Model Number

SBL-8-H-SL-V-Z-3110

Background suppression sensor

with 4-pin, M12 x 1 connector and fixed cable with 4-pin, M12 socket

Features

- Background suppression sensor for roller conveyors
- For installation between the rollers on a roller conveyor
- Pull-in/Drop-out delay can be set
- Minimal black/white difference
- Protection degree IP65
- Can be connected in series

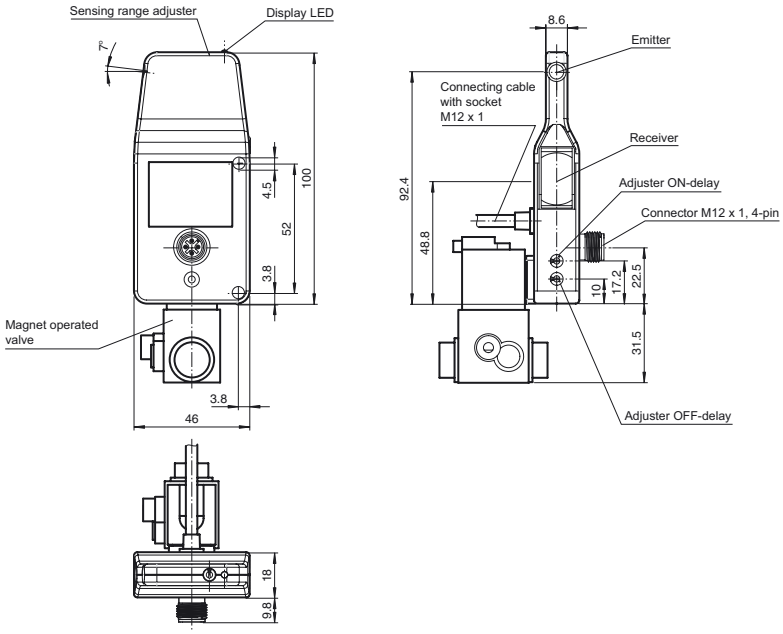
Product information

Sensors of the SBL series are used to easily control material flow on roller conveyors in material handling and other branches.

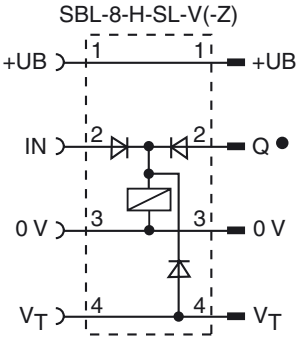
The SBL series is a precise background suppression sensor according to the 3 element method. The sensor features superior background suppression and a very good ambient light immunity. Material and transport container of all colors and opacities are reliably detected.

The special design allows the sensor to be mounted between the rollers of a roller conveyor or any other conveying unit. Mounting between the rollers is easy and protects the sensor.

Dimensions

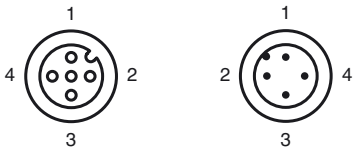


Electrical connection

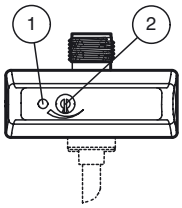


○ = Light on
● = Dark on

Pinout



Indicators/operating means



1	Signal display	yellow
2	Sensing range adjuster	

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Technical data

General specifications		
Detection range		40 ... 900 mm
Detection range min.		40 ... 340 mm
Detection range max.		40 ... 900 mm
Adjustment range		340 ... 900 mm
Reference target		standard white 200 mm x 200 mm
Light source		IRED
Light type		modulated infrared light , 880 nm
Black/White difference (6 %/90 %)		< 10 %
Diameter of the light spot		approx. 60 mm at detection range 900 mm
Cascadability		max. 25 sensors per line
Ambient light limit		continuous light 30000 Lux , Fluorescent lamp 5000 Lux
Functional safety related parameters		
$MTTF_d$		1030 a
Mission Time (T_M)		20 a
Diagnostic Coverage (DC)		0 %
Indicators/operating means		
Function display		LED yellow: lights when object is detected
Controls		Detection range adjuster
Controls		Adjuster for switch-off delay and switch-on delay
Electrical specifications		
Operating voltage	U_B	24 V DC
Ripple		max. 10 %
No-load supply current	I_0	max. 125 mA
Output		
Switching type		dark on
Signal output		1 PNP, short-circuit protected, reverse polarity protected
Switching voltage		max. 30 V DC
Switching current		max. 200 mA
Switching frequency	f	100 Hz
Response time		5 ms
On-delay		0 ... 2000 ms
Off-delay		0 ... 2000 ms
Pneumatic output		2/3 way valve
Type of valve		currentless closed
Operating pressure		0 ... 7 bar (0 ... 101.5 psi)
Medium		air
Ambient conditions		
Ambient temperature		-20 ... 50 °C (-4 ... 122 °F)
Storage temperature		-30 ... 60 °C (-22 ... 140 °F)
Mechanical specifications		
Protection degree		IP65
Connection		connector M12 x 1, 4-pin ; Connecting cable with Socket, straight M12 x 1 ; Length: 1200 mm
Material		
Housing		plastic
Optical face		plastic lens
Mass		approx. 200 g
Compliance with standards and directives		
Directive conformity		EMC Directive 2004/108/EC
Standard conformity		
Product standard		EN 60947-5-2:2007 IEC 60947-5-2:2007
Shock and impact resistance		IEC / EN 60068. half-sine, 40 g in each X, Y and Z directions
Vibration resistance		IEC / EN 60068-2-6. Sinus. 10 -1000 Hz, 10 g in each X, Y and Z directions
Approvals and certificates		
UL approval		cULus Listed, Class 2 Power Source, Type 1 enclosure
CCC approval		Products with a maximum operating voltage of ≤36 V do not bear a CCC marking because they do not require approval.

Accessories

OMH-SBL-01
Mounting bracket for sensors of SBL series

V1-G-2M-PVC
Cable socket, M12, 4-pin, PVC cable

V1-G-5M-PVC
Cable socket, M12, 4-pin, PVC cable

V1-W-2M-PUR
Cable socket, M12, 4-pin, PUR cable

V1-W-5M-PUR
Cable socket, M12, 4-pin, PUR cable

V1S-TEE-V1/V1S
T-Distributor, M12 connector to M12 socket/connector

Schraubendreher 0,5 x 3,0 mm
Screwdriver

Additional accessories can be found in the Internet.

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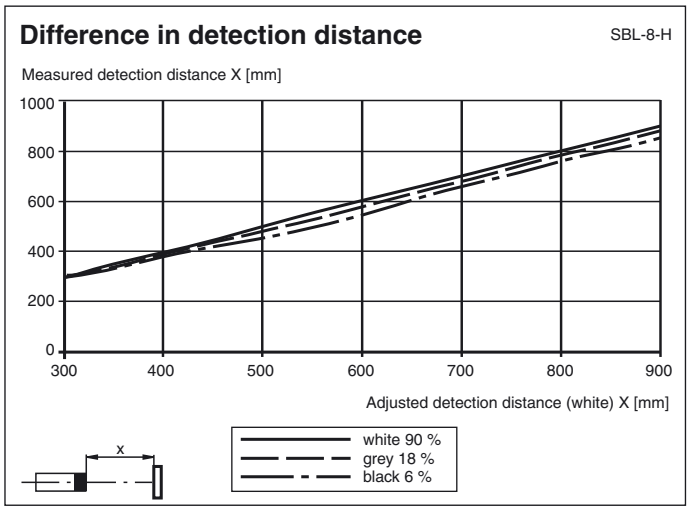
Curves/Diagrams



Additional Information

Intended use:

The transmitter and receiver are located in the same housing for direct detection sensors with background masking. Marking of objects outside the detection range is achieved by arranging the angle between the transmitter and receiver (2 receiver elements).
Objects are detected independently of the structure and colour of the surface.

The special design of the sensors makes it possible to install them between two rollers in the roller back-up conveyor systems under the material that is being moved.This allows for installation that saves space and prevents mechanical damage of the sensor caused by material being conveyed.

Mounting instructions:

The sensors can be directly fastened in place with the pass-through bore holes or can be attached with a support bracket or a clamp (the last two are not included in delivery).
The surface underneath must be flat to prevent the housing from moving when it is tightened into position. We recommend securing the nut and screw in place with spring washers to prevent the sensor from going out of adjustment.

For versions SBL-8-H-SL, -V, -Z
As many as 25 sensors can be cascaded with the aid of just one power supply. A solenoid valve is energised if the corresponding sensor itself or its predecessor in the cascade does not see any object.

It is also possible to energise the valves of all sensors included in the cascade with block movement (V_T).To do this, apply the positive supply voltage (+UB) on the input V_T of the first sensor.

Adjustment:

Align the sensor to the background. If the yellow LED is lit, the detection range should be reduced with the detection range adjuster until the yellow LED goes out.

Object detection:

Position the object to be detected in the path of the beam. If the object is detected, the yellow LED lights up.
If it does not light up, the detection range must be further adjusted on the potentiometer until it lights up when an object is detected.

Version SBL-8-H-SL-V-Z only:
The two adjusting mechanisms on the front side of the sensor can be used separately for timer functions for the switching on or switching off process.
This results in a delay defined by the adjuster between the change of state (object detected -> object not detected or vice-versa) and the switching process. The duration of the delay can be set for up to 2 seconds.

Cleaning:

We recommend cleaning the optical surface and checking all connections at regular intervals.

Note:

Use a screwdriver to adjust the sensing range. We strongly recommend to use the screwdriver given in the accessories section.

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