OBIS Laser System with Remote Startup Guide

The OBIS Laser System can be broken into 4 parts:

1. Laser
2. Controller (*Not needed unless planning on modulating the beam)*
3. Power Supply
4. Heat sink

Controller Options

1. Single Laser Remote (#87-473)
    a. Used for controlling a single laser
    b. Allows for analog and digital modulation
2. 6 Laser Remote (#87-475)
    a. Used for controlling up to 6 lasers
    b. Allows for analog and digital modulation
    c. Features a touch screen to turn specific lasers on and off
3. Laser Box (#33-351)
    a. Used in conjunction with Coherent Beam Combiner (*not sold by Edmund Optics*)
    b. Allows for analog and digital modulation
    c. Used for controlling up to 5 OBIS fiber-pigtailed lasers

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Connecting the System with OBIS Single Laser Remote:

NOTE: ***MAKE SURE TO NEVER PLUG BOTH THE 12V POWER AND I/O CONNECTOR INTO THE LASER AT THE SAME TIME.***

1. Connect the laser to the remote via “Laser Control I/O” (SDR) port on the back of the laser
2. Connect the USB Cable from the controller to the computer (not connected in picture below)
3. Connect the power supply to the remote

Now, you will have your OBIS laser connected directly to the controller.

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Connecting the System with OBIS 6 Laser Remote:

1. Connect lasers to the remote via “Laser Control I/O” (SDR) ports on the back of the laser and the back of the remote
2. Connect controller to computer via USB, ethernet, or RS32
    a. For ethernet, you can connect ethernet to a network port and use the controller remotely
    b. For USB, it will be an emulated COM port on the host computer for easy communication with HyperTerminal
3. Connect the power supply to the remote and plug into the wall

4. Use the touchscreen to navigate the system menus, and power lasers on/off

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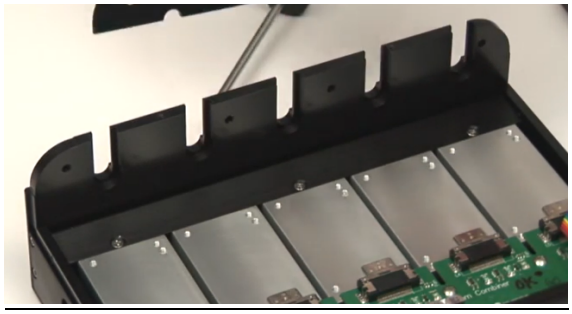
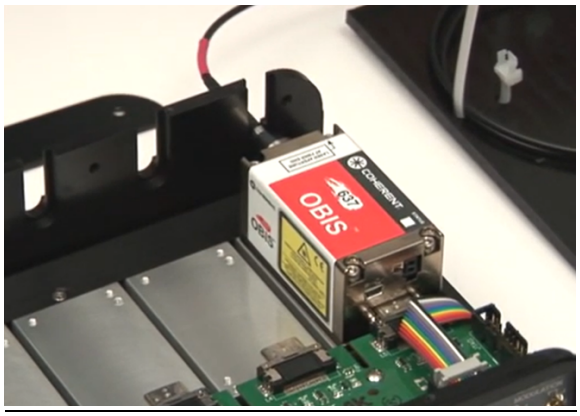
Connecting the System with OBIS Laser Box:

1. Remove the 8 screws to take the lid off the top of Laser Box
    a. Each laser port has an individual SDR connector, as well as a heatsink

2. Remove the 4 screws to take the strain relief bar for the fibers



3. Insert the fiber-coupled OBIS laser into the heatsink and connect it via SDR
4. Screw the laser into the heatsink



5. Run the fiber through the designated channel, then reinstall the strain relief bar
6. Connect power to the remote and then use the USB or RS32 port for modulation if desired.

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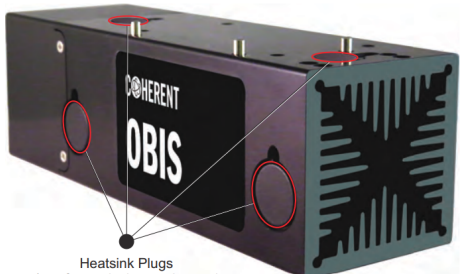
Mounting and Connecting the Heatsink:

OBIS lasers require the use of a heatsink due to the construction of the laser. The base plate is cooled by conduction, so it is essential for use. To install the Coherent heatsink:

1. Remove the plugs from the mounting holes. For applications that require horizontal polarization, remove the plugs on the side instead of the top.

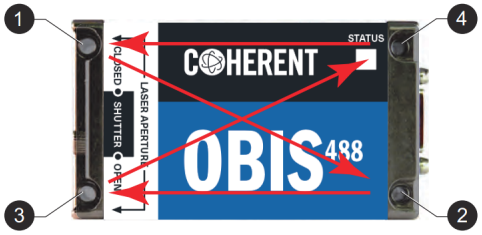


2. Mount the heatsink to breadboard via ¼-20 x 0.625” or M6x16mm mounting screws. Leave either end of the heatsink clear to have airflow. Torque the screws to 4.5 N*m

3. Place the plugs back into the mounting holes

4. Align the laser on the heatsink via provided dowel pins and screw in place via M3x35mm screws. Use washers to spread the tightening force

5. Torque the screws in a diagonal pattern to 0.25 N*m. in the order seen below (1 – 2 – 3 – 4). After this, torque each screw to 1 N*m



6. If the application requires the cooling fan, then remove the gray label covering the fan connector on the OBIS Laser and plug in the heatsink.

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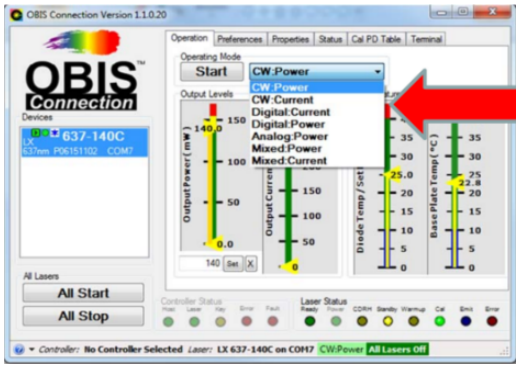
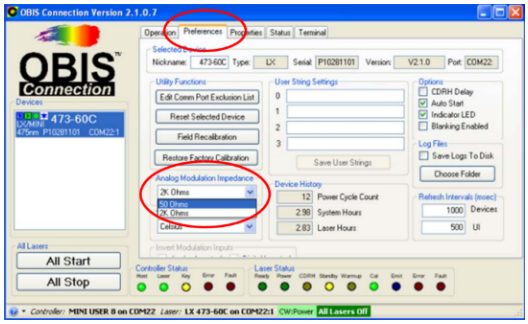
Starting Modulation:

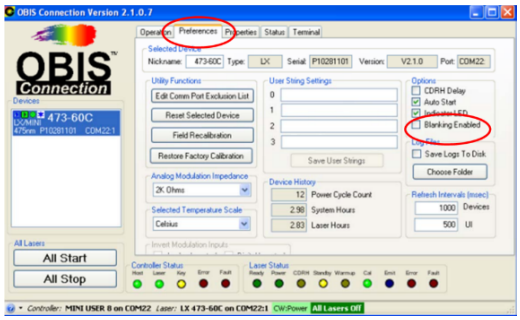
1. Modulation signals are input at the back of the remote via the SMB connectors.
    a. There are both analog and digital modulation connectors
2. Modulation options can be found next to the “Start” tab in the software
    a. This dropdown menu contains different options for modulation
        i. CW Power
        ii. CW Current
        iii. Digital Modulation
        iv. Analog Modulation
        v. Mixed Modulation



3. Additional options are found under the “Preferences” tab
    a. You can set Analog Modulation Impedance to 50 Ohms or 2K Ohms



    b. You can enable Blanking to rapidly turn the beam off



Modulation Specifications

Type	Bandwidth	Rise/Fall Time	Modulation Overshoot	Extinction Ratio
Digital: Power	500KHz	< 700ns	< 3%	1,000,000:1
Analog: Power	500KHz	< 700ns	< 3%	1,000,000:1
Mixed: Power	500KHz	< 700ns	< 3%	1,000,000:1
Digital: Current	150MHz	< 2ns	< 20%	1,000,000:1 at 0Hz, 250:1at 150MHz
Mixed: Current	150MHz	< 2ns	< 20%	1,000,000:1 at 0Hz, 250:1at 150MHz