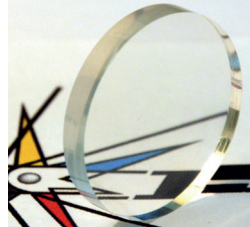


# Protection filter against red-force lasers



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ISL has developed this new passive non-linear filter by combining synthesised nano-diamonds with a polymer host. When hit by radiation above a certain energy level, the filter self-activates in order to protect the optronic sensors of observation cameras against high-intensity laser threats like designators, emitting in the infrared wavelength range.



## Context of use

Human eyes can be massively damaged, optronic sensors and photoreceptors can be dazzled or even damaged and destroyed if submitted to short-pulse laser radiation with frequency agility, low energy and little divergence. Optical limitation is a physical phenomenon based on non-linear effects. When used in a protection filter, it helps to reduce the intensity of aggressive laser radiation, such as that of laser designators aimed at optical receptors, to below the risk threshold.

### Urban warfare: red-force sniper equipped with a laser designator



### Attack by a laser designator: blue-force soldier using an optical sensor WITHOUT the ISL protection filter

Scene observed with a laser dazzling energy of 1 mJ and an average power of 20 mW.



### Attack by a laser designator: blue-force soldier using an optical sensor WITH the ISL protection filter

Scene observed with the level of laser mitigation provided by the ISL protection filter (optical density of 2.0).

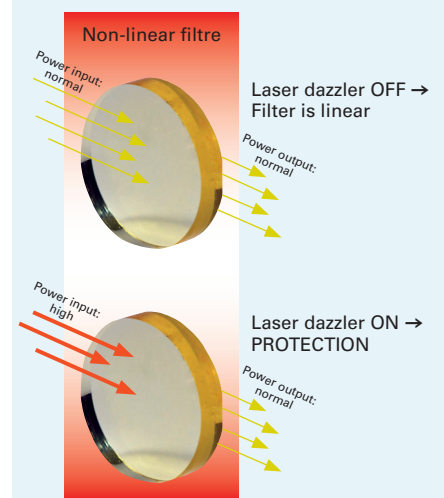


## Main characteristics

- High level of linear (static) transmission: > 80% of 500 nm at 1.6  $\mu\text{m}$
- Filtration of laser rays up to an optical density of 2.0
- Protection against 99.9% of incoming laser threat

## Working principle

The concept of optical limitation developed in ISL's laboratories is based on the principles of passive protection and self-activation. The non-linear filter self-activates when the incoming laser threat is above a certain energy level.



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