



## Inductive sensor

### NBN3-F31K2M-Z8L-B13-S

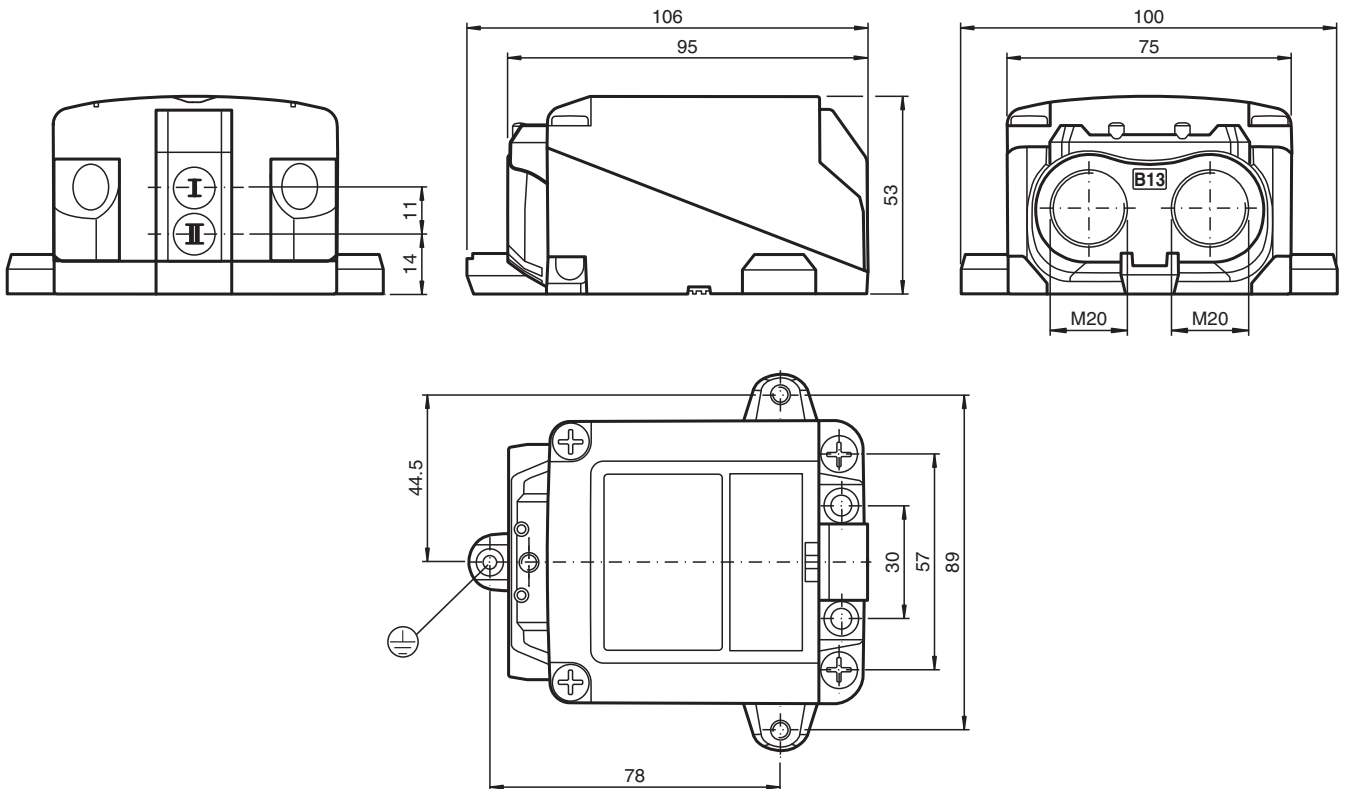
- Direct mounting on standard actuators
- Compatible with all process control systems
- Weatherproof housing for outdoor applications
- Rugged metal base
- Temperature range -40 ... 167 °F (-40°C to 75°C)
- 2-wire DC sensor with minimum off-state current
- LEDs for switching state of sensor and solenoid valve
- Plug-in terminals



## Installation

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 1 Nm.

## Dimensions



## Technical Data

### General specifications

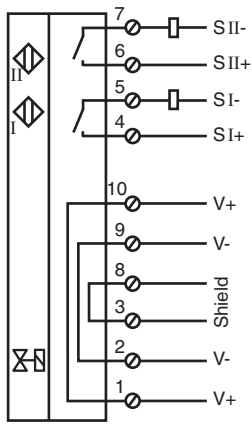
|                          |   |
|--------------------------|---|
| Switching function       | 2 x normally open (NO)                  |
| Output type              | Two-wire with minimum off-state current |
| Rated operating distance | $s_n$ 2.5 mm                            |

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## Technical Data

|   |       |   |
|---|-------|---|
| Installation                                    |       | for non-flush mounting  |
| Output polarity                                 |       | DC  |
| Assured operating distance                      | $s_a$ | 0 ... 2.05 mm   |
| Output type                                     |       | 2x 2-wire   |
| <b>Nominal ratings</b>                          |       |   |
| 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  |
| Switching state indicator                       |       | LED, yellow   |
| Valve status indicator                          |       | LED, yellow   |
| <b>Functional safety related parameters</b>     |       |   |
| MTTF <sub>d</sub>                               |       | 684 a   |
| Mission Time ( $T_M$ )                          |       | 20 a  |
| Diagnostic Coverage (DC)                        |       | 0 %   |
| <b>Valve circuit</b>                            |       |   |
| 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   |
| <b>Compliance with standards and directives</b> |       |   |
| Standard conformity                             |       |   |
| Standards                                       |       | EN IEC 60947-5-2  |
| <b>Approvals and certificates</b>               |       |   |
| UL approval                                     |       | cULus Listed<br>Load Type: General Purpose<br>Circuitry: Class 2 Power Source<br>Enclosure Type Rating: Type 1<br>Supply/Switching Voltage: 30 V DC<br>Output Switching Current: 100 mA |
| <b>Ambient conditions</b>                       |       |   |
| 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)  |
| <b>Mechanical specifications</b>                |       |   |
| Connection (system side)                        |       | screw terminal , M20 x 1.5 cable gland  |
| Core cross section (system side)                |       | 1.5/2.5 mm <sup>2</sup> flexible/rigid  |
| Connection (valve side)                         |       | screw terminal ,<br>Cable gland M20 x 1.5   |
| Housing material                                |       | rugged, translucent polycarbonate (PC) optimised for outdoor use  |
| Housing base                                    |       | powder coated aluminum  |
| Degree of protection                            |       | IP66 / IP68 / IP69  |
| Tightening torque, fastening screws             |       | $\leq 5$ Nm   |
| Tightening torque, housing screws               |       | 1.5 Nm  |
| 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  |

# Connection Assignment



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