

Inductive sensor

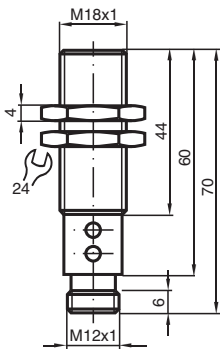
NCB5-18GM60-B3B-V1



- Comfort series
- A/B node with extended addressing possibility for up to 62 nodes
- Cylindrical
- NO/NC selectable
- Pre-fault message
- Installation help
- On/Off delay (disconnectable)
- Oscillator monitoring



Dimensions



Technical Data

General specifications		
Switching function		Normally open/closed (NO/NC) programmable
Output type		AS-Interface
Rated operating distance	s_n	5 mm
Installation		flush
Assured operating distance	s_a	0 ... 4.05 mm
Actual operating distance	s_r	4.5 ... 5.5 mm typ. 5 mm
Reduction factor r_{AI}		0.2
Reduction factor r_{Cu}		0.15
Reduction factor r_{304}		0.62
Node type		A/B node
AS-Interface specification		V3.0
Required gateway specification		\geq V2.1
Output type		2-wire
Nominal ratings		
Operating voltage	U_B	26.5 ... 31.9 V via AS-i bus system
Switching frequency	f	0 ... 100 Hz

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Refer to "General Notes Relating to Pepperl+Fuchs Product Information".

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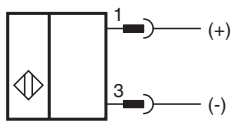
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Technical Data

Hysteresis	H	1 ... 15 typ. 5 %
Reverse polarity protection		reverse polarity protected
Voltage drop at I_L		
Voltage drop $I_L = 20$ mA, switching element on	U_d	3.4 ... 5 V typ. 4.3 V
No-load supply current	I_0	≤ 25 mA
Time delay before availability	t_v	≤ 1000 ms
Operating voltage indicator		dual-LED, green
Switching state indicator		dual-LED, yellow
Error indicator		dual-LED, red
Functional safety related parameters		
MTTF _d		926 a
Mission Time (T_M)		20 a
Diagnostic Coverage (DC)		0 %
Compliance with standards and directives		
Standard conformity		
Electromagnetic compatibility		EN 50295:1999-10
Standards		EN 60947-5-2:2007 IEC 60947-5-2:2007
Approvals and certificates		
UL approval		cULus Listed, General Purpose
CCC approval		CCC approval / marking not required for products rated ≤ 36 V
Ambient conditions		
Ambient temperature		-25 ... 70 °C (-13 ... 158 °F)
Storage temperature		-40 ... 85 °C (-40 ... 185 °F)
Mechanical specifications		
Connection type		Connector plug M12 x 1 , 4-pin
Housing material		Stainless steel 1.4305 / AISI 303
Sensing face		PBT
Degree of protection		IP67

Connection



Connection Assignment



Additional Information

Programming Instructions

Adress 00 preset, alterable
via Busmaster
or programming units
IO-Code 0
ID-Code A
ID1-Code 7
ID2-Code E

Data bit

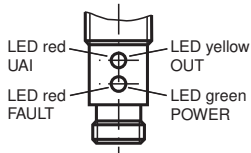
Bit	Function
D0	Switching state
D1	Prefailure message (dynamic)
D2	Oscillator monitoring
D3	Object too close

Parameter bit

Bit	Function
P0	ON / Off delay activated* / deactivated
P1	Switching element function NO* / NC
P2	not used
P3	not used

*Standard setting

Indicators



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Additional Information

Indication depending on the distance to the object and switching element function (P1)

Distance to the object	Function	Parameter P1	yellow LED (OUT)	red LED (UAI)	Data bit D0	Data bit D3
$> 1.2 S_n$	NO	1	off	off	0	1
$1 S_n - 1.2 S_n$		1	off	flashing	0	1
$0.8 S_n - 1 S_n$		1	flashing	flashing	1	1
$0.1 S_n - 0.8 S_n$		1	on	off	1	1
$0 S_n - 0.1 S_n$		1	flashing	flashing	1	0
$> 1,2 S_n$	NC	0	on	off	1	1
$1 S_n - 1.2 S_n$		0	flashing	flashing	1	1
$0.8 S_n - 1 S_n$		0	off	flashing	0	1
$0.1 S_n - 0.8 S_n$		0	off	off	0	1
$0 S_n - 0.1 S_n$		0	off	flashing	1	0

Indication depending on the operation mode

Symptoms	green LED (POWER)	red LED (FAULT)	Data bit D2
normal operation	on	off	1
oscillator defect	flashing	flashing	0*
no communication	off	on	1

*: D0, D1, D3 will be set to 0

Dynamic pre-fault indication:

While normal operation $D1=1$. If the switch is damped critically, i.e. the object has passed uncompletely the unsafe sensing range of $0.8 S_n - 1.2 s_n$ during damping, changes $D1$ to 0 and signals that an adjustment is necessary. See the following diagram:

Monitoring "object too near":

$D3$ serves as signalling: Object too near too the sensor, danger of damage, adjustment necessary. In normal mode $D3=1$. If the object reaches the $0 - 0.1 s_n$ range, $D3=0$. If the object leaves this range, $D3=1$.

On/off delay:

The on/off delay is preset and switched on ($P0=1$). On delay approx. 15 ms, when $P0=1$ and NO function ($P1=1$). Off delay approx. 15 ms, when $P0=1$ and NC function ($P1=0$).