

AEO Precise Fiber Couple Laser Light Source

Datasheet



Figure 1 Laser Source View

1. General Description

1.1 Production General Description

The AEO PFCLS series Fiber Coupled Laser Sources provide easy coupling and simple control of laser diode driven fiber optics. This Spectrum Stabilized Laser Source provides the user with a powerful and extremely stable laser source that is ideal for optical scientific applications.

AEO PFCLS series laser source provide various wavelength device with different output power, some of this series are Class 3B laser product, whose emission and output power levels exceeding 100mW. Extreme care should be taken when operating this device to avoid potentially hazardous exposure to both eyes and skin. Users should wear eye protection when operating this device and should avoid exposure to the output beam.

These laser sources are temperature controlled in full output power range. It comes equipped with a thermo-electric cooler to stabilize the output wavelength stabilizes in ± 0.1 nm in whole power range.

1.2 Important feature:

These laser light sources have a powerful control function both in manual and PC though RS232/USB communication (* this function is available only according to customer's requirement on ordering). With this PC communication function, users can easy integrate it into their Auto-Measurement System, such as Raman spectrometer analysis instrument if users select 785nm wavelength output laser light source.

1.3 System Initial Set-up

Perform the following steps for the initial set-up.

1. Determine the AC line voltage, the device will be connected to 110 VAC/60hz.
2. Locate the device on a dry working surface.
3. Make sure the POWER key switch on the rear of the device is in the OFF position.
4. Plug the female end of the AC line cord provided into the AC Input receptacle on the rear of the device.
5. Plug the male end into a properly grounded AC socket.
6. Connect a Fiber Optic Cable to the laser aperture on the front panel of the device.

2. Panel Function Overview

2.1 Front Panel Overview

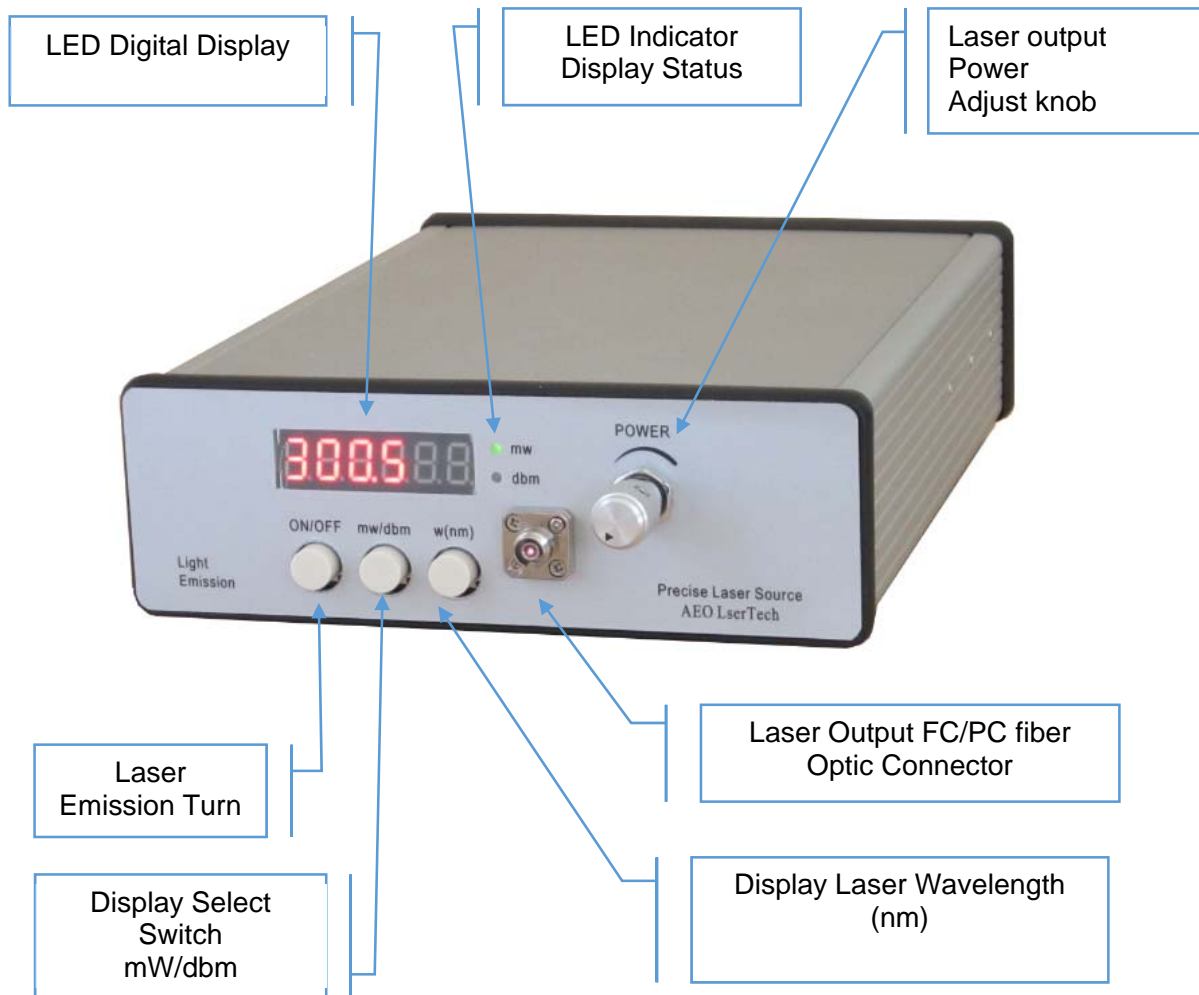


Figure 2 Laser Source Front Panel View

2.2 Rear Panel Overview

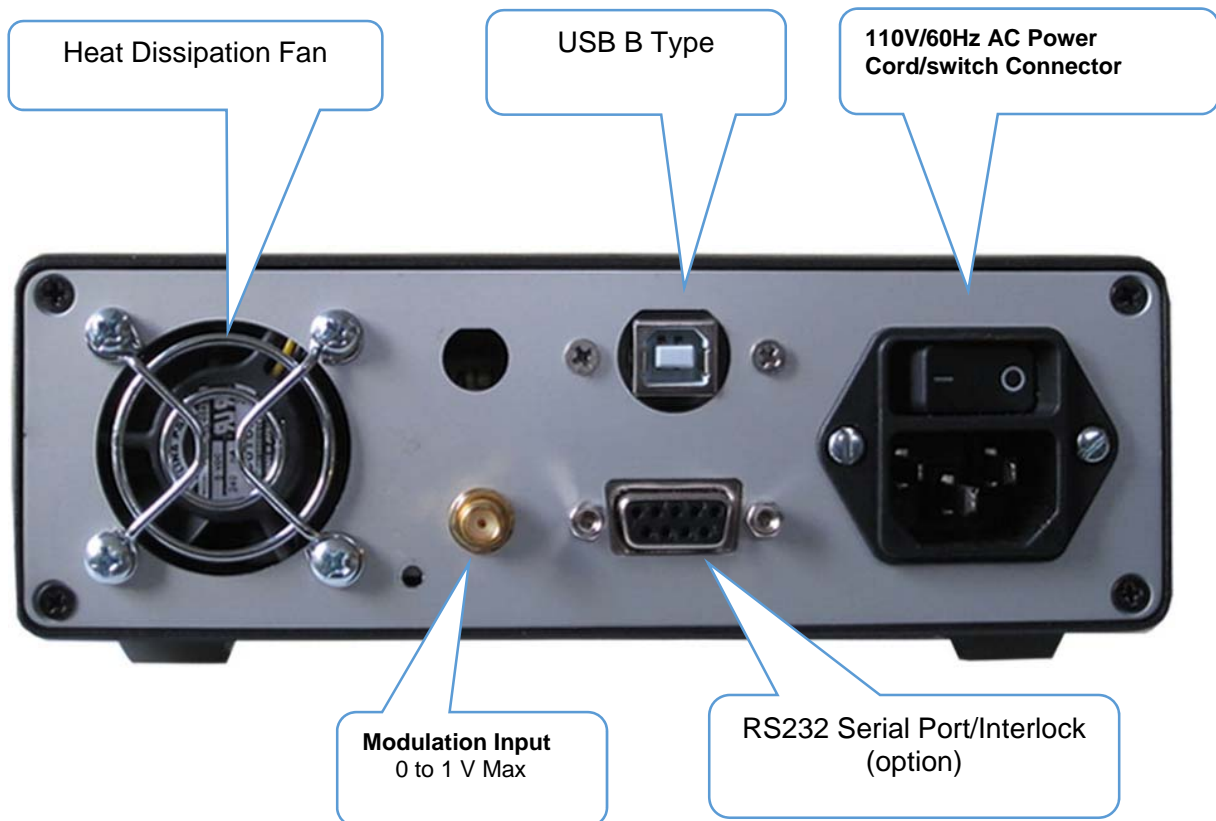


Figure 3 Laser Source Rear Panel View

3. Perform the following steps to turn on the Laser Light Source:

- 1) Turn on POWER switch. The device is ON when the display lights up. On power on initial time, there is 500ms slowly start delay, which is specifically protect diode laser avoid suddenly power up surge current. The diode laser current linearly increases from zero to System Setting Value.
- 2) If device Interlock option selected, make sure the Interlock Input is short-circuited.
- 3) The default display mode is laser power (mw), and laser thermo-electric cooler is always activated when the device turns on.
- 4) Use the Power Adjust Knob to adjust the output power to the desired level.
- 5) Press the emission button to turn ON/OFF the laser.
- 6) The LASER ON when emission button to is turn On, and indicator display "mw" (default),
- 7) The LASER OFF when emission button to is turn OFF, LED Display displays "0.00000", two indicator LED will light off
- 8) Press the mw/dbm button to change the display device: mw or dbm
- 9) Press the W (nm) button to display laser wavelength, for example display: 1480, it means the laser wavelength is 1480 nm.

4. PC Control Light Source System

4.1 PC Control Light Source System description

This light source device has a powerful PC /manual remote function

4.2 Manual Control Function:

The device default control mode set in manual control, all function can implement on panel push button.

4.3 PC control function:

The most important feature of this light source is its PC control ability. In industry intelligent equipment system, the GPIB and RS-232 are defined as a standard communication port among multi-equipment.

There are two Control method option:

- User can use AEO Lasertech Provides user GUI, which is free provided.
- User can also use HyperTerminal ASCII command to control this light Source. With this ASC code command, user can easy integrate this light source to their system, such as Raman spectrometer analysis instrument. The ASCII definition is in 4.4.2.

4.4 PC Control Communication Protocol:

4.4.1 Serial Port Setting

Serial communication with 115200 Baud rate, 8 data bits, 1 stop bit, no parity, no handshake.

4.4.2 Command Structure

Control Communication Protocol			
Command Syntax	<Command><=><VALUE><&> <Command> are ten ASCII character. <=> is a separator to separate variable and value. <VALUE> is several decimal numbers in ASCII. There is no space in the Data (Stream). <&> is a separator, which indicate the end of one data structure.		
Serial Port Setting	115200 Baud rate, 8 data bits, 1 stop bit, no parity, no handshake		
Command Summary			
Command	Command Syntax	Function	note
LdMode_Set	LdMode_Set=1&	Serial Port Control	
	LdMode_Set=0&	External Trigger Control on/off	
LD_Turn_ON	LD_Turn_ON=1&	Laser emission Turn On	
	LD_Turn_ON=0&	Laser emission Turn Off	
LdWk_P_Set	LdWk_P_Set=xxx&	Output laser light power setting(mW)	Internal has maximum limit
	Ex: LdWk_P_Set=300&	Output laser light power = 300mw	

5. Modulating the Laser Output

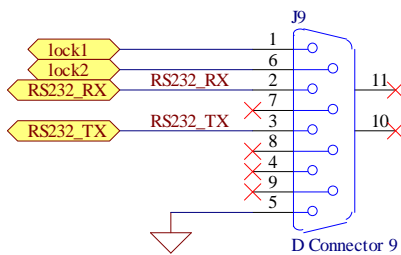
5.1 Description

The MOD IN input can be used to modulate the laser output, or set the laser output remotely using a small signal source, (maximum is 0~+1V).

5.2 Function Procedure

- 1) In order to make the light source work in modulation must set output power in 10mW using Laser output Power Adjust Knob, make the drive current is not zero but actually at the threshold current.
- 2) Connect a signal generator or 0 to 1 V signal source to the device (see figure 3 rear panel view).
- 3) Apply the appropriate signal to the MOD IN input. Signals above approximately 5 V will be clamped by internal circuits.
- 4) Adjusting the PWR ADJ knob will allow for a DC offset on the modulated output. Adjust the input signal accordingly to avoid clipping the output waveform, which will occur if the device is driven to its current or power limits.

6. Making the Safety Interlock Connection(optional).



AEO Light Sources are equipped with a remote interlock connector located on the rear panel. All devices have this feature. In order to enable the laser source, a short circuit must be applied across the terminals of the Remote Interlock connector. In practice this connection is made available to allow the user to connect a remote actuated switch to the connector. The switch, which must be normally open, has to be closed in order for the device to be enabled.

Once the switch is in an open state the laser source will automatically shut down. If the switch returns to a closed condition the laser source return

normal work status.

All devices shipped from AEO Lasertech are configured with a shorting device installed in the Interlock connector. If you are not going to use this feature, then you can leave the shorting device installed and the device will operate normally as described in the procedures above.

If you wish to make use of the Interlock feature you will need to acquire the appropriate connector mate and wire it your remote interlock switch.

7. CAUTION

7.1 User Responsibility

110 Voltage High voltage inside



To avoid electrical shock, before powering device, make sure that the protective conductor of the 3-conductor power cord is correctly connected to the protective earth contact of the socket outlet. Improper grounding can cause electric shock resulting in severe injury or even death. Do not operate without cover installed.

7.2 Eye safe caution



LASER RADIATION
AVOID EXPOSURE TO THE BEAM
CLASS 3B LASER PRODUCT



8. Warranty:

AEO Lasertech guarantees its products to be free of defects for one year from the date of shipment. During the warranty period, AEO Lasertech will, at its option, either repair or replace products which prove to be defective. Opening, modification and or servicing of this device is expressly prohibited and will result in nullification of product warranty. This is in lieu of all other guarantees, expressed or implied, and does not cover incidental or consequential loss. Warranty does not cover Catastrophic Optical Damage (COD) caused by 100% retro-reflection of the laser light. If retro-reflection of this magnitude is expected, then an optical isolator is required.