

## Technical data sheet

### Inductive switch

Part no.: 50109676

ISS 212MM/4NC-4E0-S12

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For illustration purposes only



## Technical data

### Basic data

|                                   |              |
|-----------------------------------|--------------|
| Series                            | 212          |
| type. operating range limit $S_n$ | 4 mm         |
| Operating range $S_a$             | 0 ... 3.2 mm |

### Characteristic parameters

|      |           |
|------|-----------|
| MTTF | 910 years |
|------|-----------|

### Electrical data

|                    |                              |
|--------------------|------------------------------|
| Protective circuit | Inductive protection         |
|                    | Polarity reversal protection |
|                    | Short circuit protected      |

### Performance data

|  |  |
|--|--|
| Supply voltage $U_B$                     | 10 ... 30 V, DC  |
| Residual ripple                          | 0 ... 20 %, From $U_B$   |
| Open-circuit current                     | 0 ... 10 mA  |
| Temperature drift, max. (in % of $S_r$ ) | 10 %, Over the entire operating temperature range  |
| Repeatability, max. (in % of $S_r$ )     | 5 %, For $U_B = 20 \dots 30$ VDC, ambient temperature $T_a = 23^\circ\text{C} \pm 5^\circ\text{C}$ |
| Switching hysteresis                     | 20 %   |

### Outputs

|                                     |            |
|-------------------------------------|------------|
| Number of digital switching outputs | 1 Piece(s) |
|-------------------------------------|------------|

### Switching outputs

|                         |            |
|-------------------------|------------|
| Voltage type            | DC         |
| Switching current, max. | 200 mA     |
| Residual current, max.  | 0.1 mA     |
| Voltage drop            | $\leq 2$ V |

### Switching output 1

|                     |                      |
|---------------------|----------------------|
| Switching element   | Transistor, PNP      |
| Switching principle | NC (normally closed) |

### Time behavior

|                     |          |
|---------------------|----------|
| Switching frequency | 2,500 Hz |
| Readiness delay     | 60 ms    |

### Connection

|                       |            |
|-----------------------|------------|
| Number of connections | 1 Piece(s) |
|-----------------------|------------|

### Connection 1

|                    |                |
|--------------------|----------------|
| Function           | Signal OUT     |
|                    | Voltage supply |
| Type of connection | Connector      |
| Thread size        | M12            |
| Type               | Male           |
| Material           | Metal          |
| No. of pins        | 4 -pin         |
| Encoding           | A-coded        |

### Mechanical data

|                                      |   |
|--------------------------------------|---|
| Design                               | Cylindrical                                     |
| Dimension ( $\varnothing \times L$ ) | 12 mm x 45 mm                                   |
| Thread size                          | M12 x 1 mm                                      |
| Type of installation                 | Embedded/flush                                  |
| Housing material                     | Metal   |
| Metal housing                        | Nickel-plated brass                             |
| Sensing face material                | Plastic, Polybutylene (PBT)                     |
| Net weight                           | 18 g  |
| Housing color                        | Red, RAL 3000<br>Silver                         |
| Type of fastening                    | Mounting thread<br>Via optional mounting device |
| Standard measuring plate             | 12 x 12 mm <sup>2</sup> , Fe360                 |

### Operation and display

|                 |            |
|-----------------|------------|
| Type of display | LED        |
| Number of LEDs  | 1 Piece(s) |

### Environmental data

|                                |               |
|--------------------------------|---------------|
| Ambient temperature, operation | -25 ... 70 °C |
| Ambient temperature, storage   | -25 ... 70 °C |

### Certifications

|  |               |
|--|---------------|
| Degree of protection                               | IP 67         |
| Protection class                                   | II            |
| Approvals  | c UL US       |
| Test procedure for EMC in accordance with standard | IEC 61000-4-2 |
|  | IEC 61000-4-3 |
|  | IEC 61000-4-4 |
| Standards applied                                  | IEC 60947-5-2 |

### Correction factors

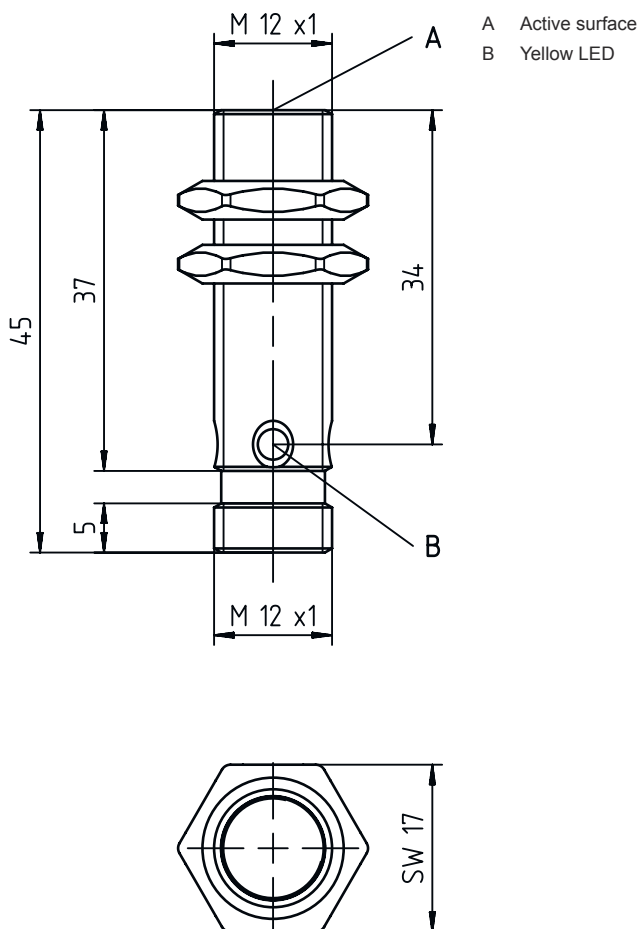
|                 |      |
|-----------------|------|
| Aluminum        | 0.44 |
| Stainless steel | 0.8  |
| Copper          | 0.4  |
| Brass           | 0.54 |
| Fe360 steel     | 1    |

### Classification

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| ECLASS 5.1.4          | 27270101 |
| ECLASS 8.0            | 27270101 |
| ECLASS 9.0            | 27270101 |
| ECLASS 10.0           | 27270101 |
| ECLASS 11.0           | 27270101 |
| ECLASS 12.0           | 27274001 |
| ECLASS 13.0           | 27274001 |
| ECLASS 14.0           | 27274001 |
| ECLASS 15.0           | 27274001 |
| ECLASS 16.0           | 27274001 |
| ETIM 5.0              | EC002714 |
| ETIM 6.0              | EC002714 |
| ETIM 7.0              | EC002714 |
| ETIM 8.0              | EC002714 |
| ETIM 9.0              | EC002714 |
| ETIM 10.0             | EC002714 |
| UNSPSC 26.08          | 39122230 |

# Dimensioned drawings

All dimensions in millimeters



## Electrical connection

### Connection 1

|                    |                |
|--------------------|----------------|
| Function           | Signal OUT     |
|                    | Voltage supply |
| Type of connection | Connector      |
| Thread size        | M12            |
| Type               | Male           |
| Material           | Metal          |
| No. of pins        | 4 -pin         |
| Encoding           | A-coded        |

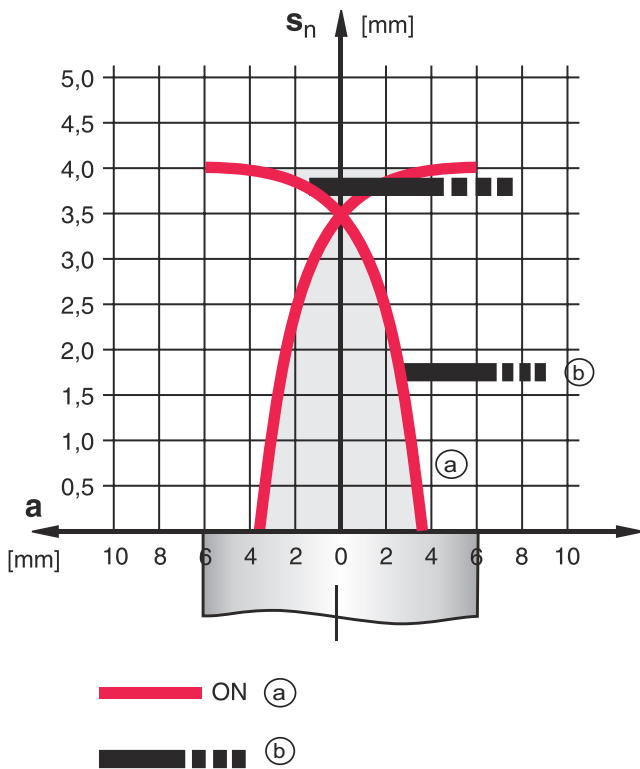
| Pin | Pin assignment |
|-----|----------------|
| 1   | V+             |
| 2   | OUT            |
| 3   | GND            |
| 4   | not connected  |

# Diagrams

## Embedded/flush installation



## Types with $S_n = 4.0$ mm



- a Inductive switch
- b Standard measuring plate

## Operation and display

| LED | Display                  | Meaning                          |
|-----|--------------------------|----------------------------------|
| 1   | Yellow, continuous light | Switching output/switching state |

## Part number code

Part designation: ISX YYY ZZ/AAA.BB-CCC-DDD-DDD

|            |  |
|------------|--|
| <b>ISX</b> | <b>Operating principle / construction</b><br>IS: inductive switch, standard design<br>ISS: inductive switch, short construction  |
| <b>YYY</b> | <b>Series</b><br>203: series with Ø 3 mm<br>204: series with Ø 4 mm<br>205: series with M5 x 0.5 external thread<br>206: series with Ø 6.5 mm<br>208: series with M8 x 1 external thread<br>212: series with M12 x 1 external thread<br>218: series with M18 x 1 external thread<br>230: series with M30 x 1.5 external thread<br>240: series in cubic design<br>244: series in cubic design<br>255: series with 5 x 5 mm <sup>2</sup> cross section<br>288: series with 8 x 8 mm <sup>2</sup> cross section   |
| <b>ZZ</b>  | <b>Housing / thread</b><br>MM: metal housing (active surface: plastic) / metric thread<br>FM: Full-metal housing (active surface: stainless steel AISI 316L) / metric thread<br>MP: metal housing (active surface: plastic) / smooth (without thread)<br>.2: New version   |
| <b>AAA</b> | <b>Output current / supply</b><br>4NO: PNP transistor, NO contact<br>4NC: PNP transistor, NC contact<br>2NO: NPN transistor, NO contact<br>2NC: NPN transistor, NC contact<br>1NO: relay, NO contact / AC/DC<br>1NC: Relay, NC contact / AC/DC<br>44: 2 PNP transistor switching outputs, antivalent (NO + NC)<br>22: 2 NPN transistor switching outputs, antivalent (NO + NC)<br>L: IO-Link interface<br>X: pin not used  |
| <b>BB</b>  | <b>Special equipment</b><br>n/a: no special equipment<br>5F: Food version<br>5: housing material V2A (1.4305, AISI 303)  |
| <b>CCC</b> | <b>Measurement range / type of installation</b><br>1E0: typ. range limit 1.0 mm / embedded/flush installation<br>1E5: typ. range limit 1.5 mm / embedded/flush installation<br>2E0: typ. range limit 2.0 mm / embedded/flush installation<br>3E0: typ. range limit 3.0 mm / embedded/flush installation<br>4E0: typ. range limit 4.0 mm / embedded/flush installation<br>5E0: typ. range limit 5.0 mm / embedded/flush installation<br>6E0: typ. range limit 6.0 mm / embedded/flush installation<br>8E0: typ. range limit 8.0 mm / embedded/flush installation<br>10E: typ. range limit 10.0 mm / embedded/flush installation<br>12E: typ. range limit 12.0 mm / embedded/flush installation<br>15E: typ. range limit 15.0 mm / embedded/flush installation<br>20E: typ. range limit 20.0 mm / embedded/flush installation<br>22E: typ. range limit 22.0 mm / embedded/flush installation<br>2N5: typ. range limit 2.5 mm / non-embedded/non-flush installation<br>4N0: typ. range limit 4.0 mm / non-embedded/non-flush installation<br>8N0: typ. range limit 8.0 mm / non-embedded/non-flush installation<br>10N: typ. range limit 10.0 mm / non-embedded/non-flush installation<br>12N: typ. range limit 12.0 mm / non-embedded/non-flush installation<br>14N: typ. range limit 14.0 mm / non-embedded/non-flush installation<br>15N: typ. range limit 15.0 mm / non-embedded/non-flush installation<br>20N: typ. range limit 20.0 mm / non-embedded/non-flush installation<br>22N: typ. range limit 22.0 mm / non-embedded/non-flush installation<br>25N: typ. range limit 25.0 mm / non-embedded/non-flush installation<br>40N: typ. range limit 40.0 mm / non-embedded/non-flush installation |

## Part number code

|            |   |
|------------|---|
| <b>DDD</b> | <p><b>Electrical connection</b><br/>                 n/a: cable, standard length 2000 mm<br/>                 S12: M12 connector, 4-pin, axial<br/>                 200-S12: cable, length 200 mm with M12 connector, 4-pin, axial<br/>                 200-S8.3: cable, length 200 mm with M8 connector, 3-pin, axial<br/>                 S8.3: M8 connector, 3-pin, axial<br/>                 005-S8.3: cable, length 500 mm with M8 connector, 3-pin, axial<br/>                 050: cable, standard length 5000 mm, 3-wire</p> |
|------------|---|

| Note |  |
|------|--|
|      | <p>A list with all available device types can be found on the Leuze website at <a href="http://www.leuze.com">www.leuze.com</a>.</p> |

## Notes

| ⚠ Observe intended use! |   |
|-------------------------|---|
|                         | <ul style="list-style-type: none"> <li>⌘ This product is not a safety sensor and is not intended as personnel protection.</li> <li>⌘ The product may only be put into operation by competent persons.</li> <li>⌘ Only use the product in accordance with its intended use.</li> </ul> |



| ⚠ For UL applications: |  |
|------------------------|--|
|                        | <p>⌘ For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code).</p> |

## Accessories


### Connection technology - Connection cables

|  | Part no. | Designation        | Article          | Description   |
|--|----------|--------------------|------------------|---|
|  | 50130654 | KD U-M12-4A-P1-020 | Connection cable | Application: Oil and lubricant resistant<br>Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 2,000 mm<br>Sheathing material: PUR |
|  | 50130657 | KD U-M12-4A-P1-050 | Connection cable | Application: Oil and lubricant resistant<br>Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: PUR |

## Accessories

|   | Part no. | Designation        | Article          | Description  |
|---|----------|--------------------|------------------|--|
|  | 50130648 | KD U-M12-4A-V1-020 | Connection cable | Application: Chemical resistant<br>Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 2,000 mm<br>Sheathing material: PVC |
|  | 50130652 | KD U-M12-4A-V1-050 | Connection cable | Application: Chemical resistant<br>Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin<br>Connector, LED: No<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: PVC |

## Mounting technology - Other

|   | Part no. | Designation | Article | Description   |
|---|----------|-------------|---------|---|
|  | 50111499 | MC 012K     | Clamp   | Diameter, inner: 12 mm<br>Design of mounting device: Mounting clamp<br>Fastening, at system: Through-hole mounting<br>Mounting bracket, at device: Clampable<br>Type of mounting device: Rigid<br>Material: Plastic |

### Note



A list with all available accessories can be found on the Leuze website in the Download tab of the article detailed page.