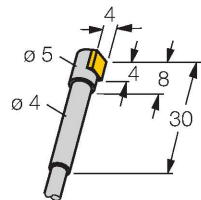


# BI1-HS540-Y1

## Inductive Sensor



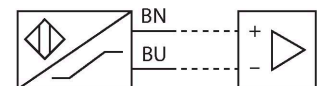
### Features

- Smooth barrel, Ø 4 mm
- Active face, lateral
- Stainless steel, 1.4427 SO
- DC 2-wire, nom. 8.2 VDC
- Output acc. to EN 60947-5-6 (NAMUR)
- Cable connection
- ATEX category II 2 G, Ex Zone 1
- ATEX category II 1 D, Ex Zone 20
- SIL 2 (Low Demand Mode) acc. to IEC 61508, PL c acc. to ISO 13849-1 at HFT0
- SIL 3 (All Demand Mode) acc. to IEC 61508, PL e acc. to ISO 13849-1 with redundant configuration HFT1

### Technical data

|   |  |
|---|--|
| Type  | BI1-HS540-Y1   |
| ID  | 1004001  |
| General data  |  |
| Rated switching distance  | 1 mm   |
| Mounting conditions   | Flush  |
| Secured operating distance  | $\leq (0.81 \times S_n)$ mm  |
| Correction factors  | St37 = 1; Al = 0.3; stainless steel = 0.7; Ms = 0.4  |
| Repeat accuracy   | $\leq 2$ % of full scale   |
| Temperature drift   | $\leq \pm 10$ %  |
| Hysteresis  | 1...10 %   |
| Electrical data   |  |
| Output function   | 2-wire, NAMUR  |
| Switching frequency   | 5 kHz  |
| Voltage   | Nom. 8.2 VDC   |
| Non-actuated current consumption                                    | $\geq 2.1$ mA  |
| Actuated current consumption  | $\leq 1.2$ mA  |
| Approval acc. to  | KEMA 02 ATEX 1090X   |
| Internal capacitance (C <sub>i</sub> )/inductance (L <sub>i</sub> ) | 150 nF/150 µH  |
| Device marking  | EX II 2 G Ex ia IIC T6 Gb/II 1 D Ex ia IIIC T135 °C Da<br>(max. U <sub>i</sub> = 20 V, I <sub>i</sub> = 60 mA, P <sub>i</sub> = 80 mW) |
| Mechanical data   |  |
| Design  | Smooth barrel, 4 mm  |
| Dimensions  | 30 mm  |
| Housing material  | Stainless steel, 1.4427 SO   |
| Active area material  | Plastic, PA12-GF30   |
| Electrical connection   | Cable  |

### Wiring diagram



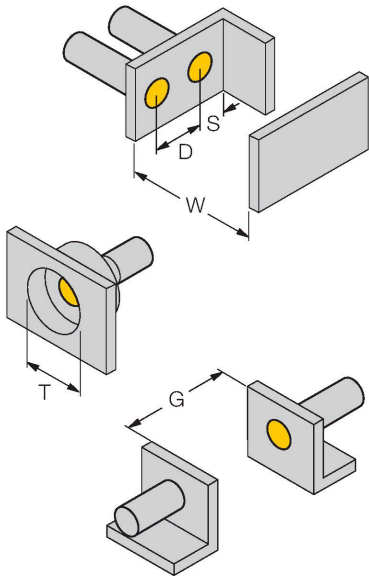
### Functional principle

Inductive sensors detect metal objects contactless and wear-free. For this, they use a high-frequency electromagnetic AC field that interacts with the target. Inductive sensors generate this field via an RLC circuit with a ferrite coil.

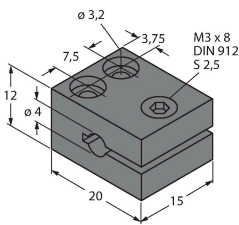
Technical data

|                          |  |
|--------------------------|--|
| Cable quality            | Ø 3 mm, Blue, Lif9YYW, PVC, 2 m            |
| Core cross-section       | 2 x 0.14 mm <sup>2</sup>                   |
| Environmental conditions |  |
| Ambient temperature      | -25...+70 °C                               |
| Vibration resistance     | 55 Hz (1 mm)                               |
| Shock resistance         | 30 g (11 ms)                               |
| Protection class         | IP67                                       |
| MTTF                     | 6198 years acc. to SN 29500 (Ed. 99) 40 °C |

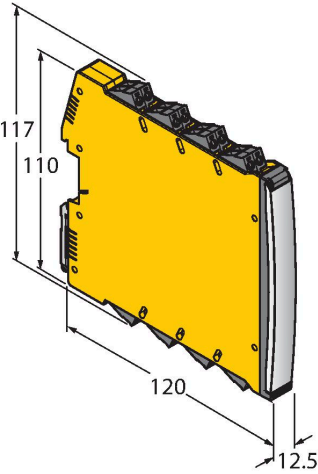
Mounting instructions

| Mounting instructions/Description  |  |         |
|--|--|---------|
|  | Distance D   | 2 x B   |
|  | Distance W   | 3 x Sn  |
|  | Distance T   | 3 x B   |
|  | Distance S   | 1.5 x B |
|  | Distance G   | 6 x Sn  |
|  | Diameter active area B   | Ø 4 mm  |
|  | Sensors of the HS540 series should only be mounted with the mounting clips BS540 (Id.-No. 69475), MBS40 (Id.-No. 69477) or with similar wide area mounting aids. |         |

Accessories

|   |       |
|---|-------|
| MBS40   | 69477 |
| Fixing clamp; material mounting block: Anodized aluminium                           |       |
|  |       |

Accessories

| Dimension drawing   | Type                     | ID      |  |
|---|--------------------------|---------|--|
|  | IMX12-DI01-2S-2T-0/24VDC | 7580020 | Isolating switching amplifier, 2-channel; SIL2 acc. to IEC 61508; Ex-proof version; 2 transistor outputs; input Namur signal; ON/OFF switchable monitoring of wire-break and short-circuit; toggle between NO/NC mode; signal doubling; removable screw terminals; 12.5 mm wide; 24 VDC power supply |

## Instructions for use

|  |   |
|--|---|
| Intended use   | This device fulfills Directive 2014/34/EC and is suited for use in areas exposed to explosion hazards according to EN 60079-0:2018 and EN 60079-11:2012. 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 2 G and II 1 D (Group II, Category 2 G, electrical equipment for gaseous atmospheres and category 1 D, electrical equipment for dust atmospheres).   |
| Marking (see device or technical data sheet)                   | Ⓔ II 2 G and Ex ia IIC T6 Gb and Ⓔ II 1 D Ex ia IIIC T135 °C Da acc. to EN 60079-0, -11   |
| 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). Attention! When used in safety systems, all content of the security manual must be observed.         |
| 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. |
| 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.   |