

PSEN op4F/H A-Series

Safety light curtain

GETTING STARTED

1003068-EN-01



SAFETY GUIDELINES



To ensure correct and safe use of the safety light curtains of the PSEN op4F/H-A-series, the following instructions have to be observed.

- The system intended to stop the machine must be electrically controllable.
- The safety system at the machine must be able to stop any hazardous machine movement
 - within the entire stopping time of the machine T_s ,
 - in accordance with the details in chapter 1.2.3 of the operating manual (see CD provided),
 - and in each phase of the processing cycle.
- The safety light curtains may only be installed and connected by qualified personnel. It is essential to follow the instructions provided in the relevant sections of the manuals provided (see Chapters 2, 3, 4 and 5) and to comply with the applicable directives.
- The safety light curtain must be installed securely so that access the danger zone is not possible without interrupting the light axes (see chapter 2 and 3 of the operating manual).
- Only qualified personnel with appropriate knowledge of all the operating procedures of the safety light curtain should be permitted to work within the danger zone.
- The operating elements for the TEST, RESET/RESTART and OVERRIDE functions have to be arranged outside the protected field, so that the operator can control the corresponding area at any time.
- Instructions provided for correct operation must be strictly followed before switching on the light curtain.

Precautionary measures when selecting and installing



Ensure that the safety level guaranteed by the light curtain is compatible with the actual hazard of the machine to be monitored, in accordance with the standards EN 954-1 and EN 13849-1.

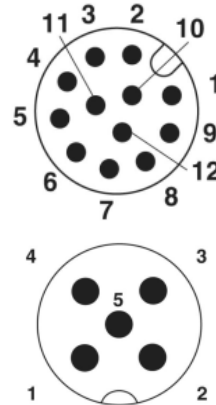
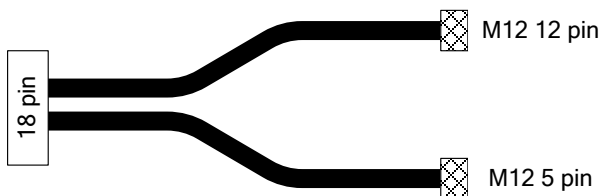
- The outputs (OSSD) of the light curtain have to be connected as safety inputs and not in the normal control circuit. The machine must have a separate START control.
- The resolution of the light curtain has to be less than the objects to be detected.
- The light curtain must be installed in an environment that complies with the technical properties stated in Chapter 10 "Technical data" of the operating manual (see CD provided).
- Avoid installing the device, particularly the receiver on the front, close to particularly intense and/or flashing light sources.
- Strong electromagnetic interference could adversely affect the correct operation of the light curtain. Consider this carefully, seeking the advice of Pilz's technical customer services.
- Smoke, mist or dust in the air in the working environment can reduce the operating range of the light curtain considerably.
- Sudden, large-scale temperature variations with very low peak values can generate a slight layer of condensation on the light curtain's lens, adversely affecting its function.
- Reflective surfaces close to the beams emitted from the protective device (whether from above, below or from the side) can cause passive reflections that adversely affect the operation of the light curtain.
- The protective device must be positioned at a distance that exceeds the minimum safety distance S or that corresponds to it, which guarantees that the operator cannot reach the danger zone until the hazardous machine movement of the object has come to a standstill by triggering the light curtain.



When the safety distance is not maintained, the safety function of the light curtain could be adversely affected or cancelled. A detailed description of the safety distance calculation is to be found in the complete operating manual (see CD provided).

Connector - pigtail cable

PSEN opt Advanced RX Muting



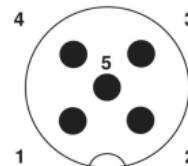
M12 connector, 12-pin:

1. 24 V (brown)
2. 0 V (blue)
3. RESET/RESTART/ALIGN (white)
4. OVERRIDE1 (green)
5. OSSD2 (pink)
6. EDM (yellow)
7. MUTING ACTIVATION (black)
8. OSSD1 (grey)
9. OVERRIDE2 (red)
10. MUTING LAMP (purple)
11. OVERRIDE STATUS (grey-pink)
12. EARTHING (red-blue)

M12 connector, 5-pin:

1. 24 V (brown)
2. MUTING2 (white)
3. 0 V (blue)
4. MUTING1 (black)
5. N.C. (grey)

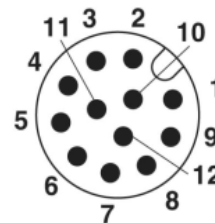
PSEN opt Advanced TX



M12 5-pin

- | | |
|--|--|
| <ol style="list-style-type: none"> 1. 24 V (brown) 2. TEST (white) | <ol style="list-style-type: none"> 3. 0 V (blue) 4. EARTH (black) 5. N.C. |
|--|--|


PSEN opt Advanced RX Blanking




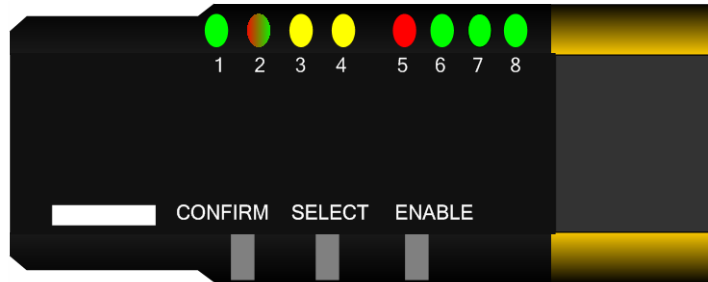
M12 12-pin

- | | |
|---|--|
| <ol style="list-style-type: none"> 1. 24 V (brown) 2. 0 V (blue) 3. RESET/RESTART/ALIGN (white) 4. TEACH IN (green) 5. OSSD2 (pink) 6. EDM (yellow) | <ol style="list-style-type: none"> 7. N.C. (black) 8. OSSD1 (grey) 9. TOLERANCE (red) 10. LAMP (purple) 11. N.C. (grey-pink) 12. EARTHING (red-blue) |
|---|--|

SETTING OF BASIC CONFIGURATION (BCM)

 The light curtain can switch to the basic configuration mode during normal operation. **After configuration and when the button "CONFIRM" is pressed, the light curtain starts up in normal operating mode in the new configuration.** Particular attention is required during administration and use of the basic configuration.

 The muting timeout "infinite" does not meet the requirements of the standard IEC 61496-1. For this reason, any possible hazards must be taken into account and the appropriate preventive measures have to be taken before selecting the option "infinite".



- 1 To open the mode of basic configuration press the **CONFIRM** button and hold it down. The system runs through a test cycle. During this test cycle, **ALL LEDs must light up** in sequence **from 1 to 8** . The current configuration is then displayed.
- 2 Use the **SELECT** function to choose the function that is to be set. The LED for the selected function will flash.
- 3 Now configure the selected function by pressing the **ENABLE** button (LED lights/goes out).
- 4 Repeat steps 2 and 3 until the required configuration is displayed.
- 5 Press the **CONFIRM** button and keep it held down to save the new configuration.

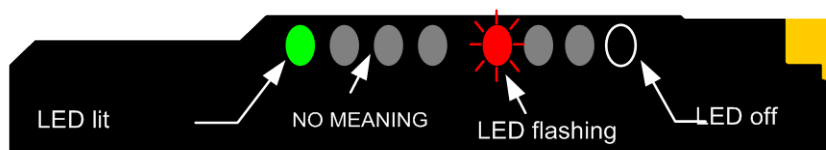
List of RX functions in muting mode (LED3 lights up yellow)			
Function	LED No.	Setting (Standard setting in bold)	Status of LED
			1 2 3 4 5 6 7 8
Coding	2	Code 1	● ● ● ● ● ● ● ●
		Code 2	● ● ● ● ● ● ● ●
		No code	● ● ● ● ● ● ● ●
Selection of muting/blanking	3	Muting	● ● ● ● ● ● ● ●
		Blanking	● ● ● ● ● ● ● ●
EDM	4	Activated	● ● ● ● ● ● ● ●
		Deactivated	● ● ● ● ● ● ● ●
Restart mode	5	Auto	● ● ● ● ● ● ● ●
		Manual	● ● ● ● ● ● ● ●
Muting direction	6	T (bidirectional)	● ● ● ● ● ● ● ●
		L (one-directional)	● ● ● ● ● ● ● ●
Muting Timeout	7	10 min	● ● ● ● ● ● ● ●
		Infinite	● ● ● ● ● ● ● ●
Override sensor	8	Level	● ● ● ● ● ● ● ●
		Edge	● ● ● ● ● ● ● ●

Function list in blanking mode (LED3 OFF)			
Function	LED No.	Setting (Default in bold)	Status of LED
			1 2 3 4 5 6 7 8
Coding	2	Code 1	● ● ● ● ● ● ● ●
		Code 2	● ● ● ● ● ● ● ●
		No code	● ● ● ● ● ● ● ●
Selection of muting/blanking	3	Muting	● ● ● ● ● ● ● ●
		Blanking	● ● ● ● ● ● ● ●
EDM	4	Activated	● ● ● ● ● ● ● ●
		Deactivated	● ● ● ● ● ● ● ●
Restart mode	5	Auto	● ● ● ● ● ● ● ●
		Manual	● ● ● ● ● ● ● ●
Selection of floating blanking	6-7	Floating blanking disabled	● ● ● ● ● ● ● ●
		Floating blanking 1 beam	● ● ● ● ● ● ● ●
		Floating blanking 2 beams	● ● ● ● ● ● ● ●
		Red. resolution 4 beams	● ● ● ● ● ● ● ●
Selection of fixed blanking	8	1 fixed blanking zone	● ● ● ● ● ● ● ●
		2 fixed blanking zones	● ● ● ● ● ● ● ●

List of TX functions			
Function	LED No.	Setting (Default in bold)	Status of LED
			1 2 3 4 5 6 7 8
Coding	2	Code 1	● ● ● ● ● ● ● ●
		Code 2	● ● ● ● ● ● ● ●
		No code	● ● ● ● ● ● ● ●
Selection of operating range	3	Long	● ● ● ● ● ● ● ●
		Reduced	● ● ● ● ● ● ● ●


DIAGNOSTIC FUNCTION

The operator can check the operating conditions of the safety light curtains via the 8 LEDs that are aligned at the RX and the TX unit. The image below displays all the display modes of the LEDs: **OFF, LIT, FLASHING, NO MEANING** (can be switched on or off according to the selected operating mode)

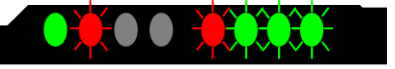
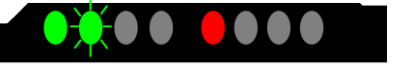



RX UNIT			
Operating mode light curtain	Information	LED Status	Recommended procedure
Normal operating mode	Interlock Free beams.	● ● ● ● ● ● ● ●	The operator can start up the light curtain in normal operating mode again by activating the RESTART
	Interlock Beams interrupted.	● ● ● ● ● ● ● ●	The operator has to remove any objects from the protected field before he can activate the RESTART
	OSSD switched on	● ● ● ● ● ● ● ●	
	OSSD switched off CODE1	● ● ● ● ● ● ● ●	

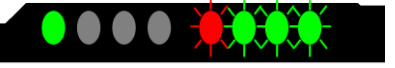




RX UNIT			
Operating mode light curtain	Information		Recommended procedure
Normal operating mode	OSSD switched off CODE2		
	OSSD switched off No CODE		
	EDM active		
	ACM active		
	ACM is currently being used		Configuration process running via PC, follow software instructions
Error	Error at OSSD		Activate the RESET. If the error should persist, please contact Pilz customer services.
	Error microprocessor/s.		Activate the RESET. If the error should persist, please contact Pilz customer services.
	Error optical system		Activate the RESET. If the error should persist, please contact Pilz customer services.
	EDM error		Check EDM feedback loop and EDM configuration. Activate the RESET.
	Restart error		Check RESTART connection. Activate the RESET.
	Communication error		Check the cascading connection and check that the terminator cap is installed correctly. Activate the RESET.
	BCM configuration error		Perform basic configuration again. If the error should persist, please contact Pilz customer services.
	ACM configuration error		Perform advanced configuration again. If the error should persist, please contact Pilz customer services.
Light curtain switched off	General error - cannot be reset		Switch light curtain on/off. The indicated error code does not correspond to the above error with lit LED.
	Supply error		Check the power supply connection. If the error should persist, please contact Pilz customer services.

RX UNIT			
Operating mode light curtain	Information		Recommended procedure











RX UNIT (BLANKING ONLY)





Normal operation	Blanking invalid (OSSD off)		Blanking zones not observed. Re-configure blanking (teach in if BCM)
	Blanking valid (OSSD on)		
	Tolerance BCM active		Check the efficient resolution for the light curtain and the intended activation of the tolerance function.

RX UNIT (MUTING ONLY)

Normal operation	Muting active		When OSSD is switched off without designated active muting, check the configuration of the partial muting.
	Override active		
	Override call status		Activate the override button to force OSSDs to light.
	Override time error		Check the override activation sequence. Check the override connector.
	Lamp error		

TX UNIT

Operating mode light curtain	Information		Procedure
Normal operation	During operation		
	TEST		In the event of unwanted tests, check the connection of the test input.
	Beams reduced range		
	Beams long range		
	No code		
	Code 1		
	Code 2		
Error	Error microprocessor/s.		Activate the RESET. If the error should persist, please contact Pilz customer services.
	Optical system error		Activate the RESET. If the error should persist, please contact Pilz customer services.

TX UNIT			
Operating mode light curtain	Information		Procedure
Error	BCM configuration error		Perform basic configuration again. If the error should persist, please contact Pilz customer services.
	Communication error		Check the cascading connection and check that the terminator cap is installed correctly. Activate the RESET.
	General error - cannot be reset		Switch light curtain on/off. The indicated error code corresponds to the above error with lit LED.

DOWNLOAD PSENopt Configurator	
URL	www.pilz.com/Downloads
Search term	PSENopt Configurator

Pilz GmbH & Co. KG
Felix-Wankel-Straße 2, 73760 Ostfildern, Germany
Tel: +49 711 3409-0 - Fax: +49 711 3409-133
www.pilz.com e-mail: pilz.gmbh@pilz.de

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