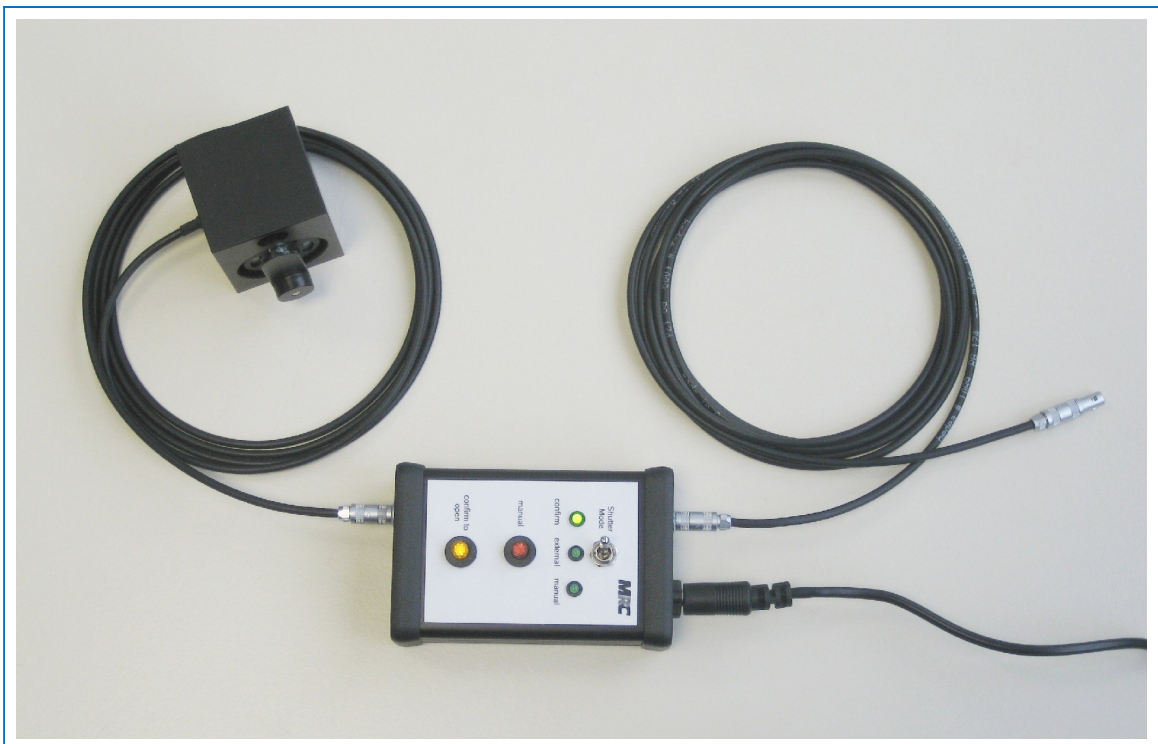


Laser shutter system „Beamblock”

User manual



1. General description

The laser shutter system *Beamblock* is designed for blocking high power laser beams. The system consists of a laser shutter and a shutter controller that allows to drive the shutter in different modes of operation. Thus the shutter can be controlled automatically by other devices or semi-manually with a safety confirmation by the user. Additionally it is possible for the user to open and close the shutter directly in the manual mode.

The input for external signals is prepared for standard TTL-levels, which allows the shutter system to be compatible to most other controllers (e.g. laser interlock or computer controlled devices).

The laser shutter system was especially developed for the use with the laser beam stabilization *Compact* or *Dynamic*. In this application the shutter system fulfils the safety function to block the laser beam in such cases where the stabilization system isn't capable to align the laser beam due to exceeding beam deviations. For this task the signal „OK“ of the laser beam stabilization is used to control the laser shutter system *Beamblock* externally.

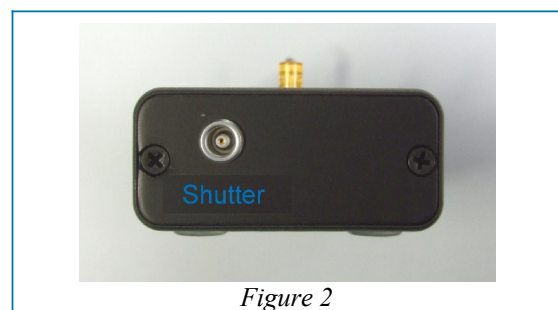
2. Installation

2.1 Shutter controller

There are three connectors at the shutter controller for the power supply, the shutter and for an external controlling device respectively.

1. For the power supply you can find the plug socket with label “12V“ on the left of Fig.1. The coaxial plug of the delivered wall power supply must be connected to this plug socket.
2. Figure 2 shows the LEMO-plug socket for the laser shutter.
3. For the connection to other devices capable to trigger the laser shutter system externally there is a LEMO plug labeled with „OK / external“ (see Fig. 1).

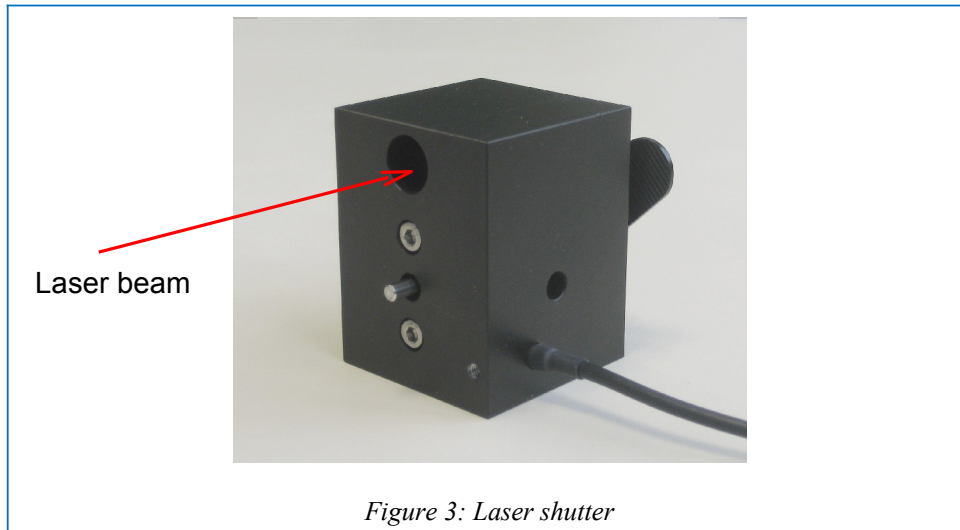
To connect the laser beam stabilization systems *Compact* or *Dynamic* with the laser shutter system the delivered LEMO cable has to be inserted in the output „OK“ of the stabilization system and the input „OK / external“ of the shutter controller.



2.2 Shutter

Before the start of operation in an optical system the laser shutter has to be mounted tightly to prevent movements during operation. For mounting, there are M6 threads at the bottom side of the shutter block.

It is also necessary to consider the orientation of the shutter. The shutter finger is rippled on one side being next to the shutter block in order to scatter the blocked laser beam to the shutter block. As shown in Figure 3 the laser beam should go through the shutter block before hitting the shutter finger on his rippled side.



3. Operation

After plugging the connectors and fixing the shutter the laser shutter system is ready for operation. For different applications the switch labelled with “Shutter Mode“ allows to choose three modes of operation. The green LED’s below the switch are showing the actual activated mode.



3.1 Confirm mode

When the „confirm“ mode is activated first the push button „confirm to open“ is yellow illuminated and the shutter controller expects a manual confirmation by pressing the push button to open the shutter.

To open the shutter two conditions have to be fulfilled.

- 1) On the one hand an external device has to be connected to the input „OK / external“ where a signal with the TTL-level „high“ means, that the optical system is ready for opening the shutter.
- 2) On the other hand the user has to confirm with the push-button „confirm to open“ that he really wants to release the laser beam. Once the push-button is pressed, the shutter will open and the yellow light in the push-button will go off. If the external signal „OK / external“ is going to the TTL-level „low“ the shutter switches back in the closed state. While this signal stays „low“ the shutter can't be opened by pressing the push-button „confirm to open“.

3.2 External mode

This mode is designed to control the laser shutter by an external device without the need of further actions by the user. For the TTL-level „high“ at the input „OK / external“ the shutter is open and for „low“ the shutter is closed.

3.3 Manual mode

This mode allows to overrule all logic operations and to control the shutter manually. The input „OK / external“ must not be connected.

When the switch „manual“ is turned on, the laser shutter is open and the switch is red illuminated. When the switch „manual“ is turned off, the shutter is closed and the red light is off.

4. Specification

Technical parameters:

Shutter	
Optical aperture	10 mm
Mounting	M6 thread
Length/width/height	55 mm/38 mm/50 mm
Weight	190 g
Cable length	1.5 m
Connector	LEMO 00
Shutter controller	
Input „OK / external“	Logic / TTL-level, LEMO 00
Output „Shutter“	0V / 12V, LEMO 00
Power supply	5.5 mm coaxial socket, 12 V / 400 mA
Length/width/height	90 mm/58 mm/38 mm
Weight	120 g
System parameters	
Shutter speed to unblock the laser beam	15 ms
Shutter speed to block the laser beam	48 ms
Power consumption (shutter opened)	400 mA / 12 V

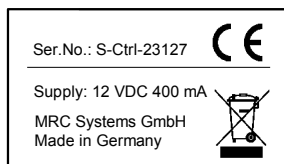
5. Safety

The system has left our factory in a faultless state. Please store and operate the system only in dry environments in order to maintain this state.



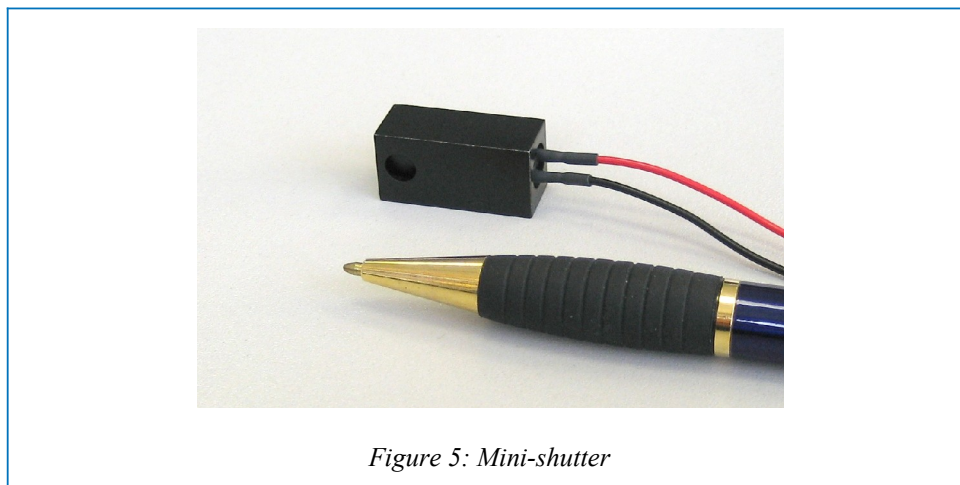
The device was designed and manufactured according to DIN EN 61000-3-2 and satisfies the requirements of the European EMC Directive 89/336/EWG.

Label



6. Customised solutions

We also offer customised solutions of our laser shutters. Figure 5 shows an example of a miniaturized device. Please do not hesitate to contact us with your special requirements.



7. Contact

MRC Systems GmbH
Hans-Bunte-Strasse 10
D-69123 Heidelberg
Phone: 06221/13803-00
Fax: 06221/13803-01
Web: www.mrc-systems.de
E-mail: info@mrc-systems.de