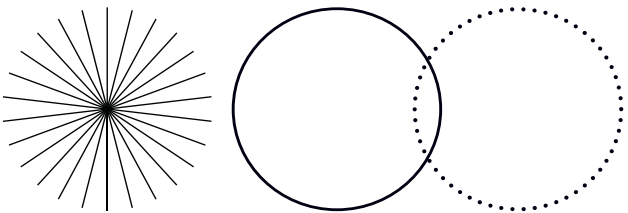
StingRay/BioRay Lasers

Quick Start Guide



INNOVATIONS THAT RESONATE

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Wilsonville, OR 97070

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1.0 Before You Begin

Coherent product information is available in one easily accessible location on the Coherent website. Filter a search by product type, document category, or both:

- Software
- Drawings
- Quick Start Guides
- Operator Manuals
- ... and more!

For more details on product information, see the *StingRay/BioRay Operator's Manual* (P/N 1369409). This manual includes specifics about installation, modulation, interfacing, and use of heat-sinks. The operator's manual is available in PDF format. To download, go to the Coherent website:

https://www.coherent.com/resources

2.0 Safety Information

This guide gives an introduction to safety information, that includes signal words and symbols necessary to know before measurements are taken.

For more detailed instructions, refer to the StingRay/BioRay Operator's Manual (P/N 1369409). This is available in Adobe® PDF format on the Coherent website.

2.1 Signal Words and Symbols

This documentation can contain sections in which applicable hazards are specified or special attention is given to applicable conditions. These sections are shown with signal words in accordance with ANSI Z-535.6 and safety symbols (pictorial hazard alerts) in accordance with ANSI Z-535.3 and ISO 7010.

2.1.1 Signal Words

The following signal words are used in this documentation:

Signal Word	Description
WARNING!	Indicates a hazardous situation that, if not avoided, could result in death or serious injury.
CAUTION!	Indicates a hazardous situation that, if not avoided, can cause minor or moderate injury.
NOTICE	Indicates information that is important, but not hazard-related. 'NOTICE' may also be used when there is the risk of property damage.

2.1.2 Symbols

These signal words are always emphasized with a safety symbol that show a special hazard, regardless of the hazard level. The icons are intended to alert the operator as described here:

Icon	Tells the operator About …
	Important information or instructions for operation and maintenance.
	Danger of exposure to hazardous visible and invisible laser radiation.
	Susceptible to Electro-Static Discharge (ESD).

2.2 Laser Safety

The laser light emitted by StingRay and BioRay lasers may be in the infrared area of the electromagnetic spectrum and may not be visible to the human eye. The safety precautions listed here are to be read and followed by anyone working with or near the laser. At all times, make sure that all personnel are protected from accidental or unnecessary exposure to laser radiation.

For more complete information, see the *StingRay/BioRay Operator's Manual* (P/N 1369409).

WARNING!

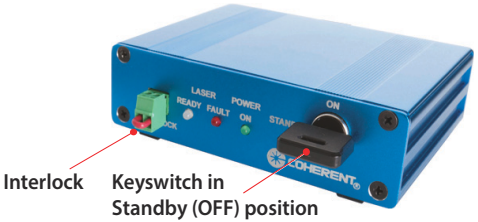
Direct eye contact with the output beam from the StingRay and BioRay lasers will cause serious eye injury and possible blindness. Always avoid exposure to eye or skin from both DIRECT and SCATTERED radiation.

Because of its optical qualities, laser light poses safety hazards not associated with light from conventional light sources. Avoid direct exposure to the laser light, and follow these control measures:

- Always wear applicable laser safety eye wear for protection against the specified wavelengths and laser power/energy being generated.
- Never look directly into the laser light source or at scattered laser light from any reflective surface, even when laser safety eye wear is worn.
- Use extreme caution near laser beams. Laser beams can easily cause flesh burns or cause clothing ignition.
- Avoid wear of watches, jewelry, or other objects that can reflect or scatter the laser beam.
- Terminate the laser beam with a light-absorbing material, and use energy-absorbing targets for beam blocking.

If StingRay and BioRay lasers are to be used as standalone units, for Class IIIb/3B lasers the installation of a safety mechanism is necessary. This prevents exposure to the laser light.

For applications that need a Keyswitch and Interlock for protection from laser emissions, use the remote for StingRay/BioRay lasers.



2.3 Electrical Safety

StingRay and BioRay lasers do not have dangerous voltages.

NOTICE

Do not disassemble the enclosure.
There are no user-serviceable components in it.

All units must be operated as assembled. The Warranty is canceled if the enclosure is disassembled.

CAUTION!

BioRay and StingRay lasers are ESD-sensitive devices. Take appropriate precautions for installation and handling.

2.4 China RoHS Label

The China RoHS label is as follows for StingRay/BioRay lasers:

部件名称 Part Name	有害物质 Hazardous Substances					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板组装 PCB Assembly	X	○	○	○	○	○
光学部件装配 Optic Assembly	X	○	○	○	○	○
组装二极管激光器 Laser Diode Assembly	X	○	○	○	○	○

本表格依据SJ/T 11364的规定编制

O: 表示该有害物质在该部件所有均质材料中的含量均在GB/T 26572规定的限量要求以下。

X: 表示该有害物质至少在该部件的某一均质材料中的含量超出GB/T 26572规定的限量要求。

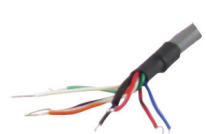
3.0 Installation and Set-Up

This *Quick Start Guide* gives an introduction to installation and set-up for modules, and includes:

- Examples of cable connectors
- Install a Stingray Laser with flying lead cable into a system
- Install a laser to operate with a remote
- Mount the laser
- LED status indicator
- Optional Accessories
- Lasers set up with communications enabled
- Install software

3.1 Cable Termination Options

Examples of cable connectors for Stingray/BioRay lasers follow in this section.



'-FL' Flying Lead Cable

'-HR' Hirose Cable

'-P' Legacy Power Cable

'-B' Legacy Power and BNC Cable

3.2 Install with a Flying Lead Cable

This section shows how to connect a StingRay Laser with a Flying Lead cable into a laser system.

CAUTION!

This laser starts emission when power is applied. Make sure to use correct safety conventions when the laser is operated.

1. Attach the correct wires to the system, as necessary for the application and the laser configuration.

NOTICE

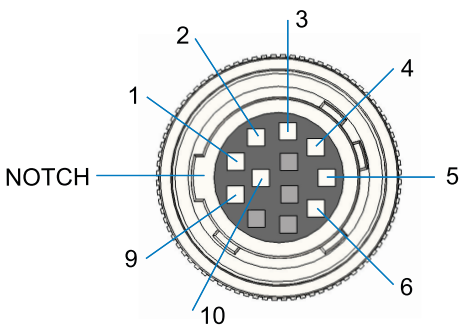
For products with modulation in the configuration, the two V_{mod} wires MUST be connected for control of laser output power.

The following table shows the pin-outs and wire descriptions. Refer to the following figure for pin locations.

Description	Wire Color	Hirose Connector Pin Number (Optional)
V_{in} Ground	Black	1
V_{mod} (Modulation Signal Input)	Blue	2
V_{mod} Ground	Red/Black	3

Description	Wire Color	Hirose Connector Pin Number (Optional)
RS-232 Receive*	White	4
RS-232 Ground*	White/Black	5
RS-232 Transmit*	Orange	6
V_{in} (Power Supply)	Red	9
Fault Signal (Output)	Green	10

*Available on StingRay lasers that include the optional RS-232 configuration. BioRay lasers are factory configured with RS-232 enabled. See page 21.



3.3 Install with a Remote

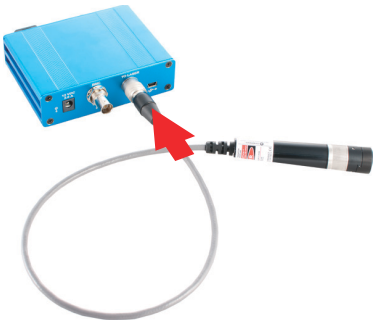
This section shows how to get the laser to operate when the laser remote is used.

For laser modules set up with modulation, a correct modulation signal MUST be applied to the BNC connector on the rear panel of the remote.

The laser does not start emission until the interlock is installed (closed), the key switch is in the On position, and power is applied to the remote.

To connect the laser:

1. **Connect the laser** to the remote.



2. **Connect the Power Supply** to the remote.
3. For BioRay (or StingRay laser with modulation), a voltage input signal must be applied to the BNC connector. This is done to control the laser output power.

4. **Connect the laser remote to a PC** with a mini-USB cable. This cable is included with the a StingRay Controller Kit (1231404) and is also sold separately (1108906).

5. **Make sure that the interlock is installed, and then turn the key to the ON position**. The laser starts to give laser light in 5 seconds.

WARNING!

Direct eye contact with the output beam from the lasers will cause serious eye injury and possible blindness. Always avoid exposure to eye or skin from both DIRECT and SCATTERED radiation.

3.4 Mount the Laser

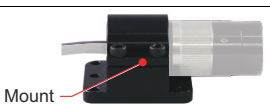
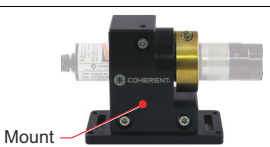
Correctly mounting the laser diode for heat dissipation is critical to laser lifetime and performance.

Correct attachment to a heat-sink means that full radial contact with the mounting area must be made.

NOTICE

V-block mounts are *not* recommended.

The mounts that are available from Coherent include:

Mount and P/N	Location
StingRay Heat Sink Mount (1222896)	
StingRay SD Heat Sink Mount (1264007)	
StingRay Multi-Axis Mount (1280838)	

3.5 LED Indicator

The status of the laser is shown on the multi-state LED indicator on the back panel.

The following table shows the colors for different conditions:

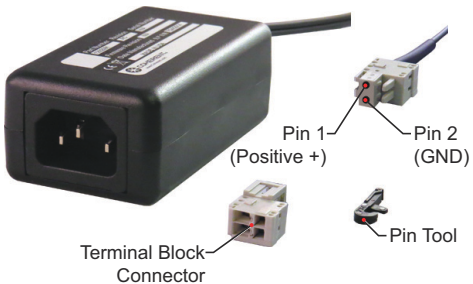
Condition	LED
Power OFF	**OFF**
Power ON	**Steady Green ON**
Health Monitor, Laser Diode approaching End-of-Life	**Slow Red Flash every 2 seconds**
Fault condition	**Fast Red Flash at 5 times a second**

For information about fault conditions, refer to the *StingRay/BioRay Operator's Manual* (P/N 1369409).

3.6 Optional Accessories

The StingRay power supply is for lasers with Flying Leads. (This is not for use with the Hirose, BNC or BNC/Plug connector models.)

- StingRay Power Supply (1232091)



The 12-pin Hirose Connector to Flying Lead break-out cable takes a laser that has a Hirose Connector. It lets the laser have flying lead connections.

- Cable (Flying Lead) (1229640)

3.7 RS-232 Communications

The Coherent Connection applications software (P/N 1258561) is available for operation with lasers configured with communications enabled.

Download the Coherent Connection software from the Coherent website:

https://www.coherent.com/resources

NOTICE

Coherent Connection software cannot be used to adjust the laser output power for lasers are set up with Analog or Reverse Analog modulation.

3.7.1 RS-232 Communication Settings

The RS-232 communication settings are as follows:

Setting	Value
Baud	115200
Parity	None
Data Bits	8
Stop Bits	1
Flow Control	None

3.8 Software Installation

NOTICE

Do the full installation of the Coherent Connection software before hardware is connected!

For lasers set up with communications enabled, go to the Coherent website and download the latest Coherent Connection software for StingRay lasers:

https://www.coherent.com/resources

Install the software:

1. Install the software, but **wait** to start the software.
2. After the software is installed, but BEFORE the software is started, connect the laser to the host computer. Use a USB connection.
3. Start the Coherent Connection software on the host computer.

4.0 Service and Support

This section gives information about how to contact Product Support, how to obtain service, and product shipping instructions.

4.1 Contact Product Support

Coherent gives telephone and web-based technical aid as a service to its customers and assumes no liability thereby for any injury or damage that can occur contemporaneous with such services.

For general Technical Support (offices the U.S.), contact your local Coherent Service Representative or contact Coherent as follows:

- By phone: 1-(734)-456-3100 or 1-(800)-367-7890
- By e-mail: Customer.Support@Coherent.com
- To see a list of contact names, telephone numbers, and addresses worldwide, visit our website: www.Coherent.com

Telephone coverage is available Monday through Friday (except during U.S. holidays). Inquiries received outside normal office hours are monitored by our automatic answering system and promptly returned the next business day.

If you are located internationally, contact Technical Support directly:

- Germany: +49–6071–968–0
- Japan: +813–5635–7170

NOTICE

Under no conditions do these support services affect the terms of any warranty agreement between Coherent and the buyer. Operation of any Coherent laser with any of its interlocks (or safety features) defeated is always at the operator's own risk.

Please be prepared to supply the following information:

- Serial number of the unit
- Model or Coherent part number of the unit
- A description of the problem
- Any corrective steps that were attempted

4.2 Get Service

To get warranty service, Customer must tell the Company of the defect. This must occur before the expiration of the warranty period and with suitable arrangements for the performance of service.

The Company must, in its sole discretion, determine whether to do warranty service at the Customer's facility, at the Company's facility, or at an approved repair location.

If Customer is instructed by the Company to ship the product to the Company or a repair location,

Customers must do the following:

- Put the product in packaging (to protect from damage during shipping) as shown in 'Product Shipping Instructions' on page 25.
- Ship it to the address given by the Company, with shipping prepaid. Send back to Coherent in conjunction with recalibration and recertification.

Coherent shall:

- Pay the cost of shipping the product back to the Customer in conjunction with product failures in less than twelve (12) months of time of sale or during an extended 12-month warranty period.

4.3 Product Shipping Instructions

A Returned Material Authorization (RMA) number given by the Company must be included on the outside of all shipping packages and containers. Items sent without an RMA number are could be sent back to the sender.

To prepare a product for shipping to Coherent:

1. Contact Coherent Customer Service (see 'Contact Product Support' on page 23) for a Return Material Authorization number. Provide the product serial number, required for creation of an RMA number.
2. Attach a tag to the product that includes the name and address of the owner, the person to contact, the serial number, and the RMA number received from Coherent Customer Service. Put this tag inside the box.
3. Put or wrap the product in an ESD-safe bag or equivalent material.
4. Use the initial shipping and packaging materials, and pack the product.
5. Put a seal on the shipping carton with shipping tape or an industrial stapler.

6. Add the RMA number that was received from Coherent Customer Service to the shipping label on the outside of the box.

Ship the product to this address:

Coherent, Corp.
Attn: RMA #_____
27650 SW 95th Avenue
Wilsonville, OR 97070
USA

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