

FireFly User Guide



1. PRODUCT OVERVIEW

Thank you for purchasing the FireFly green laser. This emits a 532nm Green spot, line or cross. You will have one of the following three versions:

- CW
- CW + Linear intensity / modulation control version
- CW + TTL & modulation control version

If you have any problems or require help when using the Firefly please call us on +44 (0)1495 212213 or contact your local representative.

2. PRODUCT OPERATION

2A. CW VERSION

To operate laser in CW mode the Red and Black flying leads should be connected to the following:

1. Red lead: + 5Vdc (+/- 10 %)
2. Black lead: 0Vdc

2B. CW + LINEAR MODULATION / CONTROL VERSION

Connect 4 way JST connector (see diagram A) to back of laser

- CW Mode

To operate laser in CW mode the Red and Black leads should be connected to the following:

1. Red lead: + 5Vdc (+/- 10 %)
2. Black lead: 0Vdc
3. Yellow lead: Not connected
4. Blue Lead: Vsupply if not using as an enable switch

- Linear Modulation function

To linearly modulate the laser any modulation signal up to 1kHz with an amplitude of 0V to +1Vdc can be applied to yellow lead.

1. Red lead: + 5Vdc (+/- 10 %)
2. Black lead: 0Vdc
3. Yellow lead: input modulation signal 0 to +1Vdc
4. Blue Lead: Vsupply if not using as an enable switch

- Linear intensity control

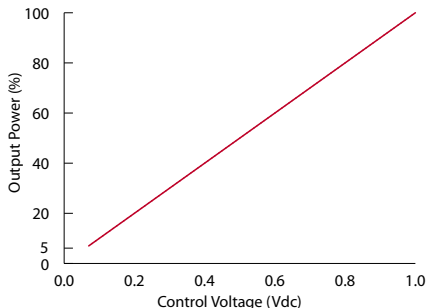
Alternatively the yellow lead can be used for a linear power control function. In this situation, the laser power is denoted by a voltage applied to the yellow lead, 0V turning the laser off and +1Vdc giving maximum power, with linear trend between. (See linear intensity graph)

1. Red lead: + 5Vdc (+/- 10 %)
2. Black lead: 0Vdc
3. Yellow lead: input control voltage (0 to +1Vdc)
4. Blue Lead: Vsupply if not using as an enable switch



- 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. A TTL switch can be utilised via this lead. If not using this function please connect the lead to the Vsupply.



Linear intensity graph

Setting the power via a resistor

The control wire has a 10k Ohm input impedance connected to an internal 1V source which is used as the reference for the factory set power. Measuring the voltage between the Yellow and Black wires with a high (>10M Ohm) impedance voltmeter, will give a reading of $1\text{ V} \pm 2\%$. Connecting a 10k Ohm resistance between the Yellow and Black wires will result in the reading falling to 0.5V and the light output falling to half the factory set power.

Other outputs between 0 and the factory set power can be achieved with a single resistor Rx by using the formula:

$$R_x = \frac{P_o * 10k}{P_f - P_o}$$

where Po is the required power output as Pf is the factory set power

2C. CW+ TTL CONTROL (TTL CONTROL VERSION)

Connect 4 way JST connector (as shown in diagram A) to back of laser.

- CW VERSION

To operate laser in CW mode the Red and Black leads should be connected to the following:

1. Red lead: + 5Vdc (+/- 10 %)
2. Black lead: 0Vdc
3. Yellow lead: Vsupply
4. Blue Lead: Vsupply if not using as an enable switch

- TTL MODE

With this version, the yellow wire can be utilised to be driven with a TTL input modulation signal, with positive TTL level resulting in maximum power and zero TTL level resulting in an off state.

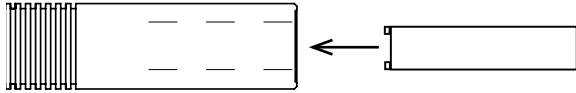
1. Red lead: + 5Vdc (+/- 10 %)
2. Black lead: 0Vdc
3. Yellow lead: input TTL signal
4. Blue Lead: Vsupply if not using as an enable switch



3. FOCUS ADJUSTMENT

The focus of the laser can be adjusted by using the supplied focus key (as shown in diagram F). Should you need to adjust the focus please follow the simple instructions below:

1. If supplied with line or cross optics remove front unscrewable section (as shown in diagram C)
2. Insert focus key (as shown in diagram F) into laser barrel and align with focus control groves as indicated in (as shown in diagram D)
3. Turn until desired focus is achieved
4. Replace front unscrewable section if supplied.



4. OPTIONAL LINE AND CROSS OPTICS

The firefly unit is offered with an optional extra line and /or cross optic (as shown in diagram C)

The angle of the cross can be adjusted by following the instructions below:

1. Insert cross adjustment tool (as shown in diagram G) into two center holes of cross optics (as shown in diagram E)
2. Turn until 90° cross is achieved

5. CLEANING THE OPTICS

If the laser pattern becomes fuzzy or unclear, please check the following:

1. Check the laser is in focus (see section 3)
2. Verify the optical lens is clean, if the area has been contaminate please remove dirt with dry air.

6. MOUNTING

It is recommended to ensure longer life and stability of the laser, the product is mounted in a suitable heatsink. Global Laser also offer a high quality industrial mount (as pictured diagram H) that firmly clamps the laser and prevents movement against shock and vibration.

7. SAFETY AND CLASSIFICATION

These modules are intended for incorporation into customer equipment. They are classified in accordance with IEC60825-1 Amendment 2/2001, 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.



OEM Laser Label



Class 2M Laser Label



Class 3R Laser Label



IEC 60825 Warning Labels

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