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The ALVIM Technology

The ALVIM real-time, on line, Biofilm Monitoring System is able to detect bacterial settlement since its first phases (down to 1% of surface covered by microorganisms). Basing on ALVIM data it is possible to adjust and optimize water treatments / biocide treatments, verifying, at the same time, the efficacy of the sanitation. ALVIM Biofilm Sensors are used worldwide in many different fields, ranging from industrial cooling waters to Food and Beverage, Pulp and Paper, Oil and Gas and others, including many Fortune 500 Companies.

Among the users of the ALVIM Biofilm Monitoring System:

For more info:
www.alvim.it | info@alvim.it | +39 0108566345
A001S3 Biofilm Sensor

Connection to the process
1” BSPP threaded connector

Materials in contact with the process
Titanium (working electrode ❶), Zinc (counter electrode ❷), PVC (threaded connector ❸)

Sensitivity
1-100% of surface covered by biofilm (i.e. the first bacterial layer)

Measures (mm)

Operating conditions
Temperature: -10<T<+60°C 
(to monitor biofilm growth: +2<T<+40°C)

Oxygen: >1 ppm 
(at the maximum sensitivity level)

Pressure: <10 bar 
Conductivity: >10 μS/cm

Power supply
12 / 24 V DC ±20%, 500 mA

Data communication
4-20 mA and RS485/MODBUS RTU

Wiring
Standard 6-wire cable, FROR 6x0.5 suggested 
(2 wires used for power supply, 2 for RS485/MODUS communication, 2 for 4-20 mA data transmission)

Software - Minimum system requirements (RS485/MODBUS)
PC with Windows XP/7/8/10, 1 GHz CPU, 512 Mb Ram, 200 Mb of free space on hard drive, RS485 serial interface or USB port (for USB-RS485/MODBUS converter)
A003S3 Biofilm Sensor

Connection to the process

1" BSPP threaded connector

Materials in contact with the process

- Titanium (working electrode ❶), Zinc (counter electrode ❷), PTFE, Stainless Steel (threaded connector ❹)

Sensitivity

1-100% of surface covered by biofilm (i.e. the first bacterial layer)

Measures (mm)

- About 190
- 66
- 46
- 37
- 30

Operating conditions

Temperature: -10°C < T < +120°C
(to monitor biofilm growth: +2°C < T < +40°C)

Oxygen: >1 ppm
(at the maximum sensitivity level)

Pressure: <10 bar
Conductivity: >10 μS/cm

Power supply

12 / 24 V DC ±20%, 500 mA

Data communication

4-20 mA and RS485/MODBUS RTU

Wiring

Standard 6-wire cable, FROR 6x0.5 suggested
(2 wires used for power supply, 2 for RS485/MODBUS communication, 2 for 4-20 mA data transmission)

Software - Minimum system requirements (RS485/MODBUS)

PC with Windows XP/7/8/10, 1 GHz CPU, 512 Mb Ram, 200 Mb of free space on hard drive, RS485 serial interface or USB port (for USB-RS485/MODBUS converter)

Suitable for most industrial applications. Compared to A001S3 sensor, this model can tolerate higher temperatures.

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# AS01S3 Biofilm Sensor

**Connection to the process**
VARIVENT® Type N  
(for pipes from DN 40 to DN 150)

**Materials in contact with the process**
Stainless Steel (working electrode 🔄, VARIVENT® connector 🔄), coated Titanium (counter electrode 🔄), PEEK 🔄, EPDM (O-Ring)

**Sensitivity**
First bacterial layer

**Measures (mm)**

<table>
<thead>
<tr>
<th>Dimension</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Width</td>
<td>65</td>
</tr>
<tr>
<td>Height</td>
<td>10</td>
</tr>
</tbody>
</table>

**Operating conditions**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Requirement</th>
</tr>
</thead>
</table>
| Temperature       | -10 < T < 150°C  
(to monitor biofilm growth: +2 < T < 40°C) |
| Oxygen            | > 1 ppm      |
| Pressure          | < 10 bar     |
| Conductivity      | > 30 μS/cm   |

**Power supply**
12 / 24 V DC ±20%, 500 mA

**Data communication**
4-20 mA and RS485/MODBUS RTU

**Wiring**
Standard 6-wire cable, FROR 6x0.5 suggested  
(2 wires used for power supply, 2 for RS485/MODUS communication, 2 for 4-20 mA data transmission)

**Software - Minimum system requirements (RS485/MODBUS)**
PC with Windows XP/7/8/10, 1 GHz CPU, 512 Mb Ram, 200 Mb of free space on hard drive, RS485 serial interface or USB port (for USB-RS485/MODBUS converter)

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### AX03S3 Biofilm Sensor

**Connection to the process**
- 1” BSPP threaded connector

**Materials in contact with the process**
- Titanium (working electrode ①), Zinc (counter electrode ②), POM-C, Stainless Steel (threaded connector ②)

**Sensitivity**
- 1-100% of surface covered by biofilm (i.e. the first bacterial layer)

**ATEX string**
- Ex II 2G Ex mb IIB T6 Gb

**Measures (mm)**

**Operating conditions**
- **Temperature:** -10<T<+50°C  
  (to monitor biofilm growth: +2<T<+40°C)
- **Oxygen:** >1 ppm  
  (at the maximum sensitivity level)
- **Pressure:** <10 bar
- **Conductivity:** >10 μS/cm

**Power supply**
- 12V DC ±20%, 500 mA

**Data communication**
- 4-20 mA and RS485/MODBUS RTU

**Software - Minimum system requirements (RS485/MODBUS)**
- PC with Windows XP/7/8/10, 1 GHz CPU, 512 Mb Ram, 200 Mb of free space on hard drive, RS485 serial interface or USB port (for USB-RS485/MODBUS converter)

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Control Box

Size
150 x 110 x H70 mm

Operating conditions
Temperature: -10<T<+60°C
IP Rating: IP56 (excluding data communication card)

Power supply unit
Input: 100-240V AC, 50/60 Hz
Output: 12V DC, 1A

Available versions
CB-USB (with USB data communication card)
CB-USB420 (with USB data communication card and additional power unit for 4-20 mA)
CB-TCP (with Modbus TCP gateway) *
CB-WIFI (with Modbus TCP over Wi-Fi gateway) *

* Available on request

ALVIM Control Box includes power supply unit and data communication card. It can be used with A001S3, A003S3 and AS01S3 sensors.