### Operating Instructions

**Ultrasonic proximity switch with one switched output and IO-Link interface**

- pms-15/CF/A1
- pms-25/CF/A1
- pms-35/CF/A1
- pms-100/CF/A1

#### Product description
The pms sensor has a stainless steel housing and is designed for applications with hygienic requirements. The ultrasonic transducer surface of the pms sensors is laminated with a PTFE film. The transducer itself is sealed against the housing by a joint ring made of FKM.

The pms sensor with D12 adapter shaft can be fitted in a mounting clip which meets hygiene standards like the sensor screw connection BF-pms/A1. The special housing design ensures that any cleaning fluids are able to run off completely, regardless of the installation situation. The pms sensor is ECOLAB and EHEDG certified. The pms sensor offers a non-contact measurement of the distance to an object present within the sensors’s detection zone. The switched output is set conditional upon the adjusted detect distance.

For sensor setting, the accessory LinkControl adapter LCA-2 is recommended in combination with LinkControl software for Windows©. Alternatively, the sensor can also be set by Teach-in via pin 2. The pms sensors are IO-Link-capable in accordance with IO-Link specification V1.1.

#### Safety Notes
- Read the operating instructions prior to start-up.
- Connection, installation and adjustment works should be carried out by skilled personnel only.
- No safety component in accordance with the EU Machine Directive.

#### Proper Use

- pms ultrasonic sensors are used for non-contact detection of objects.
- The sensor must be mounted in an EHEDG-approved mounting clip, such as the sensor screw connection BF-pms/A1 for a EHEDG-compliant use.

**Installation**

- Assemble the sensor and its hygienic D12 sensor screw connection BF-pms/A1 or an equivalent sensor mounting clip at the installation location.
- Pull sensor cable through the sensor gland, connect it to the M8 sensor plug, see. fig. 1.
- Push the sensor with its shaft into the sensor screw connection BF-pms/A1 and adjust (see figure 4-6). Tighten with lock nut (maximum tightening torque 12 Nm).

**Operating Modes**

Four operating modes are available for the switched output:

- **Normal operating mode**
- **Window mode**
- **Two-way reflective barrier**
- **Operation with one detect point**

**Factory Setting**

- Detect point operation
- Switched output on NOC
- Detect distance at operating range

### Maintenance

Microsonic sensors are maintenance-free. For cleaning in areas with hygienic requirements, access to the sensor must be guaranteed from all EHEDG. The pms sensor is ECOLAB certified. The listed cleaning agents (see ECOLAB certificate) can be used to clean the sensors. Other cleaning agents must be tested first before usage in order to determine whether the sensor (stainless steel, FKM, PTFE) is resistant to them. Cleaning is permitted up to a cleaning temperature of 85°C. Do not use a high-pressure cleaner to clean the sensor. Caking of the sensor membrane must not be removed with sharp objects. The sensor membrane must not be damaged.

**Notes**

- The sensors of the pms family have a blind zone, within which a distance measurement is not possible.
- If several pms sensors are operated...
**Technical data**

**Accuracy**
- 1 % (temperature drift internally compensated)
- Operating range: 10 - 30 V DC, reverse polarity protection (Class 2)

**Operating voltage U_b**
- ≤ 40 mA

**No-load current consumption**
- ≤ 0.069 mA

**Operating frequency**
- 400 kHz

**Resolution**
- 0.069 mm

**Reproducibility**
- ± 0.15 %

**Detection zone**
- See detection zone

**Type of connection**
- 4-pin M8 initiator plug

**Class of protection**
- IP 66, IP 67, IP 68

**Housing**
- Stainless steel 1.4404/316L;
- Yes, Type EL CLASS I AUX

**Switcher output**
- Switchable NOC/NCC, short-circuit-proof: Push-Pull, UB-3 V, -UB+3 V, Imax = 100 mA

**Switching distance**
- < 300 ms

**Sensing time**
- 32 ms

**Response (min) after approx.**
- 45 seconds

**Further settings**
- If the object to be scanned moves if the object to be scanned moves, the » Set detect point – method A « is used. The position of the sensor can be adjusted using the LinkControl adapter (optional accessory) the additional adapter 5G/M12-4G/M12/M8 is needed.

**Further settings**
- The pms sensors are equipped with an internal temperature compensation. Due to the sensors self heating, the temperature compensation reaches its optimum working point after approx. 45 seconds of operation.

**Further settings**
- The sensor can be reset to its factory setting (see »Further settings«).

**Further settings**
- With the two-way reflective barrier the object may be in the range of 0 - 85% of the teach-in distance.

**Further settings**
- For Teach-in procedure the actual distance to the object is taught to the sensor as the detect point. If the object moves towards the sensor (e.g. with level control) then the taught distance is the level at which the sensor has to switch the output. If the object to be scanned moves into the detection area from the side, the » Set detect point – method B « is used. In this way the switching distance is set 8 % further than the actual measured distance to the object. This ensures a reliable switching distance even if the height of the objects varies slightly, see fig. 3.

**Further settings**
- Teach-in procedure should be used. In this way the switching distance is set 8 % further than the actual measured distance to the object. This ensures a reliable switching distance even if the height of the objects varies slightly, see fig. 3.

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1) Can be programmed with LinkControl.
### IO-Link data

<table>
<thead>
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<th>Physical layer</th>
<th>SIO mode support</th>
<th>min cycle time</th>
<th>baud rate</th>
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<th>content of process data</th>
<th>Identification features</th>
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<th>Device ID</th>
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<td>UINT16</td>
<td>R/W</td>
<td>65 - 600</td>
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### System Commands

With 3 system commands the following settings may be carried out:

- Teach-in SP1
- Teach-in SP2
- Reset sensor to factory settings

### SSC1 Configuration

In IO-Link mode the pms sensor has 5 operating modes:

- Single point (SP1: switching point)
- Window (SP1, SP2: window mode)
- Two point (SP1, SP2: hysteresis mode)
- Single point +8 % (SP1 switching point +8 %)
- Window ±8 % (SP1 two way reflective barrier)

### IODD File

The latest IODD and further information about start-up of pms sensors with IO-Link, you will find online at [www.microsonic.de/pms](http://www.microsonic.de/pms).