



**Part no.: 50135739**  
**LCS-1M30P-F10NNP-M12-LT**  
**Capacitive sensor**



Figure can vary

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## Technical data

<b>Basic data</b>	
Series	LCS-1
Switching distance $S_n$ (embedded installation)	1 ... 10 mm
Switching distance $S_n$ (non-embedded installation)	1 ... 15 mm
Assured switching distance (embedded installation)	7.2 mm
Assured switching distance (non-embedded installation)	10.8 mm

<b>Electrical data</b>	
Protective circuit	Polarity reversal protection Short circuit protected

<b>Performance data</b>	
Supply voltage	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	200 mA

<b>Outputs</b>	
Number of digital switching outputs	1 Piece(s)

<b>Switching outputs</b>	
Type	Digital switching output
Voltage type	DC

<b>Switching output 1</b>	
Switching element	Transistor, NPN
Switching principle	Normally closed contact (NC)/normally open contact (NO), programmable

<b>Timing</b>	
Switching frequency	10 Hz

<b>Interface</b>	
Type	IO-Link

<b>IO-Link</b>	
COM mode	COM2
Frame type	2.2
Specification	1.1

<b>Connection</b>	
Number of connections	1 Piece(s)

<b>Connection 1</b>	
Type of connection	Connector
Function	Voltage supply Signal OUT
Thread size	M12
Type	Male
Material	Plastic
No. of pins	5 -pin
Encoding	A-coded

**Mechanical data**

Design	Cylindrical
Thread size	M30 x 1.5 mm
Dimension (Ø x L)	30 mm x 87.3 mm
Type of installation	Embedded and non-embedded
Housing material	Plastic, Polyamide (PA 12)
Sensing face material	Plastic, Polyamide (PA 12)
Cover material	Plastic, Polyamide (PA 12)
Net weight	67 g

**Operation and display**

Type of display	LED
Number of LEDs	1 Piece(s)
Operational controls	Teach button
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
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

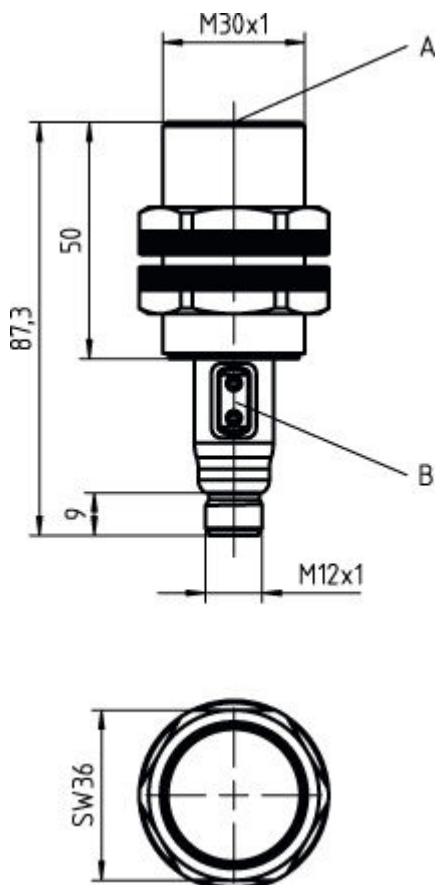
Melamine resin	0.25 ... 0.55
Milk powder	0.2
Nylon	0.2 ... 0.3
Oil-containing paper	0.25
Paper	0.1
Polyamide	0.3
Polyester resin	0.15 ... 0.5
Pressboard	0.1 ... 0.3
PTFE	0.1
Quartz glass	0.2
Salt	0.35
Sand	0.15 ... 0.3
Water	1
Cement dust	0.25
Sugar	0.15

**Classification**

eCl@ss 8.0	27270102
eCl@ss 9.0	27270102
ETIM 5.0	EC002715

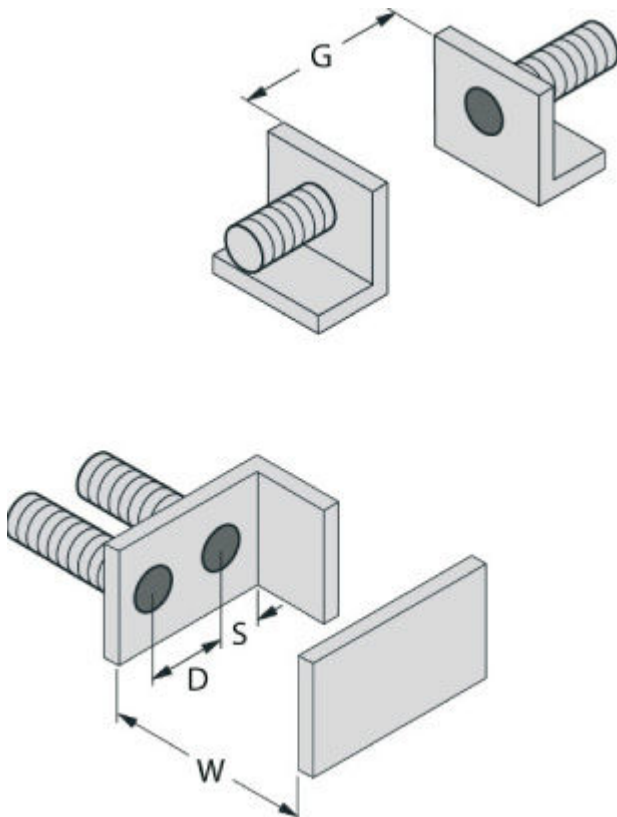
**Dimensioned drawings**

All dimensions in millimeters



- A Active surface
- B Teach buttons

### Mounting distances

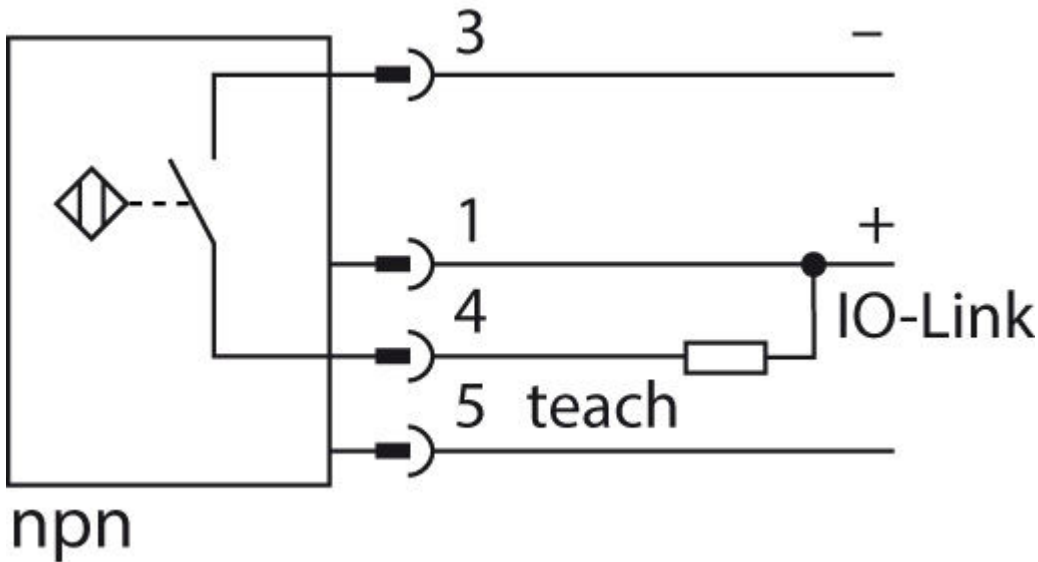


- D 60 mm
- G 60 mm
- S 45 mm
- W 30 mm

### Electrical connection

Connection 1	
Type of connection	Connector
Function	Voltage supply Signal OUT
Thread size	M12
Type	Male
Material	Plastic
No. of pins	5 -pin
Encoding	A-coded

**Circuit diagrams**



**Operation and display**

LEDs

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

**Part number code**







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

LCS	<b>Operating principle:</b> LCS: capacitive sensor
A	<b>Series:</b> 1: 1 series "Extended" 2: 2 series "Advanced"
BBB	<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
C	<b>Housing material:</b> B: brass M: metal P: plastic/PBT T: PTFE
DDD	<b>Measurement range / type of installation:</b> 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 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

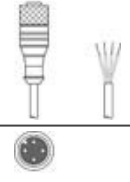
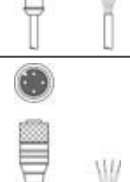
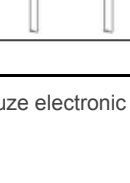
E	<b>Output function:</b> B: NC and NO contact N: NPN P: PNP
FF	<b>Switching:</b> NC: normally closed contact NO: normally open contact NP: programmable
G	<b>Connection cable:</b> K: cable n/a: no cable
HHH	<b>Cable length:</b> 020: length 2,000 mm 003: length 300 mm n/a: no cable
I	<b>Cable material: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

## Accessories

### Connection technology - Connection cables

	Part no.	Designation	Article	Description
	50112960	K-D M12A-4P-10m- FAB	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: FAB
	50104570	K-D M12A-4P-2m- FAB	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: FAB
	50104572	K-D M12A-4P-5m- FAB	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: FAB
	50112961	K-D M12W-4P-10m- FAB	Connection cable	Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: FAB
	50104571	K-D M12W-4P-2m- FAB	Connection cable	Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: FAB

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	Part no.	Designation	Article	Description
	50104573	K-D M12W-4P-5m- FAB	Connection cable	Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: FAB
	50130654	KD U-M12-4A- P1-020	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PUR
	50130672	KD U-M12-4A- P1-020-DP	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connector, LED: Yes, 1 Piece(s) 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 Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PUR
	50130675	KD U-M12-4A- P1-050-DP	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connector, LED: Yes, 1 Piece(s) Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PUR
	50130658	KD U-M12-4A- P1-100	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PUR
	50130676	KD U-M12-4A- P1-100-DP	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connector, LED: Yes, 1 Piece(s) Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PUR
	50130648	KD U-M12-4A- V1-020	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PVC
	50130652	KD U-M12-4A- V1-050	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC
	50130653	KD U-M12-4A- V1-100	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PVC






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	Part no.	Designation	Article	Description
	50132431	KD U-M12-4A-V1-200	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 20,000 mm Sheathing material: PVC
	50132430	KD U-M12-4A-V1-300	Connection cable	Connection 1: Connector, M12, Axial, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 30,000 mm Sheathing material: PVC
	50130692	KD U-M12-4W-P1-020	Connection cable	Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PUR
	50130718	KD U-M12-4W-P1-020-DP	Connection cable	Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connector, LED: Yes, 1 Piece(s) Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PUR
	50130694	KD U-M12-4W-P1-050	Connection cable	Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PUR
	50130720	KD U-M12-4W-P1-050-DP	Connection cable	Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connector, LED: Yes, 1 Piece(s) Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PUR
	50130695	KD U-M12-4W-P1-100	Connection cable	Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PUR
	50130721	KD U-M12-4W-P1-100-DP	Connection cable	Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connector, LED: Yes, 1 Piece(s) Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PUR
	50130688	KD U-M12-4W-V1-020	Connection cable	Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 2,000 mm Sheathing material: PVC
	50130690	KD U-M12-4W-V1-050	Connection cable	Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 5,000 mm Sheathing material: PVC

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	Part no.	Designation	Article	Description
	50130691	KD U-M12-4W-V1-100	Connection cable	Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 10,000 mm Sheathing material: PVC
	50132641	KD U-M12-4W-V1-200	Connection cable	Connection 1: Connector, M12, Angled, Female, A-coded, 4 -pin Connection 2: Open end Shielded: No Cable length: 20,000 mm Sheathing material: PVC

**Mounting technology - Other**

	Part no.	Designation	Article	Description
	50132730	AC D30M-CS	Clamp	Contains: 2x M36 mounting nut Diameter, inner: 30 mm Design of mounting device: Mounting clamp Fastening, at system: Screw type, Through-hole mounting Mounting bracket, at device: insertable, Clampable with limit stop Type of mounting device: Clampable, With limit stop Material: Metal
	50111503	MC 030K	Clamp	Diameter, inner: 30 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
	50111504	MC 030K-LS	Clamp	Diameter, inner: 30 mm Design of mounting device: Mounting clamp Fastening, at system: Through-hole mounting Mounting bracket, at device: Clampable with limit stop Type of mounting device: Rigid Material: Plastic

**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<sup>1</sup>: Press button 1 for 2 to 9 s
- Switching point medium not present<sup>1</sup>: 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

**Teach via manual bridging**

- Switching point medium present<sup>1</sup>: Apply  $U_B$  for 2 to 9 s
- Switching point medium not present<sup>1</sup>: 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.

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