

SB5X6 - November 29, 2017

Item # SB5X6 was discontinued on November 29, 2017. For informational purposes, this is a copy of the website content at that time and is valid only for the stated product.

LASER SAFETY BARRIER

- ▶ 5' x 6' Portable Laser Barrier
- ▶ No-Trip Base Design
- ▶ High CW and Pulsed Damage Thresholds

SB5X6



All Contents Stored In Base



OVERVIEW

Features

- Portable 5' x 6' (1.5 m x 1.8 m) Barrier
- ANSI and EN Certified*
- No-Trip Design Base Eliminates Cross-Feet
- All Components are Stored Within Base
- Easy-to-Assemble Design Based on Our 25 mm Construction Rails (See *Construction* Tab)

Laser safety barriers are an essential component in high-power laser labs where scattered light must be blocked to avoid the potential for irreparable eye damage. Our SB5X6 Laser Barrier is designed for use in labs with high-power CW or pulsed lasers. The barrier meets both ANSI and EN requirements for certification. For more details, including laser damage threshold levels, please see the *Certification* tab. For details on laser barrier assembly, please see the *Construction* tab.

Compact, Mobile Design

The 5' x 6' (1.5 m x 1.8 m) barrier is supported by a base with a footprint of only 60.2" x 12.3" (1.5 m x 31.2 cm). By not using cross-feet, the base eliminates the tripping hazard that some other laser barriers create. Mobility is provided via two fixed wheels on one end and two leveling feet on the other end, as seen in the photos to the right. When one side of the barrier is lifted, it can be easily transported around your lab. When lowered, the leveling feet ensure that the barrier will remain stationary.



Click to Enlarge
Leveling Feet and Wheels Provide Mobility

Safety Considerations

To block both CW and pulsed lasers, these barriers consist of two different materials. Material Safety Data Sheets (MSDS) for each type of material are

available by clicking on the red Docs icon below. The interior of the barrier material contains fiberglass sealed underneath a coating. If the fiberglass becomes exposed, it may act as a skin irritant.

If the barrier material is damaged (i.e., by laser burns, physical tears, etc.), the curtain should be replaced immediately. Replacements can be ordered by contacting Tech Support.

*** DISCLAIMER**

The barrier materials have been tested individually by a 3rd party using ANSI or EN specifications as applicable. Due to manufacturing variances, mechanical wear, and laser damage, Thorlabs assumes no responsibility for laser barrier failure. Please consult your laser safety specialist before purchasing to ensure that the barrier is suitable for your application. To minimize risk, inspect the barrier before each use and ensure that it is in excellent condition.

CERTIFICATION

DISCLAIMER

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EN Certification		
Certification	Test Parameters	Damage Threshold
EN 12254:D	10.6 μm (CW)	230 W/cm ²
EN 12254:D	1064 nm (CW)	175 W/cm ²
EN 12254:1998, I, A7	1064 nm, 200 μs Pulses, 20 Hz	47 J/cm ²
EN 12254:1998, R, A6	1064 nm, 7 ns Pulses, 20 Hz	-
EN 12254:1998, R, A6	532 nm, 5 ns Pulses, 20 Hz	-

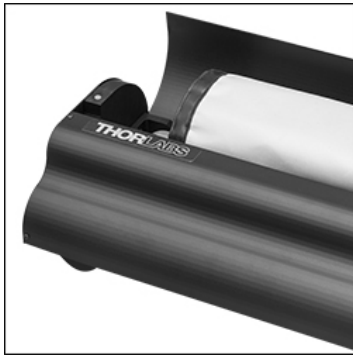
ANSI Certification		
Certification	Test Parameters	Damage Threshold
ANSI Z136.7	1064 nm (CW)	80 W/cm ²
ANSI Z136.7	1064 nm (CW)	120 W/cm ²
ANSI Z136.7	1064 nm (CW)	131 W/cm ²
ANSI Z136.7	1064 nm, 20 ns Pulses, 20 Hz	28.3 W/cm ² 1.42 J/cm ²
ANSI Z136.7	1064 nm, 20 ns Pulses, 20 Hz	40 W/cm ² 2 J/cm ²
ANSI Z136.7	1064 nm, 20 ns Pulses, 20 Hz	90 W/cm ² 4.5 J/cm ²

CONSTRUCTION

Construction

All construction components are stored in the base upon shipment. These include 25 mm Construction Rails, the 5' x 6' (1.5 m x 1.8 m) laser barrier sheet, and mounting hardware. Assembly of the laser barrier takes approximately one hour and is best performed by two people. It is recommended that users consult the material safety data sheets for the laser barrier material before assembly and wear heavy gloves when handling the barrier sheet to lessen the chance of irritation from exposed fiberglass.

The 25 mm Construction Rails attach to the base and then bolt together using the included locking collars and 1/4"-20 cap screws. The barrier material sheet is placed on the construction rails and is secured using hook-and-loop-fastener strips around the perimeter of the frame.



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All necessary laser barrier components and hardware are stored within the base. The hinged cover reveals the stored components and closes securely through the use of magnets in the base.



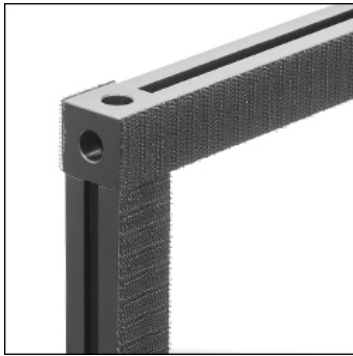
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Components include 25 mm Construction Rails and barrier material sheet, as well as mounting hardware, hex keys, and an assembly guide (not shown).



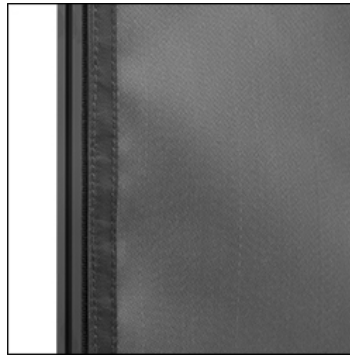
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Rail joiners clamp the side rails together, holding the barrier frame rigid. Hook-and-loop-fastener strips hold the side and top edges of the laser barrier sheet.



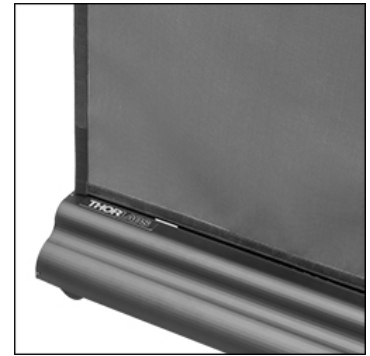
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The side and top rails are joined together using a corner cube and included cap screws. Hook-and-loop-fastener strips are pre-installed for mounting the laser barrier fabric sheet. *Note:* heavy gloves are recommended when handling the barrier sheet to lessen the chance of irritation from exposed fiberglass.



Click to Enlarge

The laser barrier material is placed on the frame and adhered with hook-and-loop-fastener strips.



Click to Enlarge

The compact weighted base is stable without requiring lengthy cross-feet, which can be a trip hazard. The assembled laser barrier can be easily repositioned: simply lift the end with leveling feet and move it to the desired position using the wheels.

For more details on assembly, please refer to the manual. A printed manual is also shipped with each unit.

LASER SAFETY

Laser Safety and Classification

Safe practices and proper usage of safety equipment should be taken into consideration when operating lasers. The eye is susceptible to injury, even from very low levels of laser light. Thorlabs offers a range of laser safety accessories that can be used to reduce the risk of accidents or injuries. Laser emission in the visible and near infrared spectral ranges has the greatest potential for retinal injury, as the cornea and lens are transparent to those wavelengths, and the lens can focus the laser energy onto the retina.

Safe Practices and Light Safety Accessories

- Thorlabs recommends the use of safety eyewear whenever working with laser beams with non-negligible powers (i.e., > Class 1) since metallic tools such as screwdrivers can accidentally redirect a beam.



Laser goggles designed for specific wavelengths should be clearly available near laser setups to protect the wearer from unintentional laser reflections.

- Goggles are marked with the wavelength range over which protection is afforded and the minimum optical density within that range.
- Laser Safety Curtains, Laser Barriers and Blackout Materials can prevent direct or reflected light from leaving the experimental setup area.
- Thorlabs' Enclosure Systems can be used to contain optical setups to isolate or minimize laser hazards.
- A fiber-pigtailed laser should always be turned off before connecting it to or disconnecting it from another fiber, especially when the laser is at power levels above 10 mW.
- All beams should be terminated at the edge of the table, and laboratory doors should be closed whenever a laser is in use.
- Do not place laser beams at eye level.
- Carry out experiments on an optical table such that all laser beams travel horizontally.
- Remove unnecessary reflective items such as reflective jewelry (e.g., rings, watches, etc.) while working near the beam path.
- Be aware that lenses and other optical devices may reflect a portion of the incident beam from the front or rear surface.
- Operate a laser at the minimum power necessary for any operation.
- If possible, reduce the output power of a laser during alignment procedures.
- Use beam shutters and filters to reduce the beam power.
- Post appropriate warning signs or labels near laser setups or rooms.
- Use a laser sign with a lightbox if operating Class 3R or 4 lasers (i.e., lasers requiring the use of a safety interlock).
- Do not use Laser Viewing Cards in place of a proper Laser Barrier or Beam Trap.



Laser Classification

Lasers are categorized into different classes according to their ability to cause eye and other damage. The International Electrotechnical Commission (IEC) is a global organization that prepares and publishes international standards for all electrical, electronic, and related technologies. The IEC document 60825-1 outlines the safety of laser products. A description of each class of laser is given below:

Class	Description	Warning Label
1	This class of laser is safe under all conditions of normal use, including use with optical instruments for intrabeam viewing. Lasers in this class do not emit radiation at levels that may cause injury during normal operation, and therefore the maximum permissible exposure (MPE) cannot be exceeded. Class 1 lasers can also include enclosed, high-power lasers where exposure to the radiation is not possible without opening or shutting down the laser.	
1M	Class 1M lasers are safe except when used in conjunction with optical components such as telescopes and microscopes. Lasers belonging to this class emit large-diameter or divergent beams, and the MPE cannot normally be exceeded unless focusing or imaging optics are used to narrow the beam. However, if the beam is refocused, the hazard may be increased and the class may be changed accordingly.	
2	Class 2 lasers, which are limited to 1 mW of visible continuous-wave radiation, are safe because the blink reflex will limit the exposure in the eye to 0.25 seconds. This category only applies to visible radiation (400 - 700 nm).	
2M	Because of the blink reflex, this class of laser is classified as safe as long as the beam is not viewed through optical instruments. This laser class also applies to larger-diameter or diverging laser beams.	
3R	Lasers in this class are considered safe as long as they are handled with restricted beam viewing. The MPE can be exceeded with this class of laser, however, this presents a low risk level to injury. Visible, continuous-wave lasers are limited to 5 mW of output power in this class.	
3B	Class 3B lasers are hazardous to the eye if exposed directly. However, diffuse reflections are not harmful. Safe handling of devices in this class includes wearing protective eyewear where direct viewing of the laser beam may occur. In addition, laser safety signs lightboxes should be used with lasers that require a safety interlock so that the laser cannot be used without the safety light turning on. Class-3B lasers must be equipped with a key switch and a safety interlock.	
4	This class of laser may cause damage to the skin, and also to the eye, even from the viewing of diffuse reflections. These hazards may also apply to indirect or non-specular reflections of the beam, even from apparently matte surfaces. Great care must be taken when handling these lasers. They also represent a fire risk, because they may ignite combustible material. Class 4 lasers must be	

equipped with a key switch and a safety interlock.

All class 2 lasers (and higher) must display, in addition to the corresponding sign above, this triangular warning sign



Part Number	Description	Price	Availability
SB5X6	5' x 6' (1.5 m x 1.8 m) Fixed Panel Laser Safety Barrier	\$1,289.00	Lead Time