**Operating Instructions**

**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. 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.

**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.

**Start-Up**

- Connect the power supply.
- Connect Com for about 1 s to +U.

**Operating Instructions**

**Sensor adjustment with Teach-in procedure**

- Place object at position II.
- Connect Com for about 3 s to +U, until both LEDs flash simultaneously.

Both LEDs: flash alternately

- Place object at position III.
- Connect Com for about 13 s to +U, until both LEDs flash alternately.

Green LED: flashes on, rising, falling characteristic curve.

Yellow LED: flashes on, rising, falling characteristic curve.

- Keep Com connected to +U for about 3 s, until both LEDs flash simultaneously.

Green LED: flashes on, Teach-in / synchronization.

Yellow LED: flashes on, Teach-in / synchronization.

- Disconnect Com from +U before switching off power supply.

**Further settings**

- To change output characteristic connect Com for about 1 s to +U.

Wait for about 10 s

- To change operation mode connect Com for about 1 s to -U.

Wait for about 10 s

- Switch on power supply

**Reset to factory setting**

- Disconnect Com from -U.

Keep Com connected to -U for about 13 s, until both LEDs stop flashing.

**Factory Setting**

- Carry out the sensor adjustment in accordance with the diagram.

**Carry out the sensor adjustment in accordance with the diagram.**

- 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.

**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.
- 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 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®.

**Ultrasonic sensor with one analogue output**

**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.

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Wait for about 10 s

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Wait for about 10 s

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**Technical data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>pico+15...</th>
<th>pico+25...</th>
<th>pico+35...</th>
<th>pico+100...</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of outputs</strong></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td><strong>Analog output</strong></td>
<td>0-10 V</td>
<td>0-10 V</td>
<td>0-10 V</td>
<td>0-10 V</td>
</tr>
<tr>
<td><strong>Operating voltage</strong></td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
</tr>
<tr>
<td><strong>Type of connection</strong></td>
<td>5-pin M12</td>
<td>5-pin M12</td>
<td>5-pin M12</td>
<td>5-pin M12</td>
</tr>
<tr>
<td><strong>Transducer frequency</strong></td>
<td>300 kHz</td>
<td>400 kHz</td>
<td>400 kHz</td>
<td>400 kHz</td>
</tr>
<tr>
<td><strong>Blind zone</strong></td>
<td>20 mm</td>
<td>30 mm</td>
<td>45 mm</td>
<td>120 mm</td>
</tr>
<tr>
<td><strong>Operating range</strong></td>
<td>150 mm</td>
<td>250 mm</td>
<td>350 mm</td>
<td>1000 mm</td>
</tr>
<tr>
<td><strong>Angle of beam spread</strong></td>
<td>See detection zone</td>
<td>See detection zone</td>
<td>See detection zone</td>
<td>See detection zone</td>
</tr>
<tr>
<td><strong>Resolution</strong></td>
<td>0.069 mm</td>
<td>0.069 mm</td>
<td>0.069 mm</td>
<td>0.069 mm</td>
</tr>
<tr>
<td><strong>Detection zones</strong></td>
<td>See diagram</td>
<td>See diagram</td>
<td>See diagram</td>
<td>See diagram</td>
</tr>
<tr>
<td><strong>Weight</strong></td>
<td>35 g</td>
<td>35 g</td>
<td>35 g</td>
<td>35 g</td>
</tr>
<tr>
<td><strong>Repeatability</strong></td>
<td>±1 %</td>
<td>±1 %</td>
<td>±1 %</td>
<td>±1 %</td>
</tr>
<tr>
<td><strong>No-load current consumption</strong></td>
<td>&lt; 40 mA</td>
<td>&lt; 40 mA</td>
<td>&lt; 40 mA</td>
<td>&lt; 40 mA</td>
</tr>
<tr>
<td><strong>Operating range</strong></td>
<td>-40°C to +85°C</td>
<td>-25°C to +70°C</td>
<td>-25°C to +70°C</td>
<td>-25°C to +85°C</td>
</tr>
<tr>
<td><strong>Temperature drift</strong></td>
<td>±1 % (Temperature drift internal compensated)</td>
<td>±1 % (Temperature drift internal compensated)</td>
<td>±1 % (Temperature drift internal compensated)</td>
<td>±1 % (Temperature drift internal compensated)</td>
</tr>
<tr>
<td><strong>Temperature class</strong></td>
<td>Cl. 2</td>
<td>Cl. 2</td>
<td>Cl. 2</td>
<td>Cl. 2</td>
</tr>
<tr>
<td><strong>Type of connection</strong></td>
<td>Teach-in via pin 5 (Com)</td>
<td>Teach-in via pin 5 (Com)</td>
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<td>Teach-in via pin 5 (Com)</td>
</tr>
<tr>
<td><strong>Indicators</strong></td>
<td>LED green (operation)</td>
<td>LED green (operation)</td>
<td>LED yellow (state of analogue output)</td>
<td>LED yellow (state of analogue output)</td>
</tr>
<tr>
<td><strong>Response time</strong></td>
<td>&lt; 300 ms</td>
<td>&lt; 300 ms</td>
<td>&lt; 300 ms</td>
<td>&lt; 300 ms</td>
</tr>
<tr>
<td><strong>Time delay availability</strong></td>
<td>EN 60947-5-2</td>
<td>EN 60947-5-2</td>
<td>EN 60947-5-2</td>
<td>EN 60947-5-2</td>
</tr>
<tr>
<td><strong>Order no. angular head (weight)</strong></td>
<td>pico+15/WK</td>
<td>pico+25/WK</td>
<td>pico+35/WK</td>
<td>pico+100/WK</td>
</tr>
<tr>
<td><strong>Order no. directly radiating (weight)</strong></td>
<td>35 g</td>
<td>35 g</td>
<td>35 g</td>
<td>35 g</td>
</tr>
<tr>
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<td>35 g</td>
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</tr>
<tr>
<td><strong>Analog output (output 0-10 V)</strong></td>
<td>U</td>
<td>U</td>
<td>U</td>
<td>U</td>
</tr>
<tr>
<td><strong>Operating voltage</strong></td>
<td>V</td>
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</tr>
</tbody>
</table>

*Note: All values are subject to change. Specifications in this document are presented in a descriptive way only. They do not warrant any product features.*