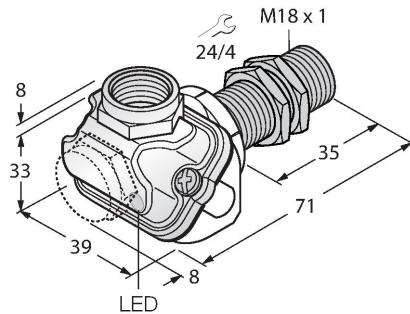


# BI5-EM18WDTTC-Y1X

## Inductive Sensor – With Increased Temperature Range



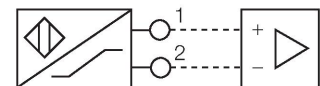
### Features

- Threaded barrel, M18 x 1
- Stainless steel, 1.4404
- For temperatures of -40 °C...+100 °C
- High protection class IP69K for harsh environments
- Special double-lip seal
- Protection against all common acidic and alkaline cleaning agents
- Suitable for applications in the food industry
- DC 2-wire, nom. 8.2 VDC
- Output acc. to DIN EN 60947-5-6 (NAMUR)
- Terminal chamber
- 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
- 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 HTF1

### Technical data

|                                         |                                                        |
|-----------------------------------------|--------------------------------------------------------|
| Type                                    | BI5-EM18WDTTC-Y1X                                      |
| ID                                      | 4012061                                                |
| General data                            |                                                        |
| Rated switching distance                | 5 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                       | $\leq \pm 10$ %                                        |
|                                         | $\leq \pm 20$ %, $\leq -25$ °C, $\geq +70$ °C          |
| Hysteresis                              | 1...10 %                                               |
| Electrical data                         |                                                        |
| Output function                         | 2-wire, NAMUR                                          |
| Switching frequency                     | 1 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)/inductance (L) | 150 nF/150 $\mu$ H                                     |
| Device marking                          | Ex II 1 G Ex ia IIC T6 Ga/II 1 D Ex ia IIIC T135 °C Da |
|                                         | (max. $U_i = 20$ V, $I_i = 20$ mA, $P_i = 200$ mW)     |
| Warning                                 | Avoid static charging                                  |
| Mechanical data                         |                                                        |
| Design                                  | Threaded barrel, M18 x 1                               |
| Dimensions                              | 71 mm                                                  |
| Housing material                        | Stainless steel, 1.4404 (AISI 316L)                    |

### 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.

Technical data

|                                       |                                                       |
|---------------------------------------|-------------------------------------------------------|
| Terminal chamber cover material       | plastic, Ultem                                        |
| Terminal chamber housing material     | plastic, LCP-GF30                                     |
| Active area material                  | Plastic, LCP                                          |
| Admissible pressure on front cap      | ≤ 15 bar                                              |
| Max. tightening torque of housing nut | 25 Nm                                                 |
| Electrical connection                 | Terminal chamber, Removable cage clamp terminals      |
|                                       | suited for M16 x 1.5 cable glands                     |
| Clamping ability                      | ≤ 1.5 mm²                                             |
| Environmental conditions              |                                                       |
| Ambient temperature                   | -40...+100 °C                                         |
|                                       | For explosion hazardous areas see instruction leaflet |
| Vibration resistance                  | 55 Hz (1 mm)                                          |
| Shock resistance                      | 30 g (11 ms)                                          |
| Protection class                      | IP68<br>IP69K                                         |
| MTTF                                  | 6198 years acc. to SN 29500 (Ed. 99) 40 °C            |
| Switching state                       | LED, Yellow                                           |

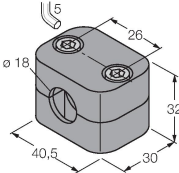
Mounting instructions

Mounting instructions/Description

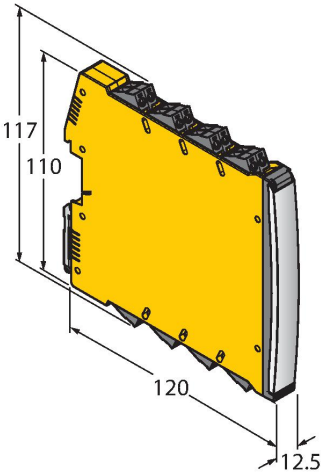
The image contains three technical diagrams illustrating the mounting of a terminal block. The top diagram shows a side view of a single terminal block with a dimension line labeled 'T' indicating its thickness. The middle diagram shows two terminal blocks mounted on a surface, with a dimension line labeled 'G' indicating the distance between them. The bottom diagram shows a terminal block mounted on a surface, with dimension lines labeled 'D' (distance between mounting holes), 'S' (distance from the edge to the first hole), and 'W' (width of the block).

|                        |         |
|------------------------|---------|
| 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 18 mm |

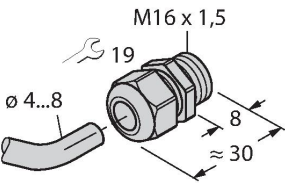
Accessories

|                                                                                   |         |                                                                                                                                                                                              |                                                                                    |         |                                                                                |
|-----------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------|--------------------------------------------------------------------------------|
| MW-18                                                                             | 6945004 | Mounting bracket for threaded barrel sensors; material: Stainless steel A2 1.4301 (AISI 304)                                                                                                 | BSS-18                                                                             | 6901320 | Mounting clamp for smooth and threaded barrel sensors; material: Polypropylene |
|  |         |                                                                                                                                                                                              |  |         |                                                                                |
| QM-18                                                                             | 6945102 | Quick-mount bracket with dead-stop; material: Chrome-plated brass. Male thread M24 x 1.5. Note: The switching distance of the proximity switches may change when using quick-mount brackets. |                                                                                    |         |                                                                                |
|  |         |                                                                                                                                                                                              |                                                                                    |         |                                                                                |

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 |

| Dimension drawing | Type                     | ID      |                                                                    |
|-------------------|--------------------------|---------|--------------------------------------------------------------------|
|                   | M16X1.5 PVDF CABLE GLAND | 1634759 | M16 × 1.5 cable gland, material: PVDF;<br>with Viton O-ring; IP69K |



## Instructions for use

|                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Intended use                                                   | This device fulfills Directive 2014/34/EC and is suited for use in explosion-hazardous areas according to EN 60079-0:2018 and EN 60079-11:2012. It is also suitable for use in safety-related systems, including SIL2 (IEC 61508) and PL c (ISO 13849-1) with HFT0 and SIL3 (IEC 61508) and PL e (ISO 13849-1) with redundant configuration HFT1. In order to ensure that the device is operated as intended, the national regulations and directives must be observed.                                                                                                                                                                                                                           |
| 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)                   | Ex II 1 G and Ex ia IIC T6 Ga and Ex II 1 D Ex ia IIIC T135 °C Da acc. to EN 60079-0, -11                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 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 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. 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.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |