



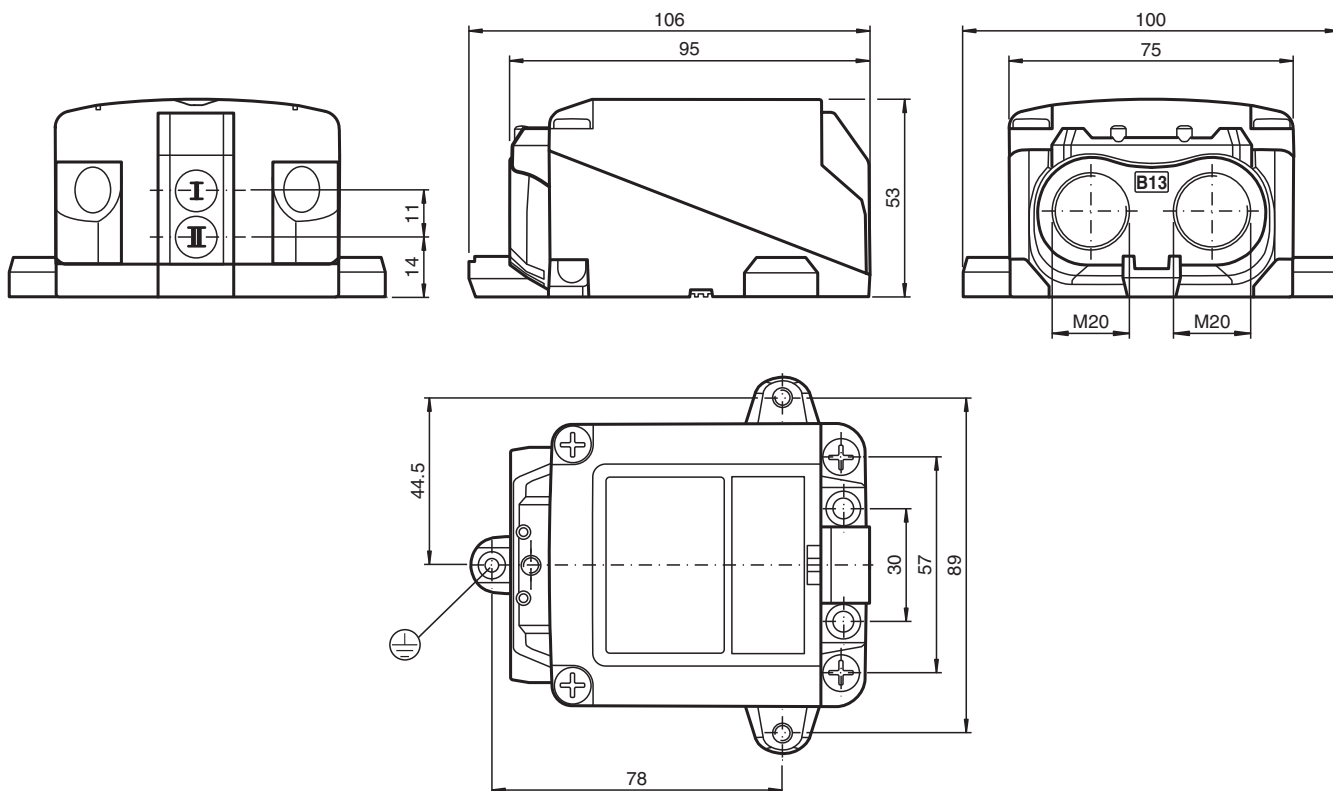
## Inductive sensor

NBN3-F31K2M-Z8L-B13-S-3G-3D

- Direct mounting on standard actuators
- ATEX/IECEX Zone 2/22
- Compatible with all process control systems
- 2-wire DC sensor with minimum off-state current
- Rugged metal base
- Weatherproof housing for outdoor applications
- Plug-in terminals



## Dimensions



## Technical Data

### General specifications

|                            |       |                                         |
|----------------------------|-------|-----------------------------------------|
| Switching function         |       | 2 x normally open (NO)                  |
| Output type                |       | Two-wire with minimum off-state current |
| Rated operating distance   | $s_n$ | 2.5 mm                                  |
| Installation               |       | for non-flush mounting                  |
| Output polarity            |       | DC                                      |
| Assured operating distance | $s_a$ | 0 ... 2.05 mm                           |
| Output type                |       | 2x 2-wire                               |

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

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## Technical Data

### Nominal ratings

|                             |       |                                      |
|-----------------------------|-------|--------------------------------------|
| Operating voltage           | $U_B$ | 6 ... 30 V                           |
| Switching frequency         | $f$   | 0 ... 100 Hz                         |
| Hysteresis                  | $H$   | typ. 0.5 mm                          |
| Reverse polarity protection |       | reverse polarity tolerant            |
| Short-circuit protection    |       | no                                   |
| Voltage drop                | $U_d$ | $\leq 6$ V                           |
| Operating current           | $I_L$ | 4 ... 100 mA                         |
| Off-state current           | $I_r$ | 100 ... 200 $\mu$ A typ. 160 $\mu$ A |

### Functional safety related parameters

|                          |  |       |
|--------------------------|--|-------|
| MTTF <sub>d</sub>        |  | 684 a |
| Mission Time ( $T_M$ )   |  | 20 a  |
| Diagnostic Coverage (DC) |  | 0 %   |

### Valve circuit

|                             |  |                                                                                           |
|-----------------------------|--|-------------------------------------------------------------------------------------------|
| Voltage                     |  | max. 32 V DC                                                                              |
| Current                     |  | max. 240 mA                                                                               |
| Short-circuit protection    |  | no                                                                                        |
| Reverse polarity protection |  | yes, with reversed output LED is out of function, therefore more power for solenoid valve |

### Compliance with standards and directives

|                     |  |                  |
|---------------------|--|------------------|
| Standard conformity |  |                  |
| Standards           |  | EN IEC 60947-5-2 |

### Approvals and certificates

|                               |  |                                      |
|-------------------------------|--|--------------------------------------|
| IECEx approval                |  |                                      |
| Equipment protection level Gc |  | IECEx TUR 20.0062X                   |
| Equipment protection level Dc |  | IECEx TUR 20.0068X                   |
| ATEX approval                 |  |                                      |
| Equipment protection level Gc |  | TÜV 20 ATEX 8592 X                   |
| Equipment protection level Dc |  | TÜV 20 ATEX 8598 X                   |
| CCC approval                  |  |                                      |
| Hazardous Location            |  | 2024322315005979<br>2024322315005980 |

### Ambient conditions

|                     |  |                                                                                                |
|---------------------|--|------------------------------------------------------------------------------------------------|
| Ambient temperature |  | -40 ... 75 °C (-40 ... 167 °F) , restriction for use in hazardous area, see instruction manual |
| Storage temperature |  | -40 ... 85 °C (-40 ... 185 °F)                                                                 |

### Mechanical specifications

|                                     |  |                                                                                                                                                                                                                                                     |
|-------------------------------------|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Connection type                     |  | screw terminals                                                                                                                                                                                                                                     |
| Connection (system side)            |  | screw terminals , M20 x 1.5 cable gland , usable thread length 13.5 mm , screw-in depth max. 13.5 mm<br>ground connection with earthing screw only for wire cross-section 4 mm <sup>2</sup> , use solid wire or stranded wire with wire end ferrule |
| Connection (valve side)             |  | screw terminal ,<br>Cable gland M20 x 1.5                                                                                                                                                                                                           |
| Housing material                    |  | PC (glass-fiber-reinforced Makrolon)                                                                                                                                                                                                                |
| Housing base                        |  | powder coated aluminum                                                                                                                                                                                                                              |
| Degree of protection                |  | IP67 ; additional degree of protection IP66/IP69 with BT65-F31K2-RG-EN-01 and SH-F31K2-B13                                                                                                                                                          |
| Terminal assembly                   |  |                                                                                                                                                                                                                                                     |
| Number                              |  | 10                                                                                                                                                                                                                                                  |
| Connection type                     |  | For connection of copper wires with 7 mm dismantle length<br>Tightening torque 0.5 ... 0.6 Nm                                                                                                                                                       |
| Type                                |  | Screw terminal block, pluggable                                                                                                                                                                                                                     |
| Terminal capacity                   |  | Conductor cross-section 0,25 ... 2,5 mm <sup>2</sup> , flexible/rigid<br>For Multiple-wire connection: two wires of equal cross-section per 0.25 ... 1 mm <sup>2</sup>                                                                              |
| Tightening torque, fastening screws |  | $\leq 5$ Nm                                                                                                                                                                                                                                         |
| Tightening torque, housing screws   |  | 1.5 Nm                                                                                                                                                                                                                                              |

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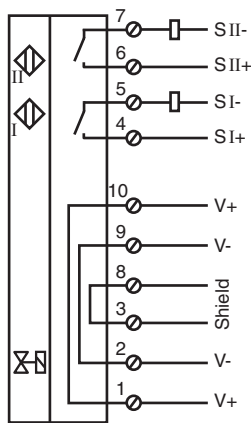
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Technical Data

|                                   |                         |
|-----------------------------------|-------------------------|
| Tightening torque, earthing screw | 1.5 Nm                  |
| Tightening torque, cable gland    | M20 x 1.5 ; max. 11 Nm  |
| Tightening torque, stopping plug  | 2 Nm                    |
| Dimensions                        |                         |
| Height                            | 53 mm                   |
| Width                             | 100 mm                  |
| Length                            | 106 mm                  |
| General information               |                         |
| Use in the hazardous area         | see instruction manuals |

Connection Assignment



## Connection

### Note

The connections to this sensor are sealed with stopping plugs to protect against dirt and moisture. If not all of the connections are used in your application, then seal the remaining stopping plugs on the sensor permanently or check during initial installation and when performing regular maintenance work that the stopping plugs are secure and impermeable. If necessary, tighten the stopping plugs to a torque of 2 Nm.