



# CW Laser Diode Module

RS Stock No. 213-3584

## Introduction

This device has been designed as a complete laser diode system for O.E.M. use and although the output power has been set in accordance BS(EN)60825, this module is not a certified laser as defined in the specification. When incorporated in a piece of equipment it may be necessary for additional safety features to be added before equipment complies fully with the standard. BS(EN)60825 is essential reading before using this product. Details of the laser safety requirements governing Class III products are given in the latest **RS** Laser Data Sheet.

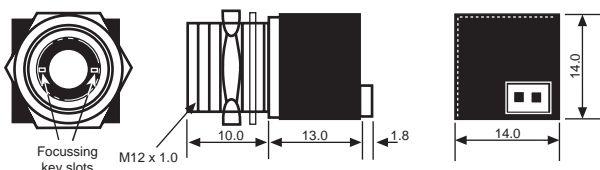
## Description

The laser module consist of a laser diode, lens and driver circuit housed in a threaded metal barrel with a plastic cap forming the rear enclosure. Electrical connections are made via a miniature, two pin, latching connector. The lens fitted as standard is a single element of aspheric design which produces a high quality collimated beam over a long distance. Its position can be adjusted to bring the beam to a focused spot. The standard lens may be replaced by other optical systems.

## Optical characteristics

Parameter	Value			Units
	Min	Typ	Max	
Power output		3		mW
Wavelength		635		nm
Power output stability (@ 20°C)			3	%
Power output temperature dependence		15		µW/°C
Beam size		4.5x2.5		mm
Polarisation ratio		10:1		
Pointing stability			0.05	mRad

Figure 1 Mechanical details



Weight : 15g (0.53oz)  
Material : Nickel plated brass barrel and black plastic rear cap

## Electrical characteristics

Parameter	Value			Units
	Min	Typ	Max	
Operating voltage	4.5		5.5	volts
Operating current @4.5V		65		mA
Operating current @5.5V		68		mA
Connections	2 pin socket (Pre-wired plug supplied)			

## Absolute maximum ratings

Supply voltage \_\_\_\_\_ +8V  
Operating temperature \_\_\_\_\_ -10 to +30°C  
Storage temperature \_\_\_\_\_ -40 to +85°C

## Electrical connections

Electrical connections are made via the pre-wired plug as follows:

Green \_\_\_\_\_ 0 Volts  
Red \_\_\_\_\_ Vcc

## Power supplies and earthing

This laser diode module must be operated from a regulated, positive supply of 5V. The case is isolated from the supply. It is advisable for any floating power supplies to have the '0' volts connection (and if used, the heatsink) taken to the ground. If this is not done, then electrically noisy environments, the power supply leads can act as aerials. Under these conditions any noise picked up can damage the laser module. If a heatsink is not used, then the barrel of the laser module should be grounded. Connections are made via the two pin latching connector, the mating half is supplied pre-wired, with 500mm of 7x0.2mm PVC insulated wire (red positive and green is negative).

## Heat sinking and mounting

When operating at elevated temperatures, these modules may require an additional heat sink. If the case temperature of the embedded laser diode should exceed its maximum specification, premature or even catastrophic failure may occur. The laser diode module should be mounted into a metal bracket or bulkhead using the threaded barrel. Thermal transfer cream can be used to improve contact and heat dissipation.

## Laser safety

All laser devices produce beams of intense monochromatic light which can present potential biological hazards. These hazards depend on a number of factors including the wavelength, the power or energy of the beam and the emission duration. The eye is the most vulnerable organ as it will tend to focus light from the laser on to the retina, thereby increasing the energy density many times.

Complete information on laser safety and laser classification can be found in the specification BS(EN)60825 which is essential reading for all users.

Figure 2 Laser warning label

