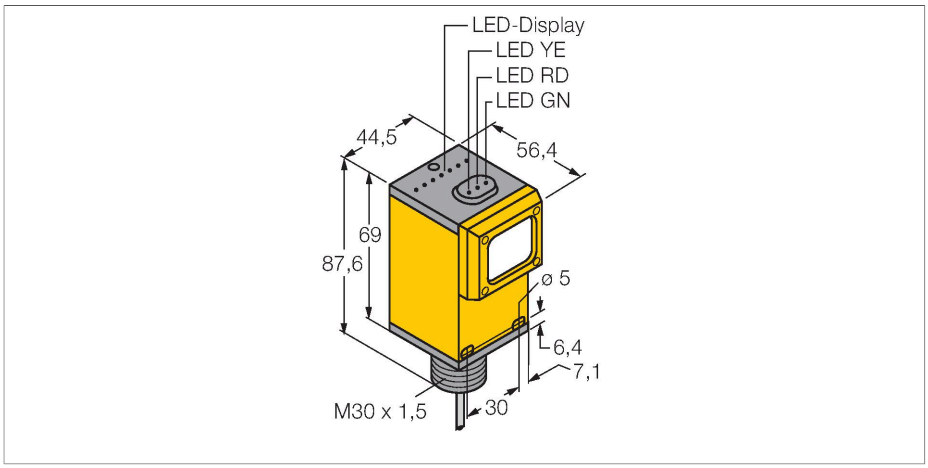
Q45AD9R
Photoelectric Sensor – Opposed Mode Sensor (Emitter/ Receiver)



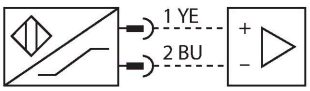
Technical data

Type	Q45AD9R
ID no.	3037626
Optical data	
Function	Opposed mode sensor
Operating mode	Receiver
Range	0…6000 mm
Electrical data	
Operating voltage	5…15 VDC
Voltage	Nom. 8.2 VDC
Current consumption non-actuated	≤ 1 mA
Actuated current consumption	≥ 2.1 mA
No-load current	≤ 2.1 mA
Output function	Light operation, NAMUR
Switching frequency	≤ 250 Hz
Readiness delay	≤ 0 ms
Response time typical	< 2 ms
Setting option	Potentiometer
Mechanical data	
Design	Rectangular, Q45
Dimensions	Ø 30 x 87 x 54.1 x 44.5 mm
Housing material	Plastic, Thermoplastic material
Lens	plastic, Acrylic
Electrical connection	Cable, 2 m, PVC
Number of cores	2
Core cross-section	0.5 mm^2
Ambient temperature	-40…+70 °C

Features

- Cable, PVC, 2 m
- Protection class IP67
- Sensitivity adjusted via potentiometer
- Operating voltage: 5…15 VDC
- NAMUR output: dark <= 1.2 mA ; light >= 2.1 mA
- Acc. to EN 60947-5-6 (NAMUR)
- ATEX category II 1 G, Ex zone 0

Wiring diagram

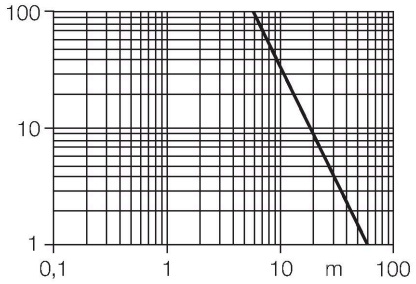


Functional principle

Opposed mode sensors consist of an emitter and receiver. They are installed opposite each other so that the light from the emitter is aimed directly at the receiver. When an object interrupts or weakens the light beam, the sensor switches. Opposed mode sensors are the most reliable photoelectric sensors for detection of opaque targets. An excellent contrast between light and dark conditions and an extremly high excess gain are typical of this sensing mode, thus allowing operation over larger distances and under difficult conditions.
Excess gain curve
Excess gain in relation to the distance

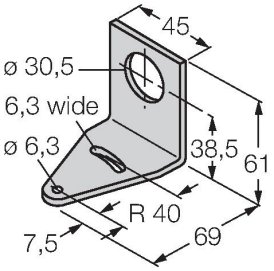
Technical data

Protection class	IP67
Switching state	LED, Red
Excess gain indication	LED, flashing
Tests/approvals	
MTTF	67 years acc. to SN 29500 (Ed. 99) 40 °C
Approvals	CE, FM, CSA
Approvals	ATEX II 1G ATEX II 2G ATEX II 3G
Device marking	Ⓔx II 1 G Ex ia IIC T5 Ga
Ignition protection category	Ex ia IIC T5 Ga
Ex approval acc. to conformity certificate	FM12ATEX0094X



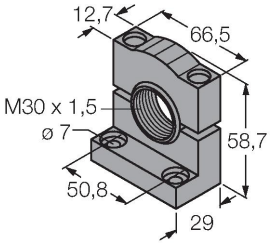
Accessories

SMB30A 3032723



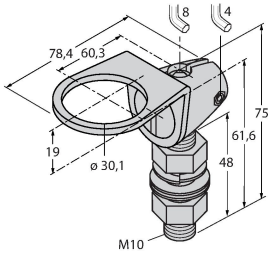
Mounting bracket, rectangular, stainless steel, for sensors with 30mm thread

SMB30SC 3052521



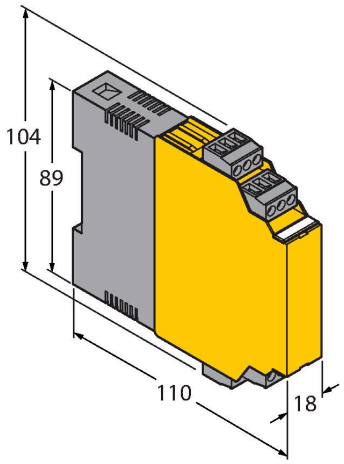
Mounting bracket, PBT black, for sensors with 30 mm thread, rotatable

SMB30FAM10 3011185



Mounting bracket, stainless steel, for M10 x 1.5 thread, thread length 30 mm

Accessories

Dimension drawing	Type	ID no.	
	IM1-22EX-R	7541231	Isolating switching amplifier, 2-channel; 2 relay outputs; input NAMUR signal; selectable ON/OFF mode for wire-break and short-circuit monitoring; adjustable output mode (NO / NC mode); removable terminal blocks; width 18 mm; universal power supply unit

Operating Instructions

Intended use	This device fulfills the directive 94/9/EC and is suited for use in explosion hazardous areas according to EN60079-0:2009, -11:2012, -26:2007.In order to ensure correct operation to the intended purpose it is required to observe the national regulations and directives.
For use in explosion hazardous areas conform to classification	II 1 G (Group II, Category 1 G, electrical equipment for gaseous atmospheres).
Marking (see device or technical data sheet)	Ex II 1 G and Ex ia IIC T5 Ga acc. to EN60079-0, -11 and -26
Local admissible ambient temperature	-25…+70 °C
Installation/Commissioning	These devices may only be installed, connected and operated by trained and qualified staff. Qualified staff must have knowledge of protection classes, directives and regulations concerning electrical equipment designed for use in explosion hazardous areas.Please verify that the classification and the marking on the device comply with the actual application conditions.
	This device is only suited for connection to approved Exi circuits according to EN 60079-0 and EN 60079-11. Please observe the maximum admissible electrical values.After connection to other circuits the sensor may no longer be used in Exi installations. When interconnected to (associated) electrical equipment, it is required to perform the "Proof of intrinsic safety" (EN60079-14).
Installation and mounting instructions	Avoid static charging of cables and plastic devices. Please only clean the device with a damp cloth. Do not install the device in a dust flow and avoid build-up of dust deposits on the device.If the devices and the cable could be subject to mechanical damage, they must be protected accordingly. They must also be shielded against strong electro-magnetic fields.The pin configuration and the electrical specifications can be taken from the device marking or the technical data sheet.In order to avoid contamination of the device, please remove possible blanking plugs of the cable glands or connectors only shortly before inserting the cable or opening the cable socket.
Service/Maintenance	Repairs are not possible. The approval expires if the device is repaired or modified by a person other than the manufacturer. The most important data from the approval are listed.