



Saphyr™ System Safety Guide

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Revision History

REVISION	NOTES
A	Initial release.
B	Updated document template.
C	Update to laser safety section

Saphyr System Safety Guide

For Research Use Only. Not for use in diagnostic procedures.

This guide provides important safety information pertaining to the installation, servicing, and operation of the Bionano Genomics® Saphyr™ System. Read this document before performing any procedures on the system.

If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Important

You must read the *Saphyr Site Preparation Guide* and *Saphyr System Guide* before plugging the instrument into the power supply.

Before the installation day, we recommend that you familiarize yourself with the relevant safety and installation instructions provided in the following documents.

These documents contain information and warnings that must be followed by the customer for safe operation and for keeping the product in a safe condition. Before use of the instrument, please review all safety instructions to avoid injury and prevent damage to this instrument and any products connected to it.

The following documents are available for download from www.bionanongenomics.com/support.

Resource	Description
<i>Saphyr Site Preparation Guide</i>	Provides specifications for laboratory space, electrical requirements, and environmental considerations.
<i>Saphyr System User Guide</i>	Provides an overview of instrument components and software, proper maintenance, and troubleshooting.
<i>Bionano Access Software Guide</i>	Provides an overview of data analysis.

Safety Warnings

Make sure that all personnel are trained in the correct operation of the instrument and any potential safety considerations.

Type	Description
	Hazard: Indicates a potential electrical shock hazard that may lead to personal injury
	Hazard: Indicates a potential laser exposure hazard that may lead to personal injury
	Warning: Indicates a warning concerning operations that may lead to personal injury or potential damage to the instrument. Follow all instructions for Saphyr to minimize risk to personnel or the instrument.

Laser Safety Warnings

The Saphyr system has a laser system classification of a Class 1 product, which uses five embedded Class 3B lasers. The Saphyr System is certified to the IEC 60825-1:2014 standards.

The nominal wavelength outputs include the following optical power:

- 300 mW (532 nm)
- 140 mW (637 nm, 2 each)
- 300 mW (488 nm)
- 90 mW (785 nm)

A Class 1 laser product is safe under all conditions of normal use.

A CLASS 3B LASER PRODUCT IS HAZARDOUS IF THE EYE IS DIRECTLY EXPOSED TO THE LASER. PROTECTIVE EYE WEAR IS REQUIRED WHEN A PERSON IS VIEWING A CLASS 3B LASER BEAM. ALL CLASS 3B LASERS MUST BE EQUIPPED WITH A KEY SWITCH AND A SAFETY INTERLOCK. PREVENTING RADIATION EXPOSURE

- Do not open the front panel of the instrument because you could come into contact with a Class 3B laser.
- If you operate the instrument with any panels removed, you risk radiation exposure from the direct or reflected laser light.
- If you use controls or make adjustments that are not specified in *The Saphyr Safety Guide*, you can be exposed to hazardous radiation.

SAFETY LABELING



Figure 1. Class 3B Laser Warning

Sound Level Safety Warnings

The instrument produces noises when it is turned on or when it is performing a run.

- Do not operate the instrument with the sample door open for an extended period of time.
- Do not stand behind the instrument for an extended period of time.
- To reduce the noise level, we recommend that the instrument is positioned near a wall, with a minimum clearance of 7.7 cm (3 in) behind the instrument.

LED Exposure Warning

Do not gaze at the light-emitting diode (LEDs) on the front panel for an extended period of time. Exposure to high-intensity LED may increase the risk of vision impairment and discomfort.

Electrical Safety Warnings

- Do not remove the outer panels from the instrument. Operating the instrument without all of the panels creates potential exposure to AC line voltage and high DC voltage.
- For protection against electrical shock hazard, the instrument must be plugged into a three-wired grounded receptacle.
- Do not attach the power cord to an extension cord or to a multiple portable socket.
- Use only the power cord supplied with the instrument. If the cord is damaged, contact Bionano Genomics for a replacement. Do not replace the cord.
- Do not connect the instrument to any other machine unless a Bionano personnel instructs you to do so.
- Do not open the front door during a scan. Doing this could expose you to an electrical shock. If you must open the door, do not touch the instrument pogo pins.
- Only Bionano Field Service Engineers or Bionano certified personnel are qualified to replace the internal fuses. The power entry module includes 2 input fuses on the high-voltage input lines.
- Under no circumstances should the user modify the safety features of this instrument.

ELECTRICAL SPECIFICATIONS

Type	Specification
Line Voltage	100–240 VAC at 50/60 Hz
Power Consumption (instrument, PC, and monitor)	≤ 300 Watt
Power Connector	Region-specific power cord supplied

Uncrating, Installing, and Moving the Instrument



CAUTION: Only an authorized Bionano personnel can uncrate and install the instrument.

The instrument is heavy and can cause serious injury if dropped or mishandled. Make sure there are three people to assist the Field Service Engineer with lifting the Saphyr instrument from the crate.

The AC power cord is the primary connection device for the instrument. Make sure that the point of connection is easily accessible and free of any obstructions.

Significant risks to optical and mechanical alignment can occur each time the instrument is moved.

Ensure the instrument is installed on a clean, sturdy, level surface bench and away from direct sunlight or heat source.

Do not set the instrument up where liquid or chemicals are used. Ensure that no liquids are spilled into the instrument.

Do not operate the instrument in the presence of flammable gases or fumes.

DIMENSIONS

Measurement	Instrument
Height	38 cm (15 in)
Width	86 cm (34 in)
Depth	76 cm (30 in)
Weight	103 kg (227 lb)

Environmental Considerations

This instrument is designed for indoor use only.

Element	Specification
Temperature	Maintain a lab temperature of 19°C (66°F) to 25°C (77°F).
Humidity	Maintain a noncondensing relative humidity between 20–80%.
Elevation	Place the instrument at an altitude below 2,000 m (6,500 ft).
Ventilation	At least 5 cm (2 in) of clearance behind the instrument to allow proper ventilation and access to power outlet. Overhead clearance required for installation and service is 93 cm (37 inch).
Air Quality	Operate the instrument in a Pollution Degree II environment or better.
Electrical	Apply category II (CAT II) electrical measurement standards.

Maintenance

No equipment maintenance is required other than cleaning the objective lens and replacing the air filter.

Disconnect the main power connectors from the instrument before cleaning the lens or replacing the air filter.

CLEAN INSTRUMENT

Use a lint-free cloth to clean the surface and sides of the instrument.

CLEAN THE OBJECTIVE LENS

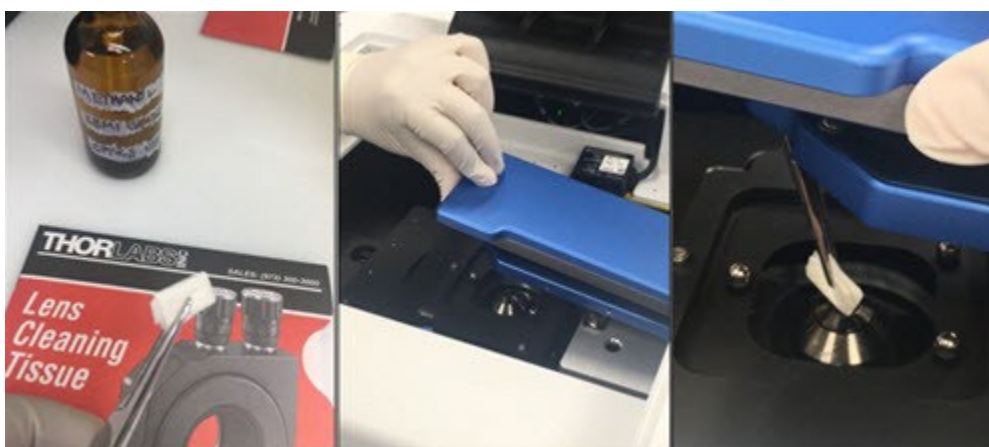


Figure 2. Cleaning the Objective Lens

1. Disconnect the main power connectors from the instrument.
2. Manually lift the sample door.
3. Fold a ThorLabs lens tissue into 4.
4. Clamp the tissue with a flat hemostat, and then add 2 to 3 drops of 98% methanol on the tissue.
5. Lift the bundle arm with one hand, and hold the hemostat with the other hand to clean the surface of the objective lens. Move the tissue in a circular motion.
 - a. The bundle arm does not lift up all the way.

Technical Assistance

For technical assistance, contact Bionano Genomics Technical Support.

You can retrieve documentation on Bionano products, SDS's, certificates of analysis, frequently asked questions, and other related documents from the Support website or by request through e-mail and telephone.

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