

Technical data sheet

Capacitive sensor

Part no.: 50135721

LCS-1M18P-F05NNP-M12-LT

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For illustration purposes only



Technical data

Basic data

Series	LCS-1
Switching distance S_n (embedded installation)	1 ... 5 mm
Switching distance S_n (non-embedded installation)	1 ... 7.5 mm
Assured switching distance (embedded installation)	3.6 mm
Assured switching distance (non-embedded installation)	5.4 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 %, From U_B
Open-circuit current	15 mA
Temperature drift, max. (in % of S_n)	20 %
Repeatability, max. (in % of S_n)	2 %
Rated operating current	200 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 4
Switching element	Transistor, NPN
Switching principle	Normally closed contact (NC)/normally open contact (NO), programmable

Time behavior

Switching frequency	10 Hz
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Interface

Type	IO-Link
IO-Link	
COM mode	COM2
Frame type	2.2
Specification	1.1

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	5 -pin
Encoding	A-coded

Mechanical data

Design	Cylindrical
Dimension ($\varnothing$ x L)	18 mm x 87.3 mm
Thread size	M18 x 1 mm
Type of installation	Embedded
Housing material	Plastic
Plastic housing	Polyamide (PA 12)
Sensing face material	Plastic, Polyamide (PA 12)
Cover material	Plastic, Polyamide (PA 12)
Net weight	40 g

Operation and display

Type of display	LED
Number of LEDs	1 Piece(s)
Operational controls	Multiturn potentiometer (12 turns)
	Teach button
Function of the operational control	Sensitivity adjustment
Switching distance, adjustable	Yes

Environmental data

Ambient temperature, operation	-25 ... 70 °C
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Certifications

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

Technical data

Correction factors

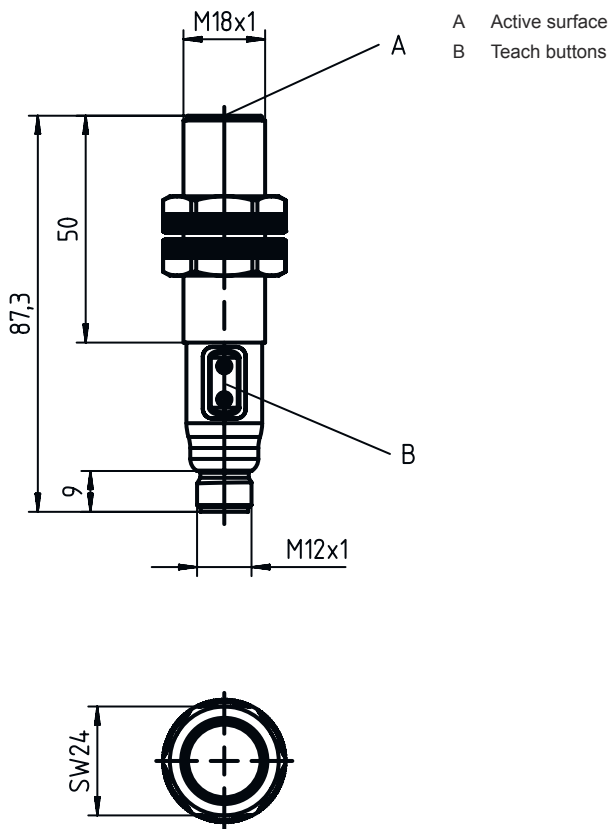
Acetone	0.75
Acrylic resin	0.1 ... 0.25
Alcohol	0.85
Ammonia	0.7 ... 0.85
Aniline	0.4
Gasoline	0.1
Celluloid	0.15
Liquid chlorine	0.1
Ebonite	0.15
Epoxy resin	0.15 ... 0.35
Crude oil	0.05
Ethanol	0.85
Ethylene glycol	0.93
Freon R22 and 502 (liquid)	0.35
Grain	0.15 ... 0.3
Glass	0.2 ... 0.55
Glycerin	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
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
ETIM 5.0	EC002715
ETIM 6.0	EC002715
ETIM 7.0	EC002715
ETIM 8.0	EC002715
ETIM 9.0	EC002715
ETIM 10.0	EC002715

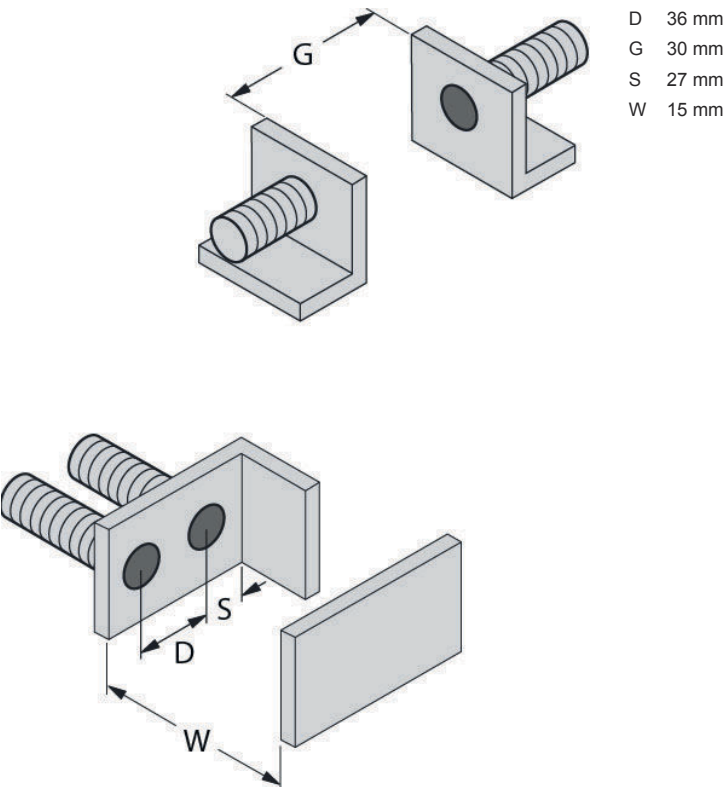
Dimensioned drawings

All dimensions in millimeters



Dimensioned drawings

Mounting distances

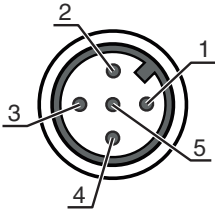


Electrical connection

Connection 1

Function	Signal OUT
	Voltage supply
Type of connection	Connector
Thread size	M12
Type	Male
Material	Plastic
No. of pins	5 -pin
Encoding	A-coded

Pin	Pin assignment	Conductor color
1	+10...30 V DC	Brown
2	n.c.	White
3	GND	Blue
4	IO-Link	Black
5	Teach-in	Gray



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 LCS: capacitive sensor
A	Series 1: series 1 "Extended" 2: series 2 "Advanced"
BBB	Design 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
C	Housing material B: Brass M: metal P: plastic/PBT T: PTFE
DDD	Measurement range / type of installation F03: typ. range limit 3.0 mm / embedded installation F04: typ. range limit 4.0 mm / embedded installation F05: typ. range limit 5.0 mm / embedded installation F06: typ. range limit 6.0 mm / embedded installation F08: typ. range limit 8.0 mm / embedded installation F10: typ. range limit 10.0 mm / embedded installation F15: typ. range limit 15.0 mm / embedded installation F20: typ. range limit 20.0 mm / embedded installation N06: typ. range limit 6.0 mm / non-embedded installation N08: typ. range limit 8.0 mm / non-embedded installation N10: typ. range limit 10.0 mm / non-embedded installation N15: typ. range limit 15.0 mm / non-embedded installation N25: typ. range limit 25.0 mm / non-embedded installation N30: typ. range limit 30.0 mm / non-embedded installation

Part number code

E	Output function B: NC and NO contact N: NPN P: PNP
FF	Switching NC: Normally closed contact NO: normally open contact NP: programmable
G	Connection cable K: Cable n/a: no cable
HHH	Cable length 020: length 2,000 mm 003: length 300 mm n/a: no cable
I	Cable material P: PUR T: PTFE V: PVC
JJJ	Electrical connection M08: M8 connector, 3-pin M12: M12 connector, 4-pin (plug)
KK	Special equipment 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 .

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.

Teach via IO-Link	
	↪ All operating modes are teachable via FDT/IODD

Teach via teach buttons	
	↪ Switching point medium present ¹ : Press button 1 for 2 to 9 s ↪ Switching point medium not present ¹ : Press button 2 for 2 to 9 s ↪ Change NC contact/NO contact: Press button 1 for more than 10 s ↪ Reset: Press button 2 for more than 10 s

Notes

Teach via manual bridging



- ↪ Switching point medium present¹: Apply U_B for 2 to 9 s
- ↪ Switching point medium not present¹: Apply GND for 2 to 9 s
- ↪ Change NC contact/NO contact: Apply U_B for more than 10 s
- ↪ Reset: Apply GND for more than 10 s

NOTE



- ↪ The specified minimum distances have been checked with a standard switching distance. If the sensitivity of the sensor is changed using a potentiometer, this data sheet information is no longer valid.

Further information

- Manual teach function: Manual bridging possible via pin 5. To do this, U_B or GND must be applied via a 5-wire cable.
- ¹ If the switching point is to be set centrally between "Medium present" and "Medium not present", both media statuses must be taught in consecutively.

Accessories

Connection technology - Connection unit

	Part no.	Designation	Article	Description
	50144900	MD 798i-11-82/L5-2222	IO-Link master	Type: IO-Link master Current consumption, max.: 11,000 mA Switching outputs for each sensor connection: 1 Piece(s) Switching output: Transistor, PNP Interface: IO-Link, Automatic protocol detection, EtherNet IP, Modbus TCP, PROFINET Connections: 12 Piece(s) Sensor connections: 8 Piece(s) Connections for voltage supply: 2 Piece(s) Interface connections: 2 Piece(s) Degree of protection: IP 67, IP 65, IP 69K

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 Connector, LED: No Connection 2: Open end Shielded: No Cable length: 2.000 mm Sheathing material: PUR
	50130657	KD U-M12-4A-P1-050	Connection cable	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

Accessories

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