

LS-200 Laser Shutter and Beam Dump



LS-200 shutter and air cooled beam dump

Overview of the shutter

The LS200 Laser Safety Shutter is designed to prevent accidental exposure to potentially harmful laser beams.

When the shutter is open the laser beam passes in clear air through the shutter. When closed, the shutter deflects the incoming laser beam out of a separate port to an appropriate beam dump which must be fitted.

The equipment comprises of the LS-200 shutter with a power/communications cable and fixing nuts. The air cooled beam dump is a separate item but can be supplied as a complete set - shutter and beam dump. Users may wish to use a separate beam dump of higher capacity for use with a mirror blade and higher powered lasers.

The shutter uses a gravity close blade and force-disconnect proving contacts and is designed to form part of a high-integrity safety system.

A SIL3 dual version is also available which, when correctly wired with the Lasermet Interlock Controller System can provide a safety interlock which meets Safety Integrity Level 3 to EN 61508 and ISO 13849-1 Performance Level 'e'.

The shutter has a \varnothing 50mm aperture.

LS-200 Standard and LS-200 SIL 24 laser shutters

Main features

- Gravity close blade
- Range of blade options
- Three control options
- Optional beam dumps: Air cooled or water cooled
- Safety rated options:-
 - LS-200 (Standard) EN ISO 13849-1 PL 'c'
 - LS-200 SIL-24 EN ISO 13849-1 PL 'e'
IEC 61508-1 SIL 3

Control options

The shutter is usually controlled and powered by a Lasermet interlock controller when all safety interlocks have been closed. If the interlock is tripped out the shutter closes immediately. It cannot be opened until the interlock system is re-armed. There are three options in wiring the shutter.

1. Arming the interlock system enables the operation of the shutter. The shutter can then be opened or closed using the buttons on top of the shutter.
2. In addition to option 1 above, the shutter may be remotely opened or closed by external controls such as Lasermet's LS-20 LS-RS units.
3. Arming the interlock opens the shutter immediately.

Blade options and blade cleanliness

Blade options include:- stainless steel, copper, ceramic and coated glass. Cleanliness of the blade is important. A perfectly clean blade will successfully divert a beam. It is essential that the blade is kept clean to avoid excessive heat absorption as this can lead to ablation of stainless steel blades.

Power ratings

The standard LS-200 shutter using a stainless steel blade is rated to sustain a 100W laser that has a beam diameter of 10mm. This is suitable for use with the air cooled beam dump shown. Users must ensure the external beam dump can absorb and dissipate the laser power. The PEL ratings are shown overleaf.

LS-200 laser shutter specifications

Aperture	Ø50mm	
Weight	Single Shutter:	1.6Kg
	Air-Cooled Beamdump:	1Kg
Mounting	2 x M6 threads, T-Nuts supplied	
Power Supply	24VDC	
Current	Closed:	40mA
	Opening:	210mA
	Open:	110mA
User Controls	Open, Close	
LED Indications	Power, Open, Closed	
Operating Time	Fully Open	800ms
	Fully Closed	200ms

Laser Blocking Specification

Maximum average beam power:

Using standard blade	100 W
Using mirror blade	As per mirror specification

Safety Specification

Standard LS-200	EN ISO 13849-1:2008 performance level 'c'
LS-200 SIL-24	EN ISO 13849-1:2008 performance level 'e' IEC 61508-1 SIL 3 when correctly wired to a suitably rated control system.

The LS-200 SIL-24 is a dual channel electromechanical safety laser shutdown device.

Power Density

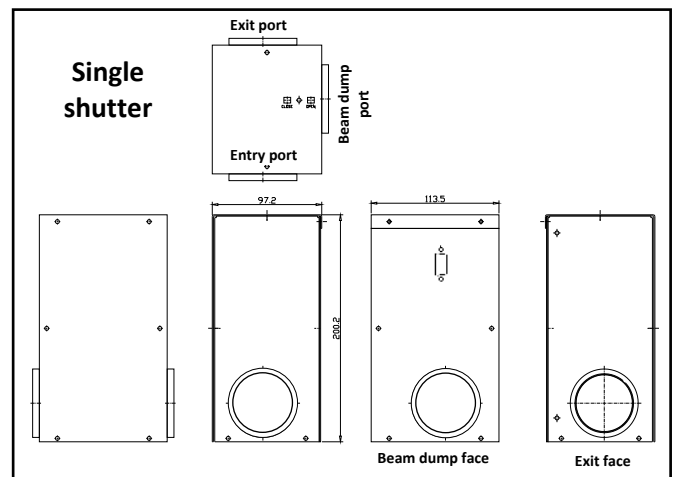
Typically the LS-200 standard shutter using a stainless steel blade can handle 100W based on a 10mm beam diameter.

The PEL ratings below are for a standard stainless steel blade.

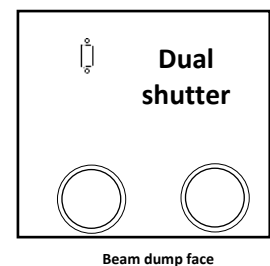
Irradiated Area	PEL (T2) 100 s	PEL (T1) 10000 s
4 mm ²	5 MW/m ²	5 MW/m ²
20 mm ²	2.5 MW/m ²	2.5 MW/m ²
80 mm ²	1.3 MW/m ²	1.3 MW/m ²

Overall dimensions

Dimensions: 97.2W x 113.5L x 200.2H mm



The dual shutter enclosure measures 238mm long compared to the single shutter which is 113.5mm long



System type: Type A System

Conformity: Certificate of Conformity is provided



Beam dump specification

The beam dump is a separate item.

An air cooled beam can be ordered or a water cooled beam dump system can be ordered depending on the cooling requirements.