



Arroyo Instruments 224B TEC TO Can Laser Mount User Manual

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Arroyo Instruments 224B TEC TO Can Laser Mount



Product Information

- **Specifications:**

- **Product Name:** 224B TEC TO-Can LaserMount
- **Manufacturer:** Arroyo Instruments
- Designed for high-performance and long-term use
- Supports 30mm CAGE systems
- Optional covers available for 1 lens tube systems and fiber pigtailed devices
- No wiring required thanks to configuration switches on the face of the fixture
- Finned design for efficient heat dissipation
- 8-32 and M4 threaded holes for post-mounting applications
- Compatible with Arroyo's LaserSource and TECSource instruments
- Industry-standard D-sub connectors and pin-outs for easy integration
- Banana plug for case ground

Product Usage Instructions

- **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.

Electrical Configurations:

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

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.

• Connection to Laser Diode Driver and TEC Controller:

- Next, connect the 224B LaserMount to your laser diode driver and temperature controller.
- If you are using Arroyo Instruments' LaserSource and TECSource products, we offer Laser and TEC cables specifically designed for direct connection.
- If you are using your own cables, ensure the connections are properly made between the instrument and the mount, and follow proper grounding techniques.
- The pin-out of the connectors can be found later in this document.

• Frequently Asked Questions (FAQ)

- **Q:** Can I use the 224B LaserMount with fiber pigtailed devices?
- **A:** Yes, the 224B LaserMount has an optional cover plate (p/n 224-C-03) designed specifically for use with fiber-pigtailed panel mount TO-can lasers.
- **Q:** Can I purchase additional cover plates for the 224B LaserMount?
- **A:** Yes, you can purchase additional cover plates separately. The available options include:
 - Standard Cover Plate (p/n 224-C-01): It has a single 0.27 (6.86mm) opening for laser beam exit and mounting holes for 30mm cage systems.
 - Opto-Mech Cover Plate (p/n 224-C-02): It has mounting holes for 30mm cage systems as well as 1 lens tube system.
 - Photos and additional information about the cover plates can be found later in this manual or online at www.arroyoinstruments.com.

Introduction

- Thank you for choosing the 224B TEC TO-Can LaserMount from Arroyo Instruments. The 224B LaserMount is designed for high performance and longterm use.
- The 224B 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 224B
- LaserMount covers a wide range of case temperature control needs.
- In addition to the standard cover, which includes support for 30mm CAGE systems, the 224B LaserMount has two optional covers: one which adds 1"
- lens tube systems, and another with a larger opening designed for fiber-pigtailed devices.
- The mount requires no wiring thanks to simple configuration switches conveniently located on the face of the fixture, and the 224B LaserMount is finned to provide the highest heat dissipation capability. Both 8-32 and M4 threaded holes are located on the bottom for post-mounting applications.

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

- Support for 30mm CAGE systems, even with the cover-off.
- Support for 1" lens tube systems when used with optional 224-C-02 cover.
- 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

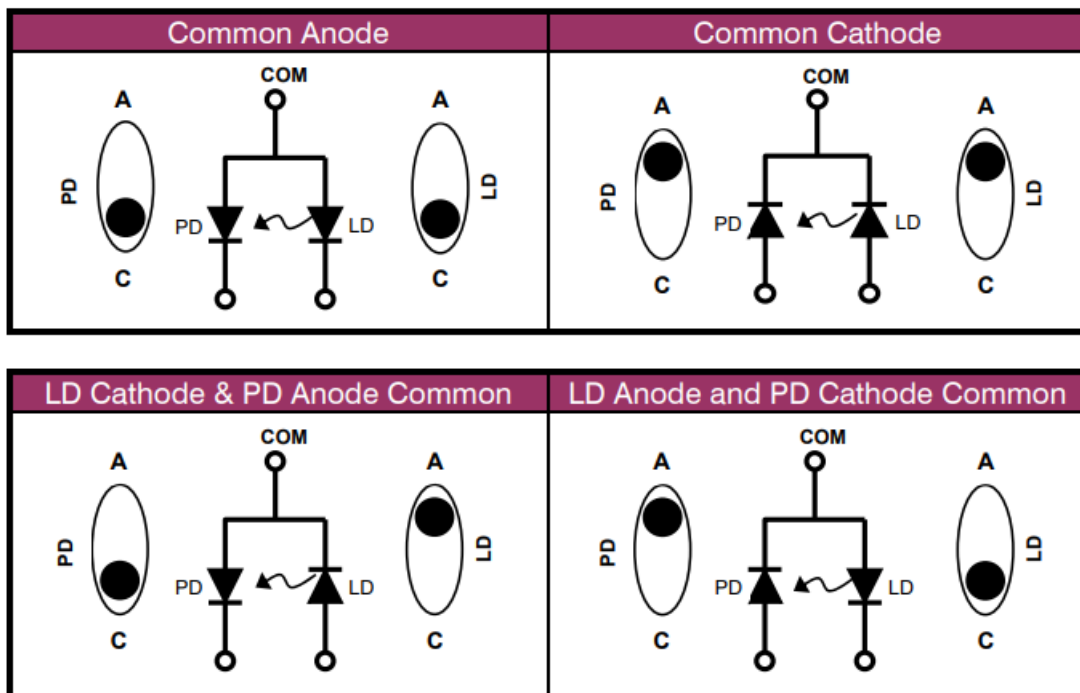
The 224B LaserMount comes standard with the 224-C-01 cover plate, which has a small opening for free-space devices, and a mounting pattern for 30mm CAGE systems. However, you can purchase additional cover plates separately, making your investment in the 224B LaserMount even more valuable. These include:

- Standard Cover Plate (p/n 224-C-01)
- This plate comes standard with the 224B. It has a single 0.27" (6.86mm) opening for laser beam exit and has mounting holes for 30mm cage systems.
- Opto-Mech Cover Plate (p/n 224-C-02) The Opto-Mech Cover Plate has mounting holes for 30mm cage systems as well as 1" lens tube systems.
- Fiber Pigtailed Cover Plate (p/n 224-C-03) The Fiber Pigtailed Cover Plate is designed for use with fiber-pigtailed panel mount TO-can lasers.

Photos and additional information about the cover plates are 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.



- 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 will have the photodiode cathode, and the right hole will 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 tied together through 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 224B with cover off

- **Connect to Laser Diode Driver and TEC Controller:** Next, connect the 224B 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 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 similarly.



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 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 two pictures below show the correct and improper use of the diode clamp:



**GOOD: Diode properly clamped,
clip is even with cold plate**



**BAD: Diode improperly clamped,
clip is uneven with cold plate**

The photos below illustrate the various clamps and covers.



5.6mm / 9mm TO-Can clamp



224-C-01 Cover Plate



224-C-02 Cover Plate



224-C-03 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 224B with the device loaded and the cover installed on a regular 224B.



224B 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 224B, the recommended flow rate is 1-2 SCFH. Your mount is now ready for use.



224 with 224-C-02 cover and CAGE system installed

The above CAGE system is comprised of four ER1.5 rods, one CP02 adapter plate, one S1TM09 lens adapter, and one C230TME-B aspheric lens, all available from Thorlabs, who carry an extensive line of CAGE components. Newport, Linos, and others also carry lens tube and CAGE systems.

Connector Pin-Outs



224B 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

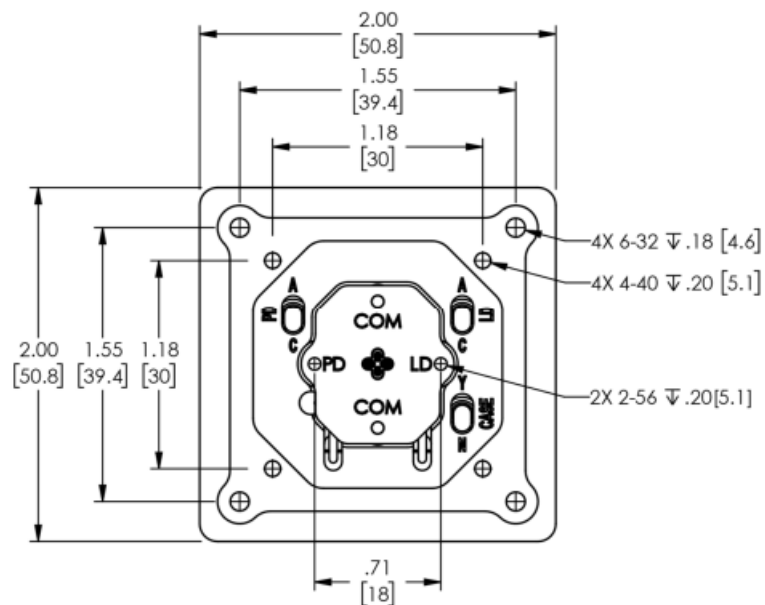
Technical Specifications

224B TEC TO-Can LaserMount	
LASER PACKAGE SUPPORTED	
Laser Package	5.6mm and 9mm TO-Can, 3 & 4 pin
Panel Mount Packages	12mm hole spacing
Pin Length	4.5mm to 20mm
Pin Diameter	0.35mm to 0.55mm
Maximum Current	3 Amps
TEMPERATURE CONTROL	
Temperature Range (°C)	+15 to +85
Sensor Type	10kΩ Thermistor
TE Module1	I _{max} = 3.1A
	V _{max} = 2.6V
Thermal Capacity	1.6W at 25°C
STANDARD COVER (224-C-01)	
Size (H x W x D) [in(mm)]	2.0 (50.8) x 2.0 (50.8) x 0.18 (4.57)
Mounting System(s)	30mm CAGE, 4-40 x 4 holes
OPTO-MECH COVER (224-C-02)	
Size (H x W x D) [in(mm)]	2.0 (50.8) x 2.0 (50.8) x 0.30 (7.62)
Mounting System(s)	30mm CAGE, 4-40 x 4 holes and
	1" lens tube (1.035"-40)
FIBER PIGTAIL COVER (224-C-03)	
Size (H x W x D) [in(mm)]	2.0 (50.8) x 2.0 (50.8) x 0.18 (4.57)
Mounting System(s)	None

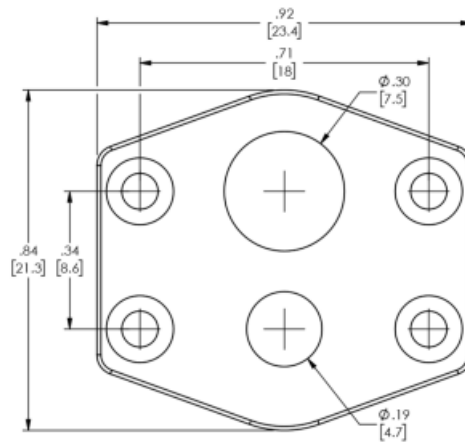
INPUT CONNECTOR	
Laser Diode	DB-9, male
Mount TEC	DB-15, male
Nitrogen	1/16" barb
GENERAL	
Grounding Plug	Banana jack
Size (H x W x D) [in(mm)]	2.0 (50.8) x 2.0 (50.8) x 1.94 (49.3) ²
Mounting holes	8-32 threaded hole
	M4 threaded hole

1. At 25°C
2. Depth is with no cover installed and excluding rear connectors.

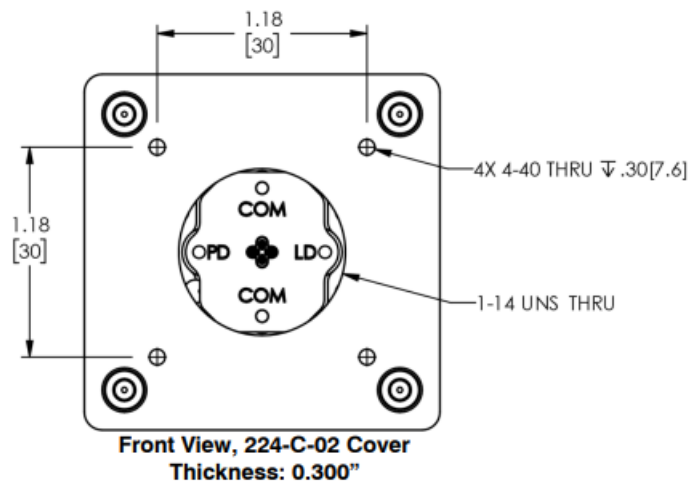
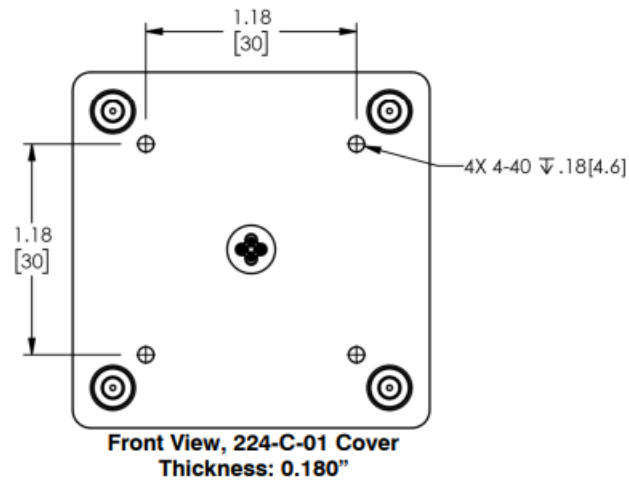
Mechanical Specifications

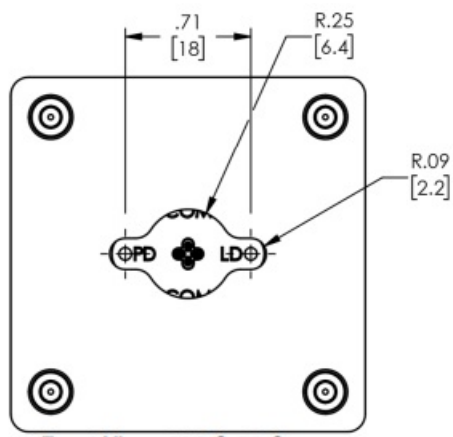


Front View, No Cover

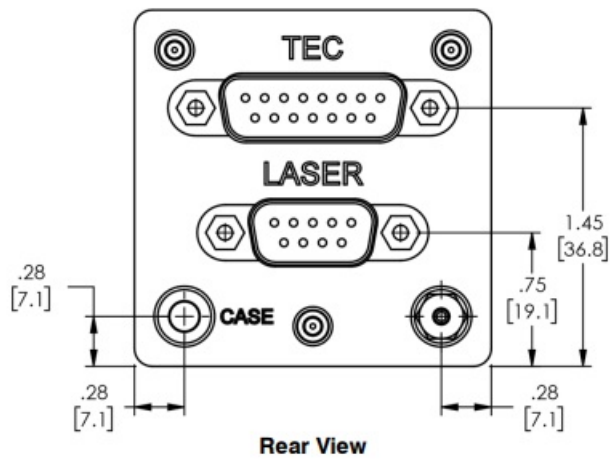


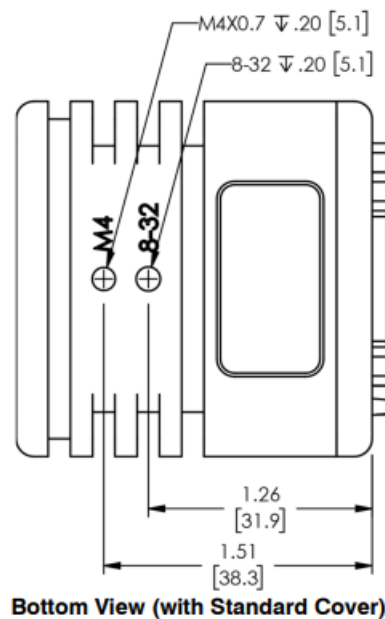
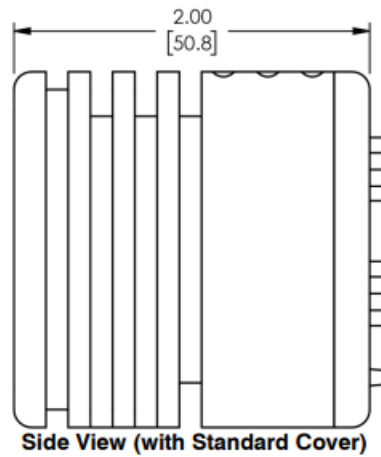
Device Clip (Scale 3x)





Thickness: 0.180"





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-the-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 the 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 it isolates 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 one (1) year from the 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 INSTEAD 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

For service and support, contact your local distributor or Arroyo Instruments.

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Documents / Resources

	<p>Arroyo Instruments 224B TEC TO Can Laser Mount [pdf] User Manual</p> <p>224B TEC TO Can Laser Mount, 224B, TEC TO Can Laser Mount, Can Laser Mount, Laser Mount, Mount</p>
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References

- [↗ Arroyo Instruments - Laser Diodes and Temperature Controllers](#)
- [User Manual](#)

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