

## Technical data sheet

### Inductive switch

Part no.: 50128183

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

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For illustration purposes only



Technical data

Basic data

|                                           |              |
|-------------------------------------------|--------------|
| Series                                    | 208          |
| Typ. operating range limit S <sub>n</sub> | 2 mm         |
| Operating range S <sub>a</sub>            | 0 ... 1.6 mm |

Special version

|                 |                    |
|-----------------|--------------------|
| Special version | Reduction factor 1 |
|-----------------|--------------------|

Electrical data

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

Performance data

|                                                   |                                                                                            |
|---------------------------------------------------|--------------------------------------------------------------------------------------------|
| Supply voltage U <sub>B</sub>                     | 10 ... 30 V, DC                                                                            |
| Residual ripple                                   | 0 ... 20 %, From U <sub>B</sub>                                                            |
| Open-circuit current                              | 0 ... 10 mA                                                                                |
| Temperature drift, max. (in % of S <sub>r</sub> ) | 10 %, Over the entire operating temperature range                                          |
| Repeatability, max. (in % of S <sub>r</sub> )     | 5 %, For U <sub>B</sub> = 20 ... 30 VDC, ambient temperature T <sub>a</sub> = 23 °C ± 5 °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            | ≤ 2 V  |

Switching output 1

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

Time behavior

|                     |        |
|---------------------|--------|
| 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 (Ø x L)        | 8 mm x 60 mm                                    |
| Type of installation     | Embedded                                        |
| Housing material         | Stainless steel                                 |
| Stainless steel housing  | V2A                                             |
| Sensing face material    | Stainless steel, AISI 303                       |
| Net weight               | 15 g                                            |
| Housing color            | Silver                                          |
| Type of fastening        | Mounting thread<br>Via optional mounting device |
| Standard measuring plate | 8 x 8 mm², 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

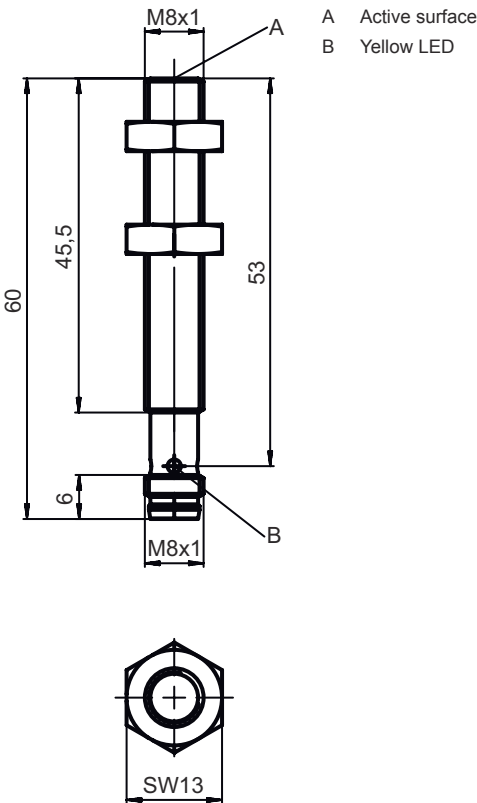
|                 |     |
|-----------------|-----|
| Aluminum        | 1   |
| Stainless steel | 0.4 |
| Copper          | 0.8 |
| Brass           | 1.4 |
| Fe360 steel     | 1   |

Classification

|                       |          |
|-----------------------|----------|
| Customs tariff number | 85365019 |
| 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 |
| ETIM 5.0              | EC002714 |
| ETIM 6.0              | EC002714 |
| ETIM 7.0              | EC002714 |
| ETIM 8.0              | EC002714 |
| ETIM 9.0              | EC002714 |

Dimensioned drawings

All dimensions in millimeters

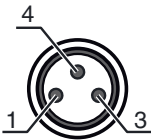


Electrical connection

Connection 1

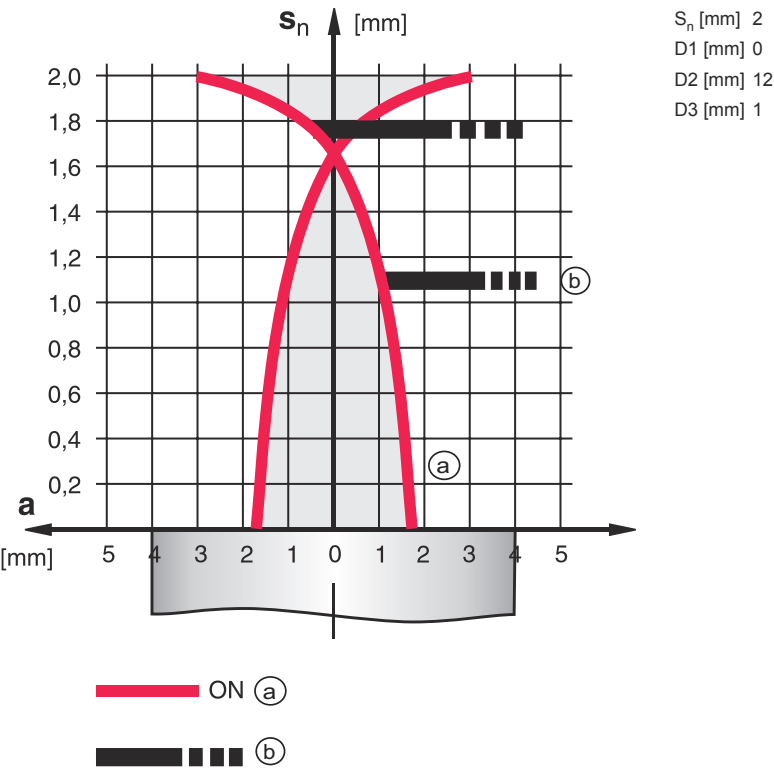
|                    |                 |
|--------------------|-----------------|
| Function           | Signal OUT      |
|                    | Voltage supply  |
| Type of connection | Connector       |
| Thread size        | M8              |
| Type               | Male            |
| Material   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

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

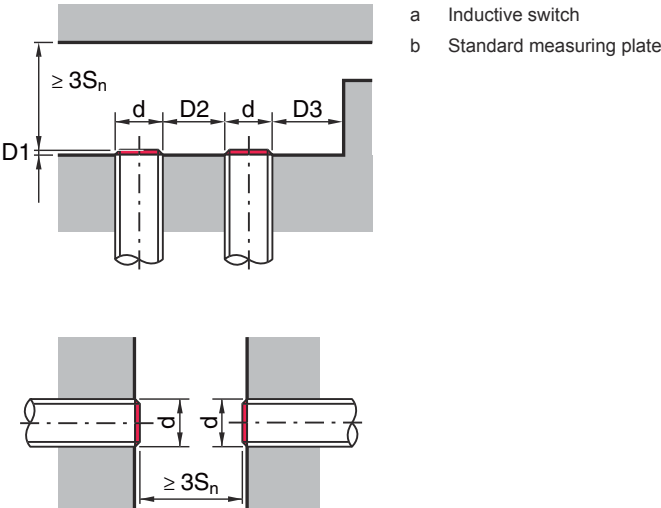


Diagrams

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).



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>Connector, LED: No<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>Connector, LED: No<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>Connector, LED: No<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>Connector, LED: No<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                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------------|----------|-------------|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | 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.