

---

# DXR3xi Class 3B Conversion Guide

## WARNING



### Avoid eye injury.



This system is configured as a Class 3B laser product when using the fiber optic accessory or operating with the protective cover removed. Class 3B laser radiation is hazardous, can be visible or invisible, can cause permanent eye damage, ignite flammable materials, liquids, and gases, and can potentially cause other hazards if not operated safely.

- Making adjustments, using controls, or performing procedures that are not specified in the documentation could result in exposure to hazardous laser radiation.
- Set up a laser control area in the location where a Class 3B system is being used.
- When using or working in the vicinity of any Class 3B laser product each person must wear laser safety eyewear that exceeds the required optical safety density for the laser wavelength in use.
- Never look directly into the laser beam or at its reflection, even when wearing laser safety eyewear.
- Ensure that the protective eyewear is fitted properly when the user wears prescription glasses.
- Proper storage and care of the goggles should be maintained. A scratch on the lens can expose the user to the hazardous beam.

- DO NOT use magnets near the stage enclosure. Magnets can defeat the interlocks, causing emission of visible and/or invisible laser radiation when the doors are open.
- Exposure to laser radiation can result in serious injury and/or blindness. To avoid serious injury, wear laser safety eyewear whenever operating a Class 3B laser product, entering a laser control area, observing trained personnel servicing the product, or operating a product that has the safety interlocks defeated.

**Note** For the complete laser safety information, refer to the DXR Raman Instruments Site and Safety Guide. A PDF copy is included in the electronic documentation set and in the online software Help system with the instrument.

For information about setting up the laser control area with external interlock, refer to the “Setting Up a Laser Control Area” section in the Safety Guide.

For information about laser safety eyewear specifications, refer to the “Protective Eyewear” section in the Safety Guide.

For information about individual lasers used in DXR3xi products, refer to the “Manufacturer’s Laser Information” section in the Safety Guide.

# Preparing the Laser Control Area

The customer is responsible for complying with local laser safety regulations and set up a Class 3B Laser Control Area for the instrument. Information can be found in the “Setting Up a Laser Control Area” section in the DXR Raman Instruments Site and Safety Guide.

## WARNING



Avoid hazard.

The Class 3B system must be connected to an external remote interlock system that blocks the laser beam whenever a safety perimeter around the instrument is breached (when an unauthorized person opens the door, for example).

- This external remote interlock system must be connected when anyone is working in the vicinity of the Class 3B laser system. Do not attempt to defeat the interlocks on the system.
- The connectors and the laser safety circuit controlling access to the Laser Control Area must be designed and built by personnel who have been trained in laser safety and in the operation of the instrument.
- Appropriate area warning signs should be posted at the entryways and within the laser-controlled area.

Below is a suggested method for installing the external remote interlock connectors:

1. Prepare 2 BNC cables and connect to the laser safety circuit within the Laser Control Area.
2. Install a switch across the pins of the connectors on each of the BNC cables. The switch must accommodate +5 VDC at 10 mA when it is closed.

**Note** Opening the switch blocks the laser beam, and closing the switch unblocks the beam.

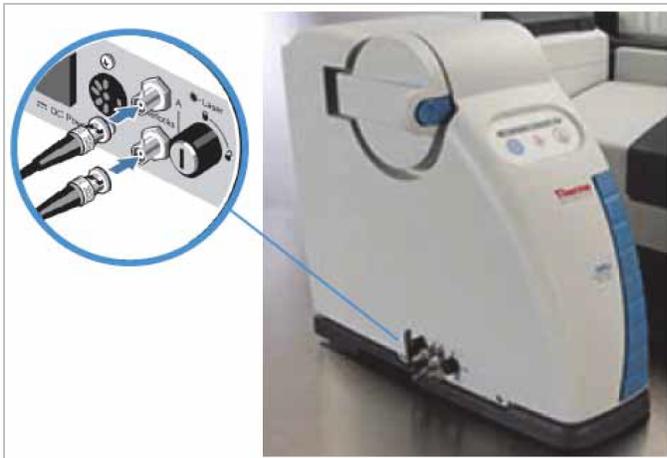
3. Connect the other end of the BNC cables to the interlock connectors on the instrument panel.

# Converting DXR3xi from Class 1 to Class 3B configuration

You must have a Class 3B Conversion Kit (840-2056xx) available to proceed.

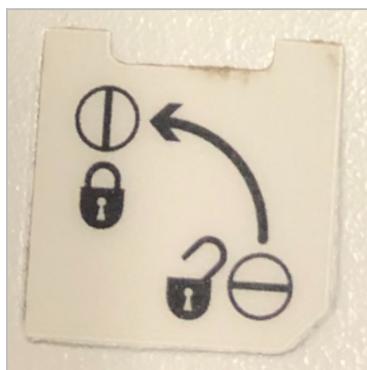
❖ **To convert a DXR3xi from the Class 1 to the Class 3B configuration**

1. Make sure the stage is positioned all the way to the back. Turn OFF the laser and close OMNICxi software.
2. Remove the BNC interlock jumpers from the Interlock connectors on the instrument panel. Properly store the jumpers in a labeled bag. (They will be used when you want to convert the instrument to Class 1 configuration.)
3. Connect the external remote interlock BNC cables from your laser control area to the Interlock connectors on the instrument panel.



4. Open the doors of the sample compartment.

- Using a flat-blade screwdriver to unlock the two cover latches on the inside of front ledge of the sample compartment, turn the cover latch 90-degrees until it is in a horizontal position.



- Disconnect the align/calibrate tool and set it aside.



7. Close the covers. Hold both sides of the whole sample area cover and slide it toward you until it stops. Gently lift the whole cover up and continue to pull forward. The whole cover can be fully pulled away from instrument.



8. Take the laser interlock defeating dongle (085-0402xx CBL CLASS 3B OPERATION) from the Class 3B Conversion Kit and install it to the interlock connector at the left side of sample area as shown below.

**Note** The instrument will not operate if the laser interlock defeating dongle is missing



9. Reconnect the align/calibrate tool onto the instrument.



10. Properly store the whole sample area cover in the lab.



11. The instrument is now converted to Class 3B configuration. Follow normal Align/Calibration procedure and make sure all tests pass.

### WARNING



Avoid eye injury.

Before turning on the laser, each person using or working in the vicinity of this Class 3B system must wear laser safety eyewear that exceeds the required optical safety density for the laser wavelength in use.

Two laser safety goggles are provided in the DXR Class 3B Conversion kit for 190-532 nm laser and 633-1064 nm laser, respectively. If you need to order additional goggles please contact our local field services or sales, or visit our web site at <http://www.thermo.com/spectroscopy> for assistance on ordering the appropriate goggles.

12. If you have other accessory to be used with Class 3B configuration of this instrument, for example a fiber optic accessory, please contact our local field services for assistance and refer to the Optional Class 3B Laser Configuration section in the DXRxi Raman Instrument User Guide for installation and align/calibration instructions.

## WARNING



Avoid eye injury.

Never put anything except samples against the tip of the fiber optic probe. Never look directly into the tip of a fiber optic probe or the fiber optic probe connectors, even if you are wearing laser safety goggles.

# Converting DXR3xi from Class 3B to Class 1 configuration

❖ To convert the DXR3xi from the Class 3B to the Class 1 configuration

1. Make sure the stage is positioned all the way to the back. Turn OFF the laser and the instrument. Close OMNICxi software.
2. Carefully remove the Class 3B accessory from the instrument.

For example, to uninstall a fiber optic accessory:

- a. Uninstall the fiber probe from the ports on the fiber optic launcher. Do not twist the probe into a tight radius which can damage the fibers.
  - b. Place the cap onto the end of the probe and the caps onto the ports on the fiber optic launcher.
  - c. Remove the fiber optic launcher and replace with the proper wavelength edge filter into the instrument.
3. Remove the interlock defeating dongle at the left side of sample area.

Properly store it in a labeled bag. (It will be used when you want to convert the instrument to Class 3B configuration.)



4. Install the BNC interlock jumpers onto the Interlock connectors on the instrument panel. Remove the external interlock BNC cables.



5. Disconnect the align/calibrate tool and set it aside.



6. Make sure the two cover latches on the inside of front ledge of the sample compartment are in a horizontal position.

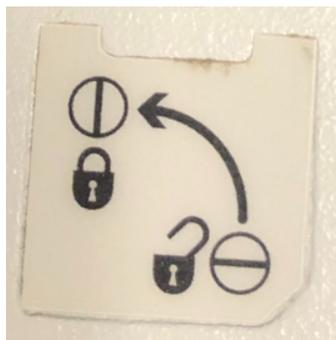


7. Slide the whole sample area cover back onto the instrument:

Make sure the white plastic feet under the cover are aligned with the wide opening of slots around the sample area. Gently set the cover on the baseplate and slide it all the way to the back wall of the instrument. Check that the cover sits properly without any gap around the sample area.



8. Using a flat-blade screwdriver to lock the two cover latches on the inside of front ledge of the sample compartment: turn 90-degrees until they are in an upright position.



9. Reconnect the align/calibrate tool and close the top cover. The instrument is now converted to Class 1 configuration.



10. Follow normal Align/Calibration procedure and make sure all tests pass.
11. Refer to the Class 3B Conversion Guide in the electronic documentation set for future reference.