



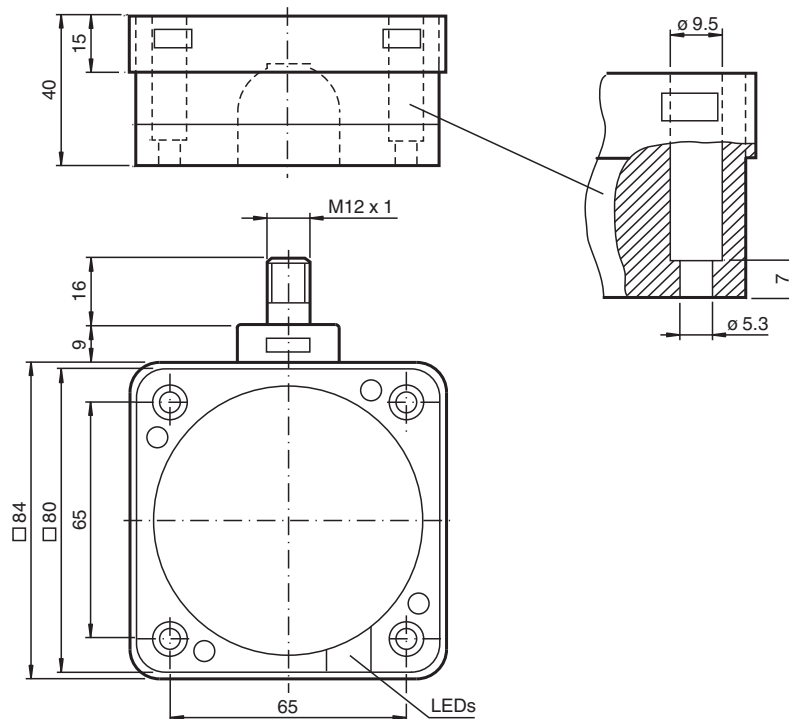
## Inductive sensor

NCB50-FP-E2-P1-V1-3G-3D

- 50 mm flush
- 3-wire DC



## Dimensions



## Technical Data

### General specifications

Switching function		Normally open (NO)
Output type		PNP
Rated operating distance	$s_n$	50 mm
Installation		flush
Output polarity		DC
Assured operating distance	$s_a$	0 ... 40.5 mm
Reduction factor $r_{AI}$		0.38
Reduction factor $r_{Cu}$		0.35
Reduction factor $r_{304}$		0.83
Output type		3-wire

### Nominal ratings

Operating voltage	$U_B$	10 ... 60 V DC
Switching frequency	$f$	0 ... 80 Hz

## Technical Data

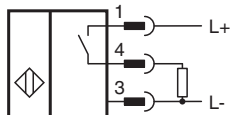
Hysteresis	H	typ. 3 %
Reverse polarity protection		reverse polarity protected
Voltage drop	$U_d$	$\leq 3 \text{ V}$
Operating current	$I_L$	0 ... 200 mA
Off-state current	$I_r$	0 ... 0.5 mA
No-load supply current	$I_0$	$\leq 20 \text{ mA}$
Time delay before availability	$t_v$	$\leq 30 \text{ ms}$
Operating voltage indicator		LED, green
Switching state indicator		LED, yellow
<b>Functional safety related parameters</b>		
MTTF <sub>d</sub>		960 a
Mission Time (T <sub>M</sub> )		20 a
Diagnostic Coverage (DC)		0 %
<b>Compliance with standards and directives</b>		
Standard conformity		
Standards		EN 60947-5-2:2007 IEC 60947-5-2:2007
<b>Approvals and certificates</b>		
UL approval		cULus Listed, General Purpose
CSA approval		cCSAus Listed, General Purpose
CCC approval		Certified by China Compulsory Certification (CCC)
<b>Ambient conditions</b>		
Ambient temperature		-25 ... 70 °C (-13 ... 158 °F)
<b>Mechanical specifications</b>		
Connection type		Connector plug M12 x 1 , 4-pin
Housing material		PBT
Sensing face		PBT
Housing base		PBT
Degree of protection		IP67
<b>Equipment protection level Gc (nA)</b>		
CE marking		[*PD-Z02586A*]
ATEX marking		Ⓔ II 3G Ex nA IIC T6 X
Standards		EN 60079-0:2006, EN 60079-15:2005 Ignition protection category "n" Use is restricted to the following stated conditions
<b>Special conditions</b>		
Maximum operating current $I_L$		The maximum permissible load current must be restricted to the values given in the following list. High load currents and load short-circuits are not permitted.
Maximum operating voltage $U_{Bmax}$		The maximum permissible operating voltage $U_{Bmax}$ is restricted to the values in the following list. Tolerances are not permissible.
Maximum permissible ambient temperature $T_{Umax}$		dependant of the load current $I_L$ and the max. operating voltage $U_{Bmax}$ Information can be taken from the following list.
at $U_{Bmax}=60 \text{ V}$ , $I_L=200 \text{ mA}$		44 °C (111.2 °F)
at $U_{Bmax}=60 \text{ V}$ , $I_L=100 \text{ mA}$		45 °C (113 °F)
at $U_{Bmax}=60 \text{ V}$ , $I_L=25 \text{ mA}$		47 °C (116.6 °F)
at $U_{Bmax}=30 \text{ V}$ , $I_L=200 \text{ mA}$		50 °C (122 °F)
at $U_{Bmax}=30 \text{ V}$ , $I_L=100 \text{ mA}$		53 °C (127.4 °F)
at $U_{Bmax}=30 \text{ V}$ , $I_L=50 \text{ mA}$		56 °C (132.8 °F)
<b>Equipment protection level Dc</b>		
CE marking		[*PD-Z02586A*]
ATEX marking		Ⓔ II 3D IP67 T 95 °C (203 °F) X
Standards		EN 50281-1-1 Protection via housing Use is restricted to the following stated conditions
<b>Special conditions</b>		

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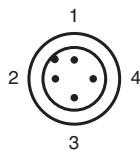
Technical Data

Maximum heating (Temperature rise)		dependant of the load current $I_L$ and the max. operating voltage $U_{Bmax}$ Information can be taken from the following list. The maximum surface temperature at maximum ambient temperature is given in the Ex identification of the apparatus.
at $U_{Bmax}=60\text{ V}$ , $I_L=200\text{ mA}$		25 K
at $U_{Bmax}=60\text{ V}$ , $I_L=100\text{ mA}$		24 K
at $U_{Bmax}=60\text{ V}$ , $I_L=25\text{ mA}$		22 K
at $U_{Bmax}=30\text{ V}$ , $I_L=200\text{ mA}$		19 K
at $U_{Bmax}=30\text{ V}$ , $I_L=100\text{ mA}$		16 K
at $U_{Bmax}=30\text{ V}$ , $I_L=50\text{ mA}$		14 K
<b>Equipment protection level Dc (tD)</b>		
General		The apparatus has to be operated according to the appropriate data in the data sheet and in this instruction manual. The maximum surface temperature has been determined in accordance with method A without a dust layer on the equipment. The data stated in the data sheet are restricted by this operating instruction! The special conditions must be adhered to!
<b>Special conditions</b>		
Maximum permissible ambient temperature $T_{Umax}$		dependant of the load current $I_L$ and the max. operating voltage $U_{Bmax}$ Information can be taken from the following list.
at $U_{Bmax}=60\text{ V}$ , $I_L=200\text{ mA}$		44 °C (111.2 °F)
at $U_{Bmax}=60\text{ V}$ , $I_L=100\text{ mA}$		45 °C (113 °F)
at $U_{Bmax}=60\text{ V}$ , $I_L=25\text{ mA}$		47 °C (116.6 °F)
at $U_{Bmax}=30\text{ V}$ , $I_L=200\text{ mA}$		50 °C (122 °F)
at $U_{Bmax}=30\text{ V}$ , $I_L=100\text{ mA}$		53 °C (127.4 °F)
at $U_{Bmax}=30\text{ V}$ , $I_L=50\text{ mA}$		56 °C (132.8 °F)
<b>General information</b>		
Use in the hazardous area		see instruction manuals
Category		3G; 3D

Connection



Connection Assignment



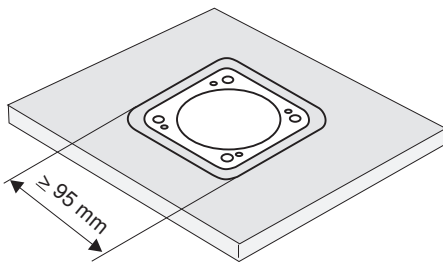
Wire colors in accordance with EN 60947-5-2

1	BN	(brown)
2	WH	(white)
3	BU	(blue)
4	BK	(black)

## Mounting

These sensors are especially designed for embeddable mounting in conveyor floors. Due to its precise location in metal base plates the sensor is afforded a high degree of mechanical protection. No clearance is required between the sensor and the base plate, avoiding the need for protective guarding to prevent possible foot injury.

The large sensing range ensures positive detection, and thus provides consistent control and monitoring of the conveyor.



**Warning!**  
Once the metal screening has been removed, the sensor can no longer be embeddable mounted.