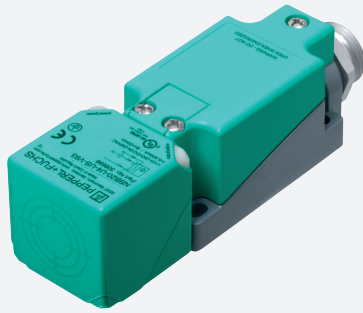


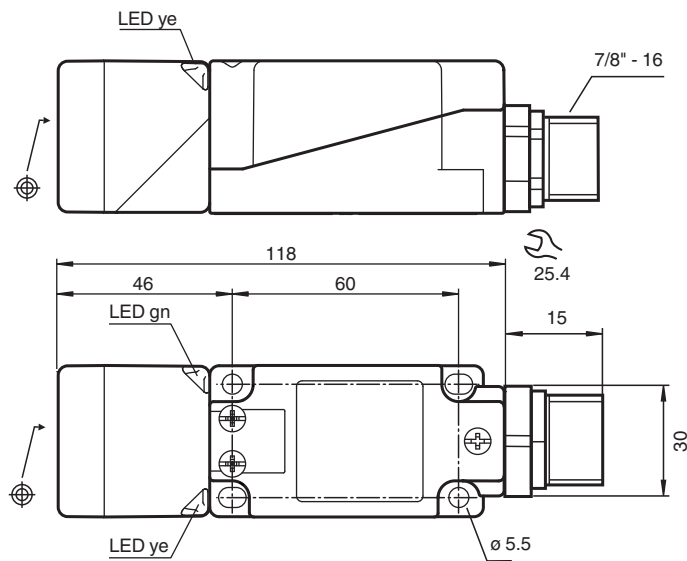


## Inductive sensor NBB20-U4-US-V93P

- Sensor head bidirectional and rotatable
- Metal base with ground connection
- Encapsulation



### Dimensions



### Technical Data

#### General specifications

|                            |       |                    |
|----------------------------|-------|--------------------|
| Switching function         |       | Normally open (NO) |
| Output type                |       | Two-wire           |
| Rated operating distance   | $s_n$ | 20 mm              |
| Installation               |       | flush              |
| Output polarity            |       | AC/DC              |
| Assured operating distance | $s_a$ | 0 ... 16.2 mm      |
| Actual operating distance  | $s_r$ | 18 ... 22 mm       |
| Reduction factor $r_{AI}$  |       | 0.4                |
| Reduction factor $r_{Cu}$  |       | 0.3                |

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

Pepperl+Fuchs Group  
www.pepperl-fuchs.com

USA: +1 330 486 0001  
fa-info@us.pepperl-fuchs.com

Germany: +49 621 776 1111  
fa-info@de.pepperl-fuchs.com

Singapore: +65 6779 9091  
fa-info@sg.pepperl-fuchs.com

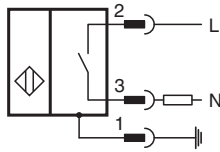
**PEPPERL+FUCHS**

## Technical Data

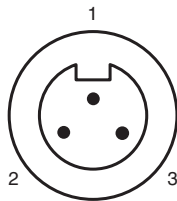
|                                                 |           |                                                              |
|-------------------------------------------------|-----------|--------------------------------------------------------------|
| Reduction factor $r_{304}$                      |           | 0.77                                                         |
| Reduction factor $r_{Fe}$                       |           | 1                                                            |
| Reduction factor $r_{Brass}$                    |           | 0.43                                                         |
| Output type                                     |           | 2-wire                                                       |
| <b>Nominal ratings</b>                          |           |                                                              |
| Switching frequency                             | f         | AC, 0 ... 30 Hz<br>DC, 0 ... 100 Hz                          |
| Hysteresis                                      | H         | 1 ... 10 % typ. 5 %                                          |
| Reverse polarity protection                     |           | reverse polarity tolerant                                    |
| Short-circuit protection                        |           | pulsing                                                      |
| Voltage drop                                    | $U_d$     | ≤ 5 V (typ. 2V) DC operation<br>≤ 8 V (typ. 2V) AC operation |
| Momentary current<br>(20 ms, 0.1 Hz)            |           | 0 ... 3000 mA                                                |
| Operating current                               | $I_L$     | 5 ... 500 mA                                                 |
| Off-state current                               | $I_r$     | ≤ 1.5 mA                                                     |
| Time delay before availability                  | $t_v$     | ≤ 300 ms                                                     |
| Operating voltage indicator                     |           | LED, green                                                   |
| Switching state indicator                       |           | LED, yellow                                                  |
| Error indicator                                 |           | flashes when overcurrent                                     |
| <b>Functional safety related parameters</b>     |           |                                                              |
| MTTF <sub>d</sub>                               |           | 540 a                                                        |
| Mission Time ( $T_M$ )                          |           | 20 a                                                         |
| Diagnostic Coverage (DC)                        |           | 0 %                                                          |
| <b>Electrical specifications</b>                |           |                                                              |
| Rated operating voltage                         | $U_e$     | 24 ... 250 V DC / 24 ... 230 V AC                            |
| Operating voltage                               | $U_B$     | 20 ... 300 V DC / 20 ... 253 V AC                            |
| <b>Compliance with standards and directives</b> |           |                                                              |
| Standard conformity                             |           |                                                              |
| Standards                                       |           | EN IEC 60947-5-2                                             |
| <b>Approvals and certificates</b>               |           |                                                              |
| Protection class                                |           | I                                                            |
| Rated insulation voltage                        | $U_i$     | 230 V                                                        |
| Rated impulse withstand voltage                 | $U_{imp}$ | 2.5 kV                                                       |
| <b>Ambient conditions</b>                       |           |                                                              |
| Ambient temperature                             |           | -25 ... 85 °C (-13 ... 185 °F)                               |
| Storage temperature                             |           | -25 ... 85 °C (-13 ... 185 °F)                               |
| <b>Mechanical specifications</b>                |           |                                                              |
| Connection type                                 |           | Connector plug                                               |
| Cable gland                                     |           |                                                              |
| Note                                            |           | terminal compartment - resin filled                          |
| Housing material                                |           | PA 6.6 / metal                                               |
| Sensing face                                    |           | PA 6.6                                                       |
| Housing base                                    |           | metal / class I equipment with ground connection             |
| Degree of protection                            |           | IP67                                                         |
| Connector                                       |           |                                                              |
| Threading                                       |           | 7/8 inch-16 UN                                               |
| Number of pins                                  |           | 3                                                            |
| Mass                                            |           | 298 g                                                        |
| Dimensions                                      |           |                                                              |
| Height                                          |           | 40 mm                                                        |
| Width                                           |           | 40 mm                                                        |
| Length                                          |           | 118 mm                                                       |

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Connection



Connection Assignment



Wire colors

|   |    |         |
|---|----|---------|
| 1 | GN | (green) |
| 2 | BK | (black) |
| 3 | WH | (white) |

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## Connection

### Note

The sensor is designed for individual operation. A series or parallel connection of sensors is not permissible.