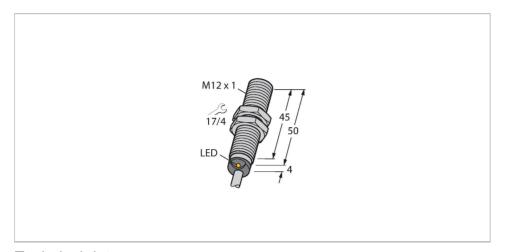


# BI3U-M12-AN6X **Inductive Sensor**





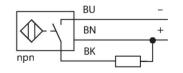
D	Туре	BI3U-M12-AN6X
Rated switching distance       3 mm         Mounting conditions       Flush         Secured operating distance       ≤ (0.81 × Sn) mm         Repeat accuracy       ≤ 2 % of full scale         Temperature drift       ≤ ±10 %         ≤±15 %, ≤ -25 °C v ≥ +70 °C         Hysteresis       315 %         Electrical data         Operating voltage U <sub>B</sub> 1030 VDC         Ripple U <sub>ss</sub> ≤ 10 % U <sub>Broax</sub> DC rated operating current I <sub>o</sub> ≤ 200 mA         No-load current       ≤ 25 mA         Residual current       ≤ 0.1 mA         Isolation test voltage       0.5 kV         Short-circuit protection       yes/Cyclic         Voltage drop at I <sub>o</sub> ≤ 1.8 V         Wire break/reverse polarity protection       yes/Complete         Output function       3-wire, NO contact, NPN         DC field stability       300 mT         AC field stability       300 mT	ID	1634120
Mounting conditions       Flush         Secured operating distance       ≤ (0.81 × Sn) mm         Repeat accuracy       ≤ 2 % of full scale         Temperature drift       ≤ ±10 %         ≤ ± 15 %, ≤ -25 °C v ≥ +70 °C         Hysteresis       315 %         Electrical data         Operating voltage $U_B$ 1030 VDC         Ripple $U_{us}$ ≤ 10 % $U_{umax}$ DC rated operating current $I_a$ ≤ 200 mA         No-load current       ≤ 25 mA         Residual current       ≤ 0.1 mA         Isolation test voltage       0.5 kV         Short-circuit protection       yes/Cyclic         Voltage drop at $I_a$ ≤ 1.8 V         Wire break/reverse polarity protection       yes/Complete         Output function       3-wire, NO contact, NPN         DC field stability       300 mT         AC field stability       300 mT	General data	
Secured operating distance $\leq (0.81 \times Sn) \text{ mm}$ Repeat accuracy $\leq 2 \% \text{ of full scale}$ Temperature drift $\leq \pm 10 \%$ $\leq \pm 15 \%, \leq -25 \text{ °C V} \geq +70 \text{ °C}$ Hysteresis $315 \%$ Electrical data  Operating voltage $U_8$ $1030 \text{ VDC}$ Ripple $U_{ss}$ $\leq 10 \% U_{Breax}$ DC rated operating current $I_e$ $\leq 200 \text{ mA}$ No-load current $\leq 25 \text{ mA}$ Residual current $\leq 0.1 \text{ mA}$ Isolation test voltage $0.5 \text{ kV}$ Short-circuit protection $0.5 \text{ kV}$ Wire break/reverse polarity protection $0.5 \text{ kV}$ Wire break/reverse polarity protection $0.5 \text{ kV}$ Output function $0.5 \text{ kV}$ DC field stability $0.5 \text{ kV}$ AC field stability $0.5 \text{ mT}_{ss}$	Rated switching distance	3 mm
Repeat accuracy $\leq 2\%$ of full scale  Temperature drift $\leq \pm 10\%$ $\leq \pm 15\%, \leq -25^{\circ}\text{C v} \geq +70^{\circ}\text{C}$ Hysteresis $315\%$ Electrical data  Operating voltage U <sub>B</sub> $1030\text{VDC}$ Ripple U <sub>ss</sub> $\leq 10\%\text{U}_{\text{Brmax}}$ DC rated operating current I <sub>B</sub> $\leq 200\text{mA}$ No-load current $\leq 25\text{mA}$ Residual current $\leq 0.1\text{mA}$ Isolation test voltage $0.5\text{kV}$ Short-circuit protection $0.5\text{kV}$ Wire break/reverse polarity protection $0.5\text{kV}$ Wire break/reverse polarity protection $0.5\text{kV}$ Wire break/reverse polarity protection $0.5\text{kV}$ Output function $0.5\text{kV}$	Mounting conditions	Flush
Temperature drift $\leq \pm 10 \%$ $\leq \pm 15 \%, \leq -25 ^{\circ}\text{C v} \geq +70 ^{\circ}\text{C}$ Hysteresis $315 \%$ Electrical data  Operating voltage $U_s$ $1030 \text{ VDC}$ Ripple $U_{ss}$ $\leq 10 \% U_{\text{Breaux}}$ DC rated operating current $I_s$ $\leq 200 \text{ mA}$ No-load current $\leq 25 \text{ mA}$ Residual current $\leq 0.1 \text{ mA}$ Isolation test voltage $0.5 \text{ kV}$ Short-circuit protection $0.5 \text{ kV}$ Wire break/reverse polarity protection $0.5 \text{ kV}$ Wire break/reverse polarity protection $0.5 \text{ kV}$ Wire break/reverse polarity protection $0.5 \text{ kV}$ Output function $0.5 \text{ kV}$ DC field stability $0.5 \text{ kV}$ 300 mT  AC field stability $0.5 \text{ kV}$	Secured operating distance	≤ (0.81 × Sn) mm
$≤ ± 15 \%, ≤ -25 °C v ≥ +70 °C$ Hysteresis $315 \%$ Electrical data $Operating voltage U_{B}$ $1030 VDC$ Ripple $U_{ss}$ $≤ 10 \% U_{Bmax}$ $DC rated operating current I_{e}$ $≤ 200 mA$ No-load current $≤ 25 mA$ Residual current $≤ 0.1 mA$ Isolation test voltage $0.5 kV$ Short-circuit protection $yes/Cyclic$ $Voltage drop at I_{e}$ $≤ 1.8 V$ Wire break/reverse polarity protection $yes/Complete$ $Output function$ $3-wire, NO contact, NPN$ $DC field stability$ $300 mT$ $AC field stability$ $300 mT$	Repeat accuracy	≤ 2 % of full scale
Hysteresis 315 %  Electrical data  Operating voltage U <sub>B</sub> 1030 VDC  Ripple U <sub>ss</sub> ≤ 10 % U <sub>Bmax</sub> DC rated operating current I <sub>e</sub> ≤ 200 mA  No-load current ≤ 25 mA  Residual current ≤ 0.1 mA  Isolation test voltage 0.5 kV  Short-circuit protection yes/Cyclic  Voltage drop at I <sub>e</sub> ≤ 1.8 V  Wire break/reverse polarity protection yes/Complete  Output function 3-wire, NO contact, NPN  DC field stability 300 mT  AC field stability 300 mT <sub>ss</sub>	Temperature drift	≤ ±10 %
Electrical data  Operating voltage $U_B$ 1030 VDC  Ripple $U_{ss}$ $\leq 10 \% U_{Bmax}$ DC rated operating current $I_e$ No-load current $\leq 25 \text{ mA}$ Residual current $\leq 0.1 \text{ mA}$ Isolation test voltage  0.5 kV  Short-circuit protection  yes/Cyclic  Voltage drop at $I_e$ $\leq 1.8 \text{ V}$ Wire break/reverse polarity protection  Output function  3-wire, NO contact, NPN  DC field stability  300 mT  AC field stability  300 mT		≤ ± 15 %, ≤ -25 °C v ≥ +70 °C
Operating voltage $U_B$ 1030 VDC         Ripple $U_{ss}$ ≤ 10 % $U_{Bmax}$ DC rated operating current $I_e$ ≤ 200 mA         No-load current       ≤ 25 mA         Residual current       ≤ 0.1 mA         Isolation test voltage       0.5 kV         Short-circuit protection       yes/Cyclic         Voltage drop at $I_e$ ≤ 1.8 V         Wire break/reverse polarity protection       yes/Complete         Output function       3-wire, NO contact, NPN         DC field stability       300 mT         AC field stability       300 mT	Hysteresis	315 %
Ripple Uss       ≤ 10 % Usmax         DC rated operating current Is       ≤ 200 mA         No-load current       ≤ 25 mA         Residual current       ≤ 0.1 mA         Isolation test voltage       0.5 kV         Short-circuit protection       yes/Cyclic         Voltage drop at Is       ≤ 1.8 V         Wire break/reverse polarity protection       yes/Complete         Output function       3-wire, NO contact, NPN         DC field stability       300 mT         AC field stability       300 mTss	Electrical data	
DC rated operating current I <sub>e</sub> ≤ 200 mA  No-load current ≤ 25 mA  Residual current ≤ 0.1 mA  Isolation test voltage 0.5 kV  Short-circuit protection yes/Cyclic  Voltage drop at I <sub>e</sub> ≤ 1.8 V  Wire break/reverse polarity protection yes/Complete  Output function 3-wire, NO contact, NPN  DC field stability 300 mT  AC field stability 300 mT <sub>ss</sub>	Operating voltage U <sub>B</sub>	1030 VDC
No-load current ≤ 25 mA   Residual current ≤ 0.1 mA   Isolation test voltage 0.5 kV   Short-circuit protection yes/Cyclic   Voltage drop at I₀ ≤ 1.8 V   Wire break/reverse polarity protection yes/Complete   Output function 3-wire, NO contact, NPN   DC field stability 300 mT   AC field stability 300 mTss	Ripple U <sub>ss</sub>	≤ 10 % U <sub>Bmax</sub>
Residual current       ≤ 0.1 mA         Isolation test voltage       0.5 kV         Short-circuit protection       yes/Cyclic         Voltage drop at $I_e$ ≤ 1.8 V         Wire break/reverse polarity protection       yes/Complete         Output function       3-wire, NO contact, NPN         DC field stability       300 mT         AC field stability       300 mT $_{ss}$	DC rated operating current I <sub>e</sub>	≤ 200 mA
Isolation test voltage     0.5 kV       Short-circuit protection     yes/Cyclic       Voltage drop at I₀     ≤ 1.8 V       Wire break/reverse polarity protection     yes/Complete       Output function     3-wire, NO contact, NPN       DC field stability     300 mT       AC field stability     300 mT <sub>ss</sub>	No-load current	≤ 25 mA
Short-circuit protection  Voltage drop at I₀  Vire break/reverse polarity protection  Output function  DC field stability  AC field stability  Short-circuit protection  yes/Cyclic  ≤ 1.8 V  yes/Complete  3-wire, NO contact, NPN  300 mT  300 mT  300 mTss	Residual current	≤ 0.1 mA
Voltage drop at I₀ ≤ 1.8 V  Wire break/reverse polarity protection yes/Complete  Output function 3-wire, NO contact, NPN  DC field stability 300 mT  AC field stability 300 mT₅s	Isolation test voltage	0.5 kV
Wire break/reverse polarity protection yes/Complete  Output function 3-wire, NO contact, NPN  DC field stability 300 mT  AC field stability 300 mT <sub>ss</sub>	Short-circuit protection	yes/Cyclic
Output function 3-wire, NO contact, NPN  DC field stability 300 mT  AC field stability 300 mT <sub>ss</sub>	Voltage drop at I <sub>e</sub>	≤ 1.8 V
DC field stability 300 mT  AC field stability 300 mT <sub>ss</sub>	Wire break/reverse polarity protection	yes/Complete
AC field stability 300 mT <sub>ss</sub>	Output function	3-wire, NO contact, NPN
	DC field stability	300 mT
Insulation class	AC field stability	300 mT <sub>ss</sub>
	Insulation class	



### **Features**

- ■M12 × 1 threaded barrel
- Chrome-plated brass
- Factor 1 for all metals
- Protection class IP68
- Resistant to magnetic fields
- ■Extended temperature range
- High switching frequency
- ■DC 3-wire, 10...30 VDC
- ■NO contact, NPN output
- Cable connection

## Wiring diagram



Functional principle

Inductive sensors are designed for wear-free and contactless detection of metal objects. uprox Factor 1 sensors have significant advantages due to their patented ferrite-coreless multi-coil system. They detect all metals at the same large switching distance and are resistant to magnetic fields.

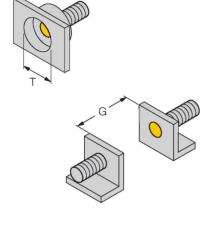


## Technical data

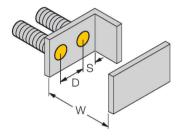
Switching frequency	3 kHz
Mechanical data	
Design	Threaded barrel, M12 x 1
Dimensions	54 mm
Housing material	Metal, CuZn, Chrome-plated
Active area material	Plastic, LCP
End cap	Plastic, EPTR
Max. tightening torque of housing nut	10 Nm
Electrical connection	Cable
Cable quality	Ø 5.2 mm, LifYY, PVC, 2 m
Core cross-section	3 x 0.34 mm <sup>2</sup>
Environmental conditions	
Ambient temperature	-30+85 °C
Vibration resistance	55 Hz (1 mm)
Shock resistance	30 g (11 ms)
Protection class	IP68
MTTF	874 years acc. to SN 29500 (Ed. 99) 40 °C
Switching state	LED, Yellow

## Mounting instructions

#### Mounting instructions/Description



Distance D	24 mm
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



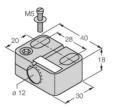
## Accessories

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.

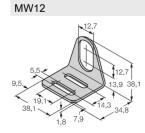




Mounting clamp for threaded barrel sensors, with dead-stop; material: PA6

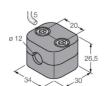
6947212

BSS-12 6901321



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

6945003



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