LaserMount™

224 SERIES

USER'S MANUAL

TEC TO-CAN

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Introduction

Thank you for choosing the **224 TEC TO-Can LaserMount** from Arroyo Instruments. The **224 LaserMount** is designed for high performance and long term use.

The **224 LaserMount** integrates a 4.7W Peltier cooler for precise control of the package temperature. With an operating range of +15°C to 85°C, the **224 LaserMount** covers a wide range of case temperature control needs.

The **224 LaserMount** comes in three configurations: the **224**, which support for free-space 5.6mm and 9mm TO-can devices; the **224-P**, which supports fiber pigtailed 5.6mm and 9mm TO-can packages in a panel mount bracket; and the **224-M**, which supports mounting of opto-mechanical assemblies. All three configurations use the same mount body, only the cover plate is different. The mount requires no wiring thanks to a simple configuration switches conveniently located on the face of the fixture. **224 LaserMount** is also heavily finned to provide the highest heat dissipation capability, and is designed to be posted mounted.

The **224 LaserMount** also offers all the features you would expect from a modern TO-Can laser diode fixture, including:

- Designed to be quickly integrated with Arroyo's **LaserSource** and **TECSource** instruments.
- Industry-standard D-sub connectors and pin-outs allow for quick integration into existing laser applications.
- Banana plug for case ground, which can be used as a wrist strap connection or to assure proper grounding to an optical table or test bench.

Accessories – Cover Plates

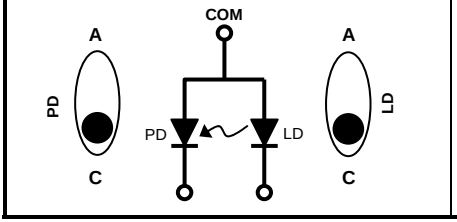
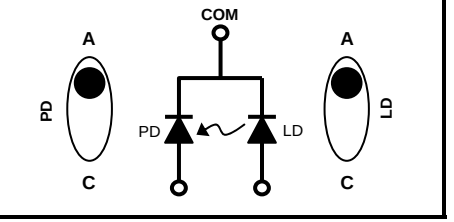
Depending on which model you have ordered, your mount will come with one style of cover plate. However, you can purchase additional cover plates separately, making your investment in the **224 LaserMount** even more valuable. These include:

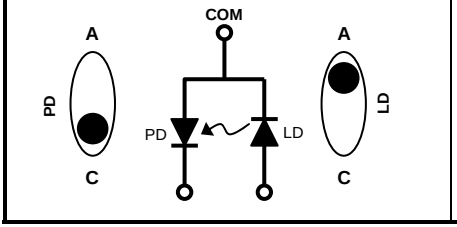
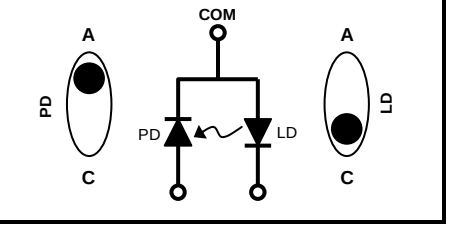
- **224 Cover Plate (p/n 224-C-01)**
  The 224 Cover Plate has a single 0.27" (6.86mm) opening for laser beam exit.
- **224-M Cover Plate (p/n 224-C-02)**
  The 224-M Cover Plate has mounting holes for 30mm cage systems as well as 1" lens tube systems.
- **224-P Cover Plate (p/n 224-C-03)**
  The 224-P Cover Plate is designed for use with fiber-pigtailed panel mount TO-can lasers.

Photos and additional information about the cover plates is available later in this manual, or online at **www.arroyoinstruments.com**.

Installation and Use

Configuring the mount: Start by identifying the specific electrical configuration of your device from the illustrations below, and then set the LD and PD switches to their correct positions. For example, if your device has both LD and PD anodes tied together, as shown in the upper left diagram below, switch both LD and PD switches into the down position.

Common Anode	Common Cathode
	

LD Cathode & PD Anode Common	LD Anode and PD Cathode Common
	

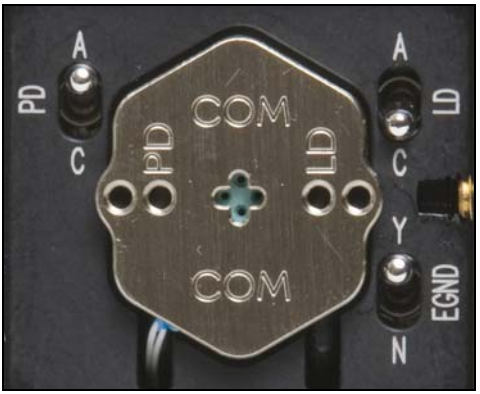
When installing your laser, the isolated (non-commoned) photodiode pin goes into the left hole of the laser socket, and the isolated (non-commoned) laser pin goes into the right hole of the laser socket.

The upper and lower holes of the laser socket, labeled the COM pins, are always tied together. The PD and LD switches on either side of socket are to set the polarity of the outside pin. For example, if your device has the laser cathode common to the photodiode anode (lower left diagram above), when you plug in your device, the left hole would have the photodiode cathode, and the right hole would have the laser anode. Therefore, the PD switch would be in the C (cathode) position, and the LD switch would be in the A (anode) position.

If the laser and photodiode of your device are completely isolated from each other, you will still need to common them together at the fixture. Choose the configuration that describes how the laser and photodiode are tried together trough the COM (upper and lower) holes.

To ground the common (center) pin to the earth ground connection, switch the EGND switch to the Y position. To float the laser, put the EGND switch in the N position.

The picture below illustrates the switches, diode socket, and two screw holes for the TO-can clamp.



Face of 224 with cover off

Connect to Laser Diode Driver and TEC Controller: Next, connect the **224 LaserMount** to your laser diode driver and temperature controller.

NOTE

Arroyo Instruments offers Laser and TEC cables designed to connect directly between our **LaserSource** and **TECSource** products. If you use your own cables, ensure the connections are properly made between the instrument and the mount, and that proper grounding techniques are used. The pin-out of the connectors can be found later in this document.

WARNING

Be sure you are properly ESD protected before handling your laser. For additional information, read the section titled "Laser Diode Protection" later in this manual.

Mounting your device: Insert the device so that the common pin is the top or bottom pin, the isolated photodiode pin is on the left, and the isolated laser pin is on the right. The illustrations below show the mounting of a free-space TO-can laser, but the fiber-pigtailed device would mount in a similar fashion.

Once the device is loaded, for free-space TO-can lasers, use the provided 5.6mm or 9mm diode clamp to clamp the TO-can to the temperature controlled gold plate. For fiber pigtailed lasers, the panel mount holes will line up with either the inside (for 5.6mm) or outside (for 9mm) holes. When tightening the screws, do not over tighten, which may strip the threads. Also, do not tighten one side further than the other, as poor or uneven temperature control may result.

The photos below illustrate the various clamps and cover.

5.6mm and 9mm TO-Can clamps

224 Cover Plate

224-P Cover Plate

224-M Cover Plate

You may choose to install the cover. The cover is not required, but will improve the temperature stability of the TO-can. The picture below shows the **224** with device loaded and cover installed on a regular **224**.

224 with diode loaded and standard cover installed

The Nitrogen fitting is intended for use with lid-less TO-can applications, or where condensation might occur. When using the standard **224**, recommended flow rate is 1-2 SCFH.

Your mount is now ready for use.

Connector Pin-Outs

224 TEC TO-Can LaserMount Connectors

DB-9 Pin	Description
1 – 3	No connection
4 & 5	Laser cathode
6	Photodiode cathode
7	Photodiode anode
8 & 9	Laser anode

Laser DB-9 Connector Pin-Out

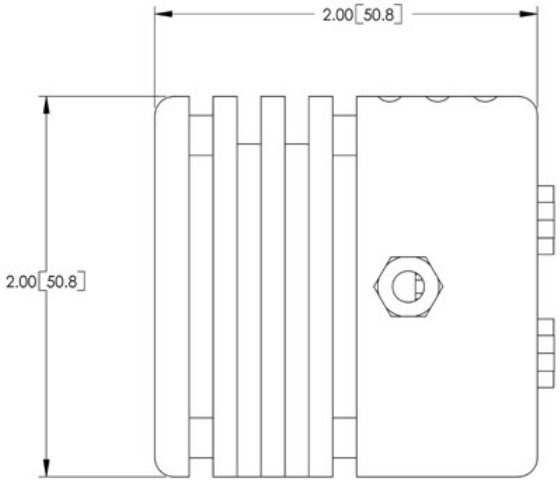
DB-15 Pin	Description
1 & 2	TE (+)
3 & 4	TE (-)
7	Thermistor
8	Thermistor
5, 6, 9-15	No connection

TEC DB-15 Connector Pin-Out

Technical Specifications

224 TEC TO-Can LaserMount	
LASER PACKAGE SUPPORTED	
Laser Package	5.6mm and 9mm TO-Can, 3 & 4 pin
Panel Mount Packages	12mm or 18mm hole spacing
TEMPERATURE CONTROL	
Temperature Range (°C)	+15 to +85
Sensor Type	10kΩ Thermistor
TE Module	Imax = 3.0A Vmax = 2.8V Qmax = 4.7W
OPTO-MECHANICAL (224-M)	
Center hole	1.035"-40, threaded through
Cage mount	4-40 x 4 holes, 30mm on center
INPUT CONNECTOR	
Laser Diode	DB-9, male
Mount TEC	DB-15, male
Nitrogen	1/16" barb
GENERAL	
Size (H x W x D) [in(mm)]	2.0 (50.8) x 2.0 (50.8) x 2.0 (50.8)
Mounting holes	8-32 threaded hole M4 threaded hole

Mechanical Specifications



Side View

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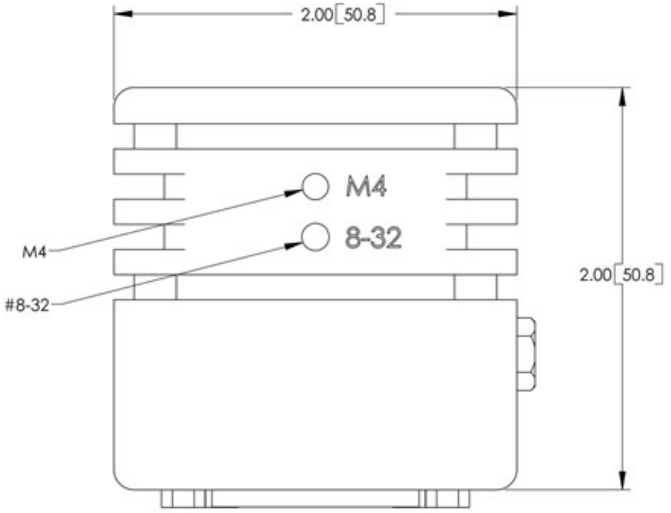

Bottom View

Laser Diode Protection

Electrostatic discharge and current spikes can be a significant cause of damage to laser diodes, but when proper precautions are taken, these risks can be greatly reduced or eliminated. Arroyo Instruments' controllers offer state-of-art laser diode protection, but no instrument can fully shield the laser from damage. Please take these considerations into account when operating your laser:

1. Always set the current limit at or below the maximum current your laser can handle. This prevents the device from accidentally driving the current too high, either via the set point or from the modulation port. This also provides additional current limiting protection from ESD.
2. Always work in an ESD safe operating environment, including the use of wrist straps, ESD grounded work surfaces and floors, and ESD-safe tools.
3. Where the AC power to the laser driver to temperature controller may be noisy, use isolation transformers or uninterruptible power supplies that provide isolation.
4. Make sure all cables are securely connected and fastening screws are screwed in tight.
5. Do not route power cords or other cables in parallel with the laser or temperature controller cables, as coupling may occur between the cables and inject noise into the laser diode.

6. While it is not possible to create a ground loop through the LaserSource because of it's isolation of all inputs, it is possible when using other equipment. Ensure that any other equipment is properly isolated to avoid any ground loop problems.

Warranty

Arroyo Instruments warrants this product to be free from defects in material and workmanship under normal use and service for a period of one (1) year from date of shipment. It does not apply when the product has been misused, altered or damaged by accident or abnormal conditions of operation. If found to be defective during the warranty period, the product will either be repaired or replaced at Arroyo Instruments's option.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. ARROYO INSTRUMENTS SHALL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL, OR CONSEQUENTIAL DAMAGES RESULTING FROM THE PURCHASE OR USE OF ITS PRODUCTS.

Service and Support

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