product news

ifm electronic

Fluid sensors and diagnostic systems

# Pressure sensor with diagnostic function for pumps.

## Pump monitoring and pressure detection – one sensor for 2 functions!

- Diagnosis of disturbance in the suction area (e.g. cavitation).
- Outgassing liquids and air trapped in the pump are detected.
- Independent system-pressure monitoring with second binary switching output.
- As an alternative: pump control by analogue output.
- Hygienic design to avoid deposits and for better cleaning.

$Al_2O_3$ 99.9 %

EHEDG certified

FDA

FDT

ISTEP

### Advantages of the pump diagnostic sensor

The pump diagnostic sensor enables diagnosis independently of pump type, pump characteristics and rotational speed range.

The conveying characteristics of the pump to be monitored is continuously detected. Significant changes are detected and lead to an automatic alarm message when critical operating states with damage potential for the pump or system are reached.

The state of the pump can be quickly detected via a trend display. In addition the system pressure is shown periodically.

The pump sensor can be set up easily and without specialist knowledge. The conveying characteristics of the pump is simply taught.

fluid sensors and diagnostic systems

position sensors and object recognition

bus, identification and control systems

## Advantages and customer benefits

- **Compact design**

  The compact **PIM** pressure sensor monitors the static system pressure and the dynamic pressure pulsation in the medium. This requires no external evaluation with additional installation input.

- **Higher plant up-time**

  The condition-based monitoring of the system "around the pump" leads to longer maintenance intervals. The up-time of the complete plant is increased – expensive consequential damage caused by adverse operating points of the pump is avoided.

- **Not only the pump is monitored**

  Disturbance around the pump (e.g. air trapped in the medium, clogged filters, deposits in pipes, improperly opened valves, etc.) are harmful for the entire system and its drives. These often progressive processes are detected thus protecting the complete system.

- **Monitoring of the system pressure**

  The second output of the sensor detects the system pressure completely independently of the diagnostic function. It can be configured as a switching output with hysteresis or window function or as a scaleable analogue output. Due to the high overload resistance of the ceramic capacitive measuring cell the sensor is especially suited for switch-off in case of overpressure.

- **Integrated hygienic connection**

  The integrated ASEPTOFLEX adapter thread **(PIM093, PIM094)** enables hygienic connection to all common process adapters. As an alternative a variant with G 1 thread **(PIM693, PIM694)**) is available. If the welding adapter is used, pressure can be detected without O-ring in a chemically extremely robust manner.

  For both variants the measuring cell is integrated flush. So the **PIM** is suitable for hygienic applications. Furthermore, the integrated temperature decoupling allows cleaning (CIP) and sterilisation when mounted (SIP).

- **Parameter setting**

  The FDT programming software ZZ0050 enables display of the measured values and adaptation of the parameters. Among others, scaling of the analogue output, setting of the limit values and parameter setting of the thresholds for diagnosis are possible.

## Products

| Description | Order no. |
|---|---|
| Pump diagnostic sensor with ASEPTOFLEX thread, 25 bar | **PIM093** |
| Pump diagnostic sensor with ASEPTOFLEX thread, 10 bar | **PIM094** |
| Pump diagnostic sensor with G 1 male thread, 25 bar | **PIM693** |
| Pump diagnostic sensor with G 1 male thread, 10 bar | **PIM694** |

## Common technical data

| Pump diagnostic sensor PIM | | |
|---|---|---|
| Operating voltage | [V] | 18...32 |
| Current rating | [mA] | 250 |
| Current consumption | [mA] | < 50 |
| Analogue output for static pressure (scaleable) | [mA] | 4...20 |
| Binary diagnostic output for dynamic pressure | | • |
| Medium temperature | [°C] | -25...125 (+145 max. 1 h) |
| **Accuracy / deviation (in % of the span)** | | |
| Deviation of the characteristics | | < ± 0.2 |
| Linearity | | < ± 0.15 |
| Hysteresis | | < ± 0.15 |
| Repeatability | | < ± 0.1 |
| Long-term stability | | < ± 0.1 |
| **Temperature coefficient in the temperature range 0...70 °C (in % of the span per 10 K)** | | |
| Greatest TEMPCO of the zero point | | < ± 0.15 |
| Greatest TEMPCO of the span | | < ± 0.1 |
| Materials wetted parts | | high-grade stainless steel (316S12), ceramics (99.9 % $Al_2O_3$), PTFE |
| Protection rating | | IP 67 / IP 69 K |

## Accessories (selection)

| Type | Description | Order no. |
|---|---|---|
|  | ASEPTOFLEX thread clamp 1"–1.5" (DN25–40) | **E33001** |
| | ASEPTOFLEX thread clamp 2" (DN50) | **E33002** |
|  | Welding adapter Ø 50 mm stainless steel (316S12) / O-ring: FPM (Viton) | **E30052** |
| | | |
|  | Welding adapter G 1 - Ø 50 mm high-grade stainless steel (316S12) | **E30013** |
| | Welding adapter G 1 - Ø 50 mm stainless steel (316S12) / O-ring: Viton / EPDM | **E30072** |
|  | PC / EPS programming interface set | **ZZ0050** |
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