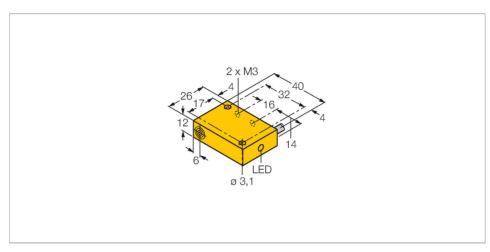


# BI2-Q12-RZ31X Inductive Sensor



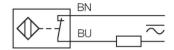
### Technical data

$= 0.4$ Repeat accuracy $\leq 2 \%$ of full scale  Temperature drift $\leq \pm 10 \%$ Hysteresis $315 \%$ Ambient temperature $-25+70 \text{ °C}$ Operating voltage $35250 \text{ VAC}$ Operating voltage $10300 \text{ VDC}$ AC rated operational current $\leq 100 \text{ mA}$ DC rated operational current $\leq 100 \text{ mA}$ Frequency $\geq 50 \leq 60 \text{ Hz}$ Residual current $\leq 1.7 \text{ mA}$ Isolation test voltage $\leq 1.5 \text{ kV}$ Surge current $\leq 1 \text{ A} (\leq 10 \text{ ms max. } 5 \text{ Hz})$ Voltage drop at $\mathbb{I}_{\circ}$ $\leq 6 \text{ V}$ Output function $2\text{-wire, NC contact}$ Smallest operating current $\geq 3 \text{ mA}$	Туре	BI2-Q12-RZ31X
Mounting conditions         Flush           Secured operating distance         ≤ (0.81 × Sn) mm           Correction factors         \$137 = 1; Al = 0.3; stainless steel = 0.7; Ms = 0.4           Repeat accuracy         ≤ 2 % of full scale           Temperature drift         ≤ ± 10 %           Hysteresis         315 %           Ambient temperature         -25+70 °C           Operating voltage         35250 VAC           Operating voltage         10300 VDC           AC rated operational current         ≤ 100 mA           DC rated operational current         ≤ 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, NC contact           Smallest operating current         ≥ 3 mA	Ident. no.	13200
Secured operating distance $\leq (0.81 \times \text{Sn}) \text{ mm}$ Correction factors $\begin{array}{l} \text{St37} = 1; \text{Al} = 0.3; \text{ stainless steel} = 0.7; \text{Ms} = 0.4 \\ \text{Repeat accuracy} &\leq 2 \text{ % of full scale} \\ \text{Temperature drift} &\leq \pm 10 \text{ %} \\ \text{Hysteresis} &315 \text{ %} \\ \text{Ambient temperature} &-25+70 \text{ °C} \\ \text{Operating voltage} &35250 \text{ VAC} \\ \text{Operating voltage} &10300 \text{ VDC} \\ \text{AC rated operational current} &\leq 100 \text{ mA} \\ \text{DC rated operational current} &\leq 100 \text{ mA} \\ \text{Frequency} &\geq 50 \leq 60 \text{ Hz} \\ \text{Residual current} &\leq 1.7 \text{ mA} \\ \text{Isolation test voltage} &\leq 1.5 \text{ kV} \\ \text{Surge current} &\leq 1 \text{ A } (\leq 10 \text{ ms max. 5 Hz}) \\ \text{Voltage drop at I}_{\circ} &\leq 6 \text{ V} \\ \text{Output function} &2-\text{wire, NC contact} \\ \text{Smallest operating current} &\geq 3 \text{ mA} \\ \end{array}$	Rated switching distance	2 mm
Correction factors $\begin{array}{ll} St37 = 1; \ Al = 0.3; \ stainless \ steel = 0.7; \ Ms = 0.4 \\ \hline Repeat accuracy & \leq 2 \% \ of \ full \ scale \\ \hline Temperature \ drift & \leq \pm 10 \% \\ \hline Hysteresis & 315 \% \\ \hline Ambient \ temperature & -25+70 \ ^{\circ}C \\ \hline Operating \ voltage & 35250 \ VAC \\ \hline Operating \ voltage & 10300 \ VDC \\ \hline AC \ rated \ operational \ current & \leq 100 \ mA \\ \hline DC \ rated \ operational \ current & \leq 100 \ mA \\ \hline Frequency & \geq 50 \leq 60 \ Hz \\ \hline Residual \ current & \leq 1.7 \ mA \\ \hline Isolation \ test \ voltage & \leq 1.5 \ kV \\ \hline Surge \ current & \leq 1 \ A \ (\leq 10 \ ms \ max. \ 5 \ Hz) \\ \hline Voltage \ drop \ at \ I_e & \leq 6 \ V \\ \hline Output \ function & 2-wire, \ NC \ contact \\ \hline Smallest \ operating \ current & \geq 3 \ mA \\ \hline \end{array}$	Mounting conditions	Flush
= 0.4     Repeat accuracy   ≤ 2 % of full scale     Temperature drift   ≤ ± 10 %     Hysteresis   315 %     Ambient temperature   -25+70 °C     Operating voltage   35250 VAC     Operating voltage   10300 VDC     AC rated operational current   ≤ 100 mA     DC rated operational current   ≤ 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, NC contact     Smallest operating current   ≥ 3 mA	Secured operating distance	≤ (0.81 × Sn) mm
Temperature drift ≤ ± 10 %  Hysteresis 315 %  Ambient temperature -25+70 °C  Operating voltage 35250 VAC  Operating voltage 10300 VDC  AC rated operational current ≤ 100 mA  DC rated operational current ≤ 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, NC contact  Smallest operating current ≥ 3 mA	Correction factors	St37 = 1; AI = 0.3; stainless steel = 0.7; Ms = 0.4
Hysteresis  315 %  Ambient temperature  -25+70 °C  Operating voltage  35250 VAC  Operating voltage  10300 VDC  AC rated operational current  ≤ 100 mA  DC rated operational current  ≤ 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  Output function  2-wire, NC contact  Smallest operating current  ≥ 3 mA	Repeat accuracy	≤ 2 % of full scale
Ambient temperature  -25+70 °C  Operating voltage  35250 VAC  Operating voltage  10300 VDC  AC rated operational current  ≤ 100 mA  DC rated operational current  ≤ 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  Output function  2-wire, NC contact  Smallest operating current  ≥ 3 mA	Temperature drift	≤ ± 10 %
Operating voltage       35250 VAC         Operating voltage       10300 VDC         AC rated operational current       ≤ 100 mA         DC rated operational current       ≤ 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>e</sub> ≤ 6 V         Output function       2-wire, NC contact         Smallest operating current       ≥ 3 mA	Hysteresis	315 %
Operating voltage       10300 VDC         AC rated operational current       ≤ 100 mA         DC rated operational current       ≤ 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>e</sub> ≤ 6 V         Output function       2-wire, NC contact         Smallest operating current       ≥ 3 mA	Ambient temperature	-25+70 °C
AC rated operational current ≤ 100 mA  DC rated operational current ≤ 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, NC contact  Smallest operating current ≥ 3 mA	Operating voltage	35250 VAC
DC rated operational current $\leq 100 \text{ mA}$ Frequency $\geq 50 \leq 60 \text{ Hz}$ Residual current $\leq 1.7 \text{ mA}$ Isolation test voltage $\leq 1.5 \text{ kV}$ Surge current $\leq 1 \text{ A } (\leq 10 \text{ ms max. 5 Hz})$ Voltage drop at $I_e$ $\leq 6 \text{ V}$ Output function $2\text{-wire, NC contact}$ Smallest operating current $\geq 3 \text{ mA}$	Operating voltage	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, NC contact         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 $I_e$ ≤ 6 V         Output function       2-wire, NC contact         Smallest operating current       ≥ 3 mA	DC rated operational current	≤ 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, NC contact         Smallest operating current       ≥ 3 mA	Frequency	≥ 50≤ 60 Hz
Surge current       ≤ 1 A (≤ 10 ms max. 5 Hz)         Voltage drop at $I_e$ ≤ 6 V         Output function       2-wire, NC contact         Smallest operating current       ≥ 3 mA	Residual current	≤ 1.7 mA
Voltage drop at I₀       ≤ 6 V         Output function       2-wire, NC contact         Smallest operating current       ≥ 3 mA	Isolation test voltage	≤ 1.5 kV
Output function 2-wire, NC contact  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
emmon speciming common	Output function	2-wire, NC contact
Switching frequency 0.02 kHz	Smallest operating current	≥ 3 mA
5.02 N 12	Switching frequency	0.02 kHz

## **Features**

- Rectangular, height 12mm
- Active face, lateral
- ■Plastic, PA12-GF30
- ■AC 2-wire, 35...250 VDC
- ■DC 2-wire, 10...300 VDC
- ■NC 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.

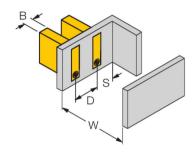


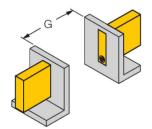
## Technical data

Design	Rectangular, Q12
Dimensions	40 x 26 x 12 mm
Housing material	Plastic, PA12-GF30
Active area material	PA12-GF30
Electrical connection	Cable
Cable quality	Ø 5.2 mm, LifYY, PVC, 2 m
Core cross-section	2 x 0.34 mm²
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 S	1 x B
Distance G	6 x Sn
Width active area B	12 mm