



Operating Manual

- pico+15/I

pico+25/I

pico+35/I

pico+100/I

pico+15/U

pico+25/U

pico+35/U

pico+100/U
- pico+15/WK/I

pico+25/WK/I

pico+35/WK/I

pico+100/WK/I

pico+15/WK/U

pico+25/WK/U

pico+35/WK/U

pico+100/WK/U

Product Description

The pico+ sensor offers a non-contact measurement of the distance to an object that has to be present 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 via Teach-in procedure. Two LEDs indicate the state of the analogue output.

Safety Notes

- Read the operating manual prior to start-up.
- Connection, installation and adjustment works should be carried out by expert personnel only.
- No safety component in accordance with the EU Machine Directive, use in the area of personal and machine protection not permitted

Proper Use

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

Installation

- ➔ Mount the sensor at the installation site.
- ➔ Connect a connection cable to the M12 device plug, see Fig. 1.

		colour
1	+U _B	brown
3	-U _B	blue
4	-	black
2	I/U	white
5	Com	grey

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

Start-Up

- ➔ Connect the power supply.
- ➔ Set the sensor parameters using the Teach-in procedure, see Diagram 1.

Factory Setting

- pico+ sensors are delivered factory made with the following settings:
- Rising analogue characteristic curve between the blind zone and the operating range

- Multifunctional input »Com« set to »Teach-in«

Synchronisation

If the assembly distance falls below the values shown in fig. 2, the internal synchronization should be used. For this purpose set the switched outputs of all sensors in accordance to the diagram »Sensor adjustment with Teach-in procedure« at first. Then set the multifunctional output »Com« to »synchronization« (see »Further settings«, Diagram 1). Finally connect pin 5 of the sensors plug of all sensors.

Maintenance

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

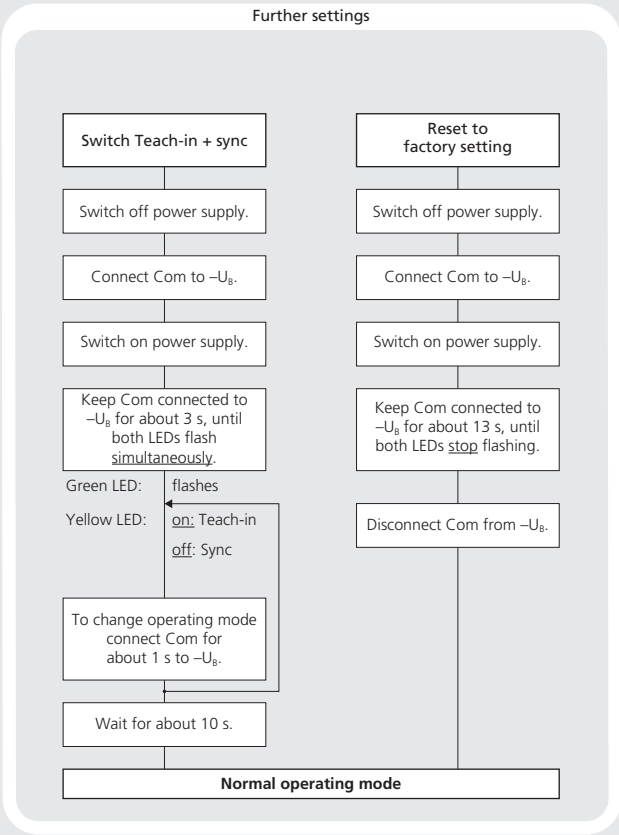
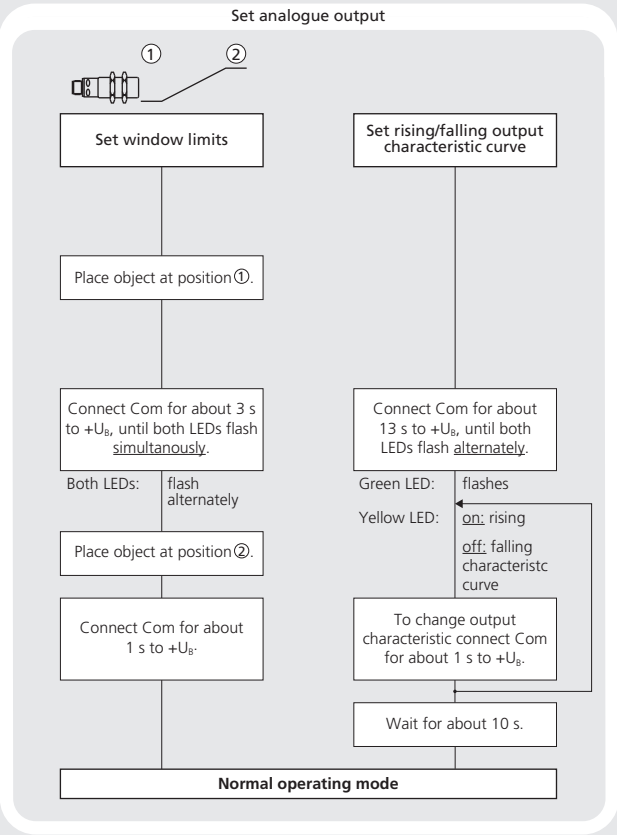
pico+15...	≥0.25 m	≥1.30 m
pico+25...	≥0.35 m	≥2.50 m
pico+35...	≥0.40 m	≥2.50 m
pico+100...	≥0.70 m	≥4.00 m

Fig. 2: Assembly distances, indication synchronization

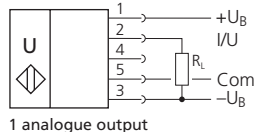
Notes

- The sensors of the pico+ family have a blind zone. Within this zone a distance measurement is not possible.
- Every time the power supply is switched on, the sensor detects its actual operating temperature and transmits it to the internal temperature compensation. The adjusted value is taken over after 120 seconds.
- In the normal operating mode, an illuminated yellow LED signals the object is within the window limits.
- If synchronisation is activated the Teach-in is disabled (see »Further settings«, Diagram 1).
- The sensor can be reset to its factory setting (see »Further settings«, Diagram 1).
- Optionally all Teach-in and additional sensor parameter settings can be adjusted via the LinkControl adapter (optional accessory) and the LinkControl software for Windows®.

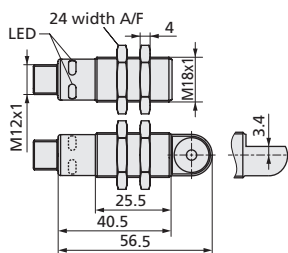
Diagram 1: Set sensor parameters via Teach-in procedure



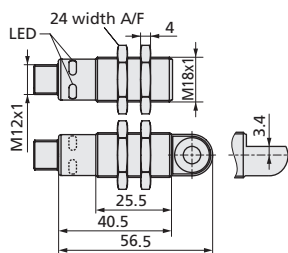
Technical data



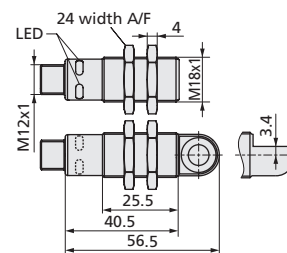
pico+15...



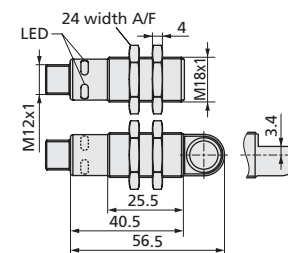
pico+25...



pico+35...



pico+100...



blind zone

operating range

maximum range

angle of beam spread

transducer frequency

resolution

20 mm

150 mm

250 mm

see detection zone

380 kHz

0.069 mm

30 mm

250 mm

350 mm

see detection zone

320 kHz

0.069 to 0.1 mm, depending on the analogue window

65 mm

350 mm

600 mm

see detection zone

400 kHz

0.069 to 0.17 mm, depending on the analogue window

120 mm

1.000 mm

1.300 mm

see detection zone

200 kHz

0.069 to 0.38 mm, depending on the analogue window

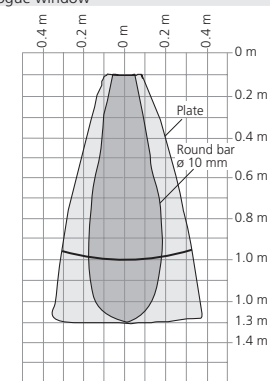
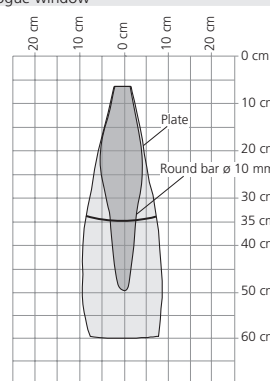
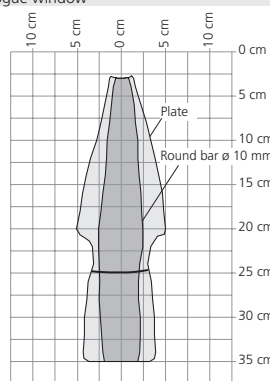
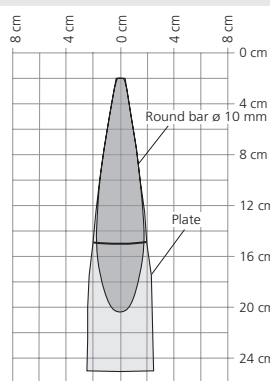
detection zones

for different objects:

The dark grey areas are determined with a round bar and indicate the typical operating range of a sensor. In order to obtain the light grey areas, a plate (100 x 100 mm) is introduced into the beam spread from the side.

In doing so, the optimum angle between plate and sensor is always employed.

This therefore indicates the maximum detection zone of the sensor. It is not possible to evaluate ultrasonic reflections outside this area.



reproducibility

accuracy

no-load current consumption

operating voltage ripple

housing

±0.15 %

±1 % (Temperature drift internal compensated)

<40 mA

±10 %

brass sleeve, nickel-plated, plastic parts: PBT; ultrasonic transducer: polyurethane foam, epoxy resin with glass content

±0.15 %

±1 % (Temperature drift internal compensated)

<40 mA

±10 %

brass sleeve, nickel-plated, plastic parts: PBT; ultrasonic transducer: polyurethane foam, epoxy resin with glass content

±0.15 %

±1 % (Temperature drift internal compensated)

<40 mA

±10 %

brass sleeve, nickel-plated, plastic parts: PBT; ultrasonic transducer: polyurethane foam, epoxy resin with glass content

±0.15 %

±1 % (Temperature drift internal compensated)

<40 mA

±10 %

brass sleeve, nickel-plated, plastic parts: PBT; ultrasonic transducer: polyurethane foam, epoxy resin with glass content

max. tightening torque of nuts

class of protection to EN 60529

norm conformity

type of connection

controls

scope for setting

indicators

synchronisation

operating temperature

storage temperature

response time ¹⁾

15 Nm

IP 67

EN 60947-5-2

5-pin M12 initiator plug

Teach-in via pin 5 (Com)

Teach-in, LinkControl

LED green, LED yellow

internal synchronisation up to 10 sensors

-25 to +70 °C

-40 to +85 °C

32 ms

<300 ms

analogue output 4 to 20 mA

operating voltage U_B

R_L ≤ 500 Ω, rising/falling characteristic

10 to 30 V DC for R_L ≤ 100 Ω

20 to 30 V DC for R_L > 100 Ω

terminal reverse polarity protected, Class 2

1 Nm

IP 67

EN 60947-5-2

5-pin M12 initiator plug

Teach-in via pin 5 (Com)

Teach-in, LinkControl

LED green, LED yellow

internal synchronisation up to 10 sensors

-25 to +70 °C

-40 to +85 °C

32 ms

<300 ms

R_L ≤ 500 Ω, rising/falling characteristic

10 to 30 V DC for R_L ≤ 100 Ω

20 to 30 V DC for R_L > 100 Ω

terminal reverse polarity protected, Class 2

15 Nm

IP 67

EN 60947-5-2

5-pin M12 initiator plug

Teach-in via pin 5 (Com)

Teach-in, LinkControl

LED green, LED yellow

internal synchronisation up to 10 sensors

-25 to +70 °C

-40 to +85 °C

64 ms

<300 ms

R_L ≤ 500 Ω, rising/falling characteristic

10 to 30 V DC for R_L ≤ 100 Ω

20 to 30 V DC for R_L > 100 Ω

terminal reverse polarity protected, Class 2

15 Nm

IP 67

EN 60947-5-2

5-pin M12 initiator plug

Teach-in via pin 5 (Com)

Teach-in, LinkControl

LED green, LED yellow

internal synchronisation up to 10 sensors

-25 to +70 °C

-40 to +85 °C

80 ms

<300 ms

R_L ≤ 500 Ω, rising/falling characteristic

10 to 30 V DC for R_L ≤ 100 Ω

20 to 30 V DC for R_L > 100 Ω

terminal reverse polarity protected, Class 2

order no. directly radiating

weight

order no. angular head

weight

analogue output 0 to 10 V

pico+15/I

30 g

pico+15/WK/I

35 g

R_L ≥ 100 kΩ, short circuit proof, rising/falling characteristic

15 to 30 V DC,

terminal reverse polarity protected, Cl. 2

pico+25/I

30 g

pico+25/WK/I

35 g

R_L ≥ 100 kΩ, short circuit proof, rising/falling characteristic

15 to 30 V DC,

terminal reverse polarity protected, Cl. 2

pico+35/I

30 g

pico+35/WK/I

35 g

R_L ≥ 100 kΩ, short circuit proof, rising/falling characteristic

15 to 30 V DC,

terminal reverse polarity protected, Cl. 2

pico+100/I

30 g

pico+100/WK/I

35 g

R_L ≥ 100 kΩ, short circuit proof, rising/falling characteristic

15 to 30 V DC,

terminal reverse polarity protected, Cl. 2

order no. directly radiating

weight

order no. angular head

weight

pico+15/U

30 g

pico+15/WK/U

35 g

pico+25/U

30 g

pico+25/WK/U

35 g

pico+35/U

30 g

pico+35/WK/U

35 g

pico+100/U

30 g

pico+100/WK/U

35 g

¹⁾ With LinkControl, the selected filter setting influences the response time.

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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 mini-
mum 32 Vdc, minimum 290 mA, in the final in-
stallation.



MV-DO-119336-828469