

Technical data sheet

Capacitive sensor

Part no.: 50135742

LCS-1Q40P-F20BNP-K020P

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- Dimensioned drawings
- Electrical connection
- Circuit diagrams
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For illustration purposes only



Technical data

Basic data

| | |
|----------------------------|-------------|
| Series | LCS-1 |
| Switching distance S_n | 1 ... 20 mm |
| Assured switching distance | 20 mm |

Characteristic parameters

| | |
|------|-----------|
| MTTF | 195 years |
|------|-----------|

Electrical data

| | |
|--------------------|-------------------------|
| Protective circuit | 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) | 5 % |
| 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, conductor 2 |
| Switching element | Transistor, Push-pull |
| Switching principle | Normally closed contact (NC)/normally open contact (NO) |

Time behavior

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

Connection

| | |
|-----------------------|------------|
| Number of connections | 1 Piece(s) |
|-----------------------|------------|

Connection 1

| | |
|----------------------|------------------------------|
| Function | Signal OUT Voltage supply |
| Type of connection | Cable |
| Cable length | 2,000 mm |
| Sheathing material | PUR |
| Number of conductors | 3 -wire |
| Wire cross section | 0.14 mm ² |

Mechanical data

| | |
|-----------------------|-----------------------------|
| Design | Cubic |
| Dimension (W x H x L) | 40 mm x 40 mm x 10 mm |
| Type of installation | Embedded |
| Housing material | Plastic |
| Plastic housing | Polybutylene (PBT) |
| Sensing face material | Plastic, Polybutylene (PBT) |
| Cover material | Plastic, Polybutylene (PBT) |
| Net weight | 48 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 | -5 ... 85 °C |
| Ambient temperature, storage | -25 ... 85 °C |

Certifications

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

Correction factors

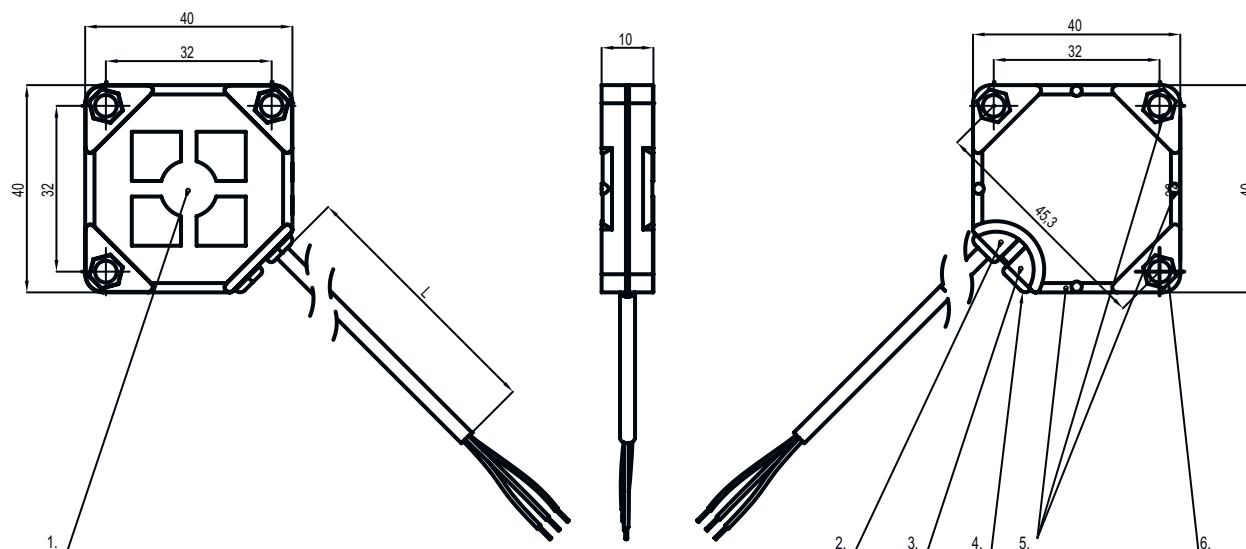
| | |
|----------------------------|---------------|
| Acetone | 0.75 |
| Acrylic resin | 0.1 ... 0.25 |
| Alcohol | 0.85 |
| Ammonia | 0.7 ... 0.85 |
| Aniline | 0.4 |
| Gasoline | 0.1 |
| Celluloid | 0.15 |
| Liquid chlorine | 0.1 |
| Ebonite | 0.15 |
| Epoxy resin | 0.15 ... 0.35 |
| Crude oil | 0.05 |
| 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 |
| 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 |
| ETIM 5.0 | EC002715 |
| ETIM 6.0 | EC002715 |
| ETIM 7.0 | EC002715 |
| ETIM 8.0 | EC002715 |
| ETIM 9.0 | EC002715 |

Dimensioned drawings

All dimensions in millimeters



- | | |
|--|------------------------|
| 1 Active surface | 4 Potentiometer |
| 2 Green LED, operating voltage display | 5 Mounting: cable tie |
| 3 Yellow LED, function indicator | 6 Mounting: 3xM3 screw |

Electrical connection

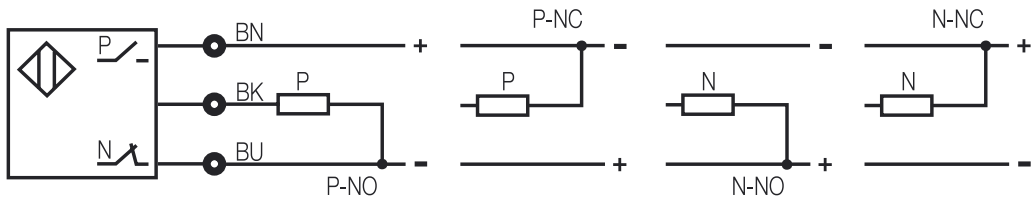
Connection 1

| | |
|----------------------|----------------------|
| Function | Signal OUT |
| | Voltage supply |
| Type of connection | Cable |
| Cable length | 2,000 mm |
| Sheathing material | PUR |
| Number of conductors | 3 -wire |
| Wire cross section | 0.14 mm ² |

Electrical connection

| Conductor color | Conductor assignment |
|-----------------|----------------------|
| Brown | VIN |
| Black | OUT |
| Blue | VIN |

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**

| | |
|------------|---|
| 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 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 | Output function B: NC and NO contact N: NPN P: PNP |

Part number code

| | |
|------------|--|
| 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.