

extract from our online catalogue:

***nano-15/CF***

current to: 2026-09-03



## **nano**

nano – what's in a name? At just 55 mm long, including plug, the nano is the shortest M12 ultrasonic sensor on the market.

### **Highlights**

- › Ultrasonic sensor in the M12 threaded sleeve
- › The total length including plug is only 55 mm
- › IO-Link interface › for support of the new industry standard
- › Smart Sensor Profile › more transparency between IO-Link Devices
- › Improved temperature compensation › adjustment to working conditions within 45 seconds

### **Basics**

- › UL Listed to Canadian and US safety standards
- › 1 Push-Pull switching output › pnp or npn basis
- › Analogue output 4–20 mA or 0–10 V
- › 2 detection ranges with a measurement range of 20 mm to 350 mm
- › microsonic Teach-in on pin 2
- › 0.069 mm resolution
- › Operating voltage 10–30 V › for use with various voltage networks

## ***With a housing length of only 55 mm***

nano sensors with switching outputs are the smallest ultrasonic sensors inside the M12 threaded sleeve on the market. Analogue sensors are 60 mm long. nano has a 4-pole M12 circular plug and are taught via pin 2.

### ***The temperature compensation***

of the sensors profits from a significant improvement. The sensors reach their operating point only 45 seconds after activation of the operating voltage. We now compensate for the influence of self-heating and installation conditions. This brings improved precision shortly after activation of the supply voltage and in running operation.

### ***For the nano sensor family***

there are 2 output stages and 2 measuring ranges available:



1 Push-Pull-switching output, in pnp or npn circuitry with IO-Link interface



1 analogue output 4–20 mA or 0–10 V

## ***With the internal alignment assistance***

the sensors with Push-Pull switching output can be optimally aligned to the object during installation.



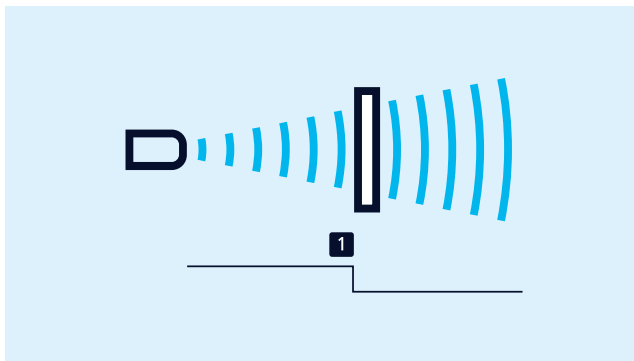
*nano sensor using alignment assistance*

**The nano sensors with switched output have three operating modes:**

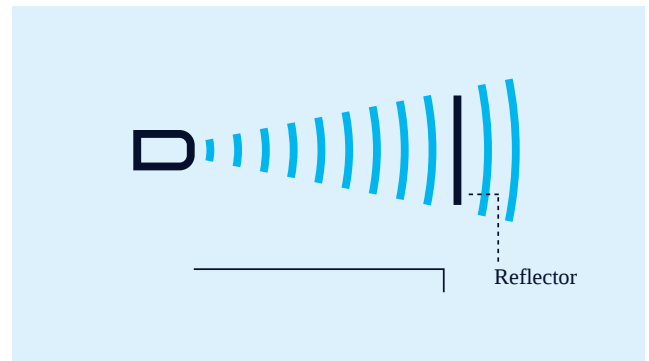
- Single switching point
- Two-way reflective barrier
- Window mode

**Teach-in of a single switching point**

- Place object (1) to be detected at the desired distance.
- Apply  $+U_B$  to pin 2 for about 3 seconds.
- Then apply  $+U_B$  to pin 2 again for about 1 second.



*Teach-in of a switching point*



*Teach-in of a two-way reflective barrier*

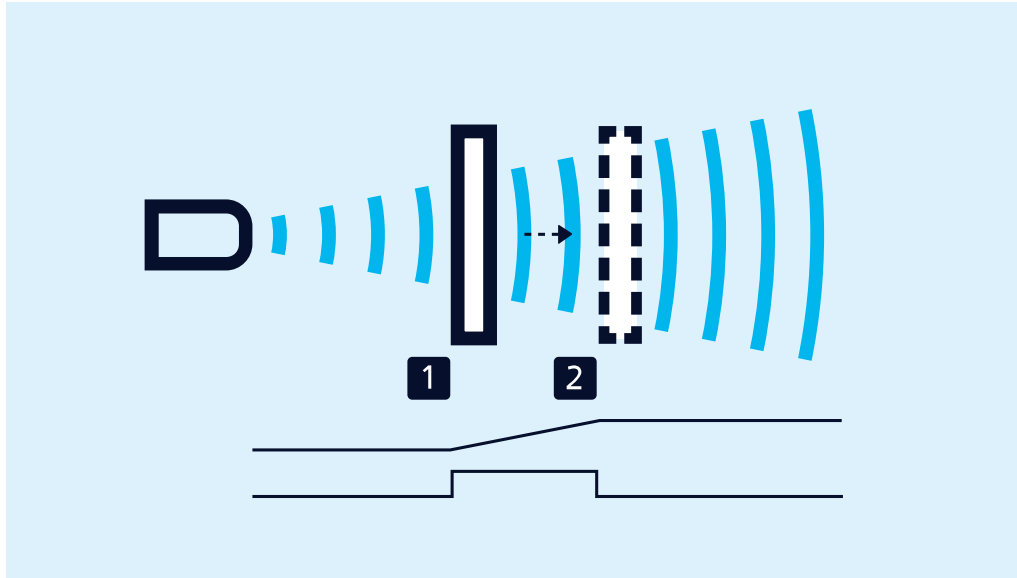
**Teach-in of a two-way reflective barrier**

with a fixed mounted reflector.

- Apply  $+U_B$  to pin 2 for about 3 seconds.
- Then apply  $+U_B$  to pin 2 again for about 10 second.

### **To set a window with two switching points**

- Place object to the sensor-close window limit (1).
- Apply  $+U_B$  to pin 2 for about 3 seconds until both LEDs flash.
- Then move the object to the sensor-distant window limit (2).
- Then apply  $+U_B$  to pin 2 again for about 1 second.



*Teach-in of an analogue characteristic or a window with two switching points*

### **For setting an analogue output**

- initially position the object to be detected on the sensor-close window limit (1).
- Apply  $+U_B$  to pin 2 for about 3 seconds until both LEDs flash.
- Move the object to the sensor-distant window limit (2).
- Then apply  $+U_B$  to pin 2 again for about 1 second.

### **NCC/NOC**

and rising/falling analogue characteristic can also be set via pin 2.

### **One green and one yellow LED**

indicate the state of the output and support microsonic Teach-in.

### ***IO-Link integrated***

in version 1.1.2 for sensors with Push-Pull output. The nano-15/CF and nano-24/CF support the Smart Sensor Profile, which creates more transparency between IO-Link devices.

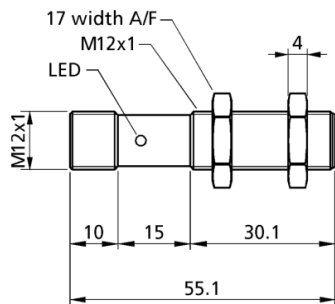
## ***You have special requirements?***

Nothing as simple as that.

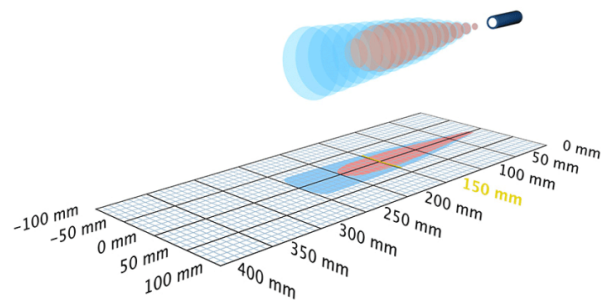
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# nano-15/CF

## scale drawing



## detection zone



1 x Push-Pull

250 mm

|                 |                                                                                  |
|-----------------|----------------------------------------------------------------------------------|
| design          | cylindrical M12                                                                  |
| operating mode  | IO-Link<br>proximity switch/reflective mode<br>reflective barrier<br>window mode |
| particularities | narrow sound field<br>IO-Link version 1.1<br>Smart Sensor Profile<br>UL Listed   |

## Ultrasonic-Specific

|                      |                                                  |
|----------------------|--------------------------------------------------|
| means of measurement | echo propagation time measurement                |
| transducer frequency | 380 kHz                                          |
| blind zone           | 20 mm                                            |
| operating range      | 150 mm                                           |
| max. range           | 250 mm                                           |
| resolution           | 0.10 mm                                          |
| reproducibility      | ± 0.15 %                                         |
| accuracy             | ± 1 % (temperature drift internally compensated) |

## Electrical Data

|                             |                                             |
|-----------------------------|---------------------------------------------|
| operating voltage $U_B$     | 10 - 30 V d.c., reverse polarity protection |
| voltage ripple              | ± 10 %                                      |
| no-load current consumption | ≤ 30 mA                                     |
| type of connection          | 4-pin M12 initiator plug                    |

## outputs

|                             |                                                                                                                                                 |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| output 1                    | switching output<br>Push-Pull, $U_B - 3\text{ V}$ , $-U_B + 3\text{ V}$ , $I_{\max} = 100\text{ mA}$<br>NOC/NCC adjustable, short-circuit-proof |
| switching hysteresis        | 2.0 mm                                                                                                                                          |
| switching frequency         | 25 Hz                                                                                                                                           |
| response delay              | 32 ms                                                                                                                                           |
| delay prior to availability | < 300 ms                                                                                                                                        |

## Inputs

|         |                                                      |
|---------|------------------------------------------------------|
| input 1 | com input<br>synchronisation input<br>teach-in input |
|---------|------------------------------------------------------|

## housing

|                                 |                                                    |
|---------------------------------|----------------------------------------------------|
| material                        | brass sleeve, nickel-plated, plastic parts, PBT    |
| ultrasonic transducer           | polyurethane foam, epoxy resin with glass contents |
| class of protection to EN 60529 | IP 67                                              |
| operating temperature           | -25°C to +70°C                                     |
| storage temperature             | -40°C to +85°C                                     |
| weight                          | 15 g                                               |

## Technical Features/Characteristics

|                          |                                                                      |
|--------------------------|----------------------------------------------------------------------|
| temperature compensation | yes                                                                  |
| scope for settings       | Teach-in via com input on pin 2<br>LCA-2 with LinkControl<br>IO-Link |
| synchronization          | yes                                                                  |
| multiplex                | yes                                                                  |
| indicators               | LED grün, LED gelb                                                   |

## Accessories

|                      |                                                                                   |
|----------------------|-----------------------------------------------------------------------------------|
| deployable accessory | KST4A-2/M12<br>KST4A-5/M12<br>KST4G-2/M12<br>KST4G-5/M12<br>LCA-2<br>LCA-2 Koffer |
|----------------------|-----------------------------------------------------------------------------------|

## pin assignment

