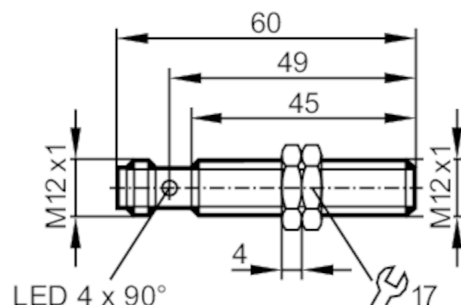


# IFP200



## Inductive sensor

IFK3002-FRKG/V4A/IO/US-104



### Product characteristics

|                         |                                        |
|-------------------------|----------------------------------------|
| Electrical design       | PNP/NPN; (configurable)                |
| Output function         | normally open / closed; (configurable) |
| Communication interface | IO-Link                                |
| Housing                 | Threaded type                          |
| Dimensions [mm]         | M12 x 1 / L = 60                       |

### Application

|                                          |                       |
|------------------------------------------|-----------------------|
| System                                   | Magnetic-field immune |
| Magnetic-field immune                    | yes                   |
| Max. electromagnetic field immunity [mT] | 300                   |

### Electrical data

|                             |            |
|-----------------------------|------------|
| Operating voltage [V]       | 10...30 DC |
| Current consumption [mA]    | < 20       |
| Protection class            | III        |
| Reverse polarity protection | yes        |

### Outputs

|                                                      |                                        |
|------------------------------------------------------|----------------------------------------|
| Electrical design                                    | PNP/NPN; (configurable)                |
| Output function                                      | normally open / closed; (configurable) |
| Max. voltage drop switching output DC [V]            | 2.5                                    |
| Permanent current rating of switching output DC [mA] | 100                                    |
| Switching frequency DC [Hz]                          | 75                                     |
| Short-circuit protection                             | yes                                    |
| Overload protection                                  | yes                                    |

### Monitoring range

|                              |            |
|------------------------------|------------|
| Switch point IO-Link [mm]    | 0.4...1.94 |
| Measuring range IO-Link [mm] | 0.2...2    |

### Accuracy / deviations

|               |         |
|---------------|---------|
| Repeatability | < 10 µm |
|---------------|---------|

# IFP200



## Inductive sensor

IFK3002-FRKG/V4A/IO/US-104

|                                                                        |                           |                                                                                    |
|------------------------------------------------------------------------|---------------------------|------------------------------------------------------------------------------------|
| Factory calibration (target: aluminium, 24x24 mm)                      |                           |                                                                                    |
| Resolution                                                             | [µm]                      | 5                                                                                  |
| Temperature drift                                                      |                           | ± 0,8 µm/K                                                                         |
| Linearity deviation                                                    |                           | ± 10 µm                                                                            |
| Application calibration (1-point calibration; target: steel, 24x24 mm) |                           |                                                                                    |
| Resolution                                                             | [µm]                      | 5                                                                                  |
| Temperature drift                                                      |                           | ± 2 µm/K                                                                           |
| Linearity deviation                                                    |                           | ± 75 µm                                                                            |
| Application calibration (3-point calibration; target: steel, 12x12 mm) |                           |                                                                                    |
| Resolution                                                             | [µm]                      | 5                                                                                  |
| Temperature drift                                                      |                           | ± 2 µm/K                                                                           |
| Linearity deviation                                                    |                           | ± 50 µm                                                                            |
| Interfaces                                                             |                           |                                                                                    |
| Communication interface                                                |                           | IO-Link                                                                            |
| Transmission type                                                      |                           | COM2 (38,4 kBaud)                                                                  |
| IO-Link revision                                                       |                           | 1.1                                                                                |
| SDCI standard                                                          |                           | IEC 61131-9 CDV                                                                    |
| Profiles                                                               | Smart Sensor - SSP 4.1.1  | Measuring and Switching Sensor, 1 channel                                          |
|                                                                        | Common - I&D              | Identification and Diagnosis                                                       |
|                                                                        | Extension                 | Object detection, switches when value falls below the setpoint                     |
|                                                                        | Function                  | Locator                                                                            |
|                                                                        | Function                  | ProductURI                                                                         |
| SIO mode                                                               |                           | yes                                                                                |
| Required master port class                                             |                           | A                                                                                  |
| Min. process cycle time                                                | [ms]                      | 3.2                                                                                |
| Supported DeviceIDs                                                    | <b>Type of operation</b>  | <b>DeviceID</b>                                                                    |
|                                                                        | default                   | 1704                                                                               |
| Operating conditions                                                   |                           |                                                                                    |
| Ambient temperature                                                    | [°C]                      | -25...70                                                                           |
| Protection                                                             |                           | IP 65; IP 66; IP 67; IP 68; IP 69K                                                 |
| Tests / approvals                                                      |                           |                                                                                    |
| EMC                                                                    | EN 61000-4-2 ESD          | 4 kV CD / 8 kV AD                                                                  |
|                                                                        | EN 61000-4-3 HF radiated  | 10 V/m                                                                             |
|                                                                        | EN 61000-4-4 Burst        | 2 kV                                                                               |
|                                                                        | EN 61000-4-6 HF conducted | 10 V                                                                               |
|                                                                        | EN 55011                  | class B                                                                            |
| Vibration resistance                                                   | EN 60068-2-6 Fc           | 20 g (10...3000 Hz) / 50 sweep cycles per frequency; 1 octave per minute in 3 axes |
| Shock resistance                                                       | EN 60068-2-27 Ea          | 100 g 11 ms half-sine; 3 shocks each in every direction of the 3 coordinate axes   |
| Continuous shock resistance                                            | EN 60068-2-27 Eb          | 40 g 6 ms; 4000 shocks each in every direction of the 3 coordinate axes            |
| Fast temperature changes                                               | EN 60068-2-14 Na          | TA = -25 °C; TB = 70 °C; t1 = 30 min; t2 = < 10 s; 50 cycles                       |
| MTTF                                                                   | [years]                   | 1357                                                                               |

# IFP200



## Inductive sensor

IFK3002-FRKG/V4A/IO/US-104

|                            |                    |                         |
|----------------------------|--------------------|-------------------------|
| Embedded software included | yes                |                         |
| UL approval                | Ta                 | -25...70 °C             |
|                            | Enclosure type     | Type 1                  |
|                            | voltage supply     | Limited Voltage/Current |
|                            | UL approval number | A005                    |
|                            | File number UL     | E174191                 |

| Mechanical data    |      |                                                                                                                                   |
|--------------------|------|-----------------------------------------------------------------------------------------------------------------------------------|
| Weight             | [g]  | 54.9                                                                                                                              |
| Housing            |      | Threaded type                                                                                                                     |
| Mounting           |      | flush mountable                                                                                                                   |
| Dimensions         | [mm] | M12 x 1 / L = 60                                                                                                                  |
| Thread designation |      | M12 x 1                                                                                                                           |
| Material           |      | housing: stainless steel (1.4404 / 316L); sensing face: LCP white;<br>LED window: PEI; lock nuts: stainless steel (1.4404 / 316L) |
| Tightening torque  | [Nm] | 7                                                                                                                                 |

| Displays / operating elements |                                    |                    |
|-------------------------------|------------------------------------|--------------------|
| Display                       | Switching status                   | 4 x LED, yellow    |
|                               | SIO mode                           |                    |
|                               | output stage supplied with current | LED, yellow lights |
|                               | IO-Link mode                       |                    |
|                               | target in measuring range          | LED, yellow lights |

| Accessories    |              |  |
|----------------|--------------|--|
| Items supplied | lock nuts: 2 |  |

| Remarks       |        |  |
|---------------|--------|--|
| Pack quantity | 1 pcs. |  |

### Electrical connection - plug

Connector: 1 x M12; coding: A



## Inductive sensor

IFK3002-FRKG/V4A/IO/US-104

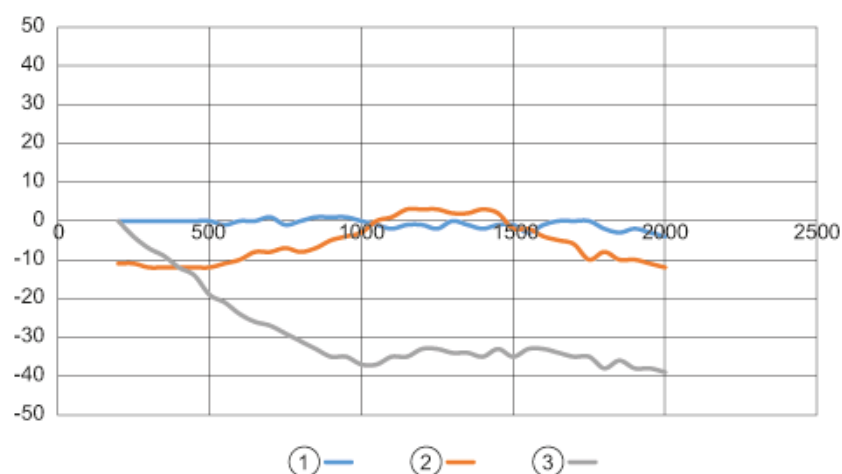
### Connection



4: OUT / IO-Link

### Diagrams and graphs

Linearity deviation



- x Measured value [μm]
- y Linearity deviation [μm]
- 1 Factory calibration (target: aluminium, 24x24 mm)
- 2 application calibration (1-point calibration; target: steel, 24x24 mm)
- 3 Application calibration (3-point calibration; target: steel, 12x12 mm)