

## Technical data sheet

### Capacitive sensor

Part no.: 50135730

LCS-1M30P-F15PNO-M12

#### Contents

- Technical data
- Dimensioned drawings
- Electrical connection
- Circuit diagrams
- Operation and display
- Part number code
- Notes
- Accessories



Figure can vary



## Technical data

### Basic data

|                            |             |
|----------------------------|-------------|
| Series                     | LCS-1       |
| Switching distance $S_n$   | 2 ... 15 mm |
| Assured switching distance | 15 mm       |

### Electrical data

|                    |                                                         |
|--------------------|---------------------------------------------------------|
| Protective circuit | Polarity reversal protection<br>Short circuit protected |
|--------------------|---------------------------------------------------------|

### Performance data

|                                          |                        |
|------------------------------------------|------------------------|
| Supply voltage $U_B$                     | 10 ... 30 V, DC        |
| Residual ripple                          | 0 ... 10 %, From $U_B$ |
| Open-circuit current                     | 15 mA                  |
| Temperature drift, max. (in % of $S_r$ ) | 20 %                   |
| Repeatability, max. (in % of $S_r$ )     | 2 %                    |
| Rated operating current                  | 100 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, PNP          |
| Switching principle | NO (normally open)       |

### Timing

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

### Connection

|                       |                              |
|-----------------------|------------------------------|
| Number of connections | 1 Piece(s)                   |
| Connection 1          |                              |
| Function              | Signal OUT<br>Voltage supply |
| Type of connection    | Connector                    |
| Thread size           | M12                          |
| Type                  | Male                         |
| Material              | Plastic                      |
| No. of pins           | 4 -pin                       |
| Encoding              | A-coded                      |

### Mechanical data

|                                |                                               |
|--------------------------------|-----------------------------------------------|
| Design                         | Cylindrical                                   |
| Thread size                    | M30 x 1.5 mm                                  |
| Dimension ( $\varnothing$ x L) | 30 mm x 79 mm                                 |
| Type of installation           | Embedded                                      |
| Housing material               | Plastic, Polybutylene (PBT)                   |
| Sensing face material          | Plastic, Polybutylene (PBT)                   |
| Cover material                 | Plastic, Polybutylene (PBT)/polyamide (PA 12) |
| Net weight                     | 40 g                                          |

### Operation and display

|                                     |                                    |
|-------------------------------------|------------------------------------|
| Type of display                     | LED                                |
| Number of LEDs                      | 2 Piece(s)                         |
| Operational controls                | Multiturn potentiometer (20 turns) |
| Function of the operational control | Sensitivity adjustment             |
| Switching distance, adjustable      | Yes                                |

### Environmental data

|                                |               |
|--------------------------------|---------------|
| Ambient temperature, operation | -25 ... 85 °C |
|--------------------------------|---------------|

### Certifications

|                      |               |
|----------------------|---------------|
| Degree of protection | IP 67         |
| Protection class     | III           |
| Certifications       | c UL US       |
| Standards applied    | IEC 60947-5-2 |

### Correction factors

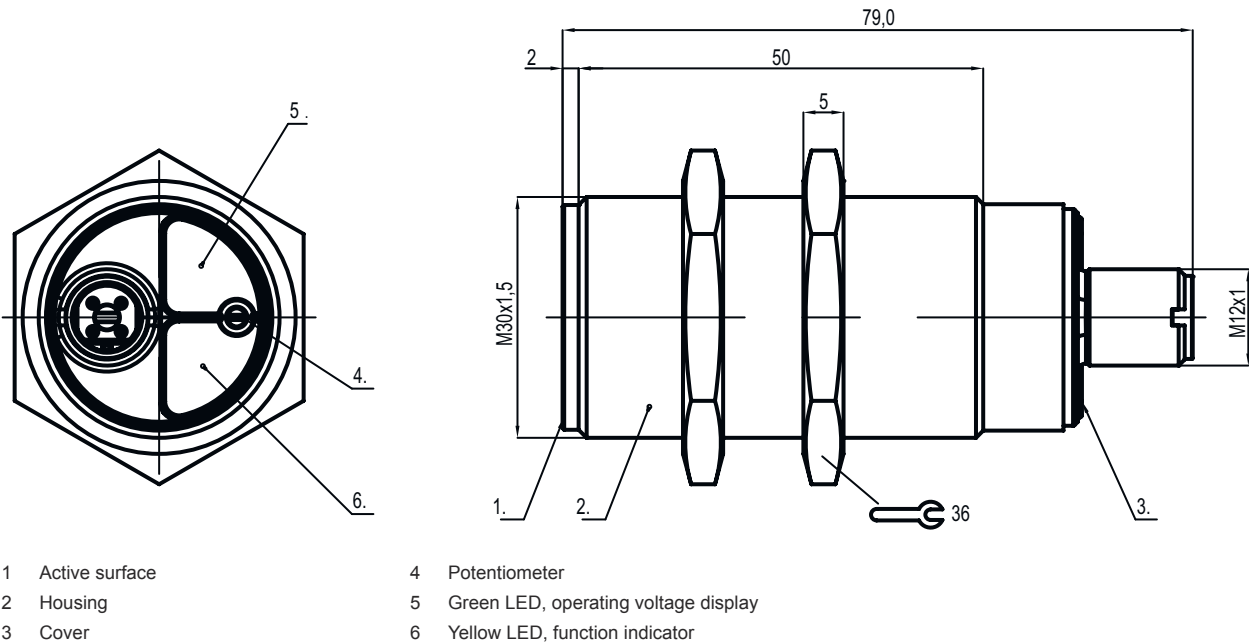
|                            |               |
|----------------------------|---------------|
| Acetone                    | 0.75          |
| Acrylic resin              | 0.1 ... 0.25  |
| Alcohol                    | 0.85          |
| Ammonia                    | 0.7 ... 0.85  |
| Aniline                    | 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          |

Technical data

|                       |          |
|-----------------------|----------|
| 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

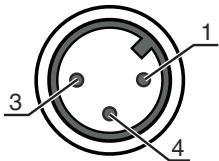


Electrical connection

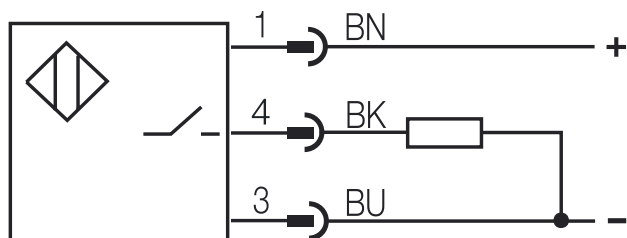
Connection 1

|                    |                |
|--------------------|----------------|
| Function           | Signal OUT     |
|                    | Voltage supply |
| Type of connection | Connector      |
| Thread size        | M12            |
| Type               | Male           |
| Material           | Plastic        |
| 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   | Green, continuous light  | Ready                            |
| 2   | Yellow, continuous light | Switching output/switching state |

## Part number code

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

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>LCS</b> | <b>Operating principle</b><br>LCS: capacitive sensor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>A</b>   | <b>Series</b><br>1: series 1 "Extended"<br>2: series 2 "Advanced"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>BBB</b> | <b>Design</b><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                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>C</b>   | <b>Housing material</b><br>B: brass<br>M: metal<br>P: plastic/PBT<br>T: PTFE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>DDD</b> | <b>Measurement range / type of installation</b><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 |
| <b>E</b>   | <b>Output function</b><br>B: NC and NO contact<br>N: NPN<br>P: PNP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>FF</b>  | <b>Switching</b><br>NC: normally closed contact<br>NO: normally open contact<br>NP: programmable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>G</b>   | <b>Connection cable</b><br>K: cable<br>n/a: no cable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>HHH</b> | <b>Cable length</b><br>020: length 2,000 mm<br>003: length 300 mm<br>n/a: no cable                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

## Part number code

|            |                                                                                              |
|------------|----------------------------------------------------------------------------------------------|
| <b>I</b>   | <b>Cable material</b><br>P: PUR<br>T: PTFE<br>V: PVC                                         |
| <b>JJJ</b> | <b>Electrical connection</b><br>M08: M8 connector, 3-pin<br>M12: M12 connector, 4-pin (plug) |
| <b>KK</b>  | <b>Special equipment</b><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](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.

## 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 |

### Note



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