

## Technical data sheet

### Capacitive sensor

Part no.: 50135690

LCS-1M12M-F04NNO-M12

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For illustration purposes only



## Technical data

### Basic data

Series	LCS-1
Switching distance $S_n$	1 ... 4 mm
Assured switching distance	4 mm

### Electrical data

Protective circuit	Polarity reversal protection Short circuit protected
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### 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)
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### 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)

### Time behavior

Switching frequency	100 Hz
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### Connection

Number of connections	1 Piece(s)
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### 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

### Mechanical data

Design	Cylindrical
Dimension ( $\varnothing$ x L)	12 mm x 75 mm
Thread size	M12 x 1 mm
Type of installation	Embedded/flush
Housing material	Metal Stainless steel
Stainless steel housing	V2A
Sensing face material	Plastic, Polybutylene (PBT)
Cover material	Plastic, Polybutylene (PBT)/polyamide (PA 12)
Net weight	25 g

### Operation and display

Type of display	LED
Number of LEDs	2 Piece(s)
Operational controls	Multiturn potentiometer (12 turns)
Function of the operational control	Sensitivity adjustment
Switching distance, adjustable	Yes

### Environmental data

Ambient temperature, operation	-25 ... 85 °C
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### Certifications

Degree of protection	IP 67
Protection class	III
Approvals	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
ECLASS 5.1.4	27270102
ECLASS 8.0	27270102
ECLASS 9.0	27270102
ECLASS 10.0	27270102
ECLASS 11.0	27270102
ECLASS 12.0	27274201
ECLASS 13.0	27274201
ECLASS 14.0	27274201
ECLASS 15.0	27274201
ECLASS 16.0	27274201
ETIM 5.0	EC002715
ETIM 6.0	EC002715
ETIM 7.0	EC002715
ETIM 8.0	EC002715
ETIM 9.0	EC002715
ETIM 10.0	EC002715
UNSPSC 26.08	39122230

## Dimensioned drawings

All dimensions in millimeters



- |                  |  |
|------------------|--|
| 1 Active surface | 4 Potentiometer                        |
| 2 Housing        | 5 Green LED, operating voltage display |
| 3 Cover          | 6 Yellow LED, function indicator       |

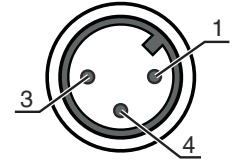
## Electrical connection

### Connection 1

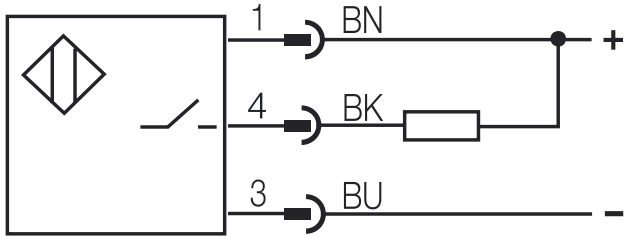
Function	Signal OUT
	Voltage supply
Type of connection	Connector
Thread size	M12
Type	Male
Material	Plastic
No. of pins	4 -pin
Encoding	A-coded

# Electrical connection

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> LCS: capacitive sensor
<b>A</b>	<b>Series</b> 1: series 1 "Extended" 2: series 2 "Advanced"
<b>BBB</b>	<b>Design</b> M12: series with M12 x 1 external thread M18: series with M18 x 1 external thread M30: series with M30 x 1.5 external thread Q40: series in cubic design, length 40 mm Q54: series in cubic design, length 54 mm
<b>C</b>	<b>Housing material</b> B: Brass M: metal P: plastic/PBT T: PTFE
<b>DDD</b>	<b>Measurement range / type of installation</b> F03: typ. range limit 3.0 mm / embedded/flush installation F04: typ. range limit 4.0 mm / embedded/flush installation F05: typ. range limit 5.0 mm / embedded/flush installation F06: typ. range limit 6.0 mm / embedded/flush installation F08: typ. range limit 8.0 mm / embedded/flush installation F10: typ. range limit 10.0 mm / embedded/flush installation F15: typ. range limit 15.0 mm / embedded/flush installation F20: typ. range limit 20.0 mm / embedded/flush installation N06: typ. range limit 6.0 mm / non-embedded/non-flush installation N08: typ. range limit 8.0 mm / non-embedded/non-flush installation N10: Typ. range limit 10.0 mm / non-embedded/non-flush installation N15: typ. range limit 15.0 mm / non-embedded/non-flush installation N25: typ. range limit 25.0 mm / non-embedded/non-flush installation N30: typ. range limit 30.0 mm / non-embedded/non-flush installation

## Part number code

<b>E</b>	<b>Output function</b> B: NC and NO contact N: NPN P: PNP
<b>FF</b>	<b>Switching</b> NC: Normally closed contact NO: normally open contact NP: programmable
<b>G</b>	<b>Connection cable</b> K: Cable n/a: no cable
<b>HHH</b>	<b>Cable length</b> 020: length 2,000 mm 003: length 300 mm n/a: no cable
<b>I</b>	<b>Cable material</b> P: PUR T: PTFE V: PVC
<b>JJJ</b>	<b>Electrical connection</b> M08: M8 connector, 3-pin M12: M12 connector, 4-pin (plug)
<b>KK</b>	<b>Special equipment</b> L: IO-Link interface T: teach-in 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	Application: Oil and lubricant resistant Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connector, LED: No Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PUR

## Accessories

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

## Mounting technology - Other

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