



- nero-15/WK/CI nero-15/WK/CU
- nero-25/WK/CI nero-25/WK/CU
- nero-35/WK/CI nero-35/WK/CU
- nero-100/WK/CI nero-100/WK/CU

Product Description

The nero sensor offers a non-contact measurement of the distance to an object that has to be positioned within the sensor's detection zone. Depending on the set window limits, a distance-proportional analogue signal is output.

The window limits of the analogue output and its characteristic can be adjusted with the Teach-in procedure.

Two LEDs indicate operation and the state of the analogue output.

Operating Manual

Ultrasonic proximity switch with analogue output

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- nero-25/CI nero-25/CU
- nero-35/CI nero-35/CU
- nero-100/CI nero-100/CU

Safety Notes

- Read the operating instructions prior to start-up.
- Connection, installation and adjustment may only be carried out by qualified staff.
- No safety component in accordance with the EU Machine Directive

Proper Use

nero ultrasonic sensors are used for non-contact detection of objects.

Installation

- Mount the sensor at the place of fitting.
- Connect a connection cable to the M12 device plug.

The assembly distances shown in fig. 2 for two or more sensors should not

be fallen below in order to avoid mutual interference.

Start-Up

- Connect the power supply.
- Carry out sensor adjustment in accordance with the diagram.

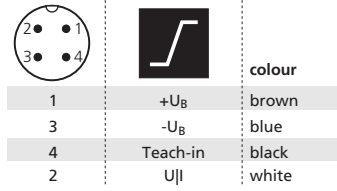


Fig. 1: Pin assignment with view onto sensor plug and colour coding of the microsonic connection cables

Factory Setting

- Rising analogue characteristic curve between the blind zone and the operating range
- »Teach-in« active

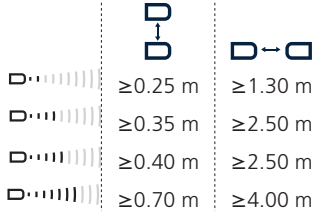


Fig.2: Assembly distances

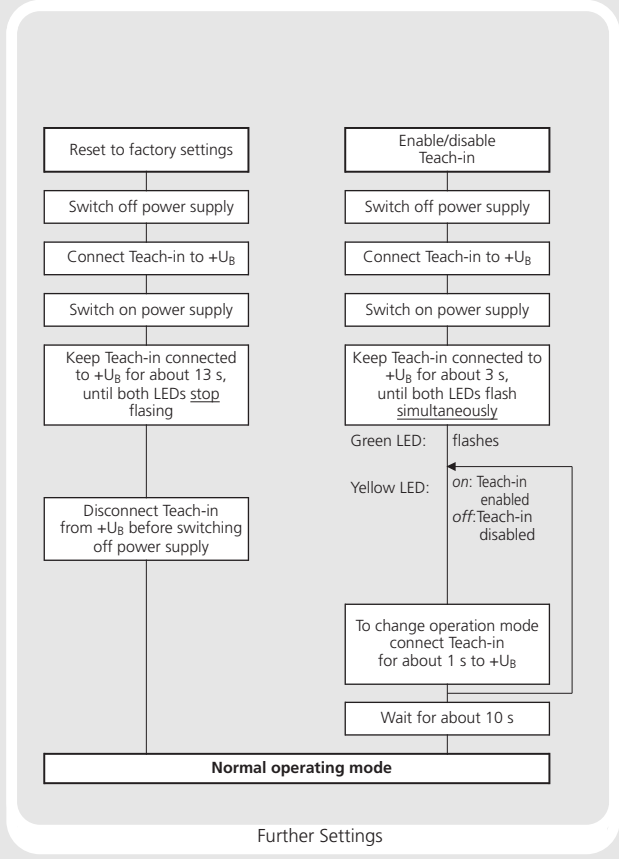
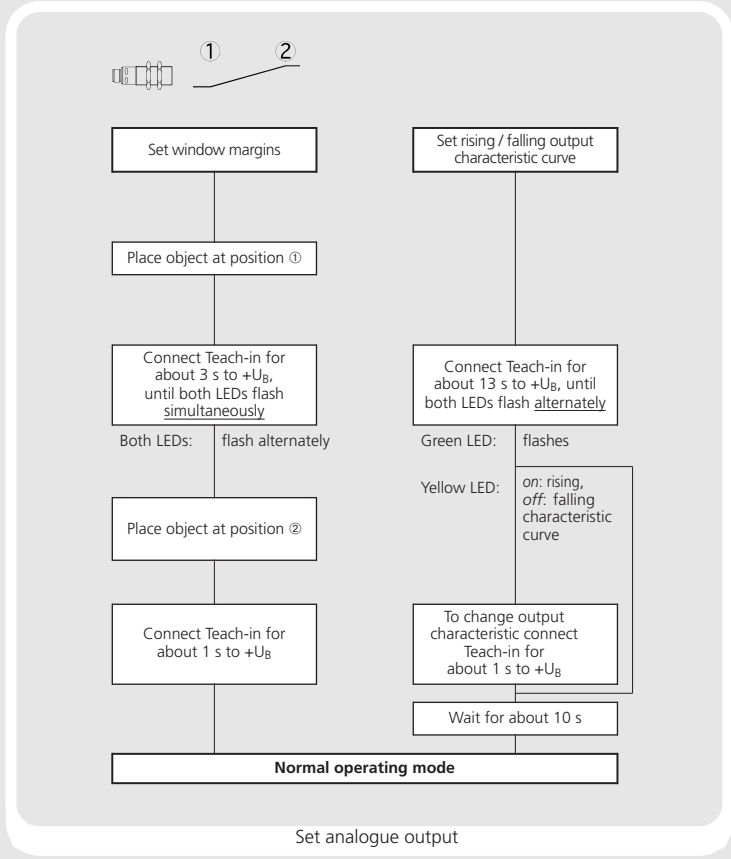
Maintenance

microsonic sensors are maintenance-free. In case of excess caked-on dirt we recommend cleaning the white sensor surface.

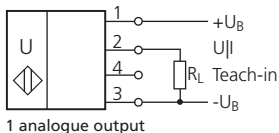
Notes

- The sensors of the nero family have a blind zone. Within this zone a distance measurement is not possible.
- In the normal operating mode, an illuminated yellow LED signals the object is within the adjusted window limits.
- The sensor can be reset to its factory setting (see »Further settings«).

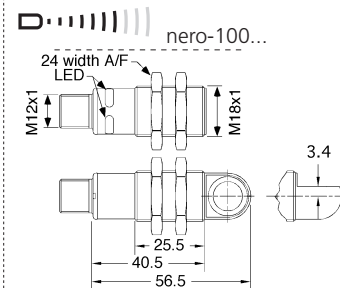
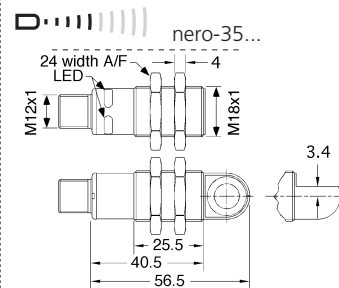
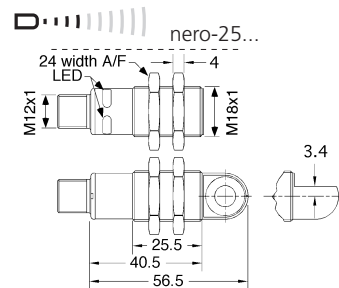
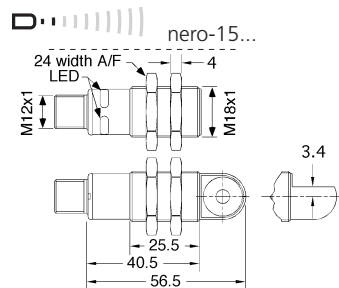
Senso adjustment with Teach-in procedure



Technical data



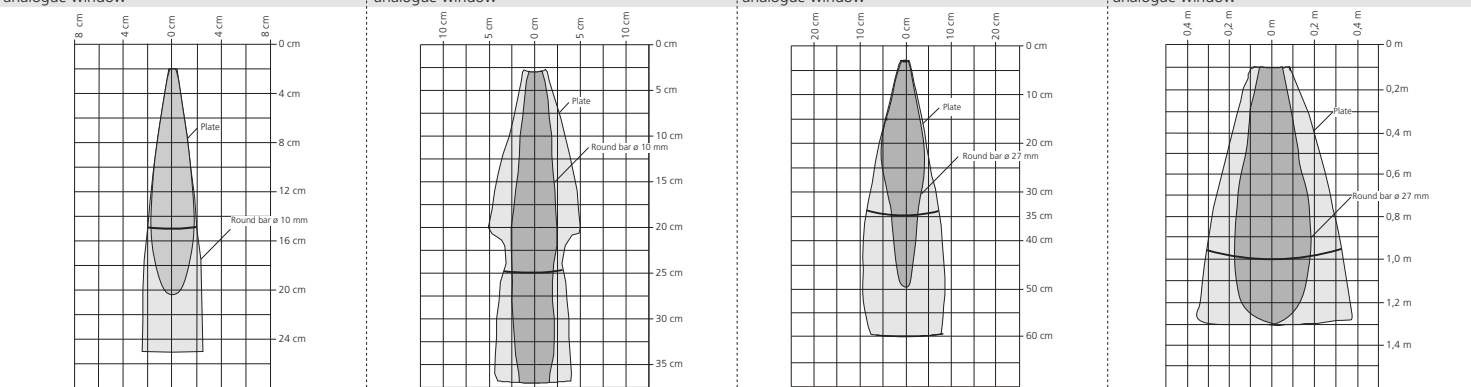
1 analogue output



blind zone	20 mm	30 mm	65 mm	120 mm
operating range	150 mm	250 mm	350 mm	1,000 mm
maximum range	250 mm	350 mm	600 mm	1,300 mm
angle of beam spread	See detection zone			
transducer frequency	380 kHz	320 kHz	400 kHz	200 kHz
resolution, sampling rate	0.056 mm to 0.297 mm, depending on the analogue window			

detection zones

for different objects:
The dark grey areas represent the zone where it is easy to recognise the normal reflector (round bar). This indicates the typical operating range of the sensors. The light grey areas represent the zone where a very large reflector - for instance a plate - can still be recognized. The requirement here is for an optimum alignment to the sensor. It is not possible to evaluate ultrasonic reflections outside this area.



reproducibility	± 0.15 %	± 0.15 %	± 0.15 %	± 0.15 %
accuracy	Temperature drift 0,17 %/°C			
no-load current consumption	< 40 mA			
operating voltage ripple	±10 %			
housing	PBT; ultrasonic transducer: polyurethane foam, epoxy resin with glass content			
max. tightening torque of nuts	1 Nm			
class of protection per EN 60 529	IP 67			
type of connection	4-pin M12 initiator plug			
controls	Teach-in via pin 4			
indicators	LED green (operation) LED yellow (state of analogue output)			
programmable	Teach-in			
operating temperature	-25°C to +70°C			
storage temperature	-40°C to +85°C			
response time	32 ms	32 ms	64 ms	80 ms
time delay before availability	< 300 ms			
norm conformity	EN 60947-5-2			
analogue output 4-20 mA	RL ≤ 500 Ω, rising/falling characteristic			
operating voltage U_B	10 - 30 V DC bei RL ≤ 100 Ω, 20 - 30 V DC bei RL > 100 Ω, terminal reverse polarity protected, Class 2			
order no. directly radiating	nero-15/I	nero-25/I	nero-35/I	nero-100/I
weight	15 g	15 g	15 g	15 g
order no. angular head	nero-15/WK/I	nero-25/WK/I	nero-35/WK/I	nero-100/WK/I
weight	20 g	20 g	20 g	20 g
analogue output 0-10 V	RL ≥ 100 kΩ, short-circuit-proof, rising/falling characteristic			
operating voltage U_B	15 - 30 V DC, terminal reverse polarity protected, Cl.2			
order no. directly radiating	nero-15/U	nero-25/U	nero-35/U	nero-100/U
weight	15 g	15 g	15 g	15 g
order no. angular head	nero-15/WK/U	nero-25/WK/U	nero-35/WK/U	nero-100/WK/U
weight	20 g	20 g	20 g	20 g



2014/30/EU

Enclosure Type 1
For use only in industrial machinery NFPA 79 applications.

The proximity switches shall be used with a Listed (CYJ/V7) cable/connector assembly rated minimum 32 Vdc, minimum 290 mA, in the final installation.

