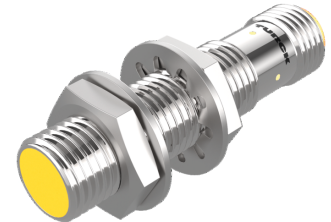
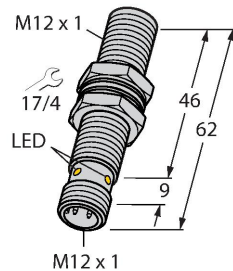


# BI4-EM12E-AP45XLD-H1141

## Inductive Sensor – For Use in Vehicle Board Nets



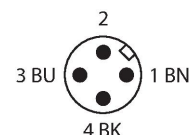
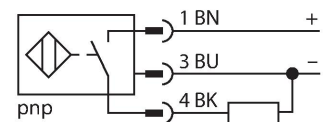
### Technical data

|                                           |                                                                      |
|-------------------------------------------|----------------------------------------------------------------------|
| Type                                      | BI4-EM12E-AP45XLD-H1141                                              |
| ID                                        | 1584000                                                              |
| <b>General data</b>                       |                                                                      |
| Rated switching distance                  | 4 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                         | $\leq \pm 10 \%$                                                     |
|                                           | $\leq \pm 15 \%, \leq -25^\circ\text{C} \vee \geq +70^\circ\text{C}$ |
| Hysteresis                                | 3...15 %                                                             |
| <b>Electrical data</b>                    |                                                                      |
| Operating voltage                         | 8.6...65 VDC                                                         |
| Residual ripple                           | $\leq 10 \%$ $U_{ss}$                                                |
| DC rated operational current              | $\leq 200$ mA                                                        |
| No-load current                           | 15 mA                                                                |
| Residual current                          | $\leq 0.1$ mA                                                        |
| Isolation test voltage                    | $\leq 0.5$ kV                                                        |
| Short-circuit protection                  | yes / Cyclic                                                         |
| Voltage drop at $I_o$                     | $\leq 1.8$ V                                                         |
| Wire breakage/Reverse polarity protection | yes / Complete                                                       |
| Output function                           | 3-wire, NO contact, PNP                                              |
| Load-dump protection (DIN ISO 7637-2)     | Severity degree IV/Level 4                                           |
| Switching frequency                       | 2 kHz                                                                |
| <b>Mechanical data</b>                    |                                                                      |
| Design                                    | Threaded barrel, M12 x 1                                             |

### Features

- Threaded barrel, M12 x 1
- Stainless steel, 1.4301
- For vehicle board nets, 12 V and 24 V
- Increased interference immunity 100 V/m radiated acc. ISO 11452-4 and 100 mA BCI acc. to ISO 11452-2
- Load-dump protection acc. to DIN ISO 7637-2 (SAE J 113-11)
- Extended temperature range
- High protection class IP68/IP69K
- Protection against salt spray and rapid temperature change
- Laser engraved label, permanently legible
- DC 3-wire, 8.4...65 VDC
- NO contact, PNP output
- M12 x 1 male connector
- E1 type approval from German federal office for motor vehicles

### Wiring diagram



### Functional principle

Maximum reliability even under the most extreme environmental conditions is guaranteed by our sensors for mobile applications. TURCK's inductive sensors for

Technical data

|                                             |                                            |
|---------------------------------------------|--------------------------------------------|
| Dimensions                                  | 62 mm                                      |
| Housing material                            | Stainless steel, 1.4301 (AISI 304)         |
| Active area material                        | Plastic, PA12-GF30                         |
| Max. tightening torque of housing nut       | 10 Nm                                      |
| Electrical connection                       | Connector, M12 × 1                         |
| Environmental conditions                    |                                            |
| Ambient temperature                         | -40...+85 °C                               |
| Temperature changes (EN60068-2-14)          | -40... +85 °C; 20 cycles                   |
| Vibration resistance                        | 55 Hz (1 mm)                               |
| Vibration resistance (EN 60068-2-6)         | 20 g; 10...3000 Hz; 50 cycles; 3 axes      |
| Shock resistance                            | 30 g (11 ms)                               |
| Shock resistance (EN 60068-2-27)            | 150 g; 6 ms ½ sine; 3 × each; 3 axes       |
| Continuous shock resistance (EN 60068-2-29) | 100 g; 11 ms ½ sine; 3 × each; 3 axes      |
| Salt spray test (EN 60068-2-52)             | Severity degree 5 (4 test cycles)          |
| Protection class                            | IP68<br>IP69K                              |
| MTTF                                        | 2283 years acc. to SN 29500 (Ed. 99) 40 °C |
| Switching state                             | LED, Yellow                                |

extremely hostile industrial environments not only meet, but even exceed the requirements of the protection classes IP68 and IP69. Applied in vehicles for road construction or in agricultural machines, these sensors excel in high vibration and shock resistance and they withstand fast temperature cycles.

|                   |    |    |    |    |    |    |
|-------------------|----|----|----|----|----|----|
| 12 V Bordnet      |    |    |    |    |    |    |
| Impulse           | 1  | 2  | 3a | 3b | 4  | 5  |
| Severity level    | IV | IV | IV | IV | IV | IV |
| Failure criterion | C  | C  | A  | A  | C  | C  |

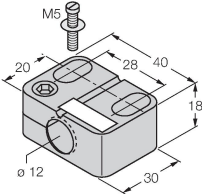
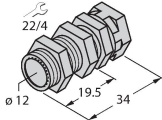
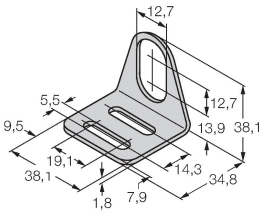
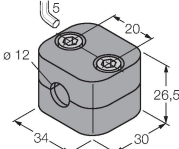
|                   |     |    |    |    |     |    |
|-------------------|-----|----|----|----|-----|----|
| 24 V Bordnet      |     |    |    |    |     |    |
| Impulse           | 1   | 2  | 3a | 3b | 4   | 5  |
| Severity level    | III | IV | IV | IV | III | IV |
| Failure criterion | C   | C  | A  | A  | A   | C  |

Mounting instructions

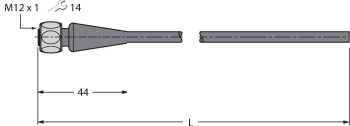
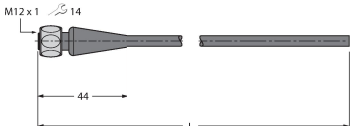
Mounting instructions/Description

|                        |         |
|------------------------|---------|
| 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 12 mm |

Accessories

|                                                                                   |         |                                                                                              |                                                                                    |         |                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------|---------|----------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BST-12B                                                                           | 6947212 | Mounting clamp for threaded barrel sensors, with dead-stop; material: PA6                    | QM-12                                                                              | 6945101 | Quick-mount bracket with dead-stop; material: Chrome-plated brass. Male thread M16 × 1. Note: The switching distance of the proximity switches may change when using quick-mount brackets. |
|  |         |                                                                                              |  |         |                                                                                                                                                                                            |
| MW-12                                                                             | 6945003 | Mounting bracket for threaded barrel sensors; material: Stainless steel A2 1.4301 (AISI 304) | BSS-12                                                                             | 6901321 | Mounting clamp for smooth and threaded barrel sensors; material: Polypropylene                                                                                                             |
|  |         |                                                                                              |  |         |                                                                                                                                                                                            |

Accessories

| Dimension drawing                                                                   | Type       | ID      |                                                                                                                                                                        |
|-------------------------------------------------------------------------------------|------------|---------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | RKH4-2/TFE | 6935482 | Connection cable, M12 female connector, straight, 3-pin, stainless steel coupling nut, cable length: 2 m, jacket material: PVC, gray; temperature range: -25...+80 °C  |
|  | RKH4-2/TFG | 6934384 | Connection cable, M12 female connector, straight, 3-pin, stainless steel coupling nut, cable length: 2 m, jacket material: TPE, gray; temperature range: -40...+105 °C |