Operating Instructions

Ultrasonic sensor with one analogue output

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 with the Teach-in procedure.

Proper use

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

Safety Notes
- Read the operating instructions 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.

Installation
- Mount the sensor at the installation site.
- Connect a connection cable to the M12 device plug.

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

Factory Setting
- Rising analogue characteristic curve between the blind zone and the operating range.
- Multifunctional input »Com« set to »Teach-in«.

Synchronization
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«). Finally connect pin 5 of the sensors plug of all sensors.

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

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

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

Notes
- The sensors of the pico+ family have a blind zone. Within this zone a distance measurement is not possible.
- The pico+ sensors are equipped with an internal temperature compensation. Due to the sensors self-heating, the temperature compensation reaches its optimum working-point after approx. 20 minutes of operation.
- In the normal operating mode, an illuminated yellow LED signals the object within the adjusted window limits.
- If synchronization is activated the Teach-in is disabled (see »Further settings«).
- The sensor can be reset to its factory setting (see »Further settings«).
- Optionally all Teach-in and additional sensor parameter settings can be made using the LinkControl adapter (optional accessory) and the LinkControl software for windows®.

Contact

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Sensor adjustment with Teach-in procedure

Set window limits

Set rising/falling output characteristic curve

Connect Com for about 1 s to +UB, until both LEDs flash simultaneously

Place object at position 1:
Both LEDs:
Green LED:
Yellow LED:
Teach:
Off:
Set rising characteristic curve
Off:
Set falling characteristic curve

Connect Com for about 1 s to -UB

Place object at position 2:
Both LEDs:
Green LED:
Yellow LED:
Teach:
Off:
Reset to factory setting

To change output characteristic:
Connect Com for about 1 to +UB

Wait for about 10 s

Normal operating mode

Further settings

Set analogue output

Switch
Teach-in / synchronization

Switch off power supply

Connect Com to +UB

Switch on power supply

Keep Com connected to +UB, for about 5 s, until both LEDs flash simultaneously

Green LED:
Yellow LED:
Teach:
Off:
Connect Com to -UB

Switch on power supply

Keep Com connected to -UB, for about 5 s, until both LEDs are flashing simultaneously

Disconnect Com from -UB before switching off power supply

To change operation mode:
Connect Com for about 1 s to -UB

Wait for about 10 s

Normal operating mode

Switch off power supply

Connect Com to -UB

Switch on power supply

Disconnect Com from -UB before switching off power supply
### Technical Data

#### pico+15/WK/U

- **Type of Connection**: 5-pin M12 Initiator Plug
- **Housing**: Epoxy resin with glass content
- **Ultrasonic Transducer**: Polyurethane foam, brass sleeve, nickel-plated, plastic parts: PBT
- **Reproducibility**: ±10 %
- **±1 % Temperature Drift Internal Compensated**: ±0.15 %
- **±10 % Temperature Drift Internal Compensated**: ±1 %
- **±0.15 % Temperature Drift Internal Compensated**: ±1 %
- **Power Consumption**: < 40 mA
- **No-Load Current Consumption**: < 40 mA
- **Operating Voltage Ripple**: ±1 %
- **Temperature Drift**: ±1 %
- **Operating Voltage**: 15 - 30 V DC, terminal reverse polarity protected, Class 2
- **Certification**: EN 60947-5-2
- **Storage Temperature**: -40°C to +85°C
- **Response Time**: < 300 ms
- **Time Delay Before Availability**: < 300 ms
- **Internal Synchronization**: Up to 10 Sensors
- **Teach-In**: Via pin 5 (Com)
- **LED Green**: (Operation)
- **LED Yellow**: (State of Analogue output)
- **Max. Tightening Torque**: 15 Nm
- **Blind Zone**: 20 mm
- **Operating Range**: 150 mm
- **Maximum Range**: See detection zone
- **Angle of Beam Spread**: 0.069 mm
- **Resolution**: 0.069 mm bis 0.17 mm, depending on the analogue window
- **Detected Zone of the Sensor**: 80 mm
- **Reproducibility**: ±10 %
- **±1 % Temperature Drift Internal Compensated**: ±0.15 %
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1) Can be programmed with LinkControl

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**Note:** The content of this document is subject to technical changes. Specifications in this document are presented in a descriptive way only. They do not warrant any product features.