusted by rotating the lens on the LDM115 module prior to the installation of the LGO to give a highly defined thin line of laser light.

	LGO
Fan Angle (°)	15, 28, 40, 60 & 120
Operational Wavelength (nm)	405 to 850
Typical Line Width @ 1 Metre (mm)	0.75
Length (mm)	24
Diameter (mm)	17
Mass	8
Length with LDM115 (grams)	51
Diameter with LDM115 (mm)	17
Mass with LDM115 (grams)	17.5

Lifetime

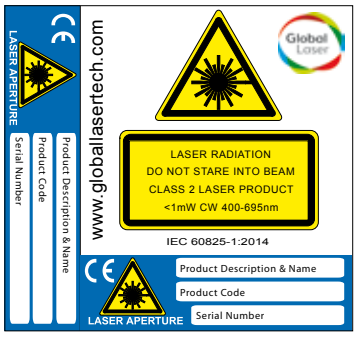
The case temperature should be kept within the specified range at all times, failure to do this could result in shortened lifetime or diode failure. As a guide, laser diode lifetime decreases by a factor of two (approx) for every ten degree increase in operating temperature.

Below is a list of the available standard wavelengths for each model and the releveant MTTF specified in hours. All data was measured at 25°C.

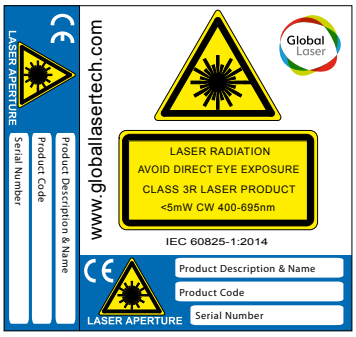
<table>
<tr><th></th><th>405nm</th><th>450nm</th><th>520nm</th><th>635nm</th><th>650nm</th><th>670nm</th><th>780nm</th><th>850nm</th></tr>
<tr><td>SIGMA</td><td rowspan="5">n/a</td><td rowspan="5">n/a</td><td rowspan="6">≥40,000</td><td rowspan="6">≥30,000</td><td rowspan="3">≥50,000</td><td>n/a</td><td>n/a</td><td>n/a</td></tr>
<tr><td>LDM150</td></tr>
<tr><td>LDL175</td><td>≥120,000</td><td>≥90,000</td><td>≥88,000</td></tr>
<tr><td>LLM115</td><td rowspan="2">n/a</td><td rowspan="2">n/a</td><td rowspan="2">n/a</td><td rowspan="2">n/a</td></tr>
<tr><td>LCG115</td></tr>
<tr><td>LDM115</td><td>≥7,000</td><td>≥TBC</td><td>≥50,000</td><td>≥120,000</td><td>≥90,000</td><td>≥88,000</td></tr>
<tr><td colspan="9">NOTES
This is the minimum MTTF for each wavelength. Other models may have a longer MTTF. Please call us for individual data.</td></tr>
</table>

Laser Safety

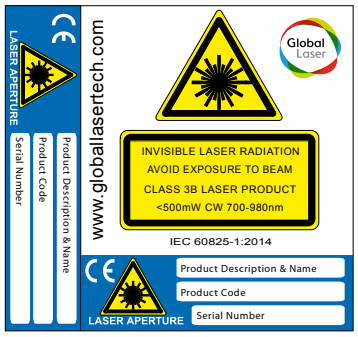
Our lasers are compliant to IEC 60825-1:2014 standards. The lasers fall within one of the following classifications depending on power and wavelength. Examples of the labels are shown below.



Class 2 Label



Class 3R Label



Class 3B Label

Quality & Warranty

The Imatronic range is supplied with a 12 month parts and labour warranty. Our manufacturing operations are certified to ISO9001:2015.

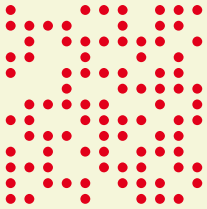
Options & Accessories

The Imatronic range has a wide range of options to suit a variety of applications. These options include projection optics, power supplies, mounting clamps, rail systems, laser safety glasses and red laser enhancement glasses.

For further information on any of these products, including mechanical drawings please refer to their individual datasheets.

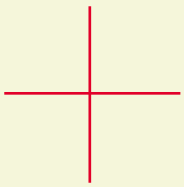
Projection Lenses (LDM115 Only)

A range of diffractive optical elements (DOE) are available to provide various patterns such as crosses, circles and random patterns for applications such as 3D mapping, surface texture analysis, alignment and general machine vision applications.

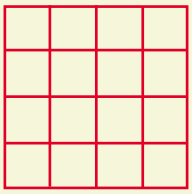


Random Pattern

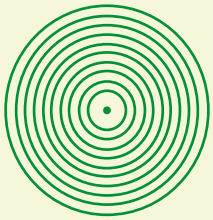
Homogenous, Gaussian & Dot Lines



Crosses



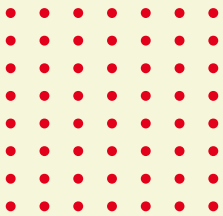
Grids



Solid Circles, Dot Circles & Multiple Rings

Viewfinders

Multiple Lines



Dot Array

Power Supplies and Leads (LDL175 Only)

The LDL can be supplied with a mains adaptor which runs on 110-240Vac input via an IEC mains lead (supplied) and has one output to power the laser. A lead to connect the LDL175 to the power adaptor is also required. The standard length is 1.5 meters. If you require a custom lead length please contact us.

110 / 240 Vac Power Adaptor

Power Leads

Mounting Clamps (LDM150, LDM115, LCG115, LLM115 & LDL175 Only)

The heavy duty mounting clamp allows the Imatronic lasers 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.

The MK1 mounting clamp rotates horizontally through 360° and vertically through 180° and the mounting post allows vertical movement.

The swivel clamp provides 180° tilt movement and ±45° swivel. Its base has a series of holes that allow the swivel clamp to be fixed directly onto a machine or workbench.

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

Swivel Clamp

Heavy Duty Clamp

MK1 Clamp

Pillow Block Bearing Mount

Mounting Rails

The rail and carriage system can either be manual or motor-driven. The carriages are translated either by hand or computer and then locked into position. All Global Laser rail and carriage systems incorporate long-life and low friction polymer bearings that are self-lubricating. The rails are hard anodized to increase their ruggedness and 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

Laser Safety Glasses

To compliment the Imatronic range there are a number of laser safety glasses. These provide a protection or block out for a wide range of wavelengths. Below is an example of some of the available glasses styles.

Overglasses Style

Wraparound Style

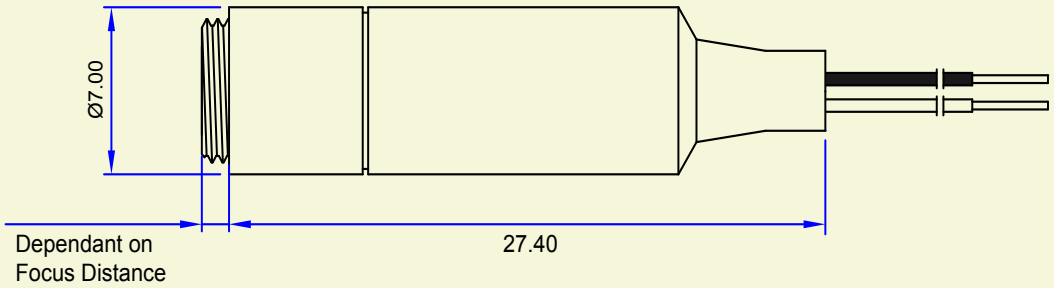
Red Laser Enhancement Glasses

To compliment our wide range of alignment laser diode modules we have introduced a range of Laser Enhancement Glasses which enhance projections in the red wavelength range (630nm to 670nm) by blocking light in other wavelengths, thus improving the visibility in outdoors or bright lighting condition's. The glasses also meet ANSI Z87 impact standard.

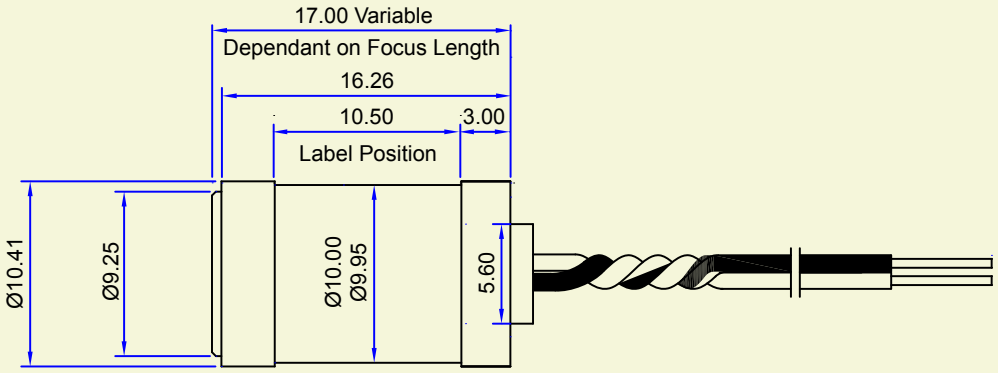
Red Laser
Enhancement Glasses

Mechanical Dimensions

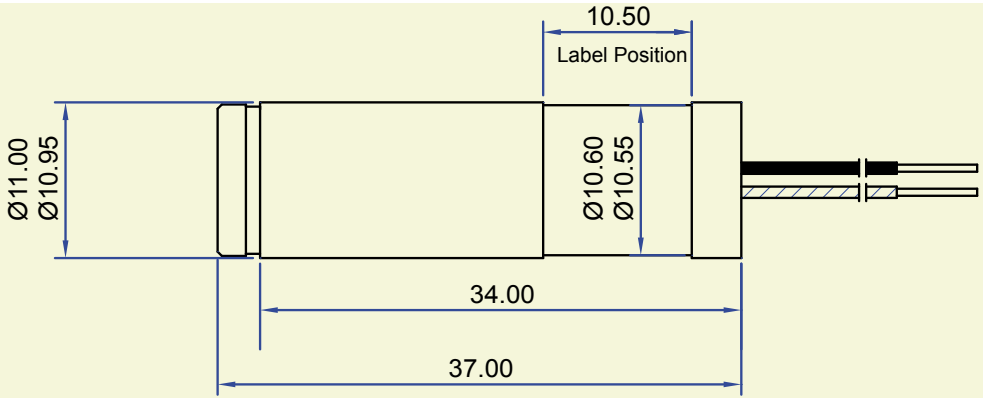
LDM150



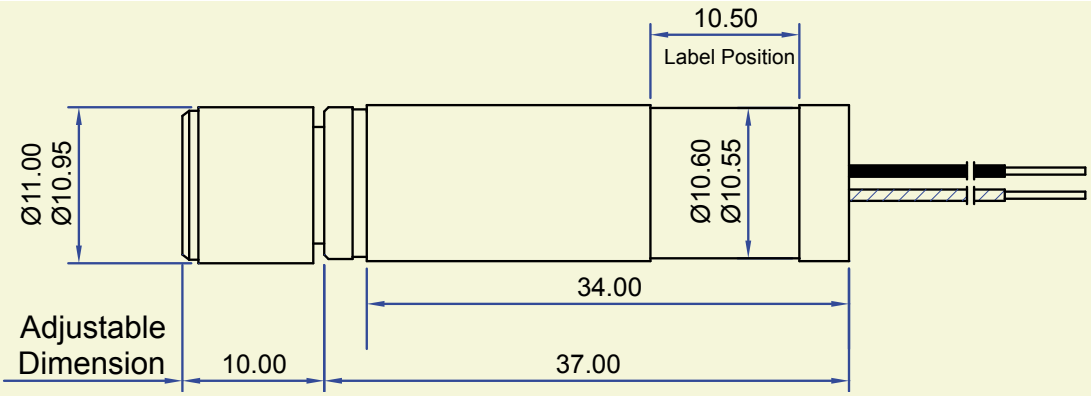
Sigma



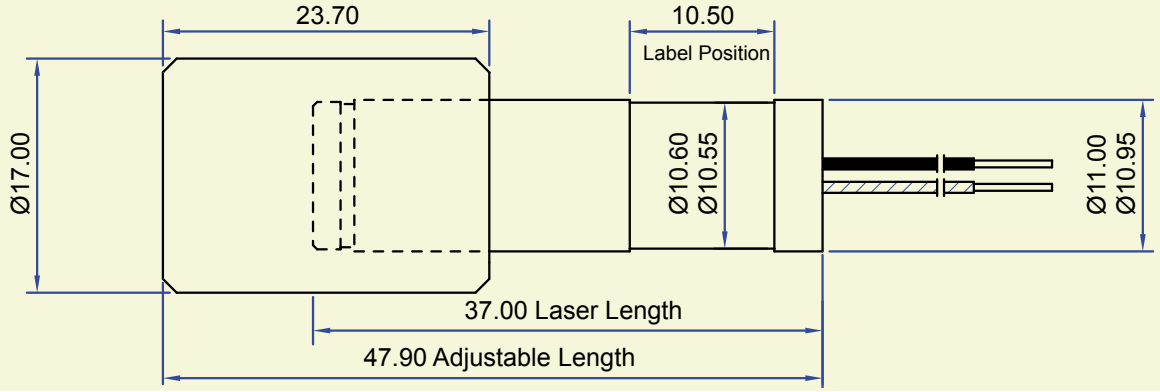
LDM115 fitted with G Lens



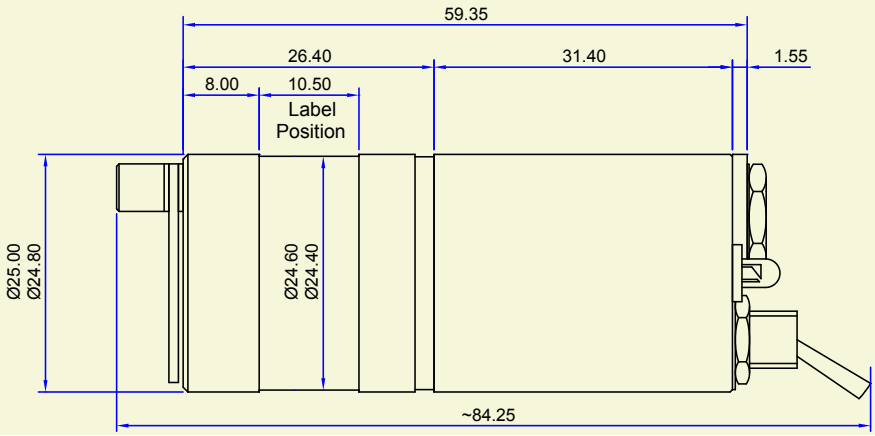
LDM115 fitted with P Lens



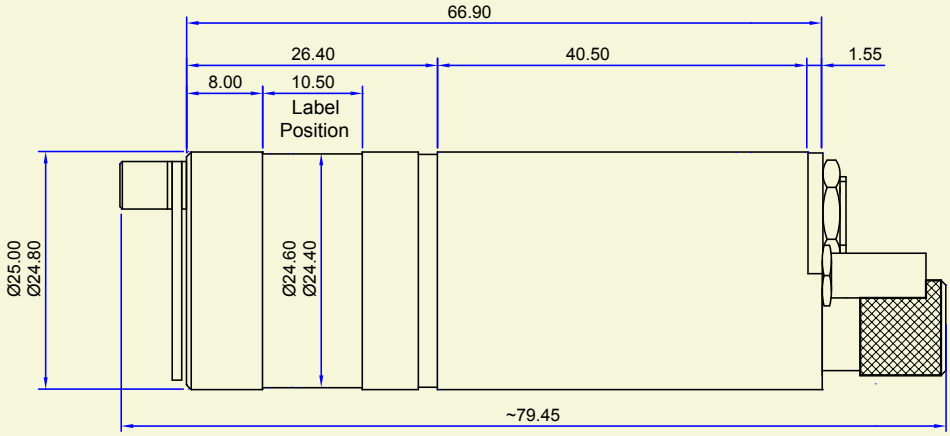
LDM115 fitted with LGO



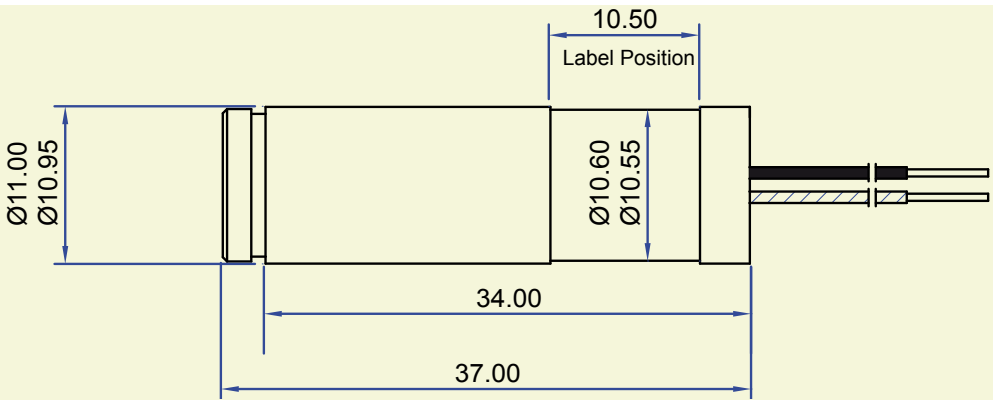
LDL175



LDL175 (with Interlock)



LLM115 & LCG115



Notes

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.

Manufacturing Operations Certified to ISO9001

T: +44 (0)1495 212213
F:+44 (0)1495 214004
E: sales@globallasertech.com
www.globallasertech.com

Global Laser Ltd
Unit 9-10
Roseheyworth Business Park
Abertillery. Gwent NP13 1SP UK

9090-05-041 Rev 9 22/09/2020