

PSEN op Mirror/1 Operating Manual

Safety guidelines

- ▶ We recommend that you never use more than 3 deviating mirrors along the light axis to ensure correct functionality.
- ▶ To maintain correct functionality of the system we recommend that you regularly clean the surface of the deviating mirror with a damp soft cloth. Cleaning intervals depend on the environmental conditions of the system.
- ▶ The length of the deviating mirror must be at least 100 mm greater than the length of the protected field of the light curtain.
- ▶ The deviating mirror must be installed in a way that its axes (horizontal and vertical) correspond to the respective axes of the light curtains.
- ▶ The deviating mirror has to be fixed, so that it cannot be displaced accidentally or by strong vibrations.
- ▶ We recommend that you use the PSEN op Protective Column/1 accessories where the deviating mirror can be fixed with the corresponding assembly kits.
- ▶ In an environment with strong temperature differences and/or shocks we recommend to use the PSEN op Mirror Bracket Kit/1.
- ▶ As the width of the deviating mirror is limited, the reaction of the entire system is particularly sensitive to turns on the vertical axis of the deviating mirror and the transmitter and receiver units. Therefore, particular care is required when aligning the system and fixing the parts.
- ▶ We recommend that you use the laser pointer to make the system installation (deviating mirror and light curtain) easier.
- ▶ Use of a deviating mirror reduces the effective operating range by about 15%. This percentage increases further when using two or three deviating mirrors.

In the table below the operating ranges are indicated, based on the number of the mirrors used.

Number of mirrors	Operating range	Operating range
Without mirror	6 m	19 m
1	5.1 m	16.5 m
2	4.3 m	13.7 m
3	3.7 m	11.6 m

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Assembly

Fig. 1 shows a protection system that consists of a light curtain and two deviating mirrors. The alignment of deviating mirrors is explained in the following sections based on this example.

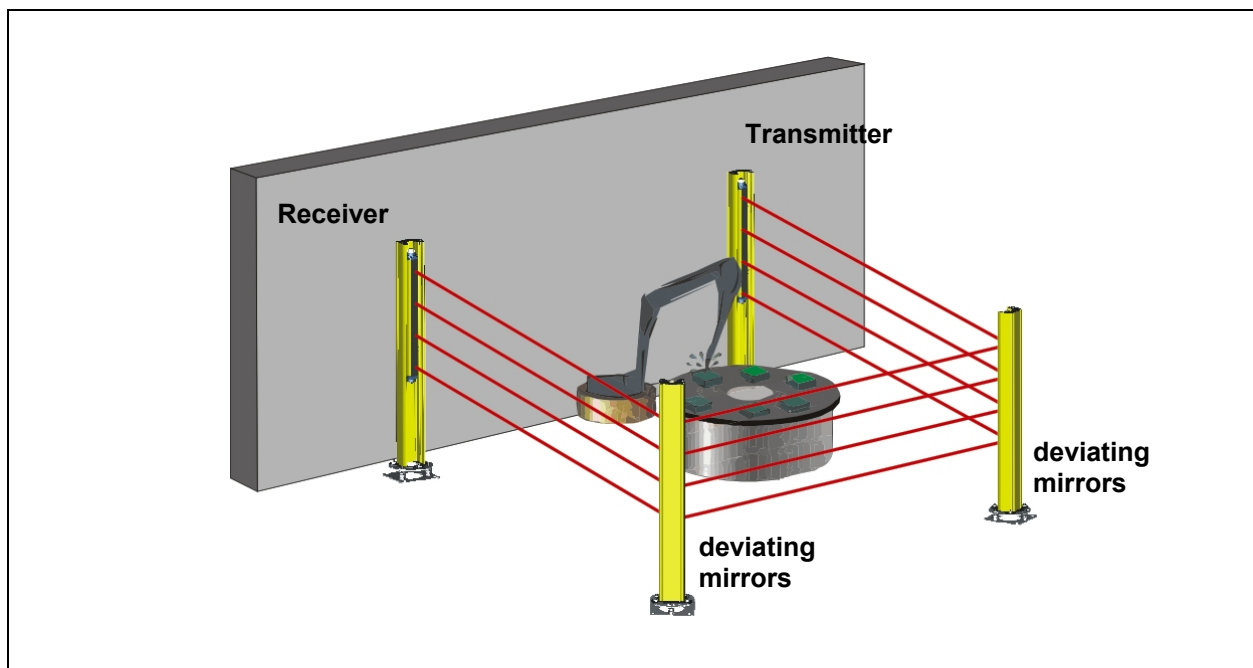


Fig. 1

Stand-alone installation

The mounting bracket kit PSEN op Mirror Bracket Kit/1 and a floor bracket are required for installation.

- ▶ Define the area to be protected and the exact positions where the deviating mirrors and the transmitter and receiver units of the light curtain are to be installed.
- ▶ Fix the floor bracket to the defined point on the floor and note that their axes have to be aligned vertically.
- ▶ Install the deviating mirrors at the floor brackets, and the transmitter and receiver units, taking into account the notes above. Insert the screw M6x50 into the slot hole of the rail, then screw it in with the corresponding washer and nut (Fig. 2) to install the mounting bracket at the deviating mirrors.
- ▶ Align the deviating mirror to ca. 45° to the optical path.
- ▶ Position the laser pointer at the upper part of the transmitter unit and align the unit so that the laser beam is horizontally in the

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middle of the first deviating mirror. The height of the laser pointer and the height where the pointer hits have to be identical.

- ▶ Repeat the procedure and align the laser pointer at the bottom part of the unit. Repeat these steps several times, if necessary.
- ▶ Align the first deviation mirror so that the laser beam hits the second deviating mirror in the position described before.
- ▶ Turn the mounting brackets to set the angle, and when the required position is reached, tighten the screws. Use the slot holes at the deviating mirror and/or adapt the inclination of the floor bracket by adding adjusting washers.
- ▶ Align the second deviating mirror in the same way and make sure that the laser hits the receiver unit.
- ▶ Insert the laser pointer in the upper part of the receiver unit and align it so that the laser beam reflected by the deviating mirrors hits the transmitter unit.
- ▶ Repeat the same process with the laser pointer in the lower part of the receiver unit.

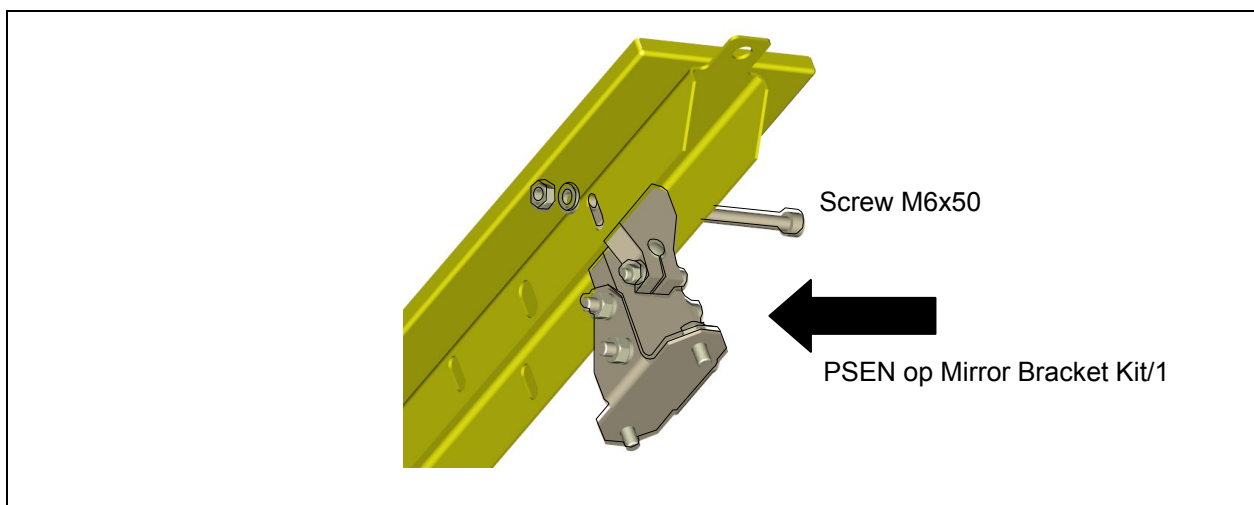


Fig. 2

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Installation on PSEN op Protective Column/1

The various PSEN op Mirror/1 can be installed on the PSEN op Protective Column/1.

PSEN op Protective Column/1 is a column made of aluminium and a base plate made of steel. The base plate consists of 2 plates that can be adapted to the ground.

Please refer to the operating manual PSEN op Protective Column/1 for the installation.

**NOTICE**

The PSEN op Protective Column 2-4/1 is pre-assembled for PSEN op Mirror-015/1. See the operating manual on PSEN op Protective Column 2-4/1 for the corresponding settings and installation.

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Order reference

Table of suitable light curtains

Product type	Light curtain
2x PSEN op Mirror-015/1	PSEN op2B-2-050
	PSEN op4B-2-050
	PSEN opSB-4B-2-050
3x PSEN op Mirror-015/1	PSEN op2B-3-080
	PSEN op4B-3-080
	PSEN opSB-4B-3-080
4x PSEN op Mirror-015/1	PSEN op2B-4-090
	PSEN op4B-4-090
	PSEN opSB-4B-4-090
	PSEN op2B-4-120
	PSEN op4B-4-120
	PSEN opSB-4B-4-120
PSEN op Mirror-060/1	PSEN op xx-s-xx-015/1
	PSEN op xx-s-xx-030/1
	PSEN op xx-s-xx-045/1
PSEN op Mirror-090/1	PSEN op xx-s-xx-060/1
	PSEN op xx-s-xx-075/1
PSEN op Mirror-120/1	PSEN op xx-s-xx-090/1
	PSEN op xx-s-xx-105/1
PSEN op Mirror-165/1	PSEN op xx-s-xx-120/1
	PSEN op xx-s-xx-135/1
	PSEN op xx-s-xx-150/1
PSEN op Mirror-190/1	PSEN op xx-s-xx-165/1
	PSEN op xx-s-xx-180/1



NOTICE

Please note the length of the deviating mirror!
The length of the deviating mirror must be at least 100 mm greater than the length of the protected field of the light curtain.

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Dimensions

PSEN op Mirror-015/1

Fig. 3 shows PSEN op Mirror-015/1 with installed PSEN op Mirror Bracket Kit/1.

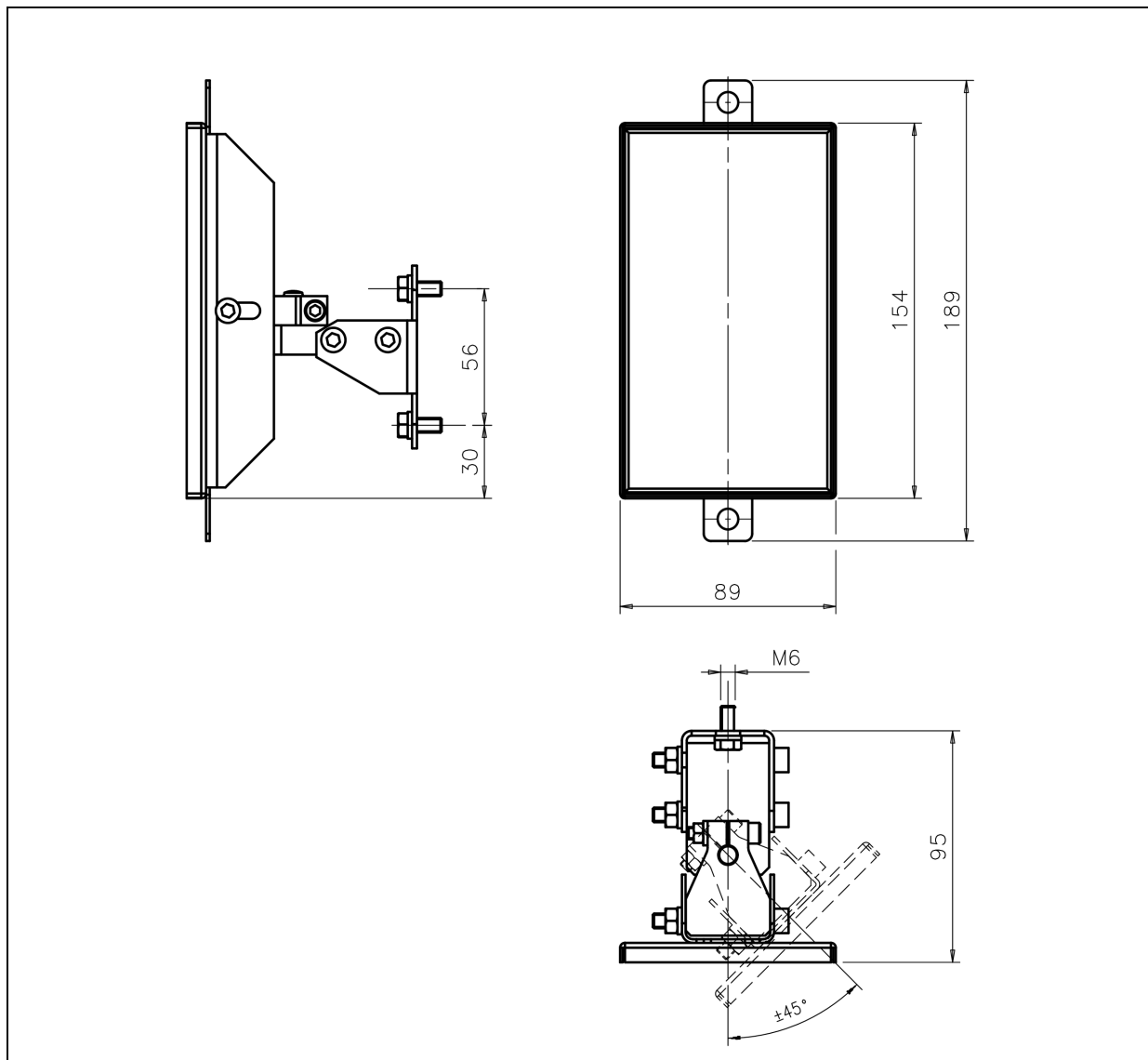


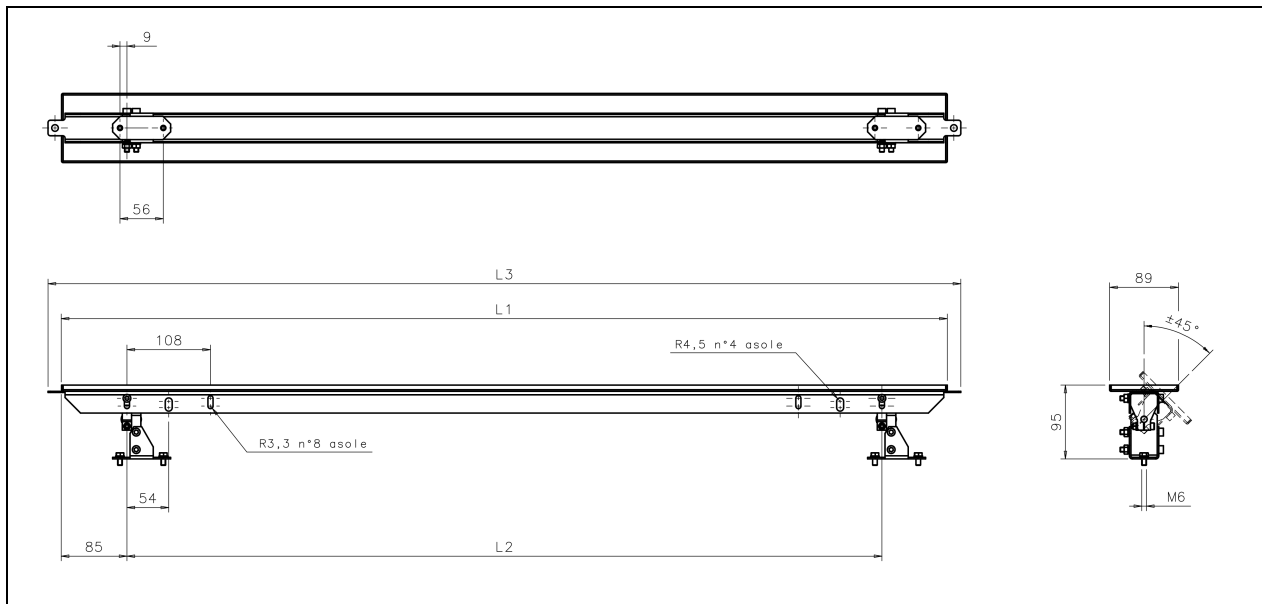
Fig. 3

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Fig. 4 shows PSEN op Mirror/1 in the length 60 - 190 cm with installed PSEN op Mirror Bracket Kit/1.



Product type	L1 (mm)	L2 (mm)	L3 (mm)
PSEN op Mirror-060/1	545	376	580
PSEN op Mirror-090/1	845	676	880
PSEN op Mirror-120/1	1145	976	1180
PSEN op Mirror-165/1	1595	1426	1630
PSEN op Mirror-190/1	1845	1676	1880

Fig. 4



NOTICE

Please refer to the operating manual PSEN op Protective Column/1 for the protective columns matching the deviating mirrors PSEN op Mirror/1.