

## Technical data sheet

### Inductive switch

Part no.: 50128181

IS 208FM/4NO.5-2E0-S8.3

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Figure can vary



## Technical data

### Basic data

|                                  |              |
|----------------------------------|--------------|
| Series                           | 208          |
| Typ. operating range limit $S_n$ | 2 mm         |
| Operating range $S_a$            | 0 ... 1.6 mm |

### Special design

|                |                    |
|----------------|--------------------|
| Special design | Reduction factor 1 |
|----------------|--------------------|

### 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 $U_B = 20 ... 30$ 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 |

### Switching output 1

|                     |                    |
|---------------------|--------------------|
| Switching element   | Transistor, PNP    |
| Switching principle | NO (normally open) |

### Timing

|                     |        |
|---------------------|--------|
| Switching frequency | 100 Hz |
| Readiness delay     | 30 ms  |

### Connection

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

### Connection 1

|                    |                 |
|--------------------|-----------------|
| Function           | Signal OUT      |
|                    | Voltage supply  |
| Type of connection | Connector       |
| Thread size        | M8              |
| Type               | Male            |
| Material           | Stainless steel |
| No. of pins        | 3 -pin          |

### Mechanical data

|                                |                               |
|--------------------------------|-------------------------------|
| Design                         | Cylindrical                   |
| Thread size                    | M8 x 1 mm                     |
| Dimension ( $\varnothing$ x L) | 8 mm x 60 mm                  |
| Type of installation           | Embedded                      |
| Housing material               | Stainless steel, V2A          |
| Sensing face material          | Stainless steel, AISI 303     |
| Net weight                     | 15 g                          |
| Housing color                  | Silver                        |
| Type of fastening              | Mounting thread               |
|                                | Via optional mounting device  |
| Standard measuring plate       | 8 x 8 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 |
|--------------------------------|---------------|

### Certifications

|                                                    |               |
|----------------------------------------------------|---------------|
| Degree of protection                               | IP 68         |
|                                                    | IP 69K        |
| Certifications                                     | 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

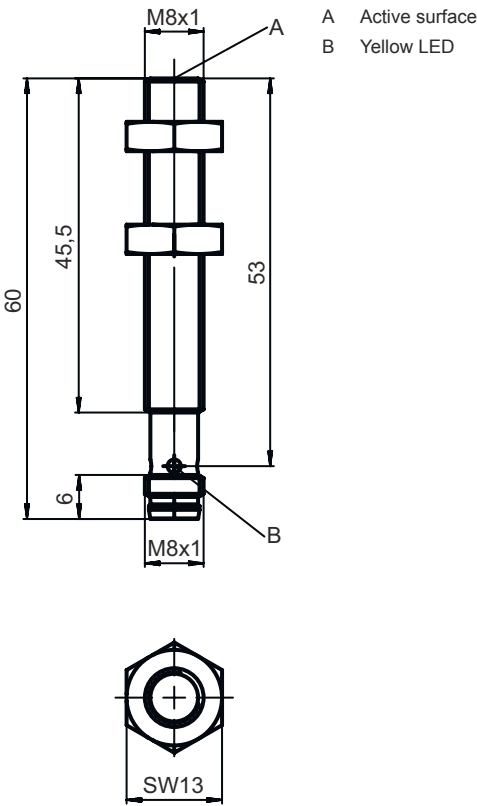
|                 |     |
|-----------------|-----|
| Aluminum        | 1   |
| Stainless steel | 0.4 |
| Copper          | 0.8 |
| Brass           | 1.4 |
| Fe360 steel     | 1   |

### Classification

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| eCl@ss 8.0            | 27270101 |
| eCl@ss 9.0            | 27270101 |
| ETIM 5.0              | EC002714 |
| ETIM 6.0              | EC002714 |

Dimensioned drawings

All dimensions in millimeters

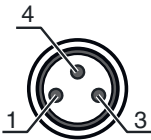


Electrical connection

Connection 1

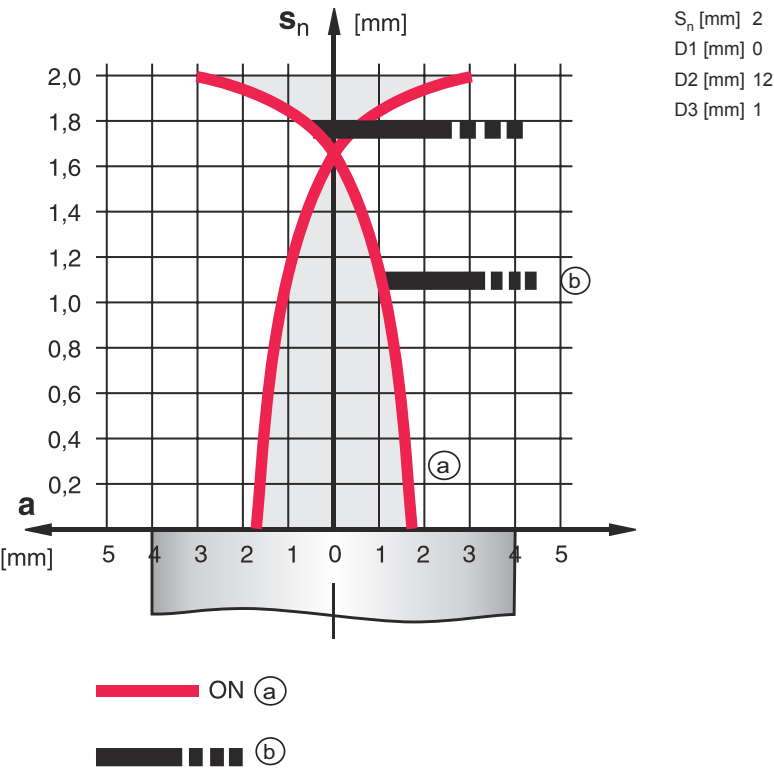
|                    |                 |
|--------------------|-----------------|
| Function           | Signal OUT      |
|                    | Voltage supply  |
| Type of connection | Connector       |
| Thread size        | M8              |
| Type               | Male            |
| Material           | Stainless steel |
| No. of pins        | 3 -pin          |

| Pin | Pin assignment |
|-----|----------------|
| 1   | V+             |
| 3   | GND            |
| 4   | OUT 1          |

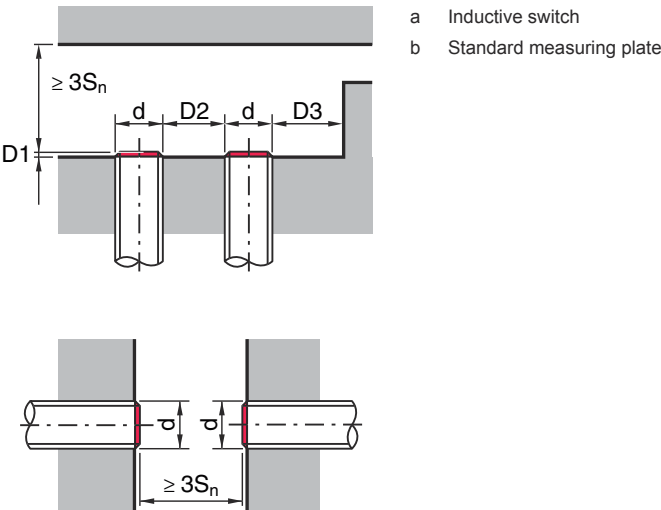


Diagrams

Embedded installation



Types with  $S_n = 2.0$  mm



Operation and display

| LED | Display                  | Meaning                          |
|-----|--------------------------|----------------------------------|
| 1   | Yellow, flashing         | No function reserve              |
|     | 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)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <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)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <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 installation<br>1E5: typ. range limit 1.5 mm / embedded installation<br>2E0: typ. range limit 2.0 mm / embedded installation<br>3E0: typ. range limit 3.0 mm / embedded installation<br>4E0: typ. range limit 4.0 mm / embedded installation<br>5E0: typ. range limit 5.0 mm / embedded installation<br>6E0: typ. range limit 6.0 mm / embedded installation<br>8E0: typ. range limit 8.0 mm / embedded installation<br>10E: typ. range limit 10.0 mm / embedded installation<br>12E: typ. range limit 12.0 mm / embedded installation<br>15E: typ. range limit 15.0 mm / embedded installation<br>20E: typ. range limit 20.0 mm / embedded installation<br>22E: typ. range limit 22.0 mm / embedded installation<br>2N5: typ. range limit 2.5 mm / non-embedded installation<br>4N0: typ. range limit 4.0 mm / non-embedded installation<br>8N0: typ. range limit 8.0 mm / non-embedded installation<br>10N: typ. range limit 10.0 mm / non-embedded installation<br>12N: typ. range limit 12.0 mm / non-embedded installation<br>14N: typ. range limit 14.0 mm / non-embedded installation<br>15N: typ. range limit 15.0 mm / non-embedded installation<br>20N: typ. range limit 20.0 mm / non-embedded installation<br>22N: typ. range limit 22.0 mm / non-embedded installation<br>25N: typ. range limit 25.0 mm / non-embedded installation<br>40N: typ. range limit 40.0 mm / non-embedded installation |
| <b>DDD</b> | <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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

### Note



A list with all available device types can be found on the Leuze website at [www.leuze.com](http://www.leuze.com).

## Notes



### Observe intended use!



- ⚠ This product is not a safety sensor and is not intended as personnel protection.
- ⚠ The product may only be put into operation by competent persons.
- ⚠ Only use the product in accordance with its intended use.



### For UL applications:



- ⚠ For UL applications, use is only permitted in Class 2 circuits in accordance with the NEC (National Electric Code).

## Accessories

### Connection technology - Connection cables

|  | Part no. | Designation       | Article          | Description                                                                                                                                        |
|--|----------|-------------------|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 50130842 | KD U-M8-3A-P1-020 | Connection cable | Connection 1: Connector, M8, Axial, Female, 3 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 2,000 mm<br>Sheathing material: PUR  |
|  | 50130844 | KD U-M8-3A-P1-050 | Connection cable | Connection 1: Connector, M8, Axial, Female, 3 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 5,000 mm<br>Sheathing material: PUR  |
|  | 50130837 | KD U-M8-3A-V1-020 | Connection cable | Connection 1: Connector, M8, Axial, Female, 3 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 2,000 mm<br>Sheathing material: PVC  |
|  | 50130860 | KD U-M8-3W-V1-020 | Connection cable | Connection 1: Connector, M8, Angled, Female, 3 -pin<br>Connection 2: Open end<br>Shielded: No<br>Cable length: 2,000 mm<br>Sheathing material: PVC |
|  |          |                   |                  |                                                                                                                                                    |

## Accessories

### Mounting technology - Other

|                                                                                   | Part no. | Designation | Article | Description                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------|----------|-------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | 50132727 | AC D08M-CS  | Clamp   | Diameter, inner: 8 mm<br>Design of mounting device: Mounting clamp<br>Fastening, at system: Screw type, Through-hole mounting<br>Mounting bracket, at device: insertable, Clampable with limit stop<br>Type of mounting device: Clampable, With limit stop<br>Material: Metal |
|  | 50111497 | MC 008K     | Clamp   | Diameter, inner: 8 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.