

LaserMount™

213 & 215

USER'S MANUAL



DIL MOUNT
TEC DIL MOUNT

Table of Contents

Introduction	3
Installation and Use.....	4
Connector Pin-Outs	10
Technical Specifications	12
Mechanical Specifications	13
Laser Diode Protection.....	17
Warranty	18
Service and Support	18

Introduction

Thank you for choosing the **213** or **215 DIL LaserMount** from Arroyo Instruments. The **DIL LaserMount** is designed for high performance and long term use, with innovative features not found in other DIL mounts. The **213** and **215 DIL LaserMounts** provide the same functionality as our previous **212** and **214** mounts, but with significant new features.

An optional fan base is available that significantly increases the thermal performance of both the **213** and **215**. Simply remove the standard base and replace with the fan base, and either use an external 12V DC supply or the built-in fan supply of our **5240** or **5300 Series TECSource** temperature controllers to power the fan.

For applications requiring case temperature control, the **215** integrates a TEC (Peltier) cooler for precise control of the package temperature. With an operating range of -5°C to 85°C, the **215** should cover most of your case temperature control needs.

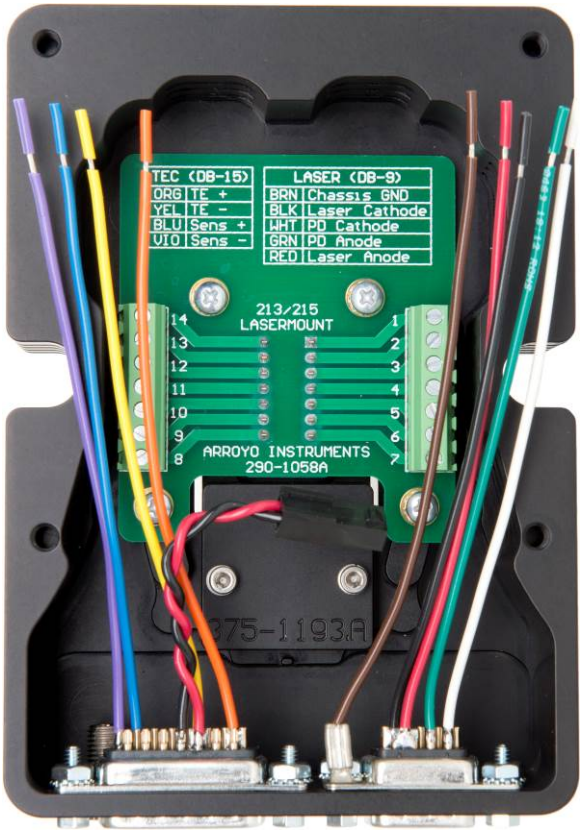
The **DIL LaserMount** also offers all the features you would expect from a modern DIL laser diode fixture, including:

- 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.
- Screw terminals for all 14 pins of the device, allowing for easy, solderless configuration of the fixture.
- The **215 TEC DIL LaserMount** features three standard connectors, eliminating the need for custom cabling to the two TEC interfaces.
- Optional fan base (p/n **200-FAN**) which significantly increases the efficiency of the heat sink.
- Optional fiber management tray (p/n **200-TRAY**) for managing the DIL's fiber output.
- Optional cover (p/n **200-C**), which improves the temperature stability of the system and provides protection for the device.

Installation and Use

Wiring the mount to your device

Start by configuring the wiring of the mount to match your DIL laser. To do this, remove the four screws from the bottom of the fixture and lift off the base plate. This will give you access to the screw terminals inside the fixture.



Internal Wiring Example

Using the wiring guide below, connect the wires to the appropriate pins of the DIL. The wires are color coded for easy identification.

Signal	Color
Laser Anode	Red
Laser Cathode	Black
Photodiode (PD) Anode	Green
Photodiode (PD) Cathode	White
Chassis Ground (GND)	Brown
TE (+)	Orange
TE (-)	Yellow
Thermistor	Blue
Thermistor	Violet

Fixture Wiring Guide

There is a black 2-pin connector for use with the optional 200-FAN fan base. If you will not be using the fan base, simply leave the connector loose inside the housing.

NOTE

Earth Grounding Considerations

The DB-9 and DB-15 connectors are electrically connected to the housing and 8mm banana jack. Depending on the wiring of your cables and instruments, this may or may not provide earth grounding of the fixture. Make sure the cable shell is earth grounded on both ends of the cable, and that the instrument makes connection from its connector to earth ground. If in doubt, you can also use a grounding strap from the 8mm banana jack directly to earth ground.

Using the Optional Fan Base

The optional fan base (p/n 200-FAN) replaces the existing bottom cover, so start by removing the four screws on the bottom of the fixture and setting the standard bottom cover aside. Before screwing on the fan base, you first need to plug the fan in. You will find a black, two-pin socket inside the fixture that is wired to the TEC (or Mount TEC for the **215**) connector. The fan base has a matching two-pin plug. It is easiest to place the mount on its back, insert the plug into the socket, and lower the fan base onto the mount. Take care that you do not pinch the fan wires (or any other wires) between the mount and the base.



215 with Optional Fan Base Installed

If you will be using the **5240** or **5300 Series** **TECSource** temperature controller to power the fan, make sure to use 1260B or 1262B cables, which have the additional connections for the fan power supply. Otherwise, you can use a 12V DC external power supply with a 2.1mm round DC power jack (center positive). It is possible to operate the fan as low as 6.5V if you would like to reduce the fan noise or vibration, but low fan speeds will reduce the thermal capacity of the mount.

Using the Optional Fiber Management Tray

The **213** and **215** offers an optional fiber management tray (p/n 200-TRAY), which makes managing excess fiber much simpler by providing a protected area to coil the fiber. Unlike other solutions that use ties to retain the fiber, our fiber tray has an upper lip that catches the fiber, retaining it gently without needing any ties. To install the tray, simply use the provided screws. Note that if you will be using the cover and screwing it down, you will need to install only the front two screws, as the socket head screws that come with the cover will use the rear two threaded holes.



Mount with Fiber Management Tray Installed

Using the Optional Cover

For applications that demand the best in thermal stability, a cover is available for the **213** and **215** to insulate the device from air currents that can otherwise cause instability in the device and cold plate. The cover also provides physical protection of the laser by preventing outside contact to the case or cold plate. Two alignment pins locate the cover on the mount and prevent it from sliding around when the screws are not installed. For more permanent installations, two socket head screws are provided that can bolt the cover to the mount to prevent removal and also add additional protection for the device. The cover can be used in conjunction with the fiber tray.



Mount with Cover Installed

Connecting to the Laser Diode Driver and TEC Controller

Next, connect the **DIL LaserMount** to your laser diode driver and temperature controller. For the **215 TEC DIL LaserMount**, you will need a second temperature controller for the case temperature control.

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

Remove any screws from the mounting plate. Open the ZIF socket by placing the lever in the up position, and insert your device. Using the two 4-40 screws provided with the mount, screw the DIL to the mounting plate, **but do not over-tighten, as you can strip the threads in the mounting plate.**

Lower the ZIF socket lever into horizontal position to make electrical contact with the laser.



Device Loaded

Your mount is now ready for use. Additional technical information can be found below.

Connector Pin-Outs



213 DIL LaserMount Connectors



215 TEC DIL 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
11	Fan+ (213 only, 215 no connection)
12	Fan- (213 only, 215 no connection)
5, 6, 9, 13 - 15	No connection

TEC DB-15 Connector Pin-Out

The **215** adds a second DB-15 connector for the Mount TEC, which pinned identically to the device's TEC except for the addition of two fan power pins:

DB-15 Pin	Description
1, 2	TE (+)
3, 4	TE (-)
7	Thermistor
8	Thermistor
11	Fan+
12	Fan-
5, 6, 9, 13 - 15	No connection

Mount TEC DB-15 Connector Pin-Out (215 Only)

Fan Power Connection

The optional fan base can be powered either through a 2.1mm round DC jack (center positive) located on the rear of the fan base, or via pins 11 & 12 on the Mount TEC DB-15 connector (see above). Using the DC jack will disconnect the DB-15 fan power connection, preventing simultaneous connection of two power supplies to the fan.

Technical Specifications

213 DIL LaserMount

LASER PACKAGE SUPPORTED	
Package	14-pin DIL, 8-pin Mini-DIL
INPUT CONNECTOR	
Laser Diode	DB-9, male
Laser TEC	DB-15, male
THERMAL PERFORMANCE	
Without fan base ¹	3.0°C/W
With fan base ¹	1.2°C/W

215 TEC DIL LaserMount

LASER PACKAGE SUPPORTED	
Package	14-pin DIL
TEMPERATURE CONTROL	
Temperature Range (°C) ²	-5 to +85
Sensor Type	10kΩ Thermistor
TE Module	I _{max} = 3.7A V _{max} = 3.6V
INPUT CONNECTOR	
Laser Diode	DB-9, male
Laser TEC	DB-15, male
Mount TEC	DB-15, male
THERMAL PERFORMANCE	
Without fan base ³	1.75W
With fan base ³	3W

Optional Fan Base

Connector	2.1mm round, center positive
Voltage / current	12V DC, 150mA

GENERAL

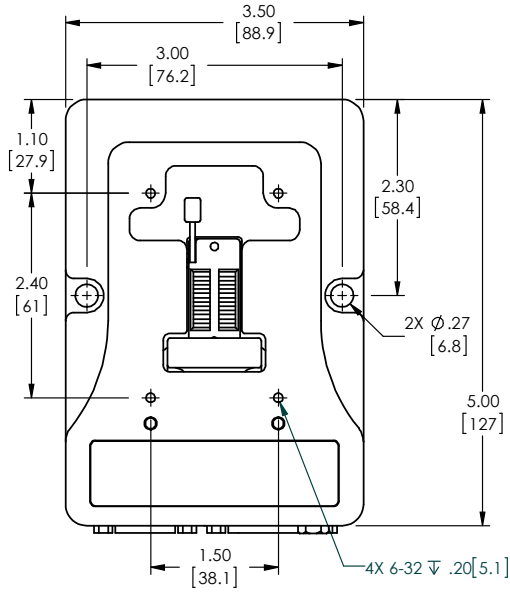
Size (H x W x D) [in(mm)]	2.15 (55) x 3.50 (89) x 5.00 (127)
Fixture mounting holes	¼-20 through-hole, 3" on center (x2)
Recommended device mounting screws	4-40 x ¼" socket head cap screw (maximum penetration depth ¼")

¹ At 25°C ambient

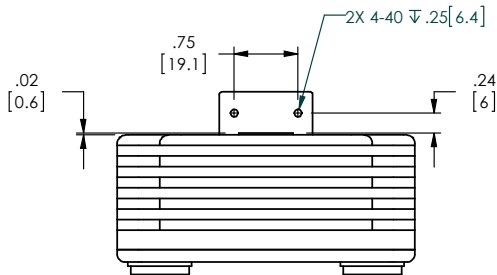
² Temperature control range is dependent on the power dissipated into the heat sink. Mounting fixture to an optical table will increase the heat dissipation capability.

³ At 0°C delta from ambient, 25°C ambient temperature

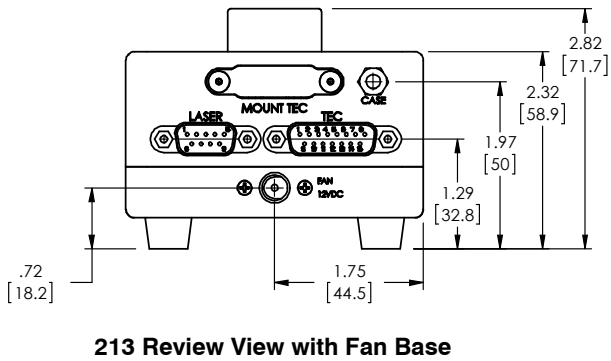
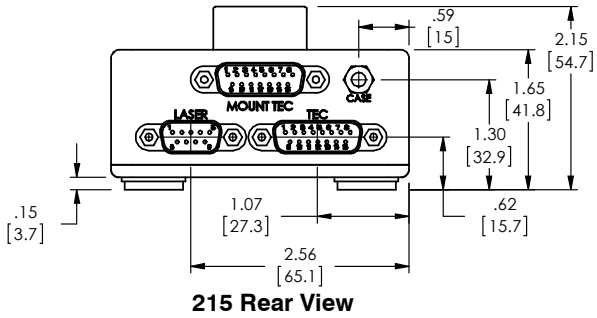
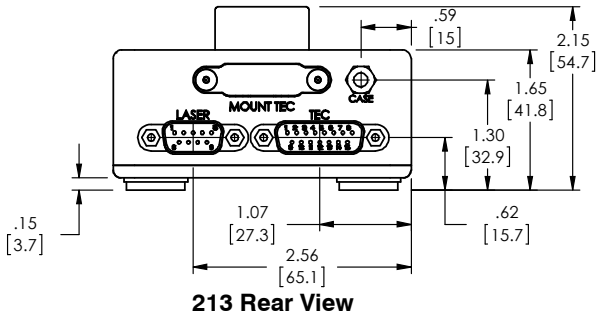
Mechanical Specifications

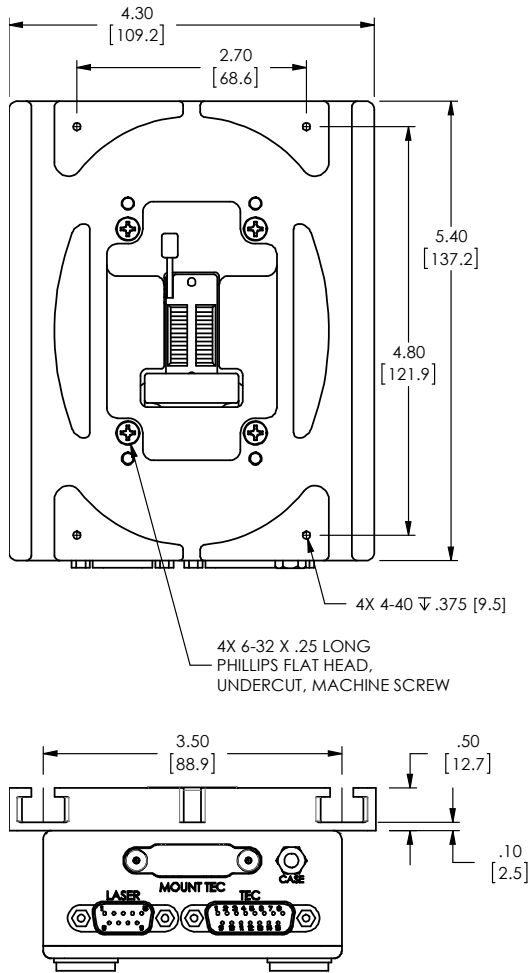


Top View

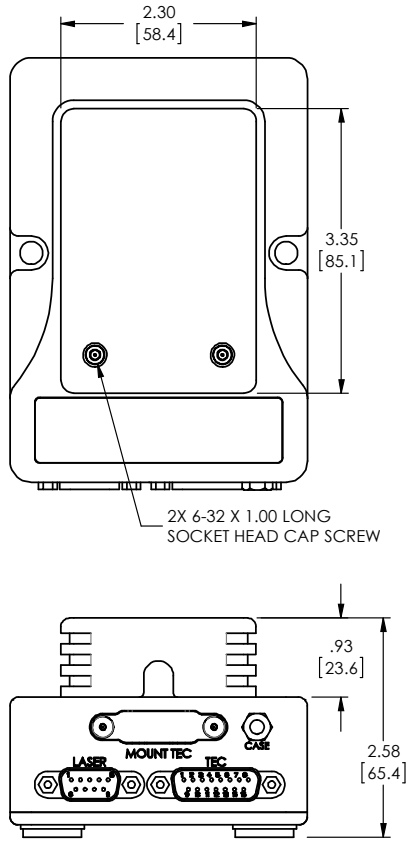


Detail View of Mounting Hole Pattern





213 with Fiber Tray



213 with Cover

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.

For additional ESD protection, adding 3.5 μ H (Mouser P/N 542-FB73-287) ferrite beads as close to the laser diode as possible is recommended. One ferrite bead should be used on each laser diode and photodiode diode anode and cathode, with the wire going through the bead at least twice (two turns).

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

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

Telephone: +1 (805) 543-1302
Facsimile: +1 (805) 543-1303
Email: support@arroyoinstruments.com
Web: <http://www.arroyoinstruments.com>
Address: 624 Clarion Court
San Luis Obispo, CA 93401
USA

NOTES:



624 Clarion Court, San Luis Obispo, CA 93401

Tel: (805) 543-1302 Fax: (805) 543-1303

sales@arroyoinstruments.com

www.arroyoinstruments.com