# Technical data sheet
# Capacitive sensor
Part no.: 50136583
LCS-2M12P-N06NNO-M12



Figure can vary

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# Technical data

Leuze

## Basic data

| | |
|---|---|
| **Series** | LCS-2 |
| **Switching distance $S_n$** | 1 ... 6 mm |
| **Assured switching distance** | 4.9 mm |

## Electrical data

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

### Performance data

| | |
|---|---|
| **Supply voltage $U_B$** | 10 ... 30 V, DC |
| **Residual ripple** | 0 ... 10 % |
| **Open-circuit current** | 10 mA |
| **Temperature drift, max. (in % of $S_r$)** | 10 % |
| **Repeatability, max. (in % of $S_r$)** | 5 % |
| **Rated operating current** | 200 mA |

### Outputs

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

#### Switching outputs

| | |
|---|---|
| **Type** | Digital switching output |
| **Voltage type** | DC |

##### Switching output 1

| | |
|---|---|
| **Assignment** | Connection 1, pin 2 |
| **Switching element** | Transistor, NPN |
| **Switching principle** | NO (normally open) |

## Timing

| | |
|---|---|
| **Switching frequency** | 100 Hz |

## 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 |
| **Thread size** | M12 x 1 mm |
| **Dimension (Ø x L)** | 12 mm x 68 mm |
| **Type of installation** | Non-embedded |
| **Housing material** | Plastic, Polybutylene (PBT) |
| **Sensing face material** | Plastic, Polybutylene (PBT) |
| **Cover material** | Plastic, Polybutylene (PBT) |

## Operation and display

| | |
|---|---|
| **Type of display** | LED |
| **Number of LEDs** | 1 Piece(s) |
| **Operational controls** | Multiturn potentiometer |
| **Function of the operational control** | Sensitivity adjustment |
| **Switching distance, adjustable** | Yes |

## Environmental data

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

## Certifications

| | |
|---|---|
| **Degree of protection** | IP 67 |
| **Protection class** | III |
| **Standards applied** | IEC 60947-5-2 |

## Correction factors

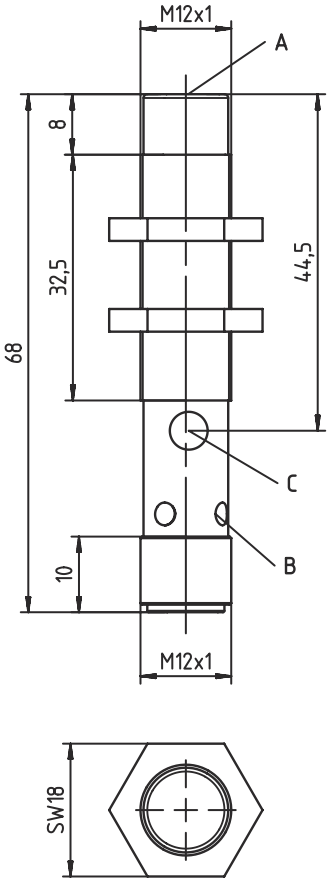
| | |
|---|---|
| **Acetone** | 0.75 |
| **Acrylic resin** | 0.1 ... 0.25 |
| **Alcohol** | 0.85 |
| **Ammonia** | 0.7 ... 0.85 |
| **Aniline** | 0.4 |
| **Gasoline** | 0.1 |
| **Celluloid** | 0.15 |
| **Liquid chlorine** | 0.1 |
| **Ebonite** | 0.15 |
| **Epoxy resin** | 0.15 ... 0.35 |
| **Crude oil** | 0.05 |
| **Ethanol** | 0.85 |
| **Ethylene glycol** | 0.93 |
| **Freon R22 and 502 (liquid)** | 0.35 |
| **Grain** | 0.15 ... 0.3 |
| **Glass** | 0.2 ... 0.55 |
| **Glycerin** | 0.98 |
| **Rubber** | 0.15 ... 0.9 |
| **Wood, wet** | 0.6 ... 0.85 |
| **Wood, dry** | 0.1 ... 0.4 |
| **Carbon dioxide** | 0 |
| **Air** | 0 |
| **Marble** | 0.5 |
| **Flour** | 0.05 |
| **Melamine resin** | 0.25 ... 0.55 |
| **Milk powder** | 0.2 |
| **Nylon** | 0.2 ... 0.3 |
| **Oil-containing paper** | 0.25 |
| **Paper** | 0.1 |
| **Polyamide** | 0.3 |
| **Polyester resin** | 0.15 ... 0.5 |
| **Pressboard** | 0.1 ... 0.3 |
| **PTFE** | 0.1 |
| **Quartz glass** | 0.2 |
| **Salt** | 0.35 |
| **Sand** | 0.15 ... 0.3 |
| **Water** | 1 |
| **Cement dust** | 0.25 |
| **Sugar** | 0.15 |

## Classification

| | |
|---|---|
| **Customs tariff number** | 85365019 |
| **eCl@ss 8.0** | 27270102 |
| **eCl@ss 9.0** | 27270102 |
| **ETIM 5.0** | EC002715 |
| **ETIM 6.0** | EC002715 |

# Dimensioned drawings

All dimensions in millimeters







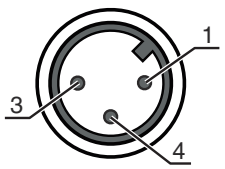
A Active surface
B Yellow LED
C Potentiometer

# Electrical connection

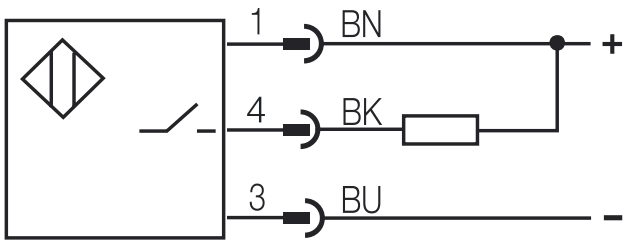
## Connection 1

| | |
|---|---|
| **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 | Conductor color |
|---|---|---|
| **1** | +10...30 V DC | Brown |
| **2** | n.c. | - |
| **3** | GND | Blue |
| **4** | OUT | Black |



# Circuit diagrams




# Operation and display

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

# Part number code

Part designation: **LCS-ABBBC-DDDEFF-GHHHIJJJ KK**

| | |
|---|---|
| **LCS** | **Operating principle**<br>LCS: capacitive sensor |
| **A** | **Series**<br>1: series 1 "Extended"<br>2: series 2 "Advanced" |
| **BBB** | **Design**<br>M12: series with M12 x 1 external thread<br>M18: series with M18 x 1 external thread<br>M30: series with M30 x 1.5 external thread<br>Q40: series in cubic design, length 40 mm<br>Q54: series in cubic design, length 54 mm |
| **C** | **Housing material**<br>B: brass<br>M: metal<br>P: plastic/PBT<br>T: PTFE |
| **DDD** | **Measurement range / type of installation**<br>F03: typ. range limit 3.0 mm / embedded installation<br>F04: typ. range limit 4.0 mm / embedded installation<br>F05: typ. range limit 5.0 mm / embedded installation<br>F06: typ. range limit 6.0 mm / embedded installation<br>F08: typ. range limit 8.0 mm / embedded installation<br>F10: typ. range limit 10.0 mm / embedded installation<br>F15: typ. range limit 15.0 mm / embedded installation<br>F20: typ. range limit 20.0 mm / embedded installation<br>N06: typ. range limit 6.0 mm / non-embedded installation<br>N08: typ. range limit 8.0 mm / non-embedded installation<br>N15: typ. range limit 15.0 mm / non-embedded installation<br>N25: typ. range limit 25.0 mm / non-embedded installation<br>N30: typ. range limit 30.0 mm / non-embedded installation |
| **E** | **Output function**<br>B: NC and NO contact<br>N: NPN<br>P: PNP |
| **FF** | **Switching**<br>NC: normally closed contact<br>NO: normally open contact<br>NP: programmable |
| **G** | **Connection cable**<br>K: cable<br>n/a: no cable |
| **HHH** | **Cable length**<br>020: length 2,000 mm<br>003: length 300 mm<br>n/a: no cable |

# Part number code

| | |
|---|---|
| **I** | **Cable material**<br>P: PUR<br>T: PTFE<br>V: PVC |
| **JJJ** | **Electrical connection**<br>M08: M8 connector, 3-pin<br>M12: M12 connector, 4-pin (plug) |
| **KK** | **Special equipment**<br>L: IO-Link interface<br>T: teach-in<br>n/a: no special equipment |

**Note**

- A list with all available device types can be found on the Leuze website at 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.

# Accessories

## Connection technology - Connection cables

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

# Accessories

## Mounting technology - Other

| | Part no. | Designation | Article | Description |
|---|---|---|---|---|
|  | 50132729 | AC D18M-CS | Clamp | Diameter, inner: 18 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 |
|  | 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.