

# Operating Instruction for model LDP-234 laser diode driver

Driver for P-type laser diodes

## Introduction

The LDP-234 is a CW laser diode driver for P-type laser diodes. In a P-type laser diode, the laser diode cathode shares a common connection with the photodiode anode. By utilizing feedback from the laser diode's internal photodiode, the LDP-234 will maintain constant optical power from the laser diode. The optical power can be adjusted with a miniature potentiometer built into the module.

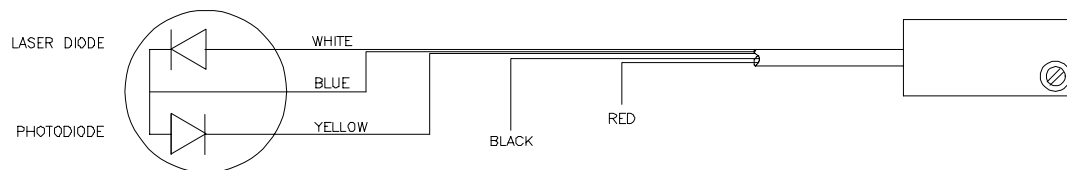
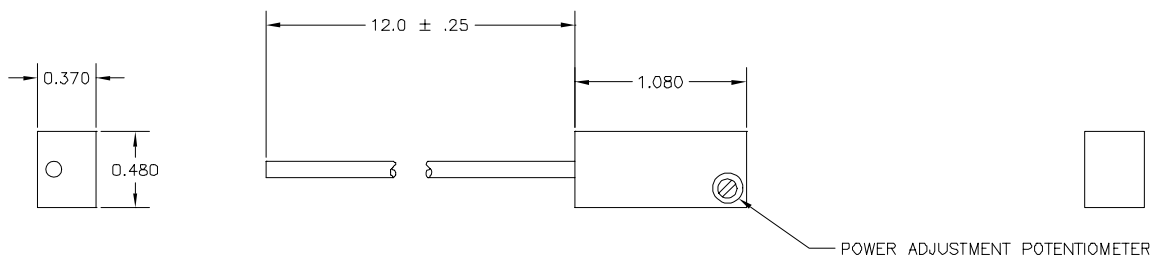
The LDP-234 can be configured with a variety of laser diodes at various output powers and operating wavelengths. It produces up to 200mA of drive current with a 5VDC input.

## Installation

The LDP-234 should be connected to the laser diode in an electrostatically safe environment using grounding straps and other ESD precautions.

Connections to the laser diode and power should be made according to FIGURE #1. The operating voltage for this laser module is 5VDC  $\pm$ 0.5VDC. Positive power should be applied to the module's red wire, and the black wire should be connected to ground.

The LDP-234 features two power adjustment potentiometers. The calibration pot can be found on the bottom of the unit. If the driver has been previously adjusted, it will ramp up to the set value when power is applied.



- NOTES:
1. RED +4.5 TO + 5.5 VDC
  2. BLACK - GROUND
  3. YELLOW - PHOTODIODE CATHODE
  4. WHITE - LASER DIODE ANODE
  5. BLUE- LASER CATHODE & PHOTODIODE ANODE

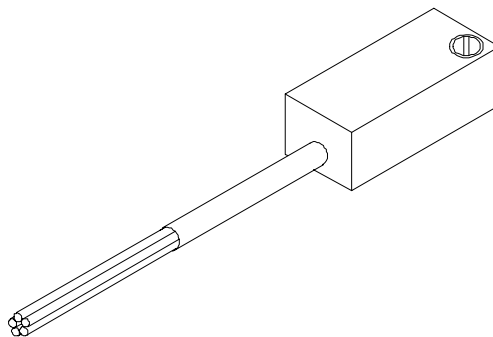


Figure 1



Select one of the following methods to calibrate the unit.

**Method 1:** The best calibration method is to use an optical power meter calibrated to the appropriate wavelength for the diode. Make certain that the power meter captures all diode output. Removing a lens or making an allowance for lens losses may be required if you are adjusting for the diode's maximum power. With DC source voltage turned OFF, adjust the power adjustment pot fully counterclockwise. Activate the DC input. Please note that the pot fully counterclockwise is a 3/4-turn potentiometer. For this reason a small rotation of the potentiometer yields a significant change of current. With extreme caution rotate the pot fully counterclockwise until the desired output power level is shown on the optical power meter. Once the unit is calibrated, this potentiometer should be sealed to prevent adjustments that may cause the laser diode to fail. Do not exceed the rated diode output.

**Method 2:** This method requires that the manufacturer specify the exact responsivity of the built-in photodiode. Do not use specification sheet rating. To use this method, you must have the specific current data for the individual diode. Specific current data may also be called diode data. Place a high quality milliampere meter in series with the yellow lead before applying power to the system. Starting with the power adjustment pot fully counterclockwise, rotate the potentiometer clockwise until the milliampere meter reading coincides with the manufacturer's photodiode calibration, i.e.,  $I_m = 0.54\text{mA} @ 3\text{mW}$ . The photodiode current is very nearly linear and can be scaled to give different operating power levels, i.e., in the above example  $0.18\text{mA} = 1\text{mW}$ .

To comply with 21CFR 1040.10 and 1040.11, a permanently installed switch at the power source will be required to obtain certification as a laser system. If the distance between the laser head and the power source switch exceeds two meters, an emissions indicator must be mounted near the switch.

## Operating Procedure & Control Description

Once the setup procedure is complete, you may adjust the output power from 0mW to max calibrated power level by turning the customer adjustment potentiometer clockwise for more power and counterclockwise for less power.

## Maintenance & Service

This laser module contains no user serviceable parts.

## Warranty and Repair Return Policy

No return of merchandise will be accepted by PTI without an RMA (Return Material Authorization) number, issued by the factory and predominantly displayed on the return package.

No return shipments will be accepted "Collect" or "COD". On warranty returns PTI will pay for shipping charges on return of merchandise to the customer.

When contacting the factory for an RMA number, please have the following information available: model number, serial numbers, and a description of the problem.

## Laser Safety

**Caution:** Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

**Caution:** The use of optical instruments with this product will increase eye hazard.

Do not shine laser in the direction of other people or at reflective surfaces that might cause exposure to the human eye. Do not unintentionally mount the laser at eye level.

Modifications, that affect any aspect of the product's performance or intended functions will require re-certification and re-identification of the product in accordance with the provisions of 21CFR 1040.10 and 1040.11. A copy of 21CFR 1040.10 and 1040.11 can be downloaded from [www.powertechnology.com](http://www.powertechnology.com).

