# C12 series

M12 cylindrical capacitive sensors

## features

- **DC supply voltage**
- **High noise immunity**
- **Shielded and unshielded models**
- **Adjustable sensitivity by Teach-in button**
- **Plastic housing**



## web contents

- **Application notes**
- **Photos**
- **Catalogue / Manuals**



## available models

C12 P / 0 0 - 3 E

| | | |
|---|---|---|
| series | C12 | M12 capacitive sensor |
| housing | P | Plastic housing |
| output state | 0 | NO/NC |
| output logic | 0 | PNP/NPN |
| | 3 | Sensing distance up to 8mm |
| connect. | E | M12 plug exit |
| | A | 2 m cable exit |

## available models

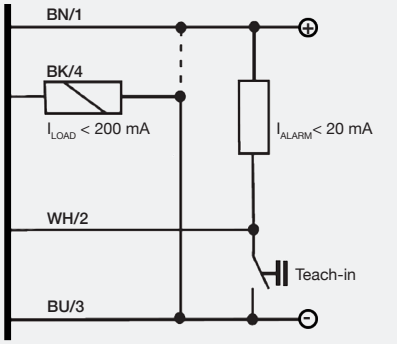
| supply | installation | connections | distance (mm) | NPN/PNP NO/NC |
|---|---|---|---|---|
| 10...40 Vcc | shielded and unshielded | cable 2 m | 0,5...8 | C12P/00-3A |
| | | M12 | | C12P/00-3E |

# technical specification

| | C12P/00-3A |
|---|---|
| |  |
| nominal sensing distance | 0,5…4 mm (shielded); 0,5…8 mm (unshielded) |
| hysteresis | ≤ 20% |
| repeatibility | 5% |
| operating voltage | 10 ... 40 Vcc |
| max ripple content | ≤ 10 % |
| no-Load supply current | ≤ 12 mA |
| load current | ≤ 200 mA (minimum operational current: ≥ 1mA) |
| leakage current | ≤ 0,3 mA |
| output voltage drop Ud | 2.5 Vmax @ IL= 200 mA |
| output type | NPN or PNP - NO or NC |
| switching frequency | ≤ 15 Hz |
| power on delay | ≤ 200 ms |
| power supply protections | polarity reversal, impulsive overvoltage |
| output protection | autoreset short circuit, overvoltage (dc models) |
| sensitivity adjustment | ● |
| storage temperature | -20 ... +85° C |
| operating temperature range | -25 ... +80° C (without freeze) |
| temperature drift | ≤ 20 % |
| EMC | in conformity with the EMC Directive, according to IEC 60947-5-2 |
| protection degree | IP67 (IEC 60529) NEMA 1,3,4,6,13 |
| LEDs | yellow (output status Lon/Don) |
| housing material | thermoplastic polyester |
| active head material | polyester |
| weight | 30 g M12 connector / 110 g cable |

## electrical diagrams of connections

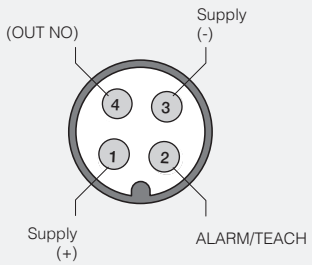
**NPN/PNP - NO/NC**




| | |
|---|---|
| BN | brown |
| BU | blue |
| BK | black |
| WH | white |

## plug

**M12 C12P/00-3***

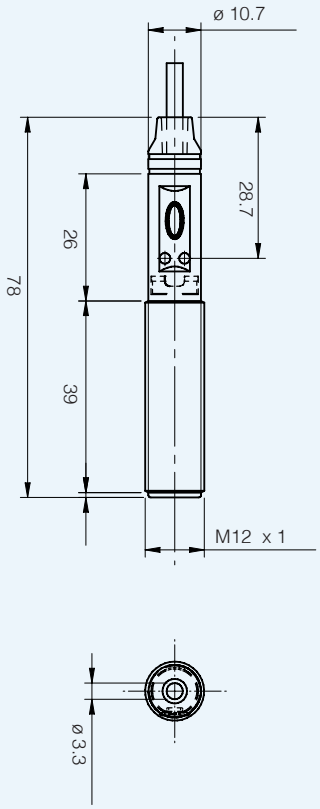



If the alarm output is unse, it ha sto be connected to POS

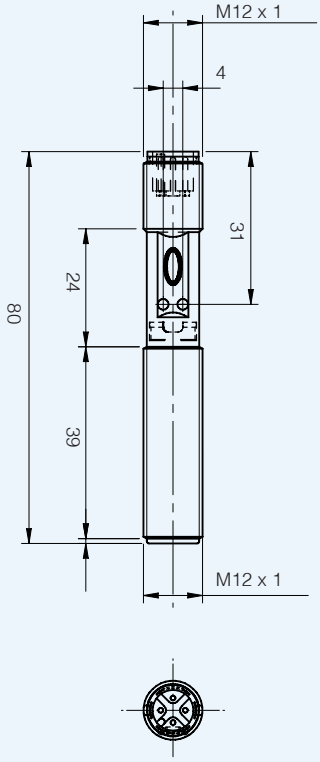
PNP/NPN load is automatically detected

## dimensions (mm)

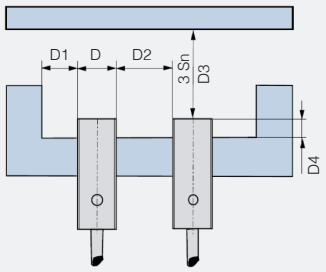
### C12P/00-3A




### C12P/00-3E




## installation

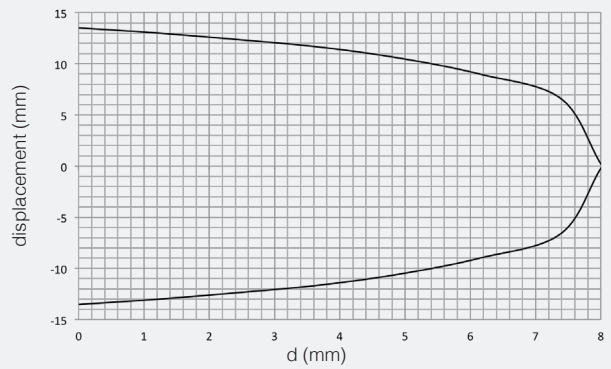



| code | D4 | D1 | D2 | D3 |
|---|---|---|---|---|
| C12P/00-3* unshielded | ≥ 20 mm (2) | ≥ 20 mm (1) | ≥ 10 mm | ≥ 24 mm |
| C12P/00-3* shielded | ≥ 15 mm (2) | ≥ 25 mm (1) | ≥ 15 mm | ≥ 12 mm |

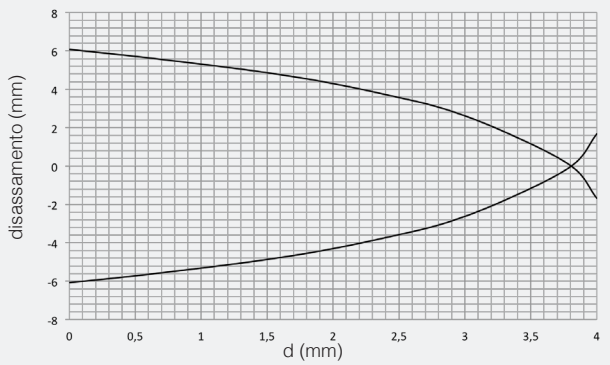
(1) ≥ 5 mm for plastic material
(2) ≥ 10 mm for plastic material

# dimensions (mm)

## C12P/00-3* - unshielded




## C12P/00-3* - shielded

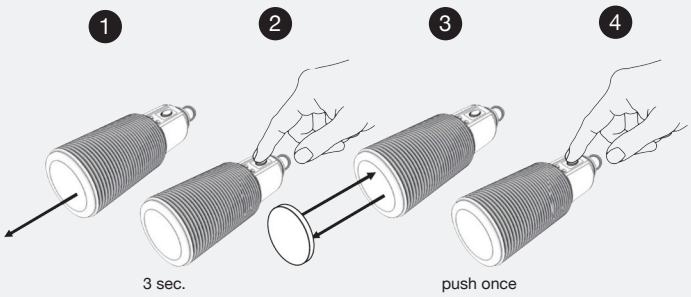



# teach-in functions

**Normal operation, optimized switching point**

1. Mount the sensor in the application without the target present. Yellow LED is not important and green LED is ON.
2. Press the button for 3 seconds until both LEDs are flashing simultaneously. (The background is stored)
3. Place the target in the detection zone.
4. Press the button once and the sensor is ready to operate (green LED ON, yellow LED ON) (The second switch point is stored).

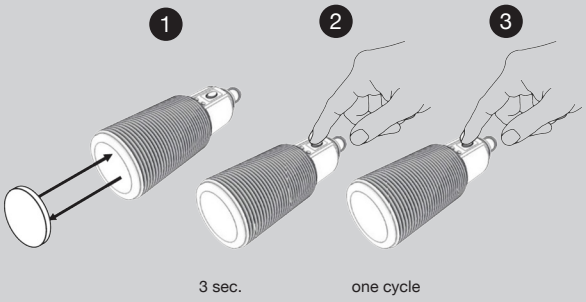
If the target is too close to the background, the sensor will perceive both background and object as background and the LEDs will alternate 3 times.




**For dynamic set-up (running process)**

1. Line up the sensor at the target. Green LED is ON, status on the yellow LED is not important.
2. Press the button for 3 seconds until both LEDs are flashing simultaneously.
3. Press and hold the button a second time for at least one second (both LEDs are flashing simultaneously and fast) and keep the button pressed for at least one process cycle. Release the button and the sensor is ready to operate (the switch point is stored into the sensor and is optimized respecting both background and target information).

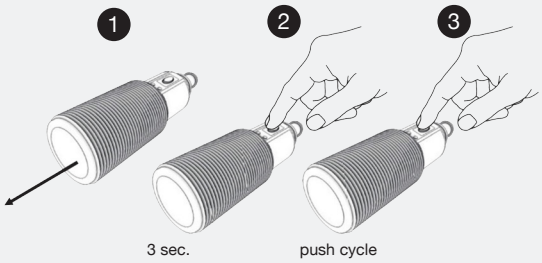
A more precise setting is possible if several process cycles are analysed.




**For maximum sensing distance (default setting)**

1. Mount the sensor in the application without the target present. Yellow LED is not important and green LED is ON.
2. Press the button for 3 seconds until both LEDs are flashing simultaneously. (The background information is stored)
3. Press the button a second time and the sensor is ready to operate (green LED ON, yellow LED ON)

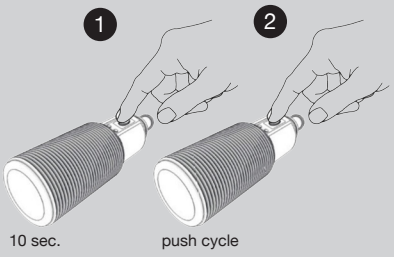
(The sensor is set up with the maximum sensing distance that is not influenced by the background).




**For make or break set-up (N.O. or N.C.)**

1. Press the button for 10 seconds, until the green LED flashes.
2. While the green LED flashes, the output is inverted each time the button is pressed. Yellow LED indicates N.O. function selected.

If the button is not pressed within the next 16 seconds, the current output is stored.




**Factory settings**

Press the button for 16 sec.