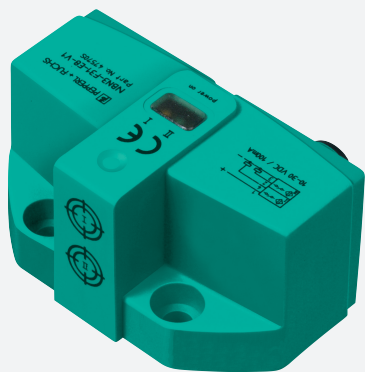




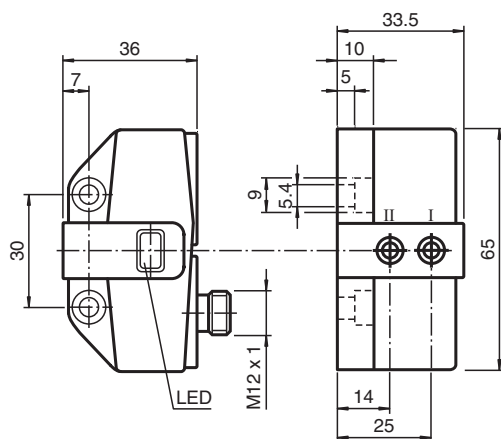
## Inductive sensor NBN3-F31-E8-V1



- Direct mounting on standard actuators
- Fixed setting



### Dimensions



### Technical Data

#### General specifications

|                             |       |                        |
|-----------------------------|-------|------------------------|
| Switching function          |       | 2 x normally open (NO) |
| Output type                 |       | PNP                    |
| Rated operating distance    | $s_n$ | 3 mm                   |
| Installation                |       | flush mountable        |
| Output polarity             |       | DC                     |
| Assured operating distance  | $s_a$ | 0 ... 2.43 mm          |
| Actual operating distance   | $s_r$ | 2.7 ... 3.3 mm typ.    |
| Reduction factor $r_{AI}$   |       | 0.5                    |
| Reduction factor $r_{Cu}$   |       | 0.4                    |
| Reduction factor $r_{304}$  |       | 1                      |
| Reduction factor $r_{S137}$ |       | 1.2                    |
| Output type                 |       | 3-wire                 |

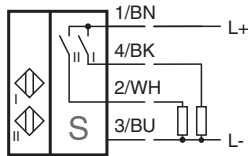
#### Nominal ratings

|                     |       |                |
|---------------------|-------|----------------|
| Operating voltage   | $U_B$ | 10 ... 30 V DC |
| Switching frequency | $f$   | 0 ... 500 Hz   |
| Hysteresis          | $H$   | typ. 5 %       |

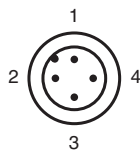
Technical Data

|                                          |       |                                                                                             |
|------------------------------------------|-------|---------------------------------------------------------------------------------------------|
| Reverse polarity protection              |       | all connections                                                                             |
| Short-circuit protection                 |       | pulsing                                                                                     |
| Voltage drop                             | $U_d$ | $\leq 3\text{ V}$                                                                           |
| Operating current                        | $I_L$ | 0 ... 100 mA                                                                                |
| Off-state current                        | $I_r$ | 0 ... 0.5 mA typ. 0.1 $\mu\text{A}$ at 25 °C                                                |
| No-load supply current                   | $I_0$ | $\leq 25\text{ mA}$                                                                         |
| Operating voltage indicator              |       | LED, green                                                                                  |
| Switching state indicator                |       | LED, yellow                                                                                 |
| Functional safety related parameters     |       |                                                                                             |
| MTTF <sub>d</sub>                        |       | 780 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<br>EN 60947-5-2/A1:2012<br>IEC 60947-5-2:2007<br>IEC 60947-5-2 AMD 1:2012 |
| Approvals and certificates               |       |                                                                                             |
| EAC conformity                           |       | TR CU 020/2011                                                                              |
| UL approval                              |       | cULus Listed, General Purpose                                                               |
| CSA approval                             |       | cCSAus Listed, General Purpose                                                              |
| CCC approval                             |       | CCC approval / marking not required for products rated $\leq 36\text{ V}$                   |
| Ambient conditions                       |       |                                                                                             |
| Ambient temperature                      |       | -25 ... 70 °C (-13 ... 158 °F)                                                              |
| Mechanical specifications                |       |                                                                                             |
| Connection (system side)                 |       | 4-pin, M12 x 1 connector                                                                    |
| Connector housing                        |       | metal                                                                                       |
| Housing material                         |       | PBT                                                                                         |
| Sensing face                             |       | PBT                                                                                         |
| Degree of protection                     |       | IP67                                                                                        |
| Tightening torque, fastening screws      |       | 4 Nm ... 5 Nm                                                                               |

Connection



Connection Assignment



Wire colors in accordance with EN 60947-5-2

|   |    |         |
|---|----|---------|
| 1 | BN | (brown) |
| 2 | WH | (white) |
| 3 | BU | (blue)  |
| 4 | BK | (black) |

Matching System Components

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

Accessories

|                                                                                     |                    |                                                                         |
|-------------------------------------------------------------------------------------|--------------------|-------------------------------------------------------------------------|
|    | <b>BT65B</b>       | Activator for F31 series                                                |
|    | <b>BT115B</b>      | Activator for F31 series                                                |
|   | <b>V1-G-2M-PUR</b> | Female cordset single-ended M12 straight A-coded, 4-pin, PUR cable grey |
|  | <b>V1-W-2M-PUR</b> | Female cordset single-ended M12 angled A-coded, 4-pin, PUR cable grey   |
|  | <b>BT65A</b>       | Activator for F31 series                                                |
|  | <b>BT65X</b>       | Activator for F31 series                                                |



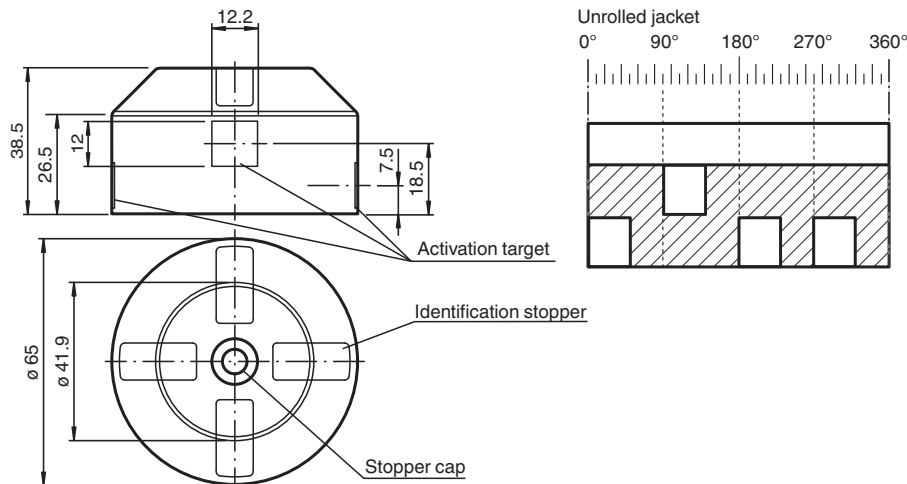
## Activator

### BT65A

- Four fixed actuating lugs, offset by 90°
- For right and left rotating drives with 180° rotational motion

Activator for F31 series

## Dimensions



## Technical Data

|                                  |                                                                                                                                  |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| <b>General specifications</b>    |                                                                                                                                  |
| Ring diameter                    | max. 65 mm                                                                                                                       |
| Spring ring height               | max. 6 mm                                                                                                                        |
| <b>Ambient conditions</b>        |                                                                                                                                  |
| Ambient temperature              | -25 ... 70 °C (-13 ... 158 °F)                                                                                                   |
| <b>Mechanical specifications</b> |                                                                                                                                  |
| Shaft diameter                   | < 58 mm                                                                                                                          |
| Shaft height                     | 20 mm and 30 mm                                                                                                                  |
| Mounting hole pattern            | 30 x 80 mm                                                                                                                       |
| <b>Material</b>                  |                                                                                                                                  |
| Housing                          | Mounting component: PA                                                                                                           |
| Spacer disk                      | PA (1 unit, 10 mm strong)                                                                                                        |
| Stopper cap                      | PE (1 unit black)                                                                                                                |
| Identification stopper           | PA (2 units yellow, 2 units black)                                                                                               |
| Mounting screw                   | for activator: 1.4305 / AISI 303 (1 piece M6 x 25)<br>for sensors - F31: 1.4305 / AISI 303 (4 pieces M5 x 16) (2 pieces M5 x 12) |
| Activation target                | Stainless steel 1.4305 / AISI 303 (integrated)                                                                                   |
| Mass                             | 40 g                                                                                                                             |



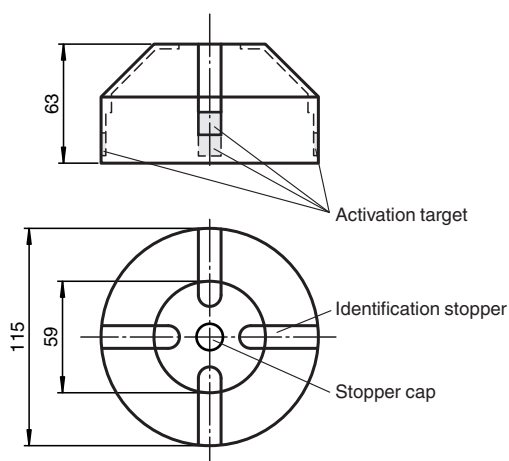
## Activator

### BT115A

- For right and left rotating drives with 180° rotational motion
- Four fixed actuating lugs, offset by 90°

Activator for F31 series

## Dimensions



## Technical Data

### General specifications

|                    |             |
|--------------------|-------------|
| Ring diameter      | max. 110 mm |
| Spring ring height | max. 7 mm   |

### Ambient conditions

|                     |                                |
|---------------------|--------------------------------|
| Ambient temperature | -25 ... 70 °C (-13 ... 158 °F) |
|---------------------|--------------------------------|

### Mechanical specifications

|                                     |                                                                                                                                  |
|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| Shaft diameter                      | < 90 mm                                                                                                                          |
| Shaft height                        | 30 mm and 50 mm                                                                                                                  |
| Mounting hole pattern               | 30 x 130 mm                                                                                                                      |
| Material                            |                                                                                                                                  |
| Housing                             | Mounting component: PA                                                                                                           |
| Spacer disk                         | PA (2 units, 10 mm strong)                                                                                                       |
| Stopper cap                         | PE (1 unit black)                                                                                                                |
| Identification stopper              | PA (2 units yellow, 2 units black)                                                                                               |
| Mounting screw                      | for activator: 1.4305 / AISI 303 (1 piece M6 x 25)<br>for sensors - F31: 1.4305 / AISI 303 (4 pieces M5 x 16) (2 pieces M5 x 12) |
| Activation target                   | Stainless steel 1.4305 / AISI 303 (integrated)                                                                                   |
| Mass                                | 120 g                                                                                                                            |
| Tightening torque, fastening screws | 1.5 Nm                                                                                                                           |