

# Inductive sensor NRB50-FP-E2-C-P3-V1

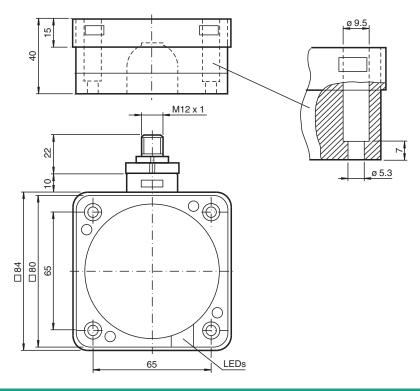
- 50 mm flush
- Reduction factor = 1
- Weld Immune





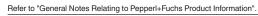


### **Dimensions**



# **Technical Data**

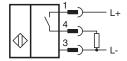
General specifications		
Switching function		Normally open (NO)
Output type		PNP
Rated operating distance	Sn	50 mm
Installation		flush
Output polarity		DC
Assured operating distance	sa	0 40.5 mm
Reduction factor r <sub>Al</sub>		1
Reduction factor r <sub>Cu</sub>		1
Reduction factor r <sub>304</sub>		1
Reduction factor r <sub>St37</sub>		1
Nominal ratings		
Operating voltage	$U_B$	10 30 V DC
Switching frequency	f	0 1 Hz



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MTTF <sub>d</sub> 944 a  Mission Time (T <sub>M</sub> ) 20 a  Diagnostic Coverage (DC) 0%  Compliance with standards and directives  Standard conformity  Standards EN 60947-5-2:2007 IEC 60947-5-2:2007  Approvals and certificates  UL approval cULus Listed, General Purpose  CSA approval cCSAus Listed, General Purpose  CCC approval CCC approval / marking not required for products rated ≤36 V  Ambient conditions  Ambient temperature 0 50 °C (32 122 °F) (± 10 % changing operating distance)  -25 70 °C (-13 158 °F) (± 20 % changing operating distance)	Technical Data		
Pulsing   Pul	Hysteresis	Н	typ. 3 %
Voltage drop         U <sub>d</sub> ≤ 3 V           Rated insulation voltage         U <sub>BIS</sub> 50 V           Operating current         I <sub>L</sub> 0200 mA           Off-state current         I <sub>r</sub> 00.5 mA           No-load supply current         I <sub>o</sub> ≤ 20 mA           Time delay before availability         t <sub>v</sub> ≤ 300 ms           Operating voltage indicator         LED, green           Switching state indicator         LED, yellow           Functional safety related parameters           MTTr <sub>d</sub> 944 a           Mission Time (T <sub>M</sub> )         20 a           Diagnostic Coverage (DC)         0%           Compliance with standards and directives           Standard conformity           Standard conformity         EN 60947-5-2:2007 [EC 60947-5-2:2007 [EC 60947-5-2:2007 [EC 60947-5-2:2007]           Approvals and certificates           UL approval         CCS Aus Listed, General Purpose           CSA approval         CCSAus Listed, General Purpose           CCC approval         CCSAus Listed, General Purpose           CCC approval         CC approval / marking not required for products rated ≤36 V           Ambient temperature         050 °C (32 122 °F) (± 10 % cha	Reverse polarity protection		reverse polarity protected
Rated insulation voltage         U <sub>BIS</sub> 50 V           Operating current         I <sub>L</sub> 0 200 mA           Off-state current         I <sub>V</sub> 0 0.5 mA           No-load supply current         I <sub>O</sub> ≤ 20 mA           Time delay before availability         t <sub>V</sub> ≤ 300 ms           Operating voltage indicator         LED, green           Switching state indicator         LED, yellow           Functional safety related parameters           MTTF <sub>0</sub> 944 a           Mission Time (T <sub>M</sub> )         20 a           Diagnostic Coverage (DC)         0 %           Compliance with standards and directives           Standard conformity           Standard conformity         EN 60947-5-2:2007 [EC 60947-5-2:2007]           Jack Compliance with standards and directives         EN 60947-5-2:2007 [EC 60947-5-2:2007]           Approvals and certificates         UL approval         CULus Listed, General Purpose           CSA approval         CCSAus Listed, General Purpose         CC approval / marking not required for products rated ≤36 V           Ambient conditions           Ambient conditions         50 °C (32 122 °F) (± 10 % changing operating distance) -25 70 °C (-13 158 °F) (± 20 % changing operating distance) -25 70 °C (-13 158 °F) (± 20	Short-circuit protection		pulsing
Operating current         I <sub>L</sub> 0 200 mA           Off-state current         I <sub>r</sub> 0 0.5 mA           No-load supply current         I <sub>0</sub> ≤ 20 mA           Time delay before availability         t <sub>r</sub> ≤ 300 ms           Operating voltage indicator         LED, green           Switching state indicator         LED, yellow           Functional safety related parameters           MTTF <sub>d</sub> 944 a           Mission Time (T <sub>M</sub> )         20 a           Diagnostic Coverage (DC)         0 %           Compliance with standards and directives           Standard conformity         EN 60947-5-2:2007 [EC 60947-5-2:2007]           Standards         EN 60947-5-2:2007 [EC 60947-5-2:2007]           Approvals and certificates         UL approval           UL approval         CULus Listed, General Purpose           CSA approval         CSA (General Purpose)           CCC approval         CCC approval / marking not required for products rated ≤36 V           Ambient conditions           Ambient conditions           Ambient conditions           Connection type         Connector M12 x 1 , 4-pin           Housing material         PBT/metal           Sensing face         PBT, PTFE	Voltage drop	$U_{d}$	≤3 V
Off-state current         I, 00.5 mA           No-load supply current         I₀ ≤ 20 mA           Time delay before availability         t₂ ≤ 300 ms           Operating voltage indicator         LED, green           Switching state indicator         LED, yellow           Functional safety related parameters           MTTF₀         944 a           Mission Time (TM)         20 a           Diagnostic Coverage (DC)         0 %           Compliance with standards and directives           Standard conformity         EN 60947-5-2:2007           Standards         EN 60947-5-2:2007           IEC 60947-5-2:2007         IEC 60947-5-2:2007           Approvals and certificates         UL approval           UL approval         cULus Listed, General Purpose           CSA approval         cCS aus Listed, General Purpose           CCC approval         CCC approval / marking not required for products rated ≤36 V           Ambient conditions         Ambient conditions           Ambient temperature         050 °C (32 122 °F) (± 10 % changing operating distance)           -25 70 °C (13 158 °F) (± 20 % changing operating distance)           -25 70 °C (13 158 °F) (± 20 % changing operating distance)           -25 70 °C (13 158 °F) (± 20 % changing operating distanc	Rated insulation voltage	$U_{BIS}$	50 V
No-load supply current	Operating current	IL	0 200 mA
Time delay before availability t, ≤ 300 ms  Operating voltage indicator LED, green  Switching state indicator LED, yellow  Functional safety related parameters  MTTF <sub>d</sub> 944 a  Mission Time (T <sub>M</sub> ) 20 a  Diagnostic Coverage (DC) 0%  Compliance with standards and directives  Standard conformity  Standards S	Off-state current	l <sub>r</sub>	0 0.5 mA
Operating voltage indicator LED, green   Switching state indicator LED, yellow   Functional safety related parameters   MTTF <sub>d</sub> 944 a   Mission Time (T <sub>M</sub> ) 20 a   Diagnostic Coverage (DC) 0 %   Compliance with standards and directives   Standard conformity   Standards EN 60947-5-2:2007 [EC 60947-5-2:2007]   Approvals and certificates   UL approval cULus Listed, General Purpose   CSA approval cCSAus Listed, General Purpose   CCC approval CCC approval / marking not required for products rated ≤36 V   Ambient conditions CCC approval / marking not required for products rated ≤36 V   Ambient temperature 0 50 °C (32 122 °F) (± 10 % changing operating distance) -25 70 °C (-13 158 °F) (± 20 % changing operating distance)   Mechanical specifications Connection type   Connection type Connector M12 x 1 , 4-pin   Housing material PBT/metal   Sensing face PBT, PTFE coated   Housing base PBT	No-load supply current	$I_0$	≤ 20 mA
Functional safety related parameters  MTTF <sub>d</sub> 944 a  Mission Time (T <sub>M</sub> ) 20 a  Diagnostic Coverage (DC) 0%  Compliance with standards and directives  Standard conformity Standards EN 60947-5-2:2007 IEC 60947-5-2:2007  Approvals and certificates  UL approval cULus Listed, General Purpose  CSA approval cCSAus Listed, General Purpose  CCC approval Ambient conditions  Ambient temperature 050 °C (32122 °F) (± 10 % changing operating distance) -2570 °C (-13158 °F) (± 20 % changing operating distance) Mechanical specifications  Connection type Connector M12 x 1 , 4-pin Housing material PBT/metal  Sensing face PBT, PTFE coated Housing base	Time delay before availability	t <sub>v</sub>	≤ 300 ms
Functional safety related parameters  MTTFd 944 a  Mission Time (T <sub>M</sub> ) 20 a  Diagnostic Coverage (DC) 0%  Compliance with standards and directives  Standard conformity Standards EN 60947-5-2:2007 IEC 60947-5-2:2007  Approvals and certificates  UL approval CCSA approval CCSA approval CCSA approval CCC approval CCC approval Ambient conditions  Ambient temperature 050 °C (32122 °F) (± 10 % changing operating distance) -2570 °C (-13158 °F) (± 20 % changing operating distance)  Mechanical specifications  Connection type Connector M12 x 1 , 4-pin  Housing material PBT/metal  Sensing face PBT, PTFE coated  Housing base	Operating voltage indicator		LED, green
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Mission Time (T <sub>M</sub> ) Diagnostic Coverage (DC)  Compliance with standards and directives  Standard conformity Standards  EN 60947-5-2:2007 IEC 60947-5-2:2007 IEC 60947-5-2:2007 Approvals and certificates  UL approval CCSA approval CCC approval Ambient conditions  Ambient temperature  0 50 °C (32 122 °F) (± 10 % changing operating distance) -25 70 °C (-13 158 °F) (± 20 % changing operating distance)  Mechanical specifications  Connection type Connector M12 x 1 , 4-pin Housing material PBT/metal Sensing face PBT, PTFE coated Housing base PBT	Functional safety related parameters		
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Standard conformity Standards  EN 60947-5-2:2007  Approvals and certificates  UL approval CCSA approval CCC approval Further temperature O50 °C (32 122 °F) (± 10 % changing operating distance) -25 70 °C (-13 158 °F) (± 20 % changing operating distance)  Mechanical specifications Connection type Connection type Connection M12 x 1 , 4-pin Housing material PBT/metal Sensing face PBT, PTFE coated Housing base PBT	Mission Time $(T_M)$		20 a
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Housing material PBT/metal Sensing face PBT, PTFE coated Housing base PBT	Mechanical specifications		
Sensing face PBT, PTFE coated Housing base PBT	Connection type		Connector M12 x 1, 4-pin
Housing base PBT	Housing material		PBT/metal
	Sensing face		PBT, PTFE coated
Degree of protection IP68	Housing base		PBT
	Degree of protection		IP68

# Connection



# **Connection Assignment**



#### Inductive sensor

Wire colors in accordance with EN 60947-5-2

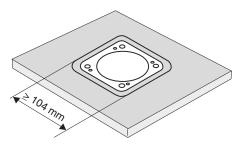
(brown) 2 WH (white) 3 BU (blue) BK (black)

### **Mounting**

These sensors are particularly suitable for embedded installation in floor conveyor systems. The installation of the switch in a metal base plate provides it with considerable protection against mechanical damage.

Care should be taken to ensure that the cut out in the base plate is at least 104 mm x 104 mm and that the sensor is positioned centrally within this cut out. The active surface of the sensor must not be recessed with respect to the front face of the base plate.

The high switching distance guarantees safe detection and thus control of the floor conveyor system.



#### Caution!

After removal of the metal screen the proximity switch can no longer be mounted as an embedded installation.

#### **Accessories**

V1-G-2M-PUR	Female cordset, M12, 4-pin, PUR cable
V1-W-2M-PUR	Female cordset, M12, 4-pin, PUR cable