

# User's Guide

## 16-Channel Laser Diode Mount LDM-4616



 **ILX Lightwave**<sup>®</sup>  
A Newport Corporation Brand

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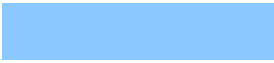
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# SAFETY AND WARRANTY INFORMATION

The Safety and Warranty Information section provides details about cautionary symbols used in the manual, safety markings used on the instrument, and information about the Warranty including Customer Service contact information.

## Safety Information and the Manual

Throughout this manual, you will see the words *Caution* and *Warning* indicating potentially dangerous or hazardous situations which, if not avoided, could result in death, serious or minor injury, or damage to the product. Specifically:

### CAUTION

Caution indicates a potentially hazardous situation which can result in minor or moderate injury or damage to the product or equipment.

### WARNING

Warning indicates a potentially dangerous situation which can result in serious injury or death.

### WARNING

Visible and/or invisible laser radiation. Avoid direct exposure to the beam.

## General Safety Considerations

If any of the following conditions exist, or are even suspected, do not use the instrument until safe operation can be verified by trained service personnel:

- Visible damage
- Severe transport stress
- Prolonged storage under adverse conditions
- Failure to perform intended measurements or functions

If necessary, return the instrument to ILX Lightwave, or authorized local ILX Lightwave distributor, for service or repair to ensure that safety features are maintained (see the contact information on page ix).

All instruments returned to ILX Lightwave are required to have a Return Authorization Number assigned by an official representative of ILX Lightwave Corporation. See Returning an Instrument on page vii for more information.

# SAFETY SYMBOLS











This section describes the safety symbols and classifications.

Technical specifications including electrical ratings and weight are included within the manual. See the Table of Contents to locate the specifications and other product information. The following classifications are standard across all ILX Lightwave products:

- Indoor use only
- Ordinary Protection: This product is NOT protected against the harmful ingress of moisture.
- Class I Equipment (grounded type)
- Mains supply voltage fluctuations are not to exceed  $\pm 10\%$  of the nominal supply voltage.
- Pollution Degree II
- Installation (overvoltage) Category II for transient overvoltages
- Maximum Relative Humidity:  $< 80\%$  RH, non-condensing
- Operating temperature range of  $0\text{ }^{\circ}\text{C}$  to  $40\text{ }^{\circ}\text{C}$
- Storage and transportation temperature of  $-40\text{ }^{\circ}\text{C}$  to  $70\text{ }^{\circ}\text{C}$
- Maximum altitude: 3000 m (9843 ft.)
- This equipment is suitable for continuous operation.

## Safety Marking Symbols

This section provides a description of the safety marking symbols that appear on the instrument. These symbols provide information about potentially dangerous situations which can result in death, injury, or damage to the instrument and other components.

	Caution, refer to manual		Earth ground Terminal		Alternating current		Visible and/or invisible laser radiation
	Caution, risk of electric shock		Protective Conductor Terminal		Caution, hot surface		Frame or chassis Terminal
	On: In position of a bistable push control. The slash (I) only denotes that mains are on.				Off: Out position of a bistable push control. The circle (O) only denotes that mains are off.		
or (I)				or (O)			



# WARRANTY

ILX LIGHTWAVE CORPORATION warrants this instrument to be free from defects in material and workmanship for a period of one year from date of shipment. During the warranty period, ILX will repair or replace the unit, at our option, without charge.

## Limitations

This warranty does not apply to fuses, lamps, defects caused by abuse, modifications, or to use of the product for which it was not intended.

This warranty is in lieu of all other warranties, expressed or implied, including any implied warranty of merchantability or fitness for any particular purpose. ILX Lightwave Corporation shall not be liable for any incidental, special, or consequential damages.

If a problem occurs, please contact ILX Lightwave Corporation with the instrument's serial number, and thoroughly describe the nature of the problem.

## Returning an Instrument

If an instrument is to be shipped to ILX Lightwave for repair or service, be sure to:

- 1 Obtain a Return Authorization number (RA) from ILX Customer Service.
- 2 Attach a tag to the instrument identifying the owner and indicating the required service or repair. Include the instrument serial number from the rear panel of the instrument.
- 3 Attach the anti-static protective caps that were shipped with the instrument and place the instrument in a protective anti-static bag.
- 4 Place the instrument in the original packing container with at least 3 inches (7.5 cm) of compressible packaging material. **Shipping damage is not covered by this warranty.**
- 5 Secure the packing box with fiber reinforced strapping tape or metal bands.
- 6 Send the instrument, transportation pre-paid, to ILX Lightwave. Clearly write the return authorization number on the outside of the box and on the shipping paperwork. ILX Lightwave recommends you insure the shipment.

If the original shipping container is not available, place your instrument in a container with at least 3 inches (7.5 cm) of compressible packaging material on all sides.

Repairs are made and the instrument returned transportation pre-paid. Repairs are warranted for the remainder of the original warranty or for 90 days, whichever is greater.

### **Claims for Shipping Damage**

When you receive the instrument, inspect it immediately for any damage or shortages on the packing list. If the instrument is damaged, file a claim with the carrier. The factory will supply you with a quotation for estimated costs of repair. You must negotiate and settle with the carrier for the amount of damage.



### Comments, Suggestions, and Problems

To ensure that you get the most out of your ILX Lightwave product, we ask that you direct any product operation or service related questions or comments to ILX Lightwave Customer Support. You may contact us in whatever way is most convenient:

Phone ..... (800) 459-9459 or (406) 586-1244

Fax ..... (406) 586-9405

On the web at: ..... ilx.custhelp.com

Or mail to:

ILX Lightwave Corporation  
P. O. Box 6310  
Bozeman, Montana, U.S.A 59771  
www.ilxlightwave.com

When you contact us, please have the following information:

Model Number: \_\_\_\_\_

Serial Number: \_\_\_\_\_

End-user Name: \_\_\_\_\_

Company: \_\_\_\_\_

Phone: \_\_\_\_\_

Fax: \_\_\_\_\_

Description of what is connected to the ILX Lightwave instrument:  
\_\_\_\_\_

Description of the problem:  
\_\_\_\_\_

If ILX Lightwave determines that a return to the factory is necessary, you are issued a Return Authorization (RA) number. Please mark this number on the outside of the shipping box.

You or your shipping service are responsible for any shipping damage when returning the instrument to ILX Lightwave; ILX recommends you insure the shipment. If the original shipping container is not available, place your instrument



## WARRANTY

in a container with at least 3 inches (7.5 cm) of compressible packaging material on all sides.

We look forward to serving you even better in the future!

# INTRODUCTION AND SPECIFICATIONS

---

This manual describes the LDM-4616 and LDM-4616DFB 16-Channel Laser Diode Butterfly Mounts and related accessories and options, and explains their operation.

Please read the entire manual to familiarize yourself with the operation of your LDM-4616 Laser Diode Mount before installing laser diodes. In particular, you should read the section on Electrical Connections before installing a laser diode. The information contained in that section is necessary to provide correct electrical connection to your particular laser

**Note:** When unpacking the mount, be sure to save the packaging in case you have to return the mount to ILX Lightwave or ship it elsewhere. Shipping damage is not covered under the standard warranty.

## Product Overview

The LDM-4616 Laser Diode Mount allows convenient mounting for up to 16 lasers in 14-pin butterfly (“flat-pack”) packages. Configurable pin headers (terminal blocks) must be wired properly to accommodate your particular laser pin configuration, unless you have the LDM-4616DFB version which has a fixed pin configuration. Four integrated fiber spools manage excess pigtail fiber. Fiber optic mating adapters on the front panel can be changed to match your fiber connector style. The mating adapters can be replaced with rubber grommets for feeding fiber directly through the front panel. Any unused ports can be covered with the plugs supplied in the shipping kit. The LDM-4616 was designed to install in a standard 19” rack with slide rails that allow easy access to your lasers. There is a large finned heat sink and removable cover included.

Standard ILX Lightwave cables, which are terminated with paired 9-pin D-sub connectors, connect easily to any ILX Lightwave current source and temperature controller. The mount was specifically designed to enhance the value of ILX Lightwave’s LDC-3916 16-Channel Laser Diode Controller. Electrical signals are bussed from 9-pin D-sub connectors on the back of the mount to the configurable

pin headers. Wiring is provided for controlling the lasers internal thermo-electric modules as well as laser drive current.

The LDM-4616 mount housing is grounded through pin 3 on the 9-pin D-sub connector for the Channel 1 current source. The housing tray includes a grounding receptacle for a wrist strap, as well as a grounded laser tray cover.

### CAUTION

**Pin 3 of the 9-pin D-sub connector for Channel 1 laser current must be connected to ground for the mount chassis to be grounded. Standard ILX Lightwave cables and instruments will have the laser connector pin 3 connected to chassis ground.**

## Shipping Kit

When you receive your LDM-4616 or LDM-4616DFB Laser Diode Mount, verify that the following items were included with the shipping kit:

- (1x) 5/64" hex socket wrench
- (1x) 3/32" hex socket wrench
- (1x) 2.5 mm x 2" screwdriver (LDM-4616 only)
- (32x) 2-56 x 3/16" screws
- (16x) metal plugs for front panel holes
- (16x) 9-wire packs for configuring pin headers (LDM-4616 only)

## Available Options and Accessories

DESCRIPTION	MODEL NUMBER
16 Channel Laser Diode Butterfly Mount with configurable pins	LDM-4616
16 Channel Laser Diode Butterfly Mount with fixed pin configuration	LDM-4616DFB
Right Side DIL Laser Diode Mount Module	LDM-4604/RDIL
Left Side DIL Laser Diode Mount Module	LDM-4606/LDIL
Right Side Butterfly Laser Diode Mount Module	LDM-4604/RBFY
Left Side Butterfly Laser Diode Mount Module	LDM-4606/LBFY
Right Side Fixed Pin-Out DFB Butterfly Laser Diode Mount Module	LDM-4604/RDFB
Left Side Fixed Pin-Out DFB Butterfly Laser Diode Mount Module	LDM-4604/LDFB
16 Channel Laser Diode Mount Chassis	LDM-4600
Slide Rail Rack Mounting Kit (20.5" hole spacing)	RM-141
Slide Rail Rack Mounting Kit (25" hold spacing)	RM-142
Mating Adapter: FC-APC / FC-APC, Wide / Wide keys = N/N = 2.15mm / 2.15 mm	MA-401
Mating Adapter: FC-APC / FC-APC, Narrow / Wide keys = R/N = 2.05mm / 2.15 mm	MA-402
Mating Adapter: FC-APC / FC-APC, Narrow / Narrow keys = R/R = 2.05mm / 2.05 mm	MA-403
Mating Adapter: FC-APC / SC-APC, Wide key = N = 2.15mm	MA-404
Current Source to Mount Interconnect Cable	CC305S
Rack Optimized 8-cable Bundle (CS to Mount)	CC316M
TEC to Mount Interconnect Cable	CC505S
Rack Optimized 8-cable Bundle (TEC to Mount)	CC516M

## Additional Configuration

In addition to the butterfly packaged laser mount shown in this manual, other mounting options are available. Please contact ILX Lightwave for information on other mount configurations, such as DIL packaged modules, etc.

## Specifications

<b>Laser Package Styles Supported</b>	
14-pin Butterfly, DIL and Mini-DIL	
<b>Laser Package Socket</b>	
16 Zero Insertion Force (ZIF) sockets	
LDM-4616 has user configurable pin-headers (terminal blocks) for configuring multiple laser pin-outs	
LDM-4616DFB has the following fixed pin configuration:	
Pin 1: Thermistor	Pin 8: Laser Anode (case)
Pin 2: Thermistor	Pin 9: Laser Anode (case)
Pin 3: Laser Cathode	Pin 10: Laser Anode (case)
Pin 4: PD Monitor Anode (-)	Pin 11: Laser Anode
Pin 5: PD Monitor Cathode (+)	Pin 12: N/C (float)
Pin 6: TEC (+)	Pin 13: Laser Anode
Pin 7: TEC (-)	Pin 14: Laser Anode (case)
<b>Electrical Input Specifications</b>	
Maximum Laser Current	3 Amps
Maximum TEC Current	3 Amps
<b>Input Connectors</b>	
Current Source	9-pin, D-Sub, female (16 on top)
Temperature Controller	9-pin, D-Sub, male (16 on bottom)
<b>Thermal</b>	
Sockets are thermally connected to a finned heat sink.	
Thermal Resistance:	0.41 °C/Watt (natural convection in open space)
	0.17 °C/Watt (moving air in thermal chamber)
<b>General</b>	
Size	3.38" x 18.97" x 23.9" (including drawer slides) 86mm x 482mm x 607mm 2U high in standard 19" rack
Tray Depth	17.52" plus 1" handle
Weight	12.7 kg (28 pounds)

In keeping with our commitment to continuous improvement, ILX Lightwave reserves the right to change specifications without notice and without liability for such changes.

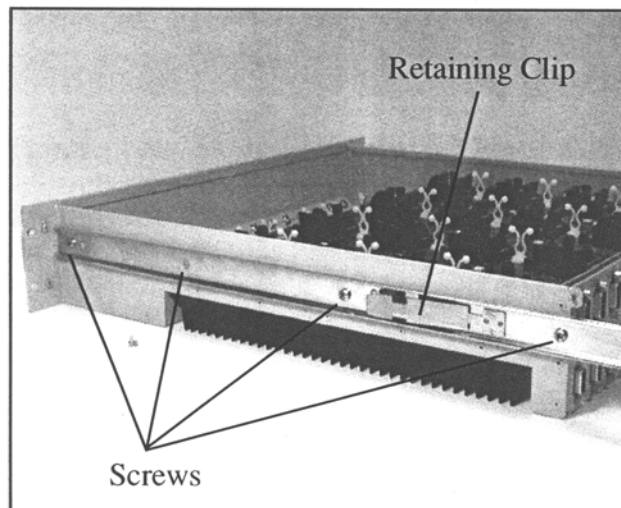


## RACK MOUNTING INSTRUCTIONS

The LDM-4616 Laser Diode Mount was designed to be installed in standard 19" wide racks using slide rails for easy access. There are two different ILX Lightwave rack mounting kits for two depths of racks. The RM-141 rack mounting kit is for racks with 20.5" spacing depth on the rack frame. The RM-142 is for racks with 25" spacing depth on the rack frame.

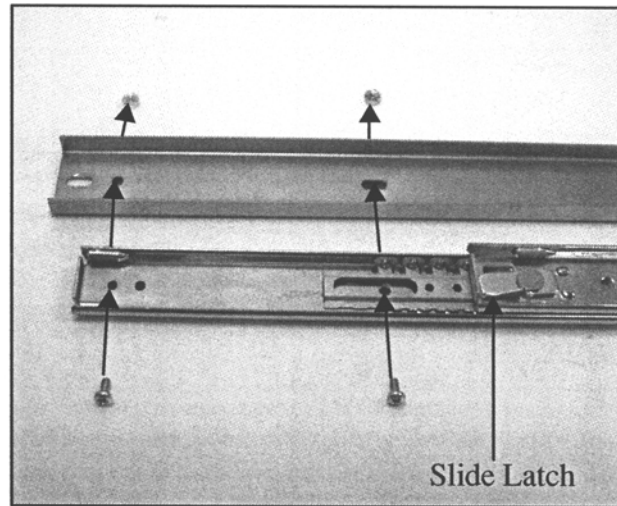
### Installation Instructions for Rack Mounting Kits

Remove the pullout members from both drawer slides by extending the inner most section to its maximum and then depressing the retaining clip while sliding the pieces apart. Attach the two pullout members to each side of the LDM-4616 with the eight 8-32 x 3/16" pan head Phillips screws. See Figure 2.1.



**Figure 2.1** Attach Pullout Members to Mount

Attach the drawer slides to the fram rails using four of the 8-32 x 3/8" pan head Phillips screws and 8-32 hex nuts. Make sure the correct holes are lined up. See Figure 2.2 You may need to push on the drawer slide latch to release the sliding mechanism.



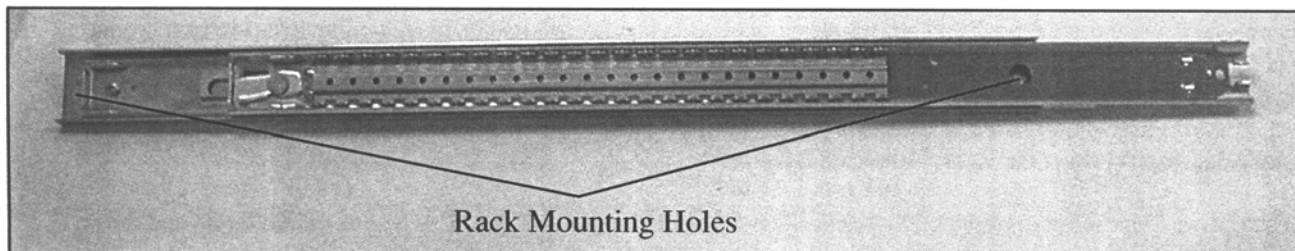
**Figure 2.2** Attach Drawer Slides to Frame Rails

If you want to secure your LDM-4616 mount shut in the rack so it does not slide open, install the two 10-32 speed nuts to the front vertical columns of the rack. Mounting location would be in the same horizontal plane as the drawer/frame slides. This allows the LDM-4616 to be secured shut in the rack with the two 10/32 x 1/2" ornamental screws when desired.

Next, mount the slide assemblies to the vertical columns of the rack using four of the 8-32 x 3/8" pan head Phillips screws and 8/32 hex nuts. The slide mechanism will have to be moved back and forth until you see the mounting hole in the frame rail through the large hold in the drawer slide. See Figure 2.3.

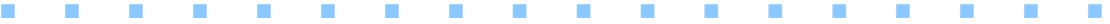
Carefully insert the pullout members on the LDM-4616 into the drawer slides within the rack. Note the initial insertion into the rack will seem tight. Smooth easy travel should resume after initial insertion.

If removal from the rack is required, pull the LDM-4616 out to its maximum extension and depress the retaining clips which are exposed on each pullout member, allowing for removal.



**Figure 2.3** Mount Slide Assemblies to Rack



**OPERATION**

This chapter describes the electrical configuration and mounting of laser diodes.

 **CAUTION**

The LDM-4616 features pin configuration headers (terminal blocks) for each socket within the mount. These headers allow various laser pin-outs to be used. It is extremely important that you verify that the configurations of the headers are correct for your laser types (pin-outs). Incorrect wiring of these headers may result in failure or damage to the laser devices. Before installing your lasers, refer to the instructions below for details on how to correctly configure your mount. The LDM-4616DFB has a fixed pin configuration. For the LDM-4616DFB version, verify that your laser pins match the fixed pin-out.

## Connecting the LDM-4616 Mount to a Laser Diode Controller

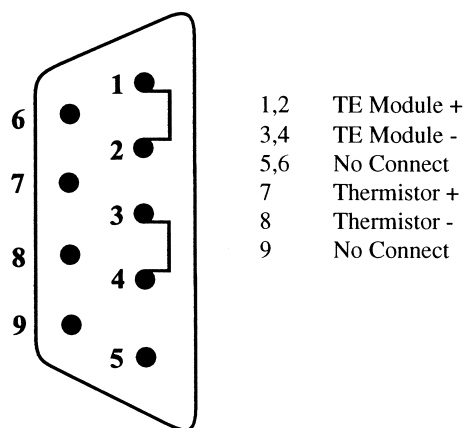
The LDM-4616 Laser Diode Mount electrical connectors are compatible with current sources and temperature controllers manufactured by ILX Lightwave when standard ILX Lightwave cables are used. The 9-pin D-sub connectors have standard ILX Lightwave pin-outs. If you are using any other laser driver, use extreme caution when connecting the cables from the mount to the driver. Check the pin-outs of the laser driver and temperature controller for compatibility with this mount before connecting the mount.

Note that ILX Lightwave current sources employ a system interlock feature, in compliance with Federal CDRH requirements. The interlock pins 1 and 2 on ILX Lightwave current sources must be connected together before current can flow from the source. ILX Lightwave's Model CC305S interconnect cable contains a jumper between these two pins and therefore no special action is necessary if this cable is used.

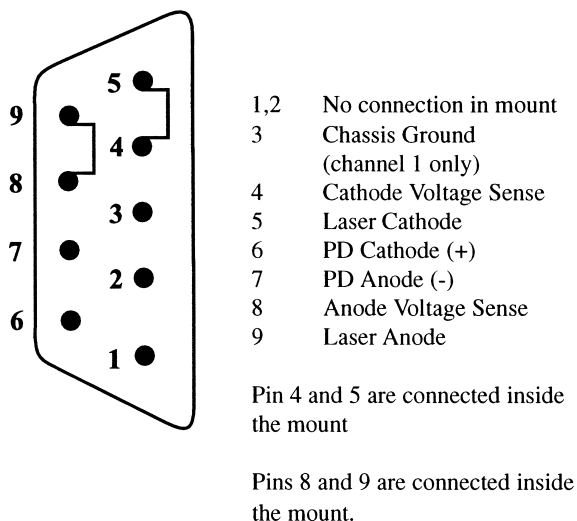
Proper shielding of the current source and temperature controller signals is necessary to ensure proper low-noise performance and immunity to radiated transients. Based on findings from laboratory testing at ILX Lightwave, we have

created a unique twisted-pair cable with braided outer shield. The Model CC305S cable has been designed to provide the best possible rejection of most noise signals. Although every situation is different, we feel that this cable provides the best shielding over the widest range of laboratory conditions.

The mount chassis is grounded through pin 3 of the Channel 1 laser connector. This pin must be grounded to ground the mount chassis. Standard ILX Lightwave cables and laser current sources ground pin 3 automatically. The pin-out configurations of the 9-pin D-sub connectors on the LDM-4616 mount are shown below in Figures 3.1 and 3.2.



**Figure 3.1** Back Panel TEC Connector



**Figure 3.2** Back Panel Laser Connector

 **CAUTION**

**Pin 3 of the 9-pin D-sub connector for the Channel 1 laser current must be connected to ground for the mount chassis to be grounded. Standard ILX Lightwave cables and instruments will have the laser connector pin 3 connected to ground.**

## Configuring the Pin Headers to Match Your Laser Pin-Out

This section does not apply to the LDM-4616DFB version which has a fixed pin configuration. The DFB version has “DFB” printed on the circuit board which can be seen through the finger holes in the front of the laser sockets. If you have the DFB version, verify your lasers have the same pin configurations as listed in Chapter 1.

The LDM-4616 mount is equipped with electrical pin configuration headers (terminal blocks) which allow the mount to be used with various laser diode pin-outs. These headers must be configured before mounting your lasers. Wires are included with the LDM-4616 shipping kit for configuring the headers.

First, remove the mount tray cover by lifting up on the finger tabs, then pull the cover toward you. It will slip off the hinge pins. There are four laser mounting modules in the tray. Each module consists of four butterfly sockets on a pedestal which is connected to a printed circuit board (PCB). There is a black plastic cover with two finger holes in the PCB. Numbers on the black plastic coincide with the channel numbers on the back of the mount. There are three fiber management clips in the black plastic.

To configure a module, remove the eight screws that are recessed into the black plastic with a 3/32" hex socket wrench (supplied in the shipping kit). See Figure 3.3.

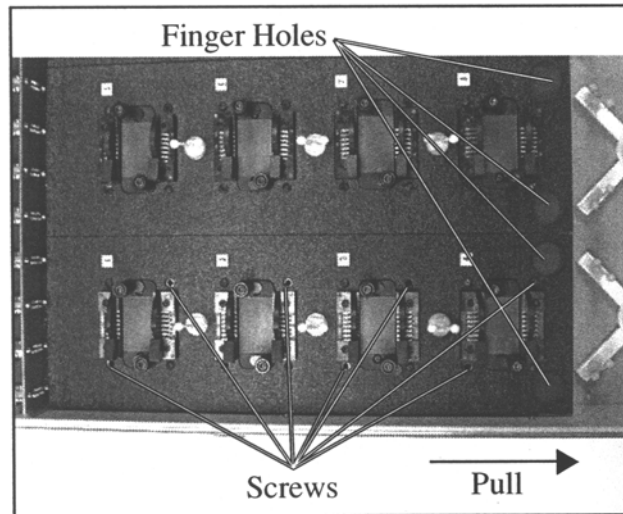


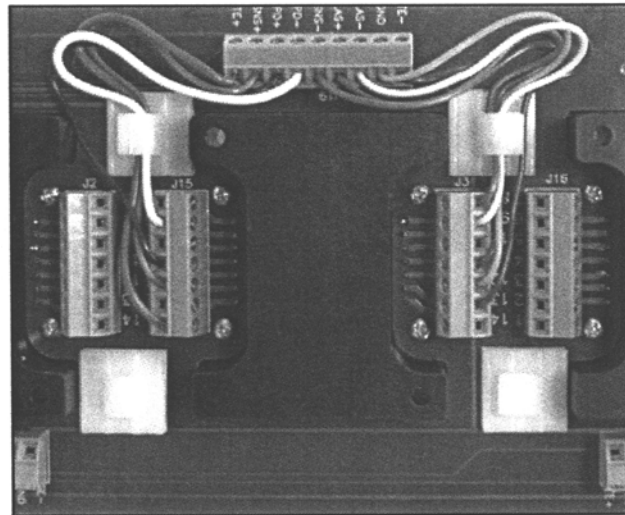
Figure 3.3 Removing Screws and Pulling the Module Forward

Using the finger holes, pull the module straight toward the front of the mount to disengage the electrical connector at the back of the circuit board. **Do not lift up on the module or you could break the electrical connector.** When the connector disengages, you can remove the module from the tray. It may be easier to configure the mount if you remove the three fiber management clips. To remove the clips, turn them 45 degrees and pull them out.

The next step is to configure the pins for each socket using the wires supplied with the LDM-4616 shipping kit. On the bottom of the module are three pin headers for each of the four sockets. Two of the three headers are labeled with laser package pin numbers and the third header is labeled with electrical connections from the back panel inputs. Put one wire into the electrical connection header and tighten the screw in that header location to secure the wire. Place the other end of the wire into the header slot corresponding to the pin-out number for your particular laser and tighten the retaining screw.

To facilitate routing, wires can be secured in the wire management clips. **Route the wires around the black pedestal and below the surface of the pedestal so they will not interfere with replacing the module in the mount.** See Figure 3.4. The surface of the pedestal sits flush on the heat sink when assembled back in the mount tray. Repeat the process until all connections are made for each laser socket.





**Figure 3.4** Configuring Pin Headers

Please note that some pins on the package may have multiple functions. These pins are usually a common ground and one or two other functions, and there are typically more than one per package. Do not be concerned if one or more of these common pins are left unconnected. Simply verify that each of the functions (laser anode and cathode, photodiode anode and cathode, TE module anode and cathode, and two thermistor terminals) have the correct termination and polarity.

After configuring all four sockets (if needed), replace the module. Set the module flat in the tray and push straight back until the electrical connector seats firmly. **Do not lift up on the module or you could break the electrical connector.** Replace the eight screws that you removed earlier. We recommend starting all eight screws before tightening them. Do not over tighten these screws. Replace any fiber management clips that you removed by inserting them into the holes and turning them 45 degrees.

Repeat the procedure for the other three modules (if needed). When replacing the modules, be sure they are returned to the proper location:

- number 1 socket is on the back left as you stand in front of the mount
- number 5 is in back second from left
- number 9 is in back third from left
- number 13 is in the back right corner

Different types of lasers can be used in each socket, but it is imperative that each socket is properly configured for the specific laser that will be used in that socket. If the previous information does not adequately explain how to configure the mount for your laser, or if you are not sure if your electrical configuration is correct, do not operate the laser. Call Customer Service at ILX Lightwave for further information and instructions.

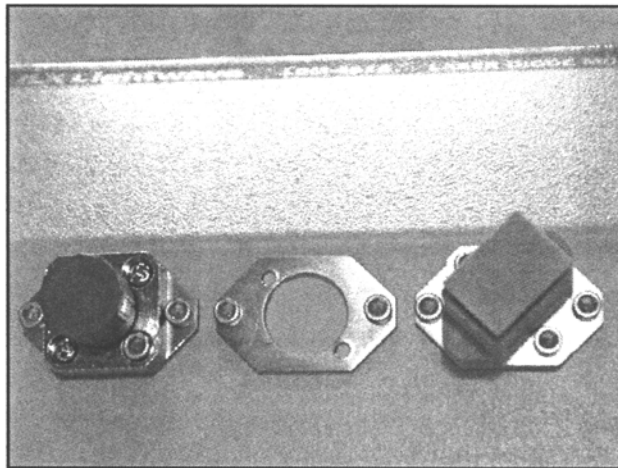
## Front Panel Fiber Optic Mating Adapters

The front panel of the LDM-4616 mount has 16 holes with adapter plates installed that will secure mating adapters with a standard square flange configuration (“FC flange” type). Many different “FC flange” type mating adapters are available to accommodate several different types of fiber optic connectors. ILX Lightwave stocks some of the most common types of mating adapters. See the Accessories List in Chapter 1 or contact ILX Lightwave for the latest list.

If you prefer to run your optical fiber directly through the front panel holes, rubber grommets are supplied in the shipping kit to protect your fiber. See the instructions on passing fiber connectors through the front panel holes. Metal plugs are supplied with the shipping kit to cover unused front panel holes.

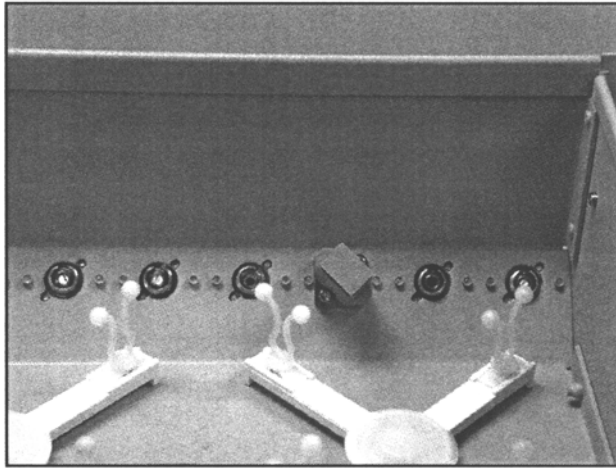
### Changing the Front Panel Mating Adapters

The LDM-4616 shipping kit includes thirty-two 2-56 x 3/16” screws to attach mating adapters to the front panel. Screw the selected mating adapters to the front panel with the key slot facing up using the 5/64” hex socket wrench supplied in the shipping kit. See Figure 3.5. Do not overtighten the screws. Leave the dust caps on any mating adapter connection not in use.



**Figure 3.5** Attaching Mating Adapters to the Front Panel

There may be certain instances when you want to put a mating adapter on the inside of the mount tray. For instance, if your laser has an SC connector, and your fiber patch cord has an FC connector, the adapter needs to be attached inside the mount. See Figure 3.6.



**Figure 3.6** Attaching Mating Adapters Inside

### Passing Fiber Through the Front Panel

Fiber can be passed directly through the front panel holes of the LDM-4616. We recommend putting the rubber grommets from the shipping kit in the holes to protect your fiber. If your fiber has an FC, ST, or SC connector on it, you can pass the connector through the front panel holes with the grommets removed. With an SC connector, you also need to remove the adapter plate with the 3/32" hex socket wrench supplied in the shipping kit. After passing the connector through the hole, slip the sliced rubber grommet around the fiber and push the grommet into the hole to protect your fiber. See Figure 3.7.

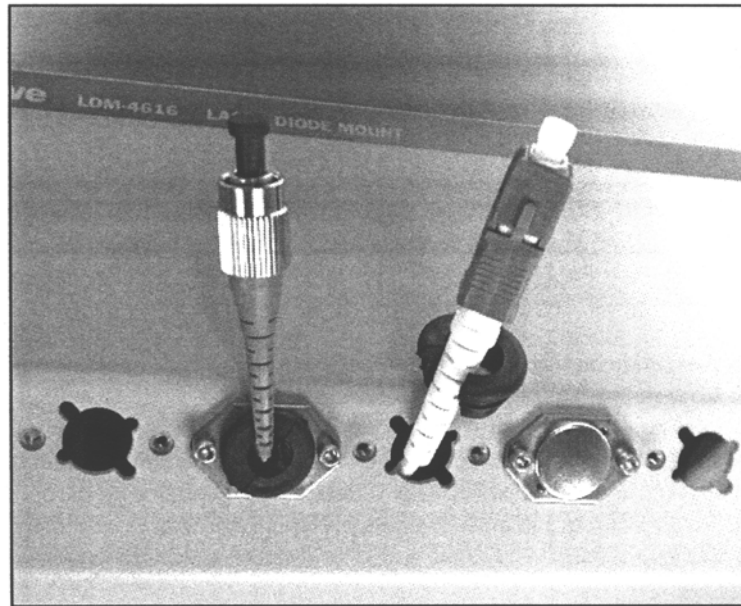


Figure 3.7 Rubber Grommets Protect Fiber Pass Through

## Mounting Your Laser Diodes

Prior to inserting your lasers, connect your current sources to the mount. When the mount and an ILX Lightwave current source are properly connected, the laser cathode and anode connections are shorted through the current source. This minimized the risk of damage to the laser from electrostatic discharge and also supports other laser safety features of the ILX Lightwave laser diode drivers.

Pin 3 of the Channel 1 laser current connector grounds the mount chassis, so this pin must be connected properly for the mount to be grounded. After installing your laser, replace the tray cover. The cover improves thermal stability and helps provide shielding from radiated noise and transients in your laboratory.

The LDM-4616 mount is equipped with a grounding connection on the right side of the front panel which is electrically connected to the chassis of the mount. We strongly recommend that you electrically ground yourself with a wrist strap. By plugging in a conductive wrist strap with a standard banana jack, you are assured of having your body at the same potential as the mount chassis.

 **CAUTION**

The LDM-4616 features pin configuration headers (terminal blocks) for each socket within the mount. These headers allow various laser pin-outs to be used. It is extremely important that you verify that the configuration of each header is correct for the specific laser used in that socket. Incorrect wiring of these headers may result in failure or damage to the laser devices. Before installing your lasers, refer to the instructions above for details on how to correctly configure your mount.

Laser diodes are extremely susceptible to damage caused by electrostatic discharge and surge currents. To avoid early failure or damage to the device, workers and work benches must be grounded at all times when handling or working with laser diodes. Refer to ILX Lightwave Application Note #3, “Protecting Your Laser Diode”, for more information.

## Inserting Your Laser

To mount a butterfly-packaged laser diode in the mount, using the following steps (refer to Figure 3.8).

- 1 Turn the laser hold down clamps outward so they do not interfere with inserting the laser package.
- 2 Open both lead clamps by releasing the latches and lifting the contact arms.
- 3 Holding the laser package by the corners, carefully lower the laser onto the heat sink, while aligning the laser leads with the appropriate contacts. **Insure that the laser package is not backwards.**
- 4 The pigtails point toward the center of the mount: the laser pigtails in the two left modules point right and the laser pigtails on the two right modules point left. **Insure that each laser goes in a socket that was configured for the proper pin-out.**

Some laser packages have leads that reside high above the bottom of the package (i.e. 7.6 mm is a common “high” dimension). If the leads on your laser sit much above the socket contacts, call ILX Lightwave to get a set of spacers that raise the socket contacts.

To install the spacers, remove the two screws on each side of the socket contact strip with a 5/64” hex socket wrench (supplied in the shipping kit). Pull the contact strip straight up being careful not to bend the connector pins on the bottom. Place on spacer under the contact strip. Carefully align the pins on the bottom of the contact strip with the holes in the mount and push the contact strip straight down. Replace the screws on either side of the contact strip. Repeat this procedure for the contact strip on the other side of the socket and insert your laser as described above.

Making sure all the laser leads are aligned with the correct contacts, secure the laser to the socket heatsink by lifting and rotating the laser hold down clamps over the laser flanges. Close and latch the lead clamps. Route your pigtail fiber through the fiber management clips and fiber spools to the front panel. Fiber management clips can be twisted together to securely retain the fiber. Verify other connections and current / temperature controller settings and the laser is ready for operation.

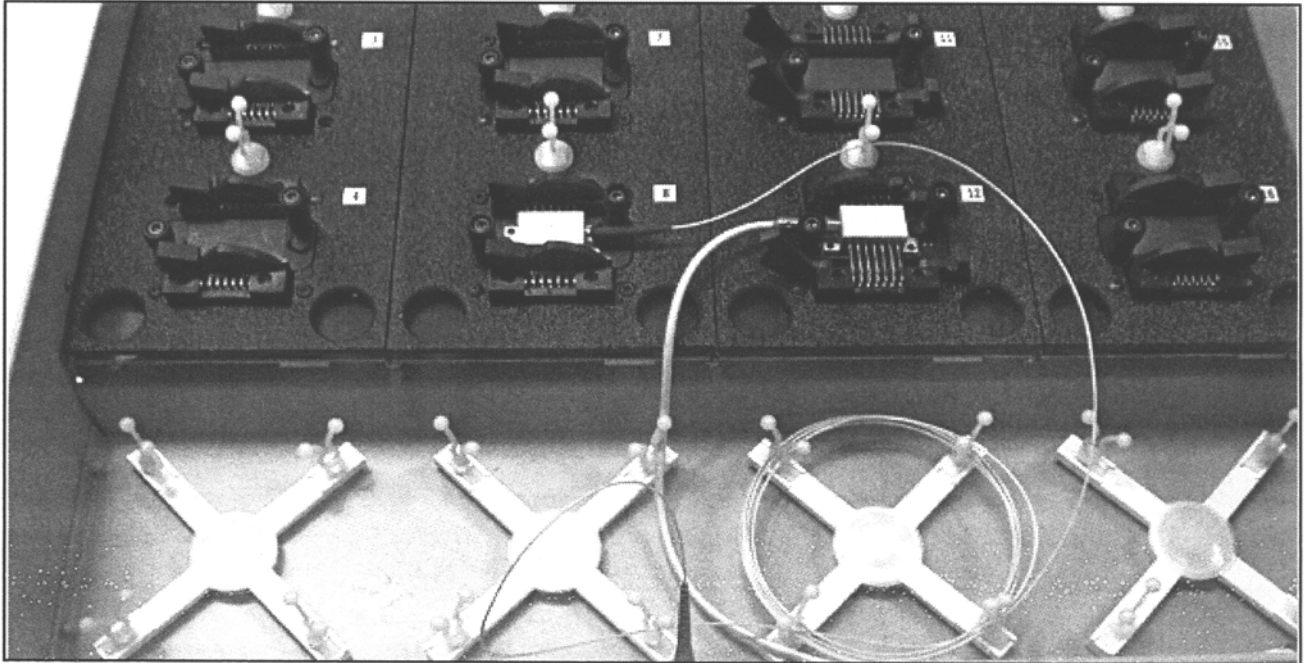


Figure 3.8 Mounting the Lasers



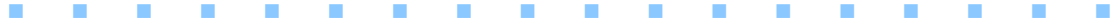
**WARNING**

Visible and / or invisible laser radiation is dangerous and may cause serious eye damage. Avoid direct exposure to the beam. Be sure all laser fibers, connectors and mating adapters (like on the front panel of the mount) are connected or capped before turning on any lasers.





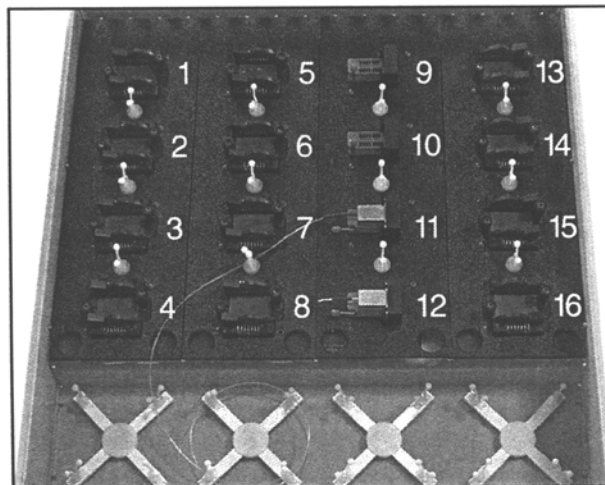
# SOCKET NUMBERING AND MOUNT MODULES



## Numbering Sockets When Installing New Modules

There are several different types of mount modules that can be installed in the LDM-4616 chassis. The chassis can be purchased separately (ILX P/N LDM-4600). When installing modules into a chassis, each socket must be numbered correctly to coincide with the correct back panel connector. Module shipping kits contain numbered stickers for this purpose. Contact ILX Lightwave if you need additional numbered stickers.

Figure 4.1 shows the correct socket numbering. Apply a sticker with the correct number in the small smooth square next to each socket. Please read the CAUTION statement below for further information. See Chapter 3 for instructions on configuring the pins and installing the modules.



**Figure 4.1** Correct Channel Numbering

 **CAUTION**

Modules must be installed in the correct position in the chassis. Left modules must be installed in one of the two left slots and right modules must be installed in one of the two right slots. All laser fiber pigtails point toward the center of the chassis. In addition, channel numbers on the modules must be verified or changed in order to match the electrical connections with the channel numbers on the back of the chassis. The left most module has channels 1-4, the middle left module has channels 5-8, the middle right module has channels 9-12, and the right most module has channels 13-16. Within each module, the least significant number is at the back with increasing numbers moving toward the front of the chassis. See Figure 4.1.

# MAINTENANCE AND SAFETY



## Maintenance

No maintenance procedures are required for the LDM-4616 other than an occasional cleaning, as needed, to remove any accumulated dust or dirt from the external surfaces. The socket lead clamps should be left closed to improve contact reliability. It is recommended that dust caps be left on both sides of the front panel mating adapters when not in use.

## Safety

Laser diodes used with the LDM-4616 Laser Diode Mount may emit infrared radiation which is invisible to the human eye. Viewing of emissions from the fiber may cause eye damage. Extreme care must be taken to prevent the beam from being viewed either directly or through external optics or mirrors. Be sure all laser fibers, connectors and mating adapters (like on the front panel of the mount) are connected or capped before turning on any lasers. Use of protective goggles is recommended when operating these lasers.

