microsonic

EVERY THING ULTRA SONIC

extract from our online catalogue:

nano ultrasonic sensors

current to: 2026-11-20

microsonic GmbH / Phoenixseestraße 7 / 44263 Dortmund / Germany / **T** +49 231 975151-0 / **F** +49 231 975151-51 / **E** info@microsonic.de
microsonic® ist eine eingetragene Marke der microsonic GmbH. Alle Rechte vorbehalten. Änderungen vorbehalten.



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
- UL Listed to Canadian and US safety standards

Basics

- 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:



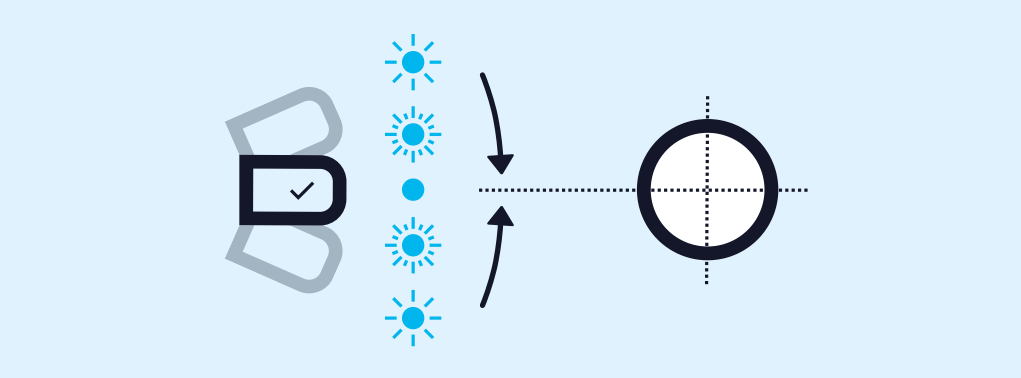
1 Push-Pull-switching output, in pnp or npn circuitry with IO-Link interface



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.



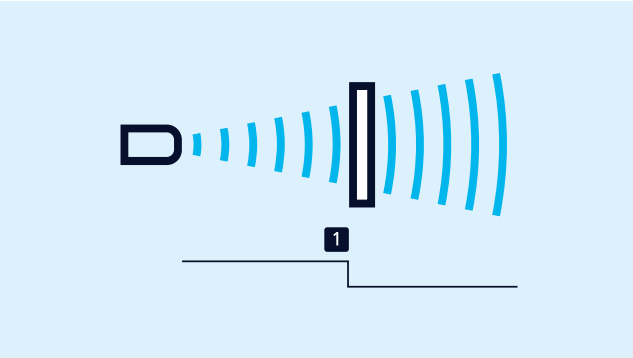
nano sensor using alignment assistance

The nano sensors with switched output have three operating modes:

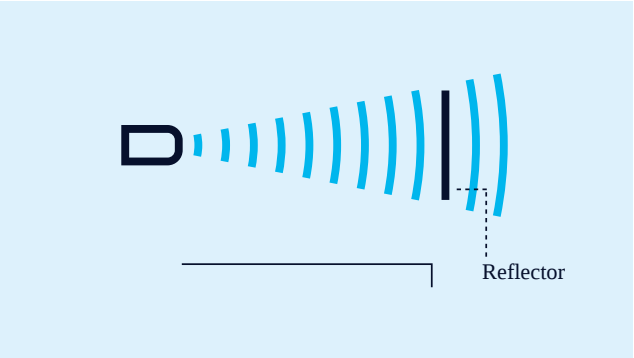
- Single switching point
- Two-way reflective barrier
- Window mode

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

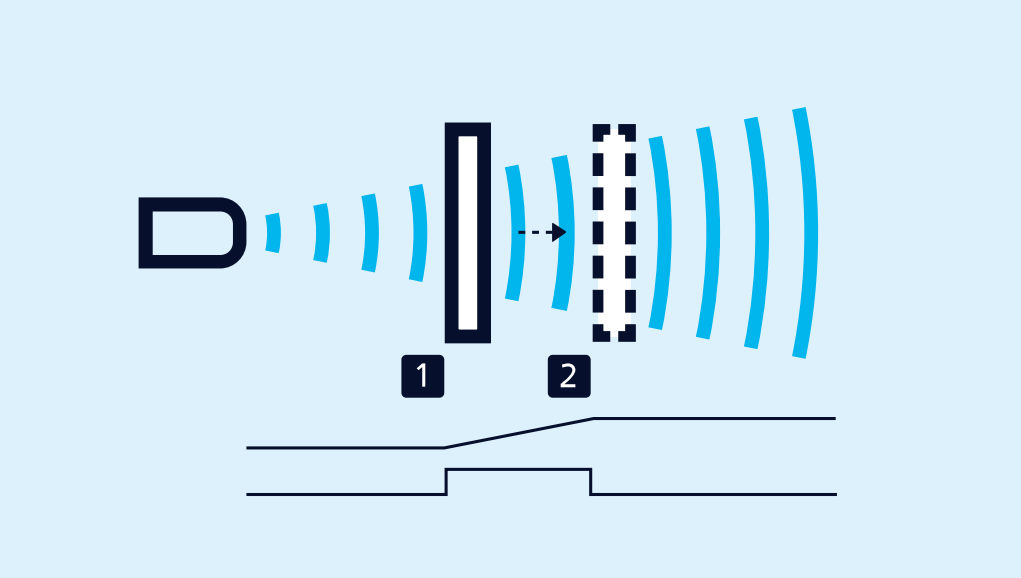
Teach-in of a two-way reflective barrier

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 analoge 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.

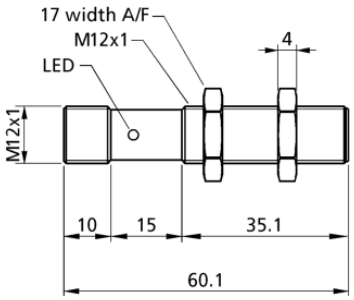
You have special requirements?

Nothing as simple as that.

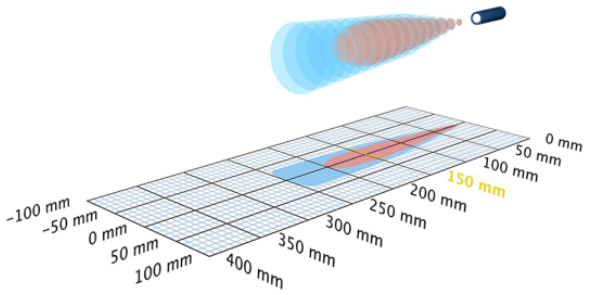
With us, you can easily find an individual solution. Let us talk about your application: +49 231 97 51 51-82.

nano-15/CI

scale drawing



detection zone



1 x analogue 4-20 mA | 250 mm

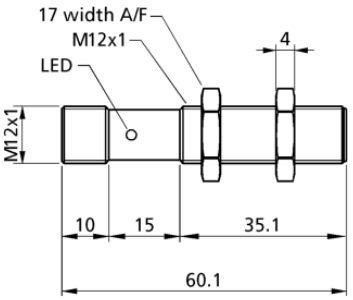
design	cylindrical M12
operating mode	analogue distance measurements
particularities	narrow sound field UL Listed

Ultrasonic-Specific

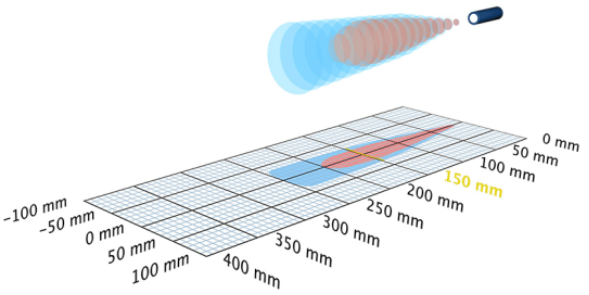
means of measurement	echo propagation time measurement
transducer frequency	380 kHz
blind zone	20 mm
operating range	150 mm
max. range	250 mm
reproducibility	± 0.15 %
accuracy	± 1 % (temperature drift internally compensated)

nano-15/CU

scale drawing



detection zone



1 x analogue 0-10 V | 250 mm

design	cylindrical M12
operating mode	analogue distance measurements
particularities	narrow sound field 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
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	analogue output current: 4-20 mA switchable rising/falling
response delay	24 ms
delay prior to availability	< 300 ms

Inputs

input 1	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

scope for settings	Teach-in Teach-in via com input on pin 2
indicators	1 x LED green: working, 1 x LED yellow: object in the window

Accessories

deployable accessory	KST4A-2/M12 KST4A-5/M12 KST4G-2/M12 KST4G-5/M12

Electrical Data

operating voltage U_B	15 V bis 30 V DC, verpolfest
voltage ripple	± 10 %
no-load current consumption	≤ 30 mA
type of connection	4-pin M12 initiator plug

Outputs

output 1	analogue output voltage: 0-10 V (at $U_B \geq 15$ V), short-circuit-proof switchable rising/falling
response delay	24 ms
delay prior to availability	< 300 ms

Inputs

input 1	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

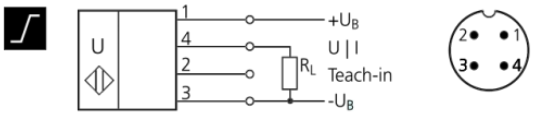
Technical Features/Characteristics

scope for settings	Teach-in Teach-in via com input on pin 2
indicators	1 x LED green: working, 1 x LED yellow: object in the window

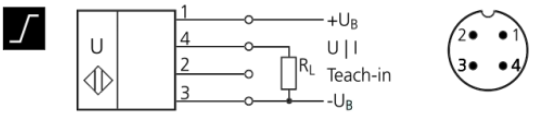
Accessories

deployable accessory	KST4A-2/M12 KST4A-5/M12 KST4G-2/M12 KST4G-5/M12

pin assignment

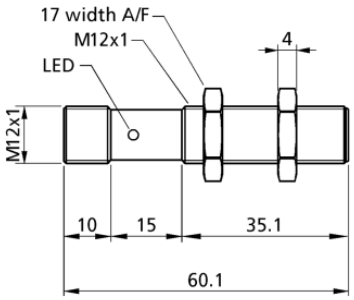


pin assignment

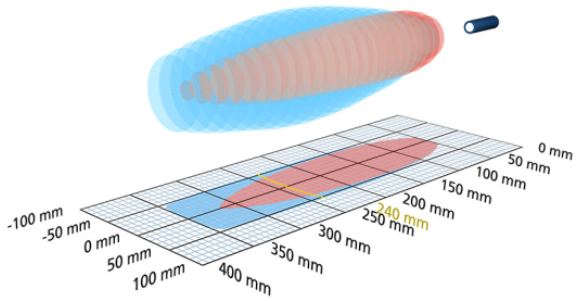


nano-24/CI

scale drawing



detection zone



1 x analogue 4-20 mA | 350 mm

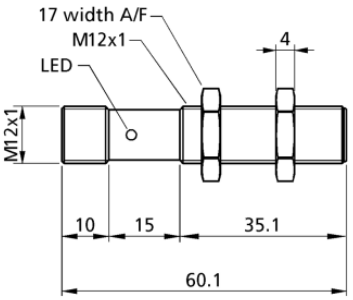
design	cylindrical M12
operating mode	analogue distance measurements
particularities	narrow sound field UL Listed

Ultrasonic-Specific

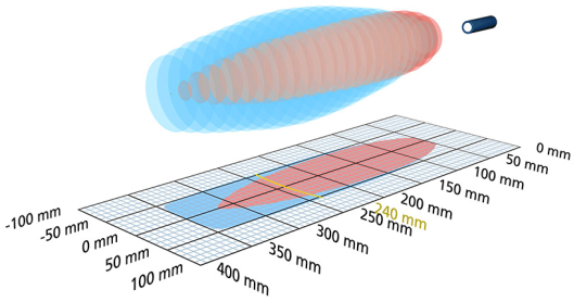
means of measurement	echo propagation time measurement
transducer frequency	500 kHz
blind zone	40 mm
operating range	240 mm
max. range	350 mm
reproducibility	± 0.15 %
accuracy	± 1 % (temperature drift internally compensated)

nano-24/CU

scale drawing



detection zone



1 x analogue 0-10 V | 350 mm

design	cylindrical M12
operating mode	analogue distance measurements
particularities	narrow sound field UL Listed

Ultrasonic-Specific

means of measurement	echo propagation time measurement
transducer frequency	500 kHz
blind zone	40 mm
operating range	240 mm
max. range	350 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	≤ 40 mA
type of connection	4-pin M12 initiator plug

Outputs

output 1	analogue output current: 4-20 mA switchable rising/falling
response delay	30 ms
delay prior to availability	< 300 ms

Inputs

input 1	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

scope for settings	Teach-in Teach-in via com input on pin 2
indicators	1 x LED green: working, 1 x LED yellow: object in the window

Accessories

deployable accessory	KST4A-2/M12 KST4A-5/M12 KST4G-2/M12 KST4G-5/M12

Electrical Data

operating voltage U_B	15 V bis 30 V DC, verpolfest
voltage ripple	± 10 %
no-load current consumption	≤ 40 mA
type of connection	4-pin M12 initiator plug

Outputs

output 1	analogue output voltage: 0-10 V (at $U_B \geq 15$ V), short-circuit-proof switchable rising/falling
response delay	30 ms
delay prior to availability	< 300 ms

Inputs

input 1	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

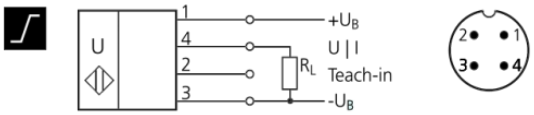
Technical Features/Characteristics

scope for settings	Teach-in Teach-in via com input on pin 2
indicators	1 x LED green: working, 1 x LED yellow: object in the window

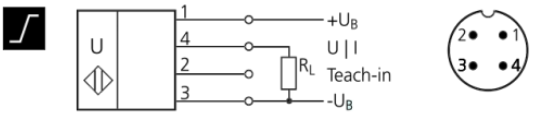
Accessories

deployable accessory	KST4A-2/M12 KST4A-5/M12 KST4G-2/M12 KST4G-5/M12

pin assignment

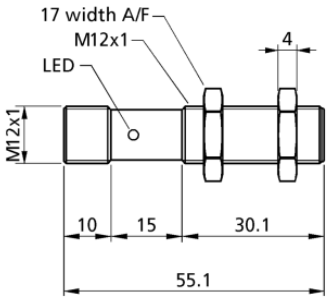


pin assignment

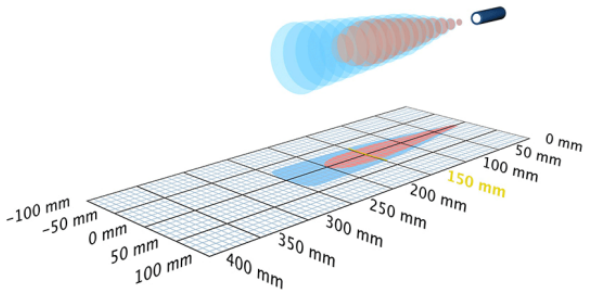


nano-15/CF

scale drawing



detection zone



1 x Push-Pull | 250 mm

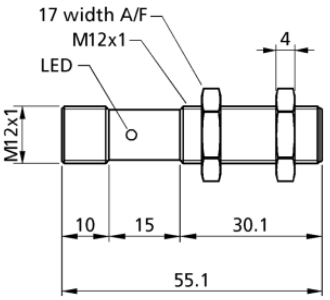
design	cylindrical M12
operating mode	IO-Link proximity switch/reflective mode reflective barrier window mode
particularities	narrow sound field IO-Link version 1.1 Smart Sensor Profile UL Listed

Ultrasonic-Specific

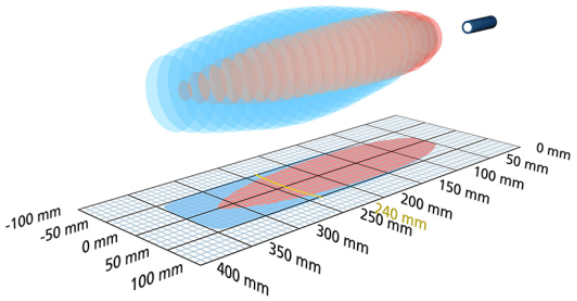
means of measurement	echo propagation time measurement
transducer frequency	380 kHz
blind zone	20 mm
operating range	150 mm
max. range	250 mm
resolution	0.10 mm
reproducibility	± 0.15 %
accuracy	± 1 % (temperature drift internally compensated)

nano-24/CF

scale drawing



detection zone



1 x Push-Pull | 350 mm

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

Ultrasonic-Specific

means of measurement	echo propagation time measurement
transducer frequency	500 kHz
blind zone	40 mm
operating range	240 mm
max. range	350 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 Push-Pull, U_B-3 V, -U_B+3 V,I_{max} = 100 mA 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 synchronisation input 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 LCA-2 with LinkControl IO-Link
synchronization	yes
multiplex	yes
indicators	LED grün, LED gelb

Electrical Data

operating voltage U_B	10 - 30 V d.c., reverse polarity protection
voltage ripple	± 10 %
no-load current consumption	≤ 40 mA
type of connection	4-pin M12 initiator plug

Outputs

output 1	switching output Push-Pull, U_B-3 V, -U_B+3 V,I_{max} = 100 mA NOC/NCC adjustable, short-circuit-proof
switching hysteresis	3 mm
switching frequency	20 Hz
response delay	40 ms
delay prior to availability	< 300 ms

Inputs

input 1	com input synchronisation input 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

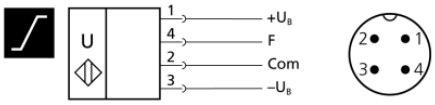
Technical Features/Characteristics

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

Accessories

deployable accessory	KST4A-2/M12
	KST4A-5/M12
	KST4G-2/M12
	KST4G-5/M12
	LCA-2
	LCA-2 Koffer

pin assignment



Accessories

deployable accessory	KST4A-2/M12
	KST4A-5/M12
	KST4G-2/M12
	KST4G-5/M12
	LCA-2
	LCA-2 Koffer

pin assignment

