Wiring Diagram

BN+ (1)

BK (4)

I_{ALARM}
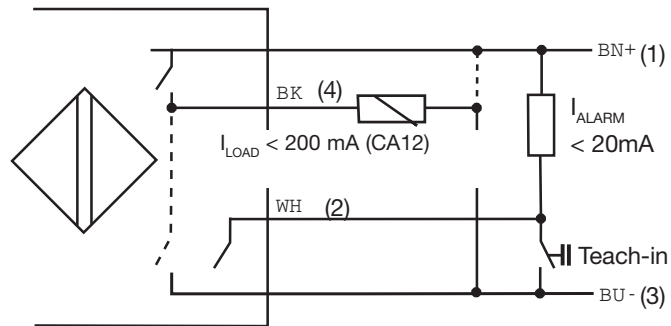< 20mA

I_{LOAD} < 200 mA (CA12)

WH (2)

Teach-in

BU - (3)

The PNP- or NPN-load will automatically be detected.

By means of the Teach-in wire, the functions described in the Teach-in Guide can be set up.

It is possible to Teach-in more sensors at the same time by connecting the WH-wires in parallel to the common "-" supply.

(#): Plug connections

Specifications

|	
Rated operational volt. (U_B)	10 to 40 VDC (ripple incl.)
Ripple	≤ 10%
Rated operational current (I_e)	≤ 200 mA (continuous)
Output	Transistor, NPN and PNP, NO and NC (factory setting is NO)
Protection	Reverse polarity, short-circuit, transients
***TRIPLESHIELD*TM protection-EMC**	
IEC 1000-4-2/EN 61000-4-2	30 kV
IEC 1000-4-3/EN 61000-4-3	> 15 V/m
IEC 1000-4-4/EN 61000-4-4	3 kV
IEC 1000-4-6/EN 61000-4-6	> 10 V_{rm}
Rated operating distance (S_n)	0 - 8 mm
Operating temperature	-20° --> +85°C (-4° --> +185°F)
Storage temperature	-40° --> +85°C (-40° --> +185°F)
Degree of protection	IP 68

Capacitive Level Sensors M12

Transistor Output with Teach-in
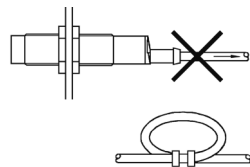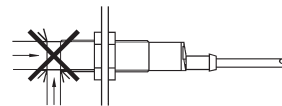

TRIPLESHIELD™
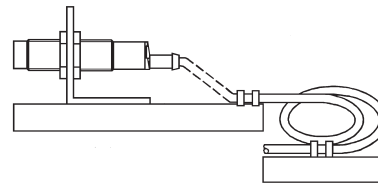
User Manual

Installation Hints
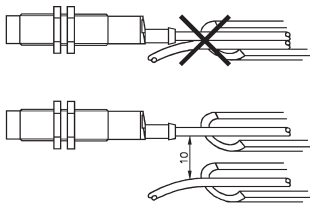
To avoid interference from inductive voltage/ current peaks, separate the prox. switch power cables from any other power cables, e.g. motor, contactor or solenoid cables

Relief of cable strain

The cable should not be pulled

Protection of the sensing face

A proximity switch should not serve as mechanical stop

Switch mounted on mobile carrier

Any repetitive flexing of the cable should be avoided

Certified in accordance with ISO 9001

Description and Installation

Capacitive sensors have the unique ability to detect almost all materials, liquid or solid. Capacitive sensors can detect metallic as well as non-metallic objects. However, their traditional use is for non-metallic materials such as:

• **Plastic Industry:** resins, regrinds or moulded products.
• **Chemical Industry:** cleansers, fertilisers, liquid soaps, corrosives and petrochemicals.
• **Wood Industry:** saw dust, paper products, door and window frames.
• **Ceramic & Glass Industry:** raw material, clay or finished product, bottles.
• **Packaging Industry:** package inspection for level or contents, dry goods, fruits and vegetables, dairy products.

Materials are detected due to their dielectric constant. The bigger the size of an object, the higher the density of material, the better or easier it is to detect the object. Nominal sensing distance for a capacitive sensor is referenced to a grounded metal plate (ST37). For additional information regarding dielectric ratings of materials please refer to our catalogue: "SENSORS".

Installation

1. **Mounting the sensor**
   Mount the sensor in the required position pointing at the target and make sure that the distance to the target is within the range of the sensor.
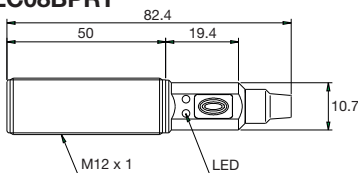
2. **Supplying the sensor**
   To supply the sensor, connect blue wire (3) to ground (0 VDC) and brown wire (1) to + (10-40 VDC).

3. **Programming the sensor**
   Program the sensor as described in the Teach-in guide. The following functions are programmable: 1. Background adjustment and switch-point setup, 2. Object adjustment, 3. NO/NC selection and 4. Restore factory settings (1. and 2. are mandatory).

Dimensions

CA12CLC08BPRT

82.4
50   19.4
10.7
M12 x 1   LED

CA12CLC08BPM1RT
84.7
50   18.4
10.7
M12 x 1   LED   M12

④   ③
Teach button
①   ②
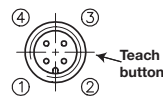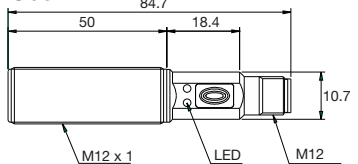
Teach Functions

Normal operation, optimized switching point.
1. Mount the sensor in the application without the object 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 first switch point is stored)
3. Place the object 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 object is too close to the background, the sensor will perceive both background and object as object.

1   2   3   4

3 sec.   Push once
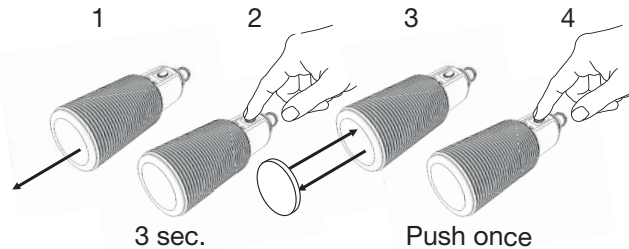
For maximum sensing distance (default setting)
1. Mount the sensor in the application without the object present. Yellow LED is not important and green LED is ON.
2. Press the button for 3 seconds until both LEDs are flashing simultaneously.
   (The first switch point is stored)
3. Press the button a second time and the sensor is ready to operate (green LED ON, yellow LED ON) (The second switch point is stored)

1   2   3

3 sec.   Push once
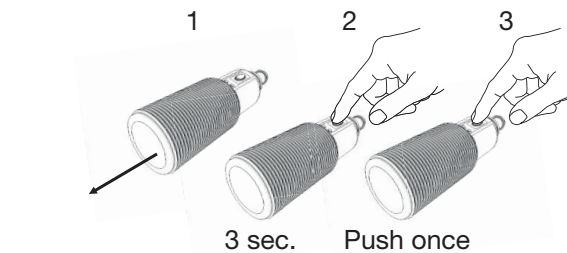
For dynamic set-up (running process)
1. Line up the sensor at the object. Green LED is ON, status on the yellow LED is not important.
2. Press the button for 3 seconds until both LEDs are flashing simultaneously.
3. Press and hold the button a second time for at least one second (both LEDs are flashing 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 second switch point is stored).
   If more process cycles are analysed, a more precise setting is possible.

1   2   3

3 sec.   One cycle
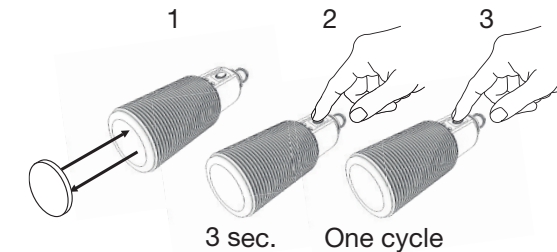
For make or break set-up (N.O. or N.C.)
1. Press the button for 10 seconds, until the green LED flashes.
2. While the green LED flashes, the output is inverted each time the button is pressed. Yellow LED indicates N.O. function selected.
   If the button is not pressed within the next 16 seconds, the current output is stored.

Factory settings
Press the button for 16 sec.

1   2

10 sec.   Push once