



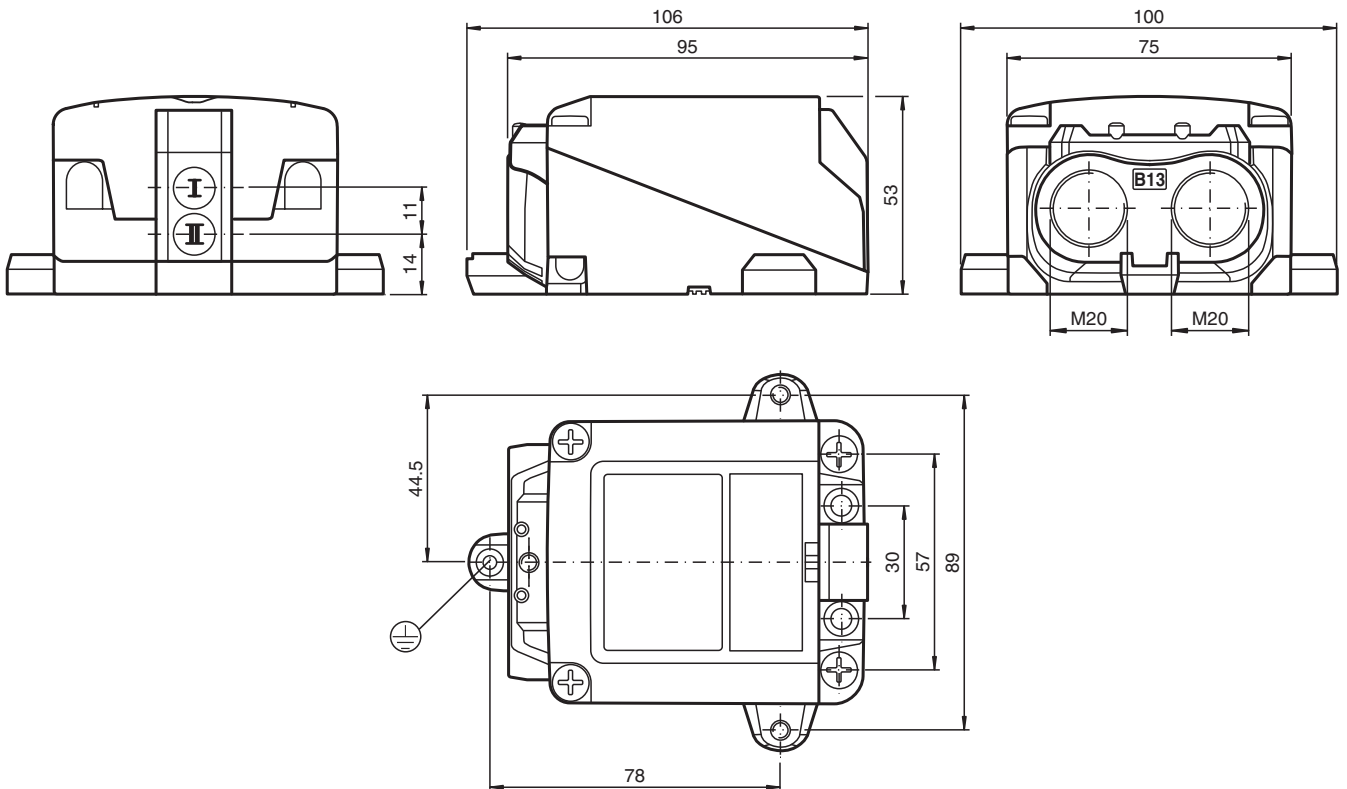
## Inductive sensor

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

- Direct mounting on standard actuators
- ATEX-approval for zone 2 and zone 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 |

## Technical Data

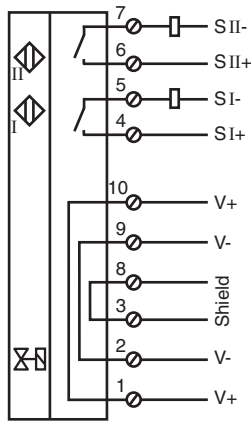
|   |       |   |
|---|-------|---|
| Rated operating distance                        | $s_n$ | 2.5 mm  |
| Installation                                    |       | for non-flush mounting  |
| Output polarity                                 |       | DC  |
| Assured operating distance                      | $s_a$ | 0 ... 2.05 mm   |
| Output type                                     |       | 2x 2-wire   |
| <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  |
| <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 60947-5-2:2007<br>EN 60947-5-2/A1:2012<br>IEC 60947-5-2:2007<br>IEC 60947-5-2 AMD 1:2012<br>VDI / VDE 3845   |
| <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 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                                |       | rugged polycarbonate (PC) + GF 10% , optimised for outdoor use  |
| 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  |
| <b>Terminal assembly</b>                        |       |   |
| 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             |       | 2 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  |

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Technical Data

|                                  |                         |
|----------------------------------|-------------------------|
| Tightening torque, stopping plug | 2 Nm                    |
| General information              |                         |
| Use in the hazardous area        | see instruction manuals |




Connection



Matching system components

|   |               |                          |
|---|---------------|--------------------------|
|  | <b>BT115A</b> | Activator for F31 series |
|  | <b>BT115X</b> | Activator for F31 series |

Accessories

|   |                            |   |
|---|----------------------------|---|
|  | <b>BT65-F31K2-RG-EN-01</b> | Activator for F31K2 series including protective housing |
|  | <b>SH-F31K2-B13</b>        | Protective cap for mechanically protected mounting      |
|  | <b>SH-BT65-F31K2-01</b>    | Protective housing for activator BT65-F31K2-RG-EN-01    |

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## 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.