

LSL10-EC - June 22, 2017

Item # LSL10-EC was discontinued on June 22, 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 SIGNS

- Provides a Clear and Concise Indication That a Laser System is in Use
- Signs for Class 2, 3A, 3B, and 4 Lasers Available



LSL10-2
Class 2 Sign



LSL10-3A
Class 3A Sign



LSL10-3B
Class 3B Sign



LSL10-4
Class 4 Sign

LSL10
Lightbox with
LSL10-3B Class 3B Sign
(Numeral Stickers Included)



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OVERVIEW

Features

- Laser Safety Signs Available Covering Laser Classes 2 Through 4
- Lightbox for Signs with Laser Interlock Feature
- Lightbox and Signs Meet ANSI Z136.1 Laser Safety Standard

Thorlabs offers laser safety signs for Laser Classes 2 through 4 and a lightbox to indicate to personnel when and where a laser system is in use. Each sign includes stickers to customize the indicated wavelength and power of the laser emission. The front of the LSL10 Laser Safety Lightbox is hinged to easily open and insert a laser safety sign. The lightbox can then be displayed on a tabletop or mounted to any wall. It also features a safety interlock that prevents the use of interlock-equipped laser systems unless the safety light is turned on. The dimensions of each sign are 10" x 12" (25.4 cm x 30.5 cm) and the lightbox measures 10" x 12" x 3" (25.4 cm x 30.5 cm x 7.6 cm).

Please Note: The signs are provided without a wavelength or power level specified. Each sign comes with a set of numeric labels to allow you to customize the sign for your specific wavelength and output power as required by ANSI Z136.1 and other pertinent laser safety regulations.

[Hide Laser Safety](#)

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 laser sign lightboxes 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		

[Hide Laser Safety Sign Lightbox](#)

Laser Safety Sign Lightbox

The LSL10(-EC) Laser Safety Sign Lightbox provides a clear indication that a laser system is in use by illuminating the laser safety sign (sold separately) that states the appropriate warning message and laser classification. The LSL10(-EC) operates at 110 VAC (220 VAC) and has a safety interlock feature that prevents the use of interlock-equipped laser systems unless the safety light is turned on. The interlock input accepts a 2.5 mm phono jack.



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The laser safety sign lightbox accepts any one of the LSL10 Laser Safety Caution and Danger Signs available below, which cover Laser Classes 2 through 4. It can be displayed on your tabletop or mounted to any wall. A convenient line cord latch prevents the AC line cord from disengaging from the unit.

Part Number	Description	Price	Availability
LSL10	Lighted Laser Safety Sign, 10" x 12", 110 VAC	\$271.00	3-5 Days

[Hide Laser Safety Signs](#)

Laser Safety Signs

Thorlabs offers laser safety signs which may be used individually or with our LSL10 lightbox. Each sign is 10" x 12" (25.4 cm x 30.5 cm). We offer four signs that cover Laser Classes 2 through 4. Please refer to the images below to see the details of each sign.

Numeral stickers are also included with each sign (see photo below). Included are two each of the digits 1, 2, 3, 4, and 6; three each of the digits 7, 8, and 9; and five each of the digits 0 and 5.



Click to Enlarge
LSL10-2



Click to Enlarge
LSL10-3A



Click to Enlarge
LSL10-3B



Click to Enlarge
LSL10-4



Click to Enlarge
Numeral Stickers
Included

Part Number	Description	Price	Availability
LSL10-2	Class 2 Laser Safety Sign 10" x 12"	\$30.75	Today
LSL10-3A	Class 3A Laser Safety Sign 10" x 12"	\$30.75	Today
LSL10-3B	Class 3B Laser Safety Sign 10" x 12"	\$30.75	Today
LSL10-4	Class 4 Laser Safety Sign 10" x 12"	\$30.75	Today