Product Data

Electrical Data	
Supply voltage (*)	10-30 V dc or 24V ac
Power consumption	Max 600 mW
Output: Solidstate	100mA / 30 DC

(*) Depends on type, 10-30V dc types have build-in output monitoring function (sniffer).

Environmental Data	
Temperature, operation	-20 to +55 °C
Sealing class	IP 67

Sensing Range	
Range	0-3m
Horizontal field	+/-40 degrees
Vertical field	+/-16 degrees

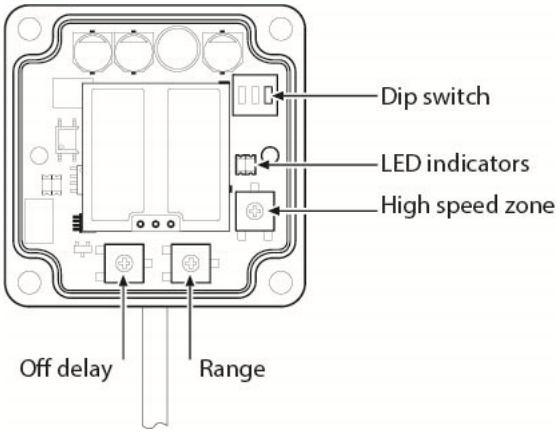
Indicators	
Green LED	Power On
Yellow LED	Output status. (See output logic) Blink for output alarm (*)

(*) For types with build-in output monitoring function.

Available Models

Type	Model	Supply Voltage	Frequency	Connection Output	Sensing Range
4033	SMM 01 4033L S50P	10 – 30 V dc	Low	Solid State Relay NC	0 – 3 m
	SMM 01 4033H S50P		High		
7023	SMM 01 7023L S50P	24 V ac / 10 – 30 V dc	Low		
	SMM 01 7023L S50P		High		

Illustration

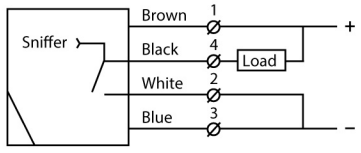


Connection

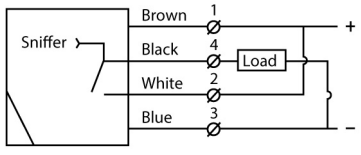
Wiring diagrams

The sensor has a solid-state relay output, and for the 4033 dc-versions also with an integrated output monitor 'Sniffer'. Connect as below to ensure correct function of the sniffer. If faulty connected or failure is found the output is de-energised and the yellow LED will start blinking. Ensure correct connection and repower the sensor to escape the fault mode.
If there is no Sniffer, i.e. the ac/dc-versions, there are no special requirements for connection of the opto-coupled solid state relay output.

Configuration of NPN output



Configuration of PNP output



Connection Steps

Check the power supply complies with electrical data. Make sure power is off. Connect all wires according to wiring diagrams. Turn on power.

Connection Wires/Pins

	Cable	4 pin, M12 plug, male	
Supply +	Brown	Pin 1 / Brown	
Supply –	Blue	Pin 3 / Blue	
Output (load)	Black	Pin 4 / Black	
Output	White	Pin 2 / White	Sensor plug

Adjustments

Mechanical adjustment

Notice that the sensing field is not symmetrical. The sensing field is in the direction perpendicular to front of the housing. The sensing field is narrow in the directions where the cable is inserted and wide in the direction orthogonal to the cable insertion.
Notice that there are two different types of the sensor marked with L and H. Whenever two sensors are used to detect the same objects, use one of each type, to avoid risk of interference.

Acces to potentiometers and LED's

The sensor has to be disassembled in order to get access to potentiometers, LED's and switch. The enclosure can be taken apart if the 4 top screws are removed, and the PCB-board will be visible as shown in figure 1.

Potentiometers (*)	
Range	Range adjustment
Extension of high-speed zone	Within the sensing range, there are two zones; a high speed zone and a low speed zone. In the low speed zone which is close to the sensor, objects with speeds down to app. 20 cm/s will be detected. This is advantageous in order to detect crossing traffic close to the escalator, for instance when traffic is passing from one escalator to the next escalator in a multi-storey building. In the high speed zone only objects with speed larger than 0.4 m/s = 1.5 km/h will be detected. This will to reduce cross-traffic detection, but on the other hand still detect motion towards the sensor. For radar sensor it is the speed towards the sensor that matters. (or more precisely the magnitude of the velocity projected on the line between the sensor and the object). Increasing the potentiometer will increase the fraction of the high speed zone and reduce the size of the low speed zone.
Off delay	Delay on de-activation of output can be adjusted between 0 s and 10 s

(*) See figure 1.

Dip switches (*)	
1	Background suppression on/off. Minor signals from constant signal contributors as for instance fluorescent light tubes and constantly moving parts as handrails on escalators, that may lead to unwanted detection are suppressed. Disable the function if it is not needed.
2	Signal summation on/off. If signal summation is on, multiple objects with different speed are all contributing to detection. Can provide more consistent detection of for instance legs, because these consist of different minor parts moving with different velocity relative to the sensor. Turn signal summation off if the range is larger and the sensor is directed towards the body, because the sensor then will have less sensitivity to background traffic.
3 (**)	Direction sensitive on/off. If 'on' the sensor will only detect objects moving towards the sensor. If 'off' the sensor will detect both objects moving towards and away from the sensor.

(*) See figure 1
(**) Only present for direction sensitive types

Output Logic		
Detection	Output indicator	Output
Moving objects present	OFF	OFF
No objects or non-moving objects	ON	ON

Electrical adjustment	
1	Turn 'Range' potentiometer fully clockwise for maximum range. Turn 'Off-delay' fully anti clock wise to remove off-delay, for instant response. Turn high speed zone fully anti clock wise to remove high speed zone, for maximum motion sensitivity. This setting corresponds to the factory setting.
2	Check if the sensing distance is adequate, but not excessive. Turn the 'Range' potentiometer anti clockwise in steps until suitable range is obtained.
3	With the High speed zone set to zero (fully anti clock wise) the sensor will detect all motions down to 20 cm/s in the full sensing range. Crossing traffic will therefore be detected in the entire sensing range. Turn the 'High speed zone' potentiometer clockwise in steps in order to make the part of the sensing zone which is distant from the sensor to a high speed zone. Check whether crossing traffic is detected.
4	Finally increase the Off-delay if needed by the control system.

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Made in Denmark

Warning

This product is not a safety system and must not be used as such.
It is not designed for personnel safety applications, and must not be used as a stand alone personnel safety system.

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