



# Acculase PWM Userguide

## 1. Product Overview

Thank you for purchasing the Acculase PWM laser. This emits a Visible / IR spot/projection. If you have any problems or require help when using the laser Acculase PWM please call us on +44 (0)1495 212213 or contact your local representative.

The Acculase laser diode modules represent the highest level of optical and electrical performance at an economical price, a combination that is unmatched in the marketplace. The Acculase also has the additional benefit of the output beam being accurately aligned to the outer sleeve during manufacture.

The secret of their superiority is a control circuit design that not only gives you excellent output power stability over time and temperature, but also offers fast, closed-loop modulation with an extinction ratio as high as 10,000:1. The PWM version allows you to use pulse width modulation of the output intensity from a TTL level input signal, within the limits of the laser module's maximum rise and fall time. You can therefore control the mean intensity of the laser beam simply by changing the mark to space ratio or modulate the laser with coded information. A wide range of wavelengths, powers and lens options are available, each combination having been carefully selected to provide you optimum performance, while ensuring the laser diode is never over driven.



# 2. Product Operation

## A: CW Mode

To operate the laser in CW mode connect the 4 way JST (see diagram A) to back of laser module. The Red, Black and Blue leads should be connected as below. If you have purchased a DNI (Digital non inverted) model, connect the yellow lead to supply, if you have purchased a DI model (Digital inverted) model connect the yellow lead to 0 volts.

		Acculase PWM
Pin 1	Red Lead	+5 Vdc $\pm$ 250mV
Pin 2	Black Lead	0 Vdc
Pin 3	Yellow (DNI)	Supply
	Yellow (DI)	0 Volts
Pin 4	Blue Lead	V supply if not using as enable switch

## B: TTL Mode

The Acculase PWM allows the unit to be gated on and off, or pulse-width modulated at TTL voltage levels via the yellow control lead. The standard version (DNI) offers non inverting TTL where an input signal of TTL Low = off and TTL High = on and vice versa for the inverted (DI) model. Frequency bandwidth is typically 1 MHz. Rise Time: 0.5  $\mu$ s (typical).

		Acculase PWM
Pin 1	Red Lead	+5 Vdc $\pm$ 250mV
Pin 2	Black Lead	0 Vdc
Pin 3	Yellow Lead	Input TTL Signal
Pin 4	Blue Lead	V Supply if not using as enable switch

### Blue Lead (Enable Switch)

An on/off switch function is available via the blue wire. Applying 0V will switch the laser off whilst applying Vsupply leaves the laser on. This is partially useful for safety interlocks or enable switch's required for 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 these function please connect the lead to the V supply or the laser will not switch on.

# 3. Focus Adjustment

The focus of the laser can be adjusted by using the supplied focus key. Should you need to adjust the focus please follow the instructions below.

1. Remove any external optics, where fitted (see drawing F).
2. Insert focus key into laser barrel and align with focus control groves.
3. Turn the focus key until desired focus is achieved.
4. Replace the external optics if fitted and rotate to achieve the desired projection.

# 4. Mounting

To ensure the lifetime and the stability of the laser it is recommended that it is mounted in a suitable Heat sink/mount. The case temperature should be kept within the specified range at all times, failure to do this could result in shortened lifetime or catastrophic failure. As a guide, laser diode lifetime decreases by a factor of two (approx.) for every ten degree increase in operating temperature.

There are two mounting clamps available as standard from Global laser for the Premier PWM range.

Global Laser's Heavy Duty Clamp has parallel and vertical adjustment which allows the user to aim the laser in any required direction or angle, the robust aluminium construction also assists in conducting heat away from the laser body as well as prevents movement due to shock and vibration. The base plate of the Heavy Duty Clamp has a series of threaded holes to allow secure fastening to stable surface. A Magnetic Base is also available which simply screws in to the base of the Heavy Duty Clamp and allow it to be fitted to a ferrous surface.

The Swivel Mount is available for 15 mm diameter lasers. It provides the user with up and down tilt movement as well as +/- 45° swivel. The base plate has a series of holes which allows the clamp to be fixed directly onto a machine or workbench. On the rear of the main block are two M3 threaded holes which enable heatsink fins to be attached if required.

## **5A Mounting the Premier PWM in the Heavy Duty Clamp**

1. Un-tighten Allen screw A (see drawing C) with the supplied Allen key.
2. Slide the laser into the mounting hole (see drawing C) and tighten Allen key A.
3. For vertical adjustment of the laser un-tighten Grub screw A (see drawing C). This will allow the section mounting the laser to be adjusted. When the vertical posting is complete re-tighten grub screw A.
4. For horizontal adjustment of the laser un-tighten Grub screw B (see drawing C). This will allow the main body of the mount to be moved. When the horizontal positing is complete re-tighten grub screw B.
5. To secure the Heavy Duty Clamp to a surface machine screw or studs can be used in conjunction with the base section (see drawing D for thread details).

## **5B Mounting the Premier PWM in the Heavy Duty Clamp with the Magnetic Base**

1. Un-tighten Allen screw A (see drawing C) with the supplied Allen key.
2. Slide the laser into the mounting hole (see drawing C) and tighten Allen key A.
3. For vertical adjustment of the laser un-tighten Grub screw A (see drawing C). This will allow the section mounting the laser to be adjusted. When the vertical posting is complete re-tighten grub screw A.

4. For horizontal adjustment of the laser un-tighten Grub screw B (see drawing C). This will allow the main body of the mount to be moved. When the horizontal positing is complete re-tighten grub screw B.

### 5C Mounting the Premier PWM in the Swivel Mount

1. Un-tighten Allen screw A (see drawing E).
2. Slide the laser into the mounting hole (see drawing E) and tighten Allen key A.
3. For vertical adjustment of the laser un-tighten Allen screw B (see drawing E). This will allow the section mounting the laser to be adjusted. When the vertical posting is complete re-tighten Allen screw B.
4. For horizontal adjustment of the laser un-tighten Allen screw C (see drawing E). This will allow the main body of the mount to be moved. When the horizontal positing is complete re-tighten Allen screw C.
5. To secure the swivel mount to a surface screws, machine screw can be used in conjunction with the base section (see drawing E for thread details).

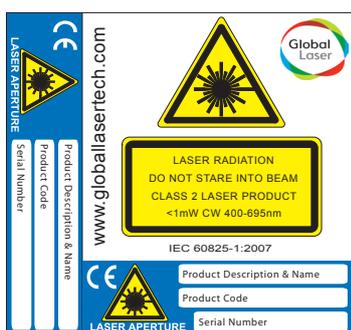
## 5. Cleaning The Optics

It is recommended that when the Acculase PWM laser is not in use the supplied protective cap is placed over the optics to reduce the risk of the being contaminated by dirt. If the laser pattern becomes fuzzy or unclear, please check the following:

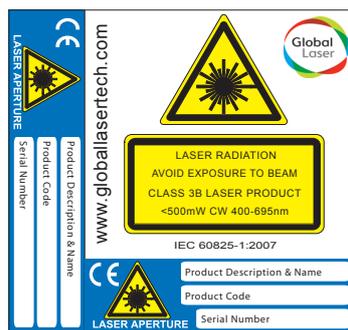
1. Check the laser is in focus.
2. Verify the optical lens is clean, if the area has been contaminate please remove dirt with dry air.

## 6. Safety & Classification

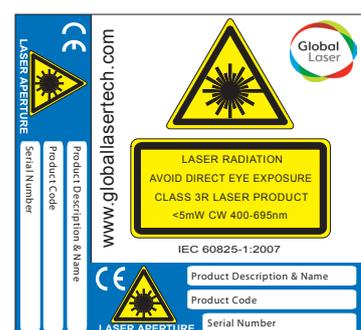
These modules are intended for incorporation into customer equipment. They are classified in accordance with IEC60825-1 2007, which should be consulted prior to designing or using any laser product. The following labels are supplied for attachment to the customer's equipment, but responsibility for compliance with the standard remains with the user.



Class 2 Laser Label



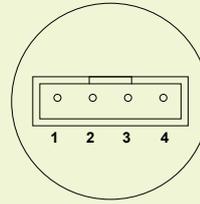
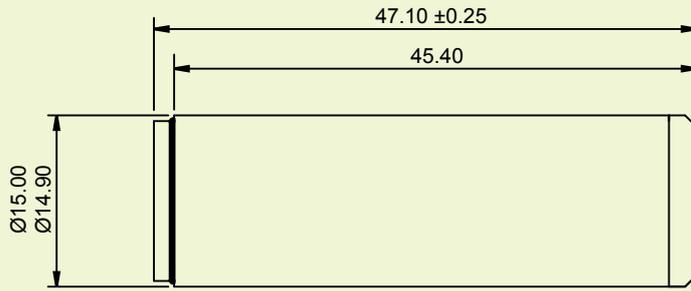
Class 3B Laser Label



Class 3R Laser Label

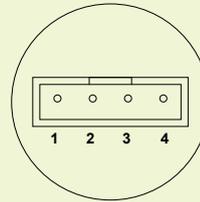
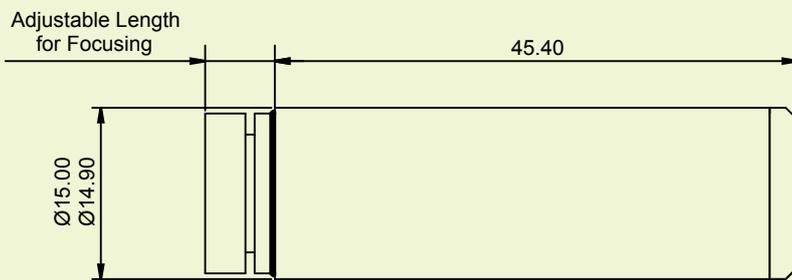
# 7. Diagrams

## A) Acculase LC



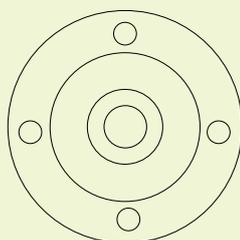
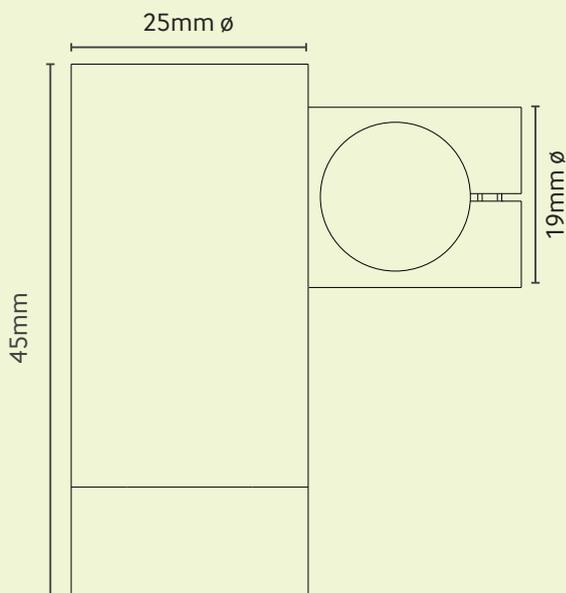
Pin 1 - Red  
Pin 2 - Black  
Pin 3 - Yellow  
Pin 4 - Green/Yellow

## B) Acculase LC with External Optic



Pin 1 - Red  
Pin 2 - Black  
Pin 3 - Yellow  
Pin 4 - Green/Yellow

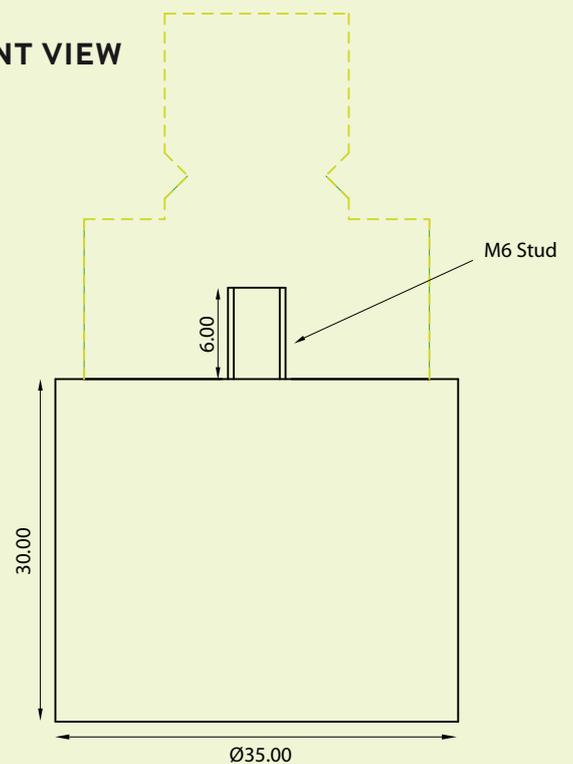
## C) Heavy Duty Mounting Clamp



M5 Mounting hole on base

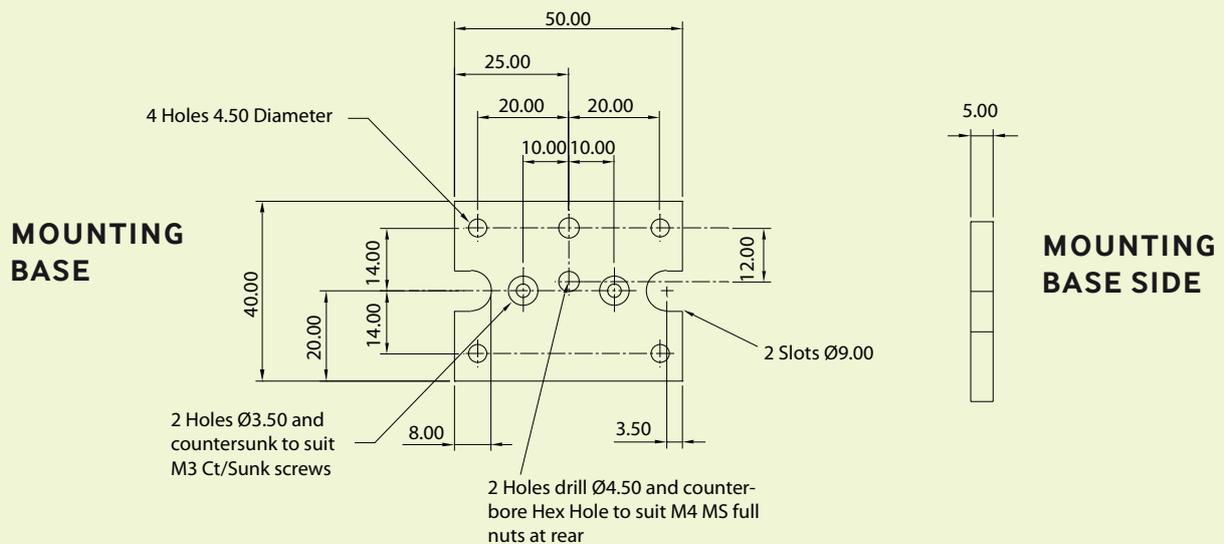
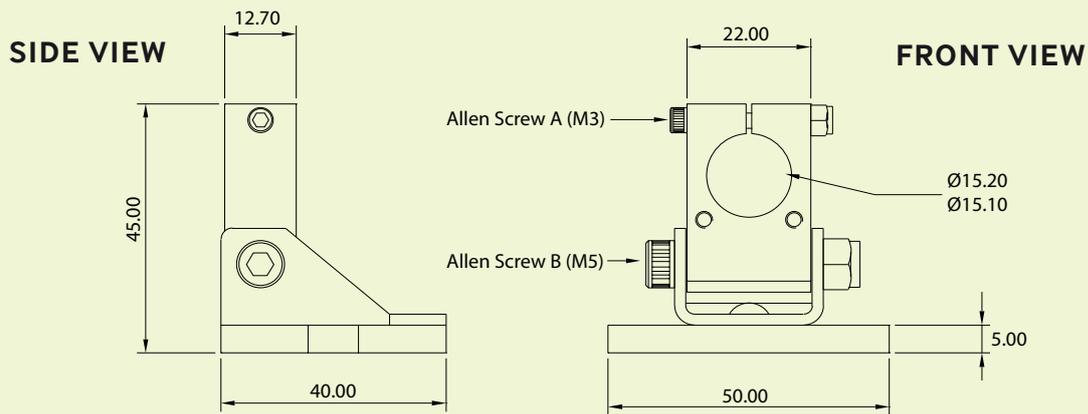
## D) Magnetic Base

### FRONT VIEW

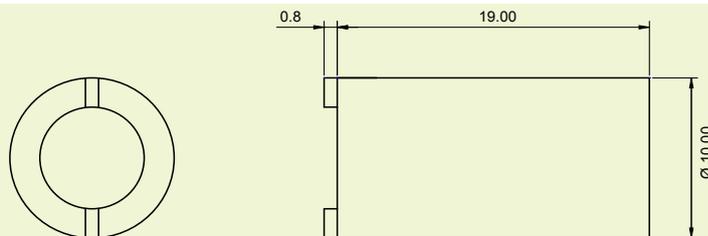


Drawings not to scale

## E) Swivel Mount



## F) Focus Key



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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