



## Background suppression sensor SBL-8-H-900-IR-SL-V-4288



- Background suppression sensor for roller conveyors
- For installation between the rollers on a roller conveyor
- Very small black-white difference
- Adjustable detection range
- Can be connected in series
- 3 in 1: Sensor, pneumatic valve and integrated control logic

Congested track scanner, background suppression sensor, 900 mm adjustable detection range, infrared light, dark on, 1 PNP output, M12 plug and fixed cable with M12 socket

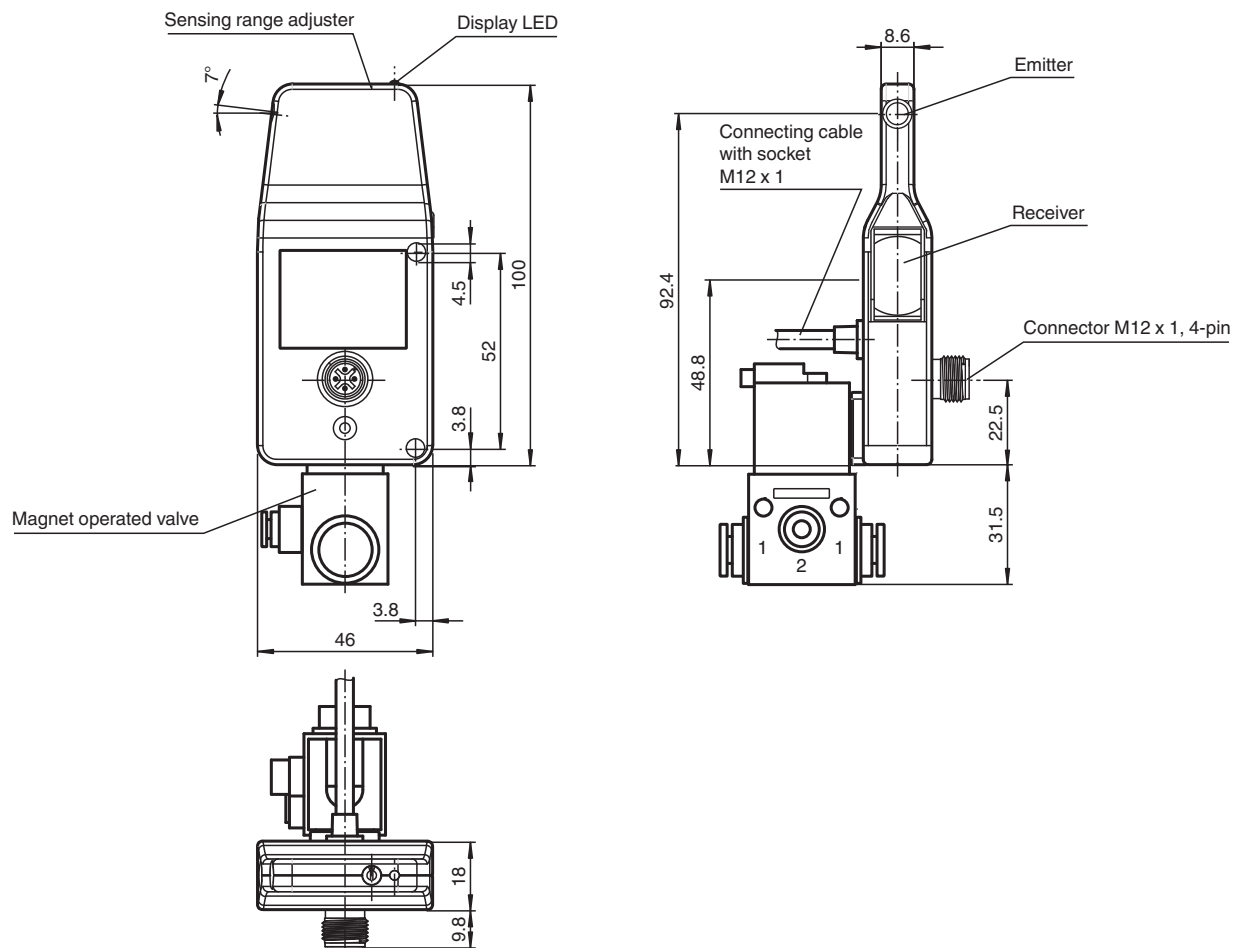


### Function

Sensors of the SBL serie 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



Release date: 2023-03-28 Date of issue: 2023-03-28 Filename: 223834\_eng.pdf

Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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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                      | IREC                                                   |
| 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                     | At 20°C:<br>max. 38 sensors per line                   |
| Ambient light limit               | continuous light 30000 Lux , Fluorescent lamp 5000 Lux |

### Functional safety related parameters

|                                |        |
|--------------------------------|--------|
| MTTF <sub>d</sub>              | 1100 a |
| Mission Time (T <sub>M</sub> ) | 20 a   |
| Diagnostic Coverage (DC)       | 0 %    |

### Indicators/operating means

|                    |                                            |
|--------------------|--------------------------------------------|
| Function indicator | LED yellow: lights when object is detected |
| Control elements   | Sensing range adjuster                     |

### Electrical specifications

|                        |                |                |
|------------------------|----------------|----------------|
| Operating voltage      | U <sub>B</sub> | 24 V DC ± 20 % |
| Ripple                 |                | max. 10 %      |
| No-load supply current | I <sub>0</sub> | max. 115 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                                                       |
| Pneumatic output    |   | 3/2 way valve                                              |
| Type of valve       |   | currentless closed                                         |
| Operating pressure  |   | 0 ... 4 bar (0 ... 58 psi)                                 |
| Medium              |   | air                                                        |

### Conformity

|                  |              |
|------------------|--------------|
| Product standard | EN 60947-5-2 |
|------------------|--------------|

### Compliance with standards and directives

|                             |                                                                            |
|-----------------------------|----------------------------------------------------------------------------|
| Standard conformity         |                                                                            |
| 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 | CCC approval / marking not required for products rated ≤36 V |

### Ambient conditions

|                     |                                |
|---------------------|--------------------------------|
| Ambient temperature | -15 ... 50 °C (5 ... 122 °F)   |
| Storage temperature | -30 ... 60 °C (-22 ... 140 °F) |

### Mechanical specifications

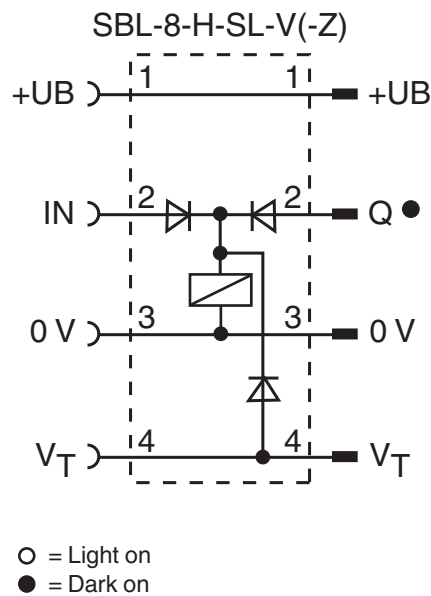
|                      |                                                                                             |
|----------------------|---------------------------------------------------------------------------------------------|
| Housing width        | 18 mm                                                                                       |
| Housing height       | 100 mm                                                                                      |
| Housing depth        | 46 mm                                                                                       |
| Degree of protection | IP65                                                                                        |
| Connection           | 4-pin, M12 x 1 connector ; Connecting cable with Socket, straight M12 x 1 ; Length: 1930 mm |

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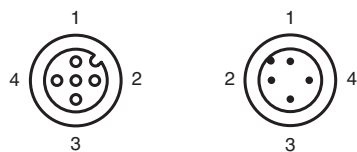
Technical Data

|              |               |
|--------------|---------------|
| Material     |               |
| Housing      | plastic       |
| Optical face | plastic lens  |
| Mass         | approx. 200 g |

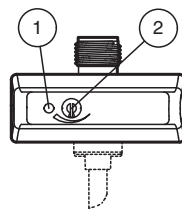
Connection Assignment



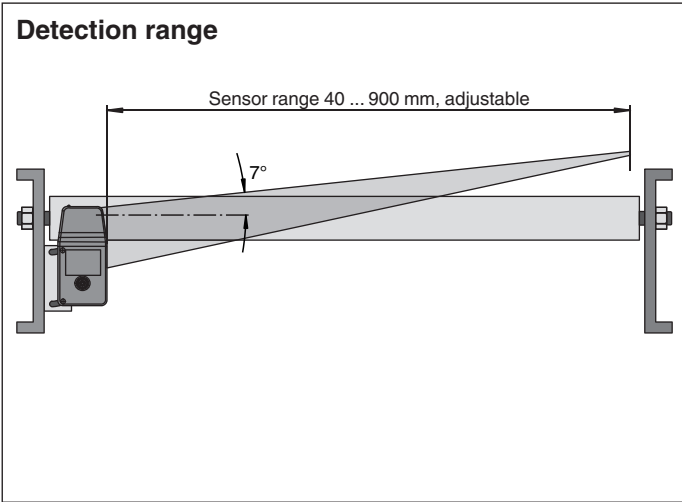
Connection Assignment



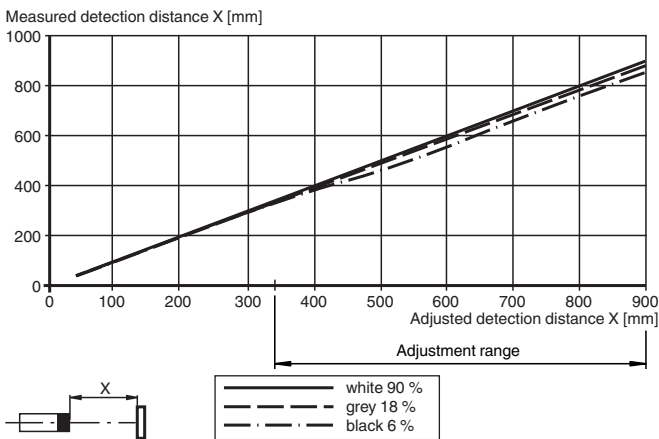
Assembly



|   |                        |        |
|---|------------------------|--------|
| 1 | Signal display         | yellow |
| 2 | Sensing range adjuster |        |



Difference in detection distance



Accessories

|  |                       |                                                                         |
|--|-----------------------|-------------------------------------------------------------------------|
|  | <b>OMH-SBL-01</b>     | Mounting bracket for sensors of SBL series                              |
|  | <b>V1-G-2M-PVC</b>    | Female cordset single-ended M12 straight A-coded, 4-pin, PVC cable grey |
|  | <b>V1-G-5M-PVC</b>    | Female cordset single-ended M12 straight A-coded, 4-pin, PVC cable grey |
|  | <b>V1-W-2M-PUR</b>    | Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey   |
|  | <b>V1-W-5M-PUR</b>    | Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey   |
|  | <b>V1S-TEE-V1/V1S</b> | T-Splitter M12 plug to M12 plug / M12 socket 4-pin A-coded              |

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## System Description

### Options:

Sensors with the **version -V** are equipped with a solenoid valve and can directly control a 3/2 way pneumatic actuator, without any-interaction of an external system controlling unit (PLC). As soon as conveyed goods are detected, the diffuse mode sensor gives an electrical-signal to the pneumatic solenoid valve, which is then activated.

Sensors with the control logic **option -SL-(V)** allows up to 50 diffuse mode sensors to be connected-to each other (data and power), depending on the current consumption of sensor and solenoid valve. An additional supply power and data bus cable is used to interconnect the sensors with control logic option -SL. All necessary functions for controlling the material flow of conveyed goods are supported, such as: single feed, single release, slug release, external motor and solenoid valve control. It is also possible to energize the valves of all sensors included in the cascade by slug release (VT). To do this, apply the positive supply voltage (+UB) on the input VT of the first sensor.

Sensors with timing **function -Z** features the adjustment of the ON- and OFF delay of the output independently. This optimizes control of the solenoid valve. A zero pressure accumulation of the conveyed goods can be realized with application of time ON- and OFF delay of the output. The ON- and OFF delay to control the switching of the solenoid valve may be adjusted between 0 and 2 seconds.

Additional power supply between every 20 to 25 sensors can be realized by the use of the power in feed junction V1S-TEE-V1/V1S in combination with a cable V1-G-...-PVC. This features to practically connect any number of SBL sensors in series. Attention should be paid to the maximum rated current of the cable and the connectors which usually is max. I = 4 A. For more details on the maximum rated current of single components, please refer to our datasheet values. For the electrical supply of the sensors the country specific standards have to be considered.

## Accessories

### Note:

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