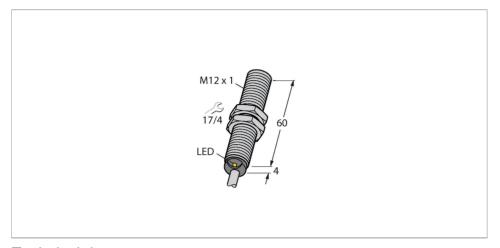


# BI2-G12-AZ33X Inductive Sensor





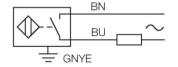
ID         1304002           General data         Rated switching distance         2 mm           Mounting conditions         Flush           Secured operating distance         ≤ (0.81 × Sn) mm           Correction factors         \$t37 = 1; Al = 0.3; stainless steel = 0.7; Ms = 0.4           Repeat accuracy         ≤ 2 % of full scale           Hysteresis         315 %           Electrical data         20250 VAC           Operating voltage U <sub>8</sub> 20250 VAC           Operating voltage U <sub>8</sub> 10300 VDC           AC rated operational current         ≤ 100 mA           DC rated operating current I <sub>6</sub> ≤ 100 mA           Frequency         ≥ 50≤ 60 Hz           Residual current         ≤ 1.7 mA           Isolation test voltage         1.5 kV           Surge current         ≤ 1 A (≤ 10 ms max. 5 Hz)           Voltage drop at I <sub>6</sub> ≤ 6 V           Output function         2-wire, NO contact, 2-wire           Smallest operating current         ≥ 3 mA           Switching frequency         0.02 kHz	Туре	BI2-G12-AZ33X
Rated switching distance 2 mm  Mounting conditions Flush  Secured operating distance ≤ (0.81 × Sn) mm  Correction factors St37 = 1; Al = 0.3; stainless steel = 0.7; Ms = 0.4  Repeat accuracy ≤ 2 % of full scale  Hysteresis 315 %  Electrical data  Operating voltage U <sub>8</sub> 20250 VAC  Operating voltage U <sub>8</sub> 10300 VDC  AC rated operational current ≤ 100 mA  DC rated operating current I <sub>8</sub> ≤ 100 mA  Frequency ≥ 50≤ 60 Hz  Residual current ≤ 1.7 mA  Isolation test voltage 1.5 kV  Surge current ≤ 1 A (≤ 10 ms max. 5 Hz)  Voltage drop at I <sub>8</sub> ≤ 6 V  Output function 2-wire, NO contact, 2-wire  Smallest operating current ≥ 3 mA	ID	1304002
Mounting conditions       Flush         Secured operating distance       ≤ (0.81 × Sn) mm         Correction factors       St37 = 1; Al = 0.3; stainless steel = 0.7; Ms = 0.4         Repeat accuracy       ≤ 2 % of full scale         Hysteresis       315 %         Electrical data       20250 VAC         Operating voltage Us       10300 VDC         AC rated operational current       ≤ 100 mA         DC rated operating current Is       ≤ 100 mA         Frequency       ≥ 50≤ 60 Hz         Residual current       ≤ 1.7 mA         Isolation test voltage       1.5 kV         Surge current       ≤ 1 A (≤ 10 ms max. 5 Hz)         Voltage drop at Is       ≤ 6 V         Output function       2-wire, NO contact, 2-wire         Smallest operating current       ≥ 3 mA	General data	
Secured operating distance $\leq (0.81 \times Sn) \text{ mm}$ Correction factors $\begin{array}{l} St37 = 1; \text{ Al} = 0.3; \text{ stainless steel} = 0.7; \text{ Ms} = 0.4 \\ \hline Repeat accuracy & \leq 2 \% \text{ of full scale} \\ Hysteresis & 315 \% \\ \hline Electrical data \\ \hline Operating voltage U_B 20250 \text{ VAC}  Operating voltage U_B 10300 \text{ VDC}  AC rated operational current \leq 100 \text{ mA}  DC rated operating current I_0 \leq 100 \text{ mA}  Frequency \geq 50\leq 60 \text{ Hz}  Residual current \leq 1.7 \text{ mA}  Isolation test voltage 1.5 \text{ kV}  Surge current \leq 1 \text{ A} (\leq 10 \text{ ms max. 5 Hz})  Voltage drop at I_0 \leq 6 \text{ V}  Output function 2\text{-wire, NO contact, } 2\text{-wire}  Smallest operating current \geq 3 \text{ mA}$	Rated switching distance	2 mm
Correction factors $ \begin{array}{ll} St37 = 1; \ Al = 0.3; \ stainless \ steel = 0.7; \ Ms \\ = 0.4 \\ \hline \\ Repeat \ accuracy \\ \leq 2 \ \% \ of \ full \ scale \\ \hline \\ Hysteresis \\ \hline \\ 315 \ \% \\ \hline \\ Electrical \ data \\ \hline \\ Operating \ voltage \ U_{\scriptscriptstyle B} \\ \hline \\ Operating \ voltage \ U_{\scriptscriptstyle B} \\ \hline \\ AC \ rated \ operational \ current \\ \leq 100 \ mA \\ \hline \\ DC \ rated \ operating \ current \ I_{\scriptscriptstyle e} \\ \hline \\ Erequency \\ \hline \\ Esidual \ current \\ \hline \\ Residual \ current \\ \hline \\ Surge \ current \\ \hline \\ Voltage \ drop \ at \ I_{\scriptscriptstyle e} \\ \hline \\ Output \ function \\ \hline \\ Smallest \ operating \ current \\ \hline \\ \geq 3 \ mA \\ \hline \\ \hline \\ \hline \\ Smallest \ operating \ current \\ \hline \\ \hline \\ Smallest \ operating \ current \\ \hline \\ \hline \\ \hline \\ \hline \\ Smallest \ operating \ current \\ \hline \\ $	Mounting conditions	Flush
$= 0.4$ Repeat accuracy $\leq 2 \text{ % of full scale}$ Hysteresis $315 \text{ %}$ Electrical data $Operating \text{ voltage } U_{\text{B}} \qquad 20250 \text{ VAC}$ Operating voltage $U_{\text{B}} \qquad 10300 \text{ VDC}$ $AC \text{ rated operational current} \qquad \leq 100 \text{ mA}$ $DC \text{ rated operating current } I_{\text{e}} \qquad \leq 100 \text{ mA}$ $Frequency \qquad \geq 50\leq 60 \text{ Hz}$ $Residual \text{ current} \qquad \leq 1.7 \text{ mA}$ Isolation test voltage $1.5 \text{ kV}$ $Surge \text{ current} \qquad \leq 1 \text{ A } (\leq 10 \text{ ms max. 5 Hz})$ $Voltage \text{ drop at } I_{\text{e}} \qquad \leq 6 \text{ V}$ $Output \text{ function} \qquad 2-\text{wire, NO contact, 2-wire}$ $Smallest \text{ operating current} \qquad \geq 3 \text{ mA}$	Secured operating distance	≤ (0.81 × Sn) mm
Hysteresis  315 %  Electrical data  Operating voltage U <sub>B</sub> 20250 VAC  Operating voltage U <sub>B</sub> 10300 VDC  AC rated operational current  ≤ 100 mA  DC rated operating current I <sub>B</sub> Frequency  ≥ 50≤ 60 Hz  Residual current  ≤ 1.7 mA  Isolation test voltage  1.5 kV  Surge current  ≤ 1 A (≤ 10 ms max. 5 Hz)  Voltage drop at I <sub>B</sub> Output function  2-wire, NO contact, 2-wire  Smallest operating current  ≥ 3 mA	Correction factors	
Electrical data  Operating voltage $U_B$ 20250 VAC  Operating voltage $U_B$ 10300 VDC  AC rated operational current $\leq 100 \text{ mA}$ DC rated operating current $I_B$ Frequency $\geq 50 \leq 60 \text{ Hz}$ Residual current $\leq 1.7 \text{ mA}$ Isolation test voltage  1.5 kV  Surge current $\leq 1 \text{ A } (\leq 10 \text{ ms max. 5 Hz})$ Voltage drop at $I_B$ Output function $\leq 3 \text{ mA}$	Repeat accuracy	≤ 2 % of full scale
Operating voltage $U_B$ 20250 VAC         Operating voltage $U_B$ 10300 VDC         AC rated operational current       ≤ 100 mA         DC rated operating current $I_B$ ≤ 100 mA         Frequency       ≥ 50≤ 60 Hz         Residual current       ≤ 1.7 mA         Isolation test voltage       1.5 kV         Surge current       ≤ 1 A (≤ 10 ms max. 5 Hz)         Voltage drop at $I_B$ ≤ 6 V         Output function       2-wire, NO contact, 2-wire         Smallest operating current       ≥ 3 mA	Hysteresis	315 %
Operating voltage U <sub>B</sub> 10300 VDC         AC rated operational current       ≤ 100 mA         DC rated operating current I <sub>B</sub> ≤ 100 mA         Frequency       ≥ 50≤ 60 Hz         Residual current       ≤ 1.7 mA         Isolation test voltage       1.5 kV         Surge current       ≤ 1 A (≤ 10 ms max. 5 Hz)         Voltage drop at I <sub>B</sub> ≤ 6 V         Output function       2-wire, NO contact, 2-wire         Smallest operating current       ≥ 3 mA	Electrical data	
AC rated operational current ≤ 100 mA  DC rated operating current I₀ ≤ 100 mA  Frequency ≥ 50≤ 60 Hz  Residual current ≤ 1.7 mA  Isolation test voltage 1.5 kV  Surge current ≤ 1 A (≤ 10 ms max. 5 Hz)  Voltage drop at I₀ ≤ 6 V  Output function 2-wire, NO contact, 2-wire  Smallest operating current ≥ 3 mA	Operating voltage U <sub>B</sub>	20250 VAC
DC rated operating current I₀       ≤ 100 mA         Frequency       ≥ 50≤ 60 Hz         Residual current       ≤ 1.7 mA         Isolation test voltage       1.5 kV         Surge current       ≤ 1 A (≤ 10 ms max. 5 Hz)         Voltage drop at I₀       ≤ 6 V         Output function       2-wire, NO contact, 2-wire         Smallest operating current       ≥ 3 mA	Operating voltage U <sub>B</sub>	10300 VDC
Frequency       ≥ 50≤ 60 Hz         Residual current       ≤ 1.7 mA         Isolation test voltage       1.5 kV         Surge current       ≤ 1 A (≤ 10 ms max. 5 Hz)         Voltage drop at $I_e$ ≤ 6 V         Output function       2-wire, NO contact, 2-wire         Smallest operating current       ≥ 3 mA	AC rated operational current	≤ 100 mA
Residual current ≤ 1.7 mA  Isolation test voltage 1.5 kV  Surge current ≤ 1 A (≤ 10 ms max. 5 Hz)  Voltage drop at I₀ ≤ 6 V  Output function 2-wire, NO contact, 2-wire  Smallest operating current ≥ 3 mA	DC rated operating current I <sub>e</sub>	≤ 100 mA
Isolation test voltage       1.5 kV         Surge current       ≤ 1 A (≤ 10 ms max. 5 Hz)         Voltage drop at $I_e$ ≤ 6 V         Output function       2-wire, NO contact, 2-wire         Smallest operating current       ≥ 3 mA	Frequency	≥ 50≤ 60 Hz
Surge current $\leq$ 1 A ( $\leq$ 10 ms max. 5 Hz)  Voltage drop at I <sub>e</sub> $\leq$ 6 V  Output function 2-wire, NO contact, 2-wire  Smallest operating current $\geq$ 3 mA	Residual current	≤ 1.7 mA
Voltage drop at I₀       ≤ 6 V         Output function       2-wire, NO contact, 2-wire         Smallest operating current       ≥ 3 mA	Isolation test voltage	1.5 kV
Output function 2-wire, NO contact, 2-wire  Smallest operating current ≥ 3 mA	Surge current	≤ 1 A (≤ 10 ms max. 5 Hz)
Smallest operating current ≥ 3 mA	Voltage drop at I <sub>e</sub>	≤ 6 V
	Output function	2-wire, NO contact, 2-wire
Switching frequency 0.02 kHz	Smallest operating current	≥ 3 mA
	Switching frequency	0.02 kHz



### **Features**

- ■Threaded barrel, M12 x 1
- Chrome-plated brass
- AC 2-wire, 20...250 V AC
- ■DC 2-wire, 10...300 V DC
- ■NO contact
- Cable connection

# 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.

BI2-G12-AZ33X | 02/21/2025 13-37 | technical changes reserved

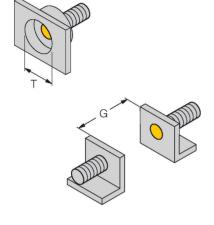


# Technical data

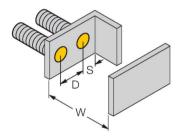
Mechanical data	
Design	Threaded barrel, M12 x 1
Dimensions	64 mm
Housing material	Metal, CuZn, Chrome-plated
Active area material	Plastic, PA12-GF30
End cap	Plastic, EPTR
Max. tightening torque of housing nut	10 Nm
Electrical connection	Cable
Cable quality	Ø 5.2 mm, LifYY, PVC, 2 m
Core cross-section	3 x 0.5 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	2283 years acc. to SN 29500 (Ed. 99) 40 °C
Switching state	LED, Red

# 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

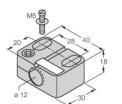


#### Accessories

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.



BST-12B

BSS-12

Mounting clamp for threaded barrel sensors, with dead-stop; material: PA6

6947212

6901321

MW12 6945003



Mounting bracket for threaded barrel sensors; material: Stainless steel A2 1.4301 (AISI 304)

Mounting clamp for smooth and threaded barrel sensors; material: Polypropylene