Inductive sensor  
With extended temperature range  
BI10-EM30WDTC-Y1X

Type code  
BI10-EM30WDTC-Y1X

Ident no.  
4012071

Rated switching distance Sn  
10 mm

Mounting conditions  
flush

Assured switching distance  
≤ (0.81 x Sn) mm

Correction factors  
St37 = 1; Al = 0.3; stainless steel = 0.7; Ms = 0.4

Repeatability  
≤ 2 % of full scale

Temperature drift  
≤ ± 10 %  
≤ ± 20 %, ≤ -25 °C, ≥ +70 °C

Hysteresis  
1...10 %

Ambient temperature  
-40...+100 °C

in the explosion hazardous area see instruction leaflet

Output function  
2-wire, NAMUR

Switching frequency  
0.5 kHz

Voltage  
Nom. 8.2 VDC

Non-actuated current consumption  
≥ 2.1 mA

Actuated current consumption  
≤ 1.2 mA

Approval acc. to  
KEMA 02 ATEX 1090X

Internal capacitance (C) / inductance (L)  
150 nF / 150 µH

Device designation  
© II 1 G Ex ia IIC T6 Ga/II 1 D Ex ia IIC T115 °C Da

(max. U = 20 V, I = 20 mA, P = 200 mW)

Warning  
avoid static charging

Construction  
threaded barrel, M30 x 1.5

Dimensions  
80 mm

Housing material  
stainless steel, V4A (1.4404)

Terminal chamber cover material  
plastic, Ultem

Terminal chamber housing material  
plastic, LCP-GF30

Material active area  
plastic, LCP

Admissible pressure on front cap  
≤ 10 bar

Max. tightening torque housing nut  
75 Nm

Connection  
Terminal chamber, Removable cage clamp terminals suited for M16 x 1.5 cable glands

Clamping ability  
≤ 1.5 mm²

Vibration resistance  
55 Hz (1 mm)

Shock resistance  
30 g (11 ms)

IP Rating  
IP68 / IP69K

MTTF  
6198 years acc. to SN 29500 (Ed. 99) 40 °C

Switching state  
LED yellow

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ATEX category II 1 G, Ex-zone 0 at temperatures up to +80 °C

ATEX category II 2 G. Ex-zone 1

ATEX category II 1 D, Ex zone 20 for temperatures from -25°C to +70°C

SIL2 according to IEC 61508

Threaded barrel, M30 x 1.5

Stainless steel, 1.4404

Temperatures -40 °C ... +100 °C

High protection class IP69K, for harsh environments

Special double-lip seal

Protection against all common acid and alkaline cleaning agents

For the food industry

DC 2-wire, nom. 8.2 VDC

Output acc. to DIN EN 60947-5-6 (NAMUR)

Terminal chamber

Wiring diagram

Functional principle

Inductive sensors detect metal objects contactless and wear-free. For this purpose they use a high-frequency electromagnetic AC field that interacts with the target. The sensors hosting a ferrite core coil generate the AC field through an LC resonant circuit. Special versions are available for ambient temperatures between -60°C and +250°C.
Inductive sensor
With extended temperature range
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<table>
<thead>
<tr>
<th>Distance</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>D</td>
<td>2 x B</td>
</tr>
<tr>
<td>W</td>
<td>3 x Sn</td>
</tr>
<tr>
<td>T</td>
<td>3 x B</td>
</tr>
<tr>
<td>S</td>
<td>1.5 x B</td>
</tr>
<tr>
<td>G</td>
<td>6 x Sn</td>
</tr>
</tbody>
</table>

Diameter of the active area B  Ø 30 mm
## Accessories

<table>
<thead>
<tr>
<th>Type code</th>
<th>Ident no.</th>
<th>Description</th>
<th>Design</th>
</tr>
</thead>
<tbody>
<tr>
<td>MW-30</td>
<td>6945005</td>
<td>Mounting bracket for threaded barrel devices; material: Stainless steel A2 1.4301 (AISI 304)</td>
<td></td>
</tr>
<tr>
<td>BSS-30</td>
<td>6901319</td>
<td>Mounting bracket for smooth and threaded barrel devices; material: Polypropylene</td>
<td></td>
</tr>
<tr>
<td>IM1-22EX-R</td>
<td>7541231</td>
<td>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</td>
<td></td>
</tr>
</tbody>
</table>
Intended use
This device fulfills the directive 94/9/EC and is suited for use in explosion hazardous areas according to EN60079-0:2012, -11:2012, -26:2007. Further it is suited for use in safety-related systems, including SIL2 as per IEC 61508. 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 and II 1 D (Group II, Category 1 G, electrical equipment for gaseous atmospheres and category 1 D, electrical equipment for dust atmospheres).

Marking (see device or technical data sheet)
• II 1 G and Ex ia IIC T6 Ga acc. to EN60079-0 and -26 and • II 1 D Ex ia IIIC T115°C Da acc. to EN60079-0

Local admissible ambient temperature
ATEX category II 2 G electrical equipment -40…+100 °C, category II 1 G -40…+80 °C and category II 1 D -25…+70 °C. The corresponding temperature classes are provided in the ATEX type-examination certificate. The device incorporates the custom-built /S97 and /S100 types.

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 compliant to EN60079-0 and -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).
When employed in safety systems to IEC 51408 it is required to assess the failure probability (PFD) of the complete circuitry.

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.

Special conditions for safe operation
avoid static charging

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.