



# **Thread Mountable Cameo Laser Diode Module**

# Thread Mountable Cameo

The Cameo is a unique, versatile, high quality industrial laser diode module widely used in alignment applications. Available in two models, either the CW version (1250) or the Gated version (1260). The Gated version incorporates a TTL modulatable input capable of 100Khz.

The electrically isolated threaded mount houses an industrial grade laser diode, adjustable collimating lens and protected connectorised drive electronics.

A comprehensive range of collimating and external lenses are available for the Cameo, making it suitable for a wide range of requirements. The threaded barrel helps to simplify mounting and also ensures a good thermal contact between the module and the mount.



# Selection Guide

This catalogue covers the Thread Mountable Cameo Range and is broken down into various sections. Please use the guide below to go straight to the relevant section.

Page	Section	Description
3	Features	List of key features for the Cameo and Gated Cameo.
4	Specification	Comprehensive specification for the Cameo and Gated Cameo.
5	Standard Lens Options	A list of the four standard collimating lenses and their specification.
5	Projection Lens Options	A list of all optional projection lenses.
6	Line Lens Options	A list of all optional line lenses.
7	Modulation	Modulation features for the Gated Cameo and how it works.
7	Mounting	Information on mounting the Cameo and the effect on lifetime.
8	Laser Safety & Warranty	Laser safety classification details and label examples. Product warranty details.
9	Mechanical Dimensions	Detailed technical drawing of the Cameo and Gated Cameo.

# Cameo & Gated Cameo

The main features of the **Cameo**:-

- Versatile thread mountable industrial laser diode module
- Compact length for restricted areas
- User focusable
- Reliable connector construction
- Isolated metal case
- Simple to mount
- Wide range of lens options

The main features of the **Gated Cameo**:-

- The Gated Cameo has all the features of the Cameo plus the following
- Third wire input to facilitate rapid switching/gating
- Switching speeds up to 100kHz
- Operates directly from TTL logic levels
- Effective in wide variety of light conditions
- Controlled gating minimises power consumption and extends life
- Low speed enable input

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The Cameo is one of the most compact laser modules available in the laser market and has the same lifetime as much larger lasers (> 30,000 hrs)

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# Specifications

	Cameo	Gated Cameo			
<b>Mechanical Information</b>					
Width by Height (mm)	14 by 14				
Length (mm)	24				
Housing	Brass M12 thread front and black plastic back				
Isolated Body	Yes				
Input Leads	2 Leads, / Red (+Ve) / Green (0 V)		4 Leads, / Red (+Ve) / Black (0 V) / Yellow (Control) / Blue (Enable Switch)		
Lead Length (mm)	500				
<b>Optical Information</b>					
Wavelength (nm)	Power's (mW)				
Lens Option	C2/P Lens	S/HG Lens		A Lens	
635	1, 3	1, 3, 6		1, 3, 6	
650	1, 3	1, 3, 6		1, 3, 6	
670	1, 3	1, 3, 6		1, 3, 6	
780	1	1, 3, 6		1, 3, 6	
850	1	1, 3, 6		1, 3, 6	
Custom wavelengths and powers	Please call for with requirements				
Typical Power Stability over temp range (%)	±1.5				
Bore Sighting (Typical) (mrad)	≤10				
Pointing Stability (μrad per °C)	10 *				
<b>Environmental Information</b>					
Wavelength (nm)	635	650	670	780	850
Operating Case Temperature (°C)	-10 to +45 *		-10 to +55 *		
Storage Temperature (°C)	-40 to +85				
Operating Humidity (%RH)	90 (non condensing)				
MTTF @ 25°C (hrs)	≥30,000	≥50,000	≥120,000	≥90,000	≥88,000
<b>Dynamic Output</b>					
Control Input Rise / Fall Time (μs)	N/A		≤5		
Enable Input Delay Time (ms)	N/A		2		
<b>Electrical Specifications</b>					
Input Voltage +ve (Vdc)	3.3 to 5.0				
Input Voltage -ve (V)	0				
Control Lead Yellow	N/A		off = < 50 mV / on = > 2.0 V		
Enable Lead Blue	N/A		off = < 0.4 V / on > 2.0 V		
Connector Type	JST 2 Pin		JST 4 Pin		
Reverse Polarity Protection	Yes				
Operating Current (mA)	20 to 80 *				
NOTES * Varies with laser diode type All specifications are typical @ 25°C					

# Standard Lens Options

Below are the four standard collimating lenses available in the Cameo Range. Please note that we have a number of other collimating lenses. If the listed lenses do not meet your requirements then please contact us.

	C2 Lens	S Lens	HG Lens	P Lens	A Lens
<b>Description</b>	2mm Aperture Lens	Standard Collimating Lens	High Quality Aspheric Lens	Long Focal Length Collimating Lens	Collimating Lens For External Optics Models
<b>Beam Size at aperture (mm)</b>	2	5 by 1.5	5.5 by 2.5	5.5	*
<b>Beam size at nearest focus (<math>\mu\text{m}</math>)</b>	< 50	< 40	< 45	< 35	*
<b>Typical Beam Divergence (Full Angle) (mrad)</b>	0.35	< 0.5	< 0.2	< 0.1	*
<b>Minimum focus distance (mm)</b>	25	25	50	120	*
* = the beam specification of this model is dependant on the external lens that it is used with please note					

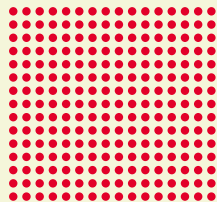
# Projection Options

## 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. These will only work when the A Lens option is chosen. Please see the Projection Lens Datasheet for further information.



Circle with center dot



Dot Array



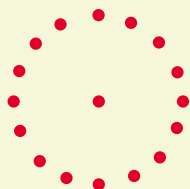
Dot Lines



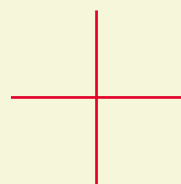
Viewfinders



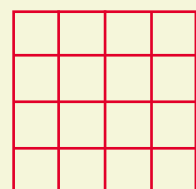
Multiple Lines



Dot Circle



Cross



Grids

# Line Lens Options

## Homogeneous Optics

The homogeneous line optics produce a line where the intensity distribution is gaussian in the width and homogeneous in the line. The homogeneous distribution consists of many gaussian beams combined. This produces a line with high uniformity levels at shorter working distances, however due to the effects of divergence the uniformity levels will decrease over longer working distances. 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 principal, but with two lines, one perpendicular to the other.

Pattern	Fan Angle
Line	4.2, 18, 33, 40, 60, 90 & 105°
Cross	14, 60 & 100°

## Gaussian Line Optics

The gaussian line optics produces a line with gaussian distribution in both axis. This results in a line with high intensity's levels in the centre of the line, the downside is that power levels decrease towards the ends of the line. The Long line + Dot consists of a gaussian line with a centre gaussian dot. This is useful for alignment and positioning of buttons/button holes in the textile industry.

Pattern	Fan Angle
L4 Line	8°
L8 Line	16°
Line	21 & 47°
Long Line + Dot	100°

# Modulation

Below is a application guide of how the modulation capabilities of the Gated Cameo are used.

## Introduction

A common requirement for applications which use photo detectors, cameras and other non-visual sensing is the ability to rapidly switch the laser output ON and OFF. Simply applying and removing the supply voltage is rarely satisfactory and in certain cases can result in the destruction of the module. This is because laser diodes are very sensitive to spikes and surges, which are often the result of uncontrolled supply switching. To overcome this limitation, the 1260 Gated Cameo has two additional inputs that are provided to control the output of the laser diode module in a reliable and predictable way.

## Control Input

A logic LOW level turns the output completely OFF ( $\approx < 5\%$ ). However, applying a logic HIGH turns the laser ON after a control input delay. This sets the maximum rate at which the module can switch fully ON and OFF. Bandwidth is  $\approx$  or  $> 100\text{Khz}$ .

## Enable Input

Some applications require a simple, slow speed ON/OFF switching. The 1260 Gated Cameo eliminates the requirement to provide an external switching device by providing a logic compatible enable input, capable of operating from low power logic and micro-processors. In this OFF condition, the module draws virtually no current and no light is emitted.

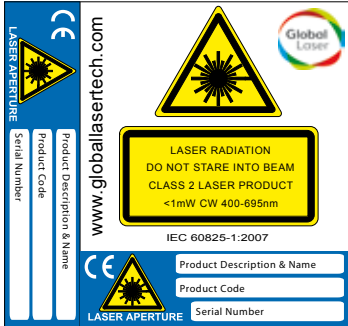
# Mounting

The M12 x 1 threaded body provides a stable and convenient mounting method which also provides effective cooling of the laser diode to maximise the operating life. The metal body should be in good thermal contact with the mount, which should not be allowed to exceed the maximum case temperature.

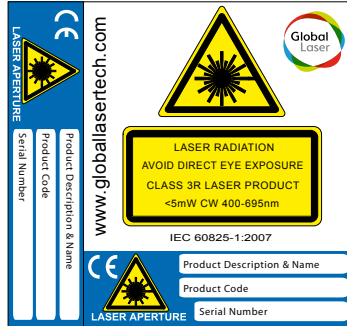


# Laser Safety

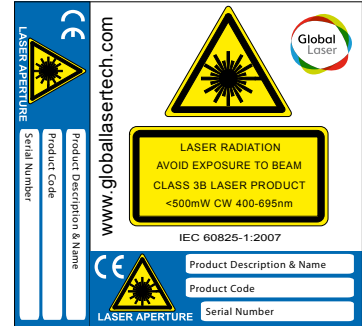
Our lasers are compliant to IEC 60825-1 2007 standards. The lasers fall within one of the following classifications depending on power and wavelength.



Class 2 Laser Label



Class 3R Laser Label



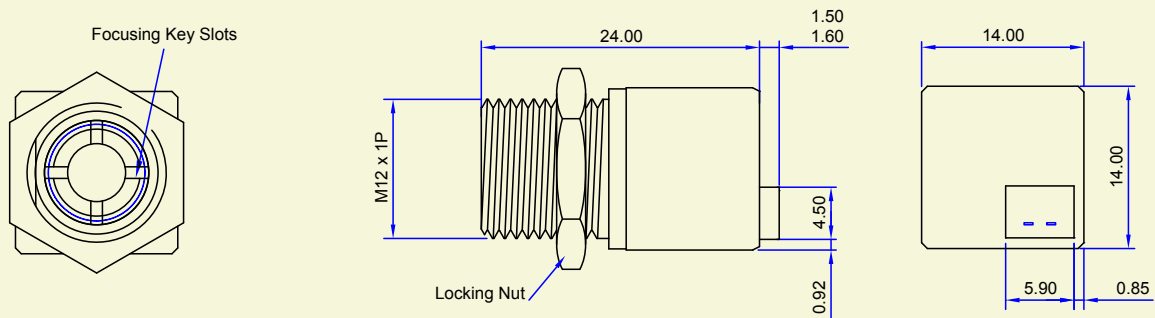
Class 3B Laser Label

# Quality & Warranty

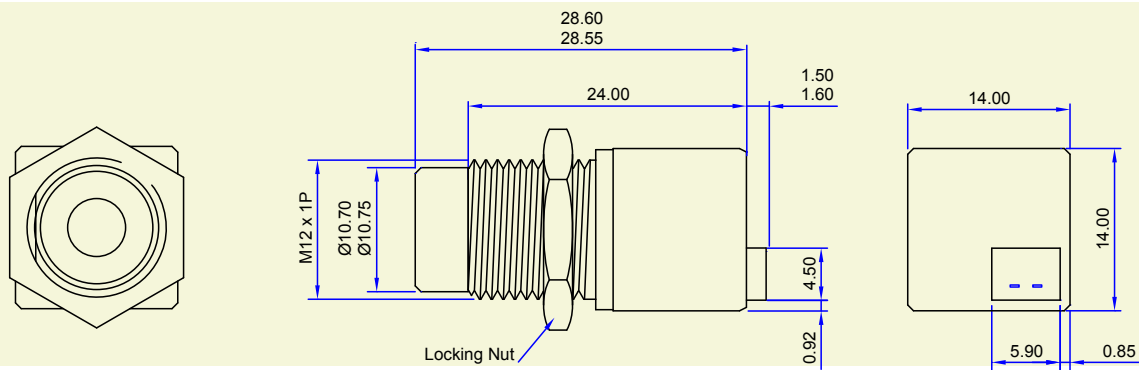
The Cameo Range is supplied with a 12 month parts and labour warranty. Our manufacturing operations are certified to ISO9001.

# Mechanical Dimensions

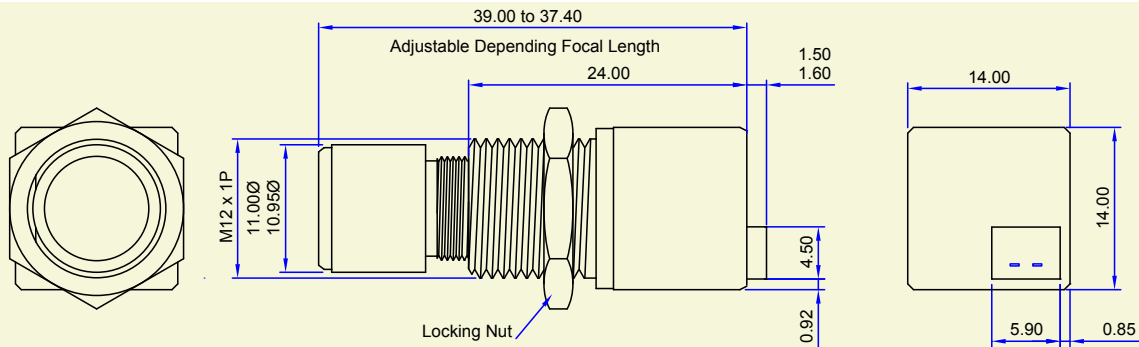
## Cameo Diode Laser Module with S/C2 Lens



## Cameo Laser Diode Module with P Lens



## Cameo Laser Diode Module with Projection Lens



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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