

# AF46-EX

## Dual Channel UV Absorption Sensor



- Inline real time process monitoring
- Designed for hazardous locations
- Dual channel background compensation
- Extremely low maintenance
- Broad variety of line sizes, process connections and wetted materials
- Designed for CIP/SIP and ultra-sanitary applications
- NIST-traceable validation accessories

The model AF46-EX is an advanced, dual channel UV absorption sensor with two additional lamp reference channels. This sensor is designed for inline operation and provides accurate concentration measurements with great repeatability, linearity and resolution. The AF46-EX can be used in hazardous environments.

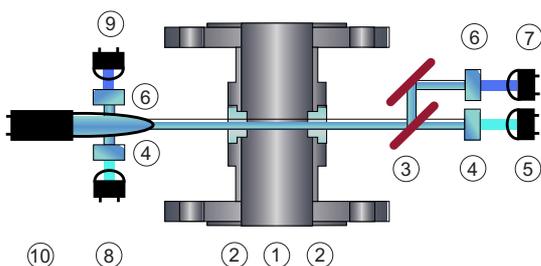
The modular sensor consists of an intrinsically safe detector housing and a flameproof stainless steel housing comprising the lamp modules as well as the reference detector modules. The appropriate converter can be located either in a safe area or in a flameproof or pressurized enclosure directly in the hazardous location.

The AF46-EX uses light in the UV range at selected wavelengths combinations. A precisely defined, constant light beam penetrates the process medium.

The attenuation of the light intensity, caused by absorption and/or scattering by dissolved and undissolved substances, is detected by photo diodes. The light beam is divided into two beams and passes through the specific interference filters.

This dual channel measurement compensates for background influences at the specified wavelengths. The additional reference photo diodes compensate for any lamp intensity variations.

The special optical sapphire window provides superior resistance to all abrasive and corrosive media. The AF46-EX is available with a broad variety of line sizes, process connections and wetted materials. NIST-traceable validation accessories are also available.



### Type AF46-EX

- |                 |                                      |
|-----------------|--------------------------------------|
| 1 Sensor body   | 6 Filter 2                           |
| 2 Windows       | 7 Detector 2                         |
| 3 Beam splitter | 8 Reference detector 1               |
| 4 Filter 1      | 9 Reference detector 2               |
| 5 Detector 1    | 10 Low pressure mercury light source |

# Technical Data



## Sensor AF46-EX

**Material:**

measuring cell made of stainless steel  
SS 316 Ti, 1.4571 (standard)

**Special materials:**

SS 316 L (1.4435), 1.4539, 1.4462, TFM 4215, Hastelloy® C4, Hastelloy® C22, Titanium, Tantalum, Monel® 400, Inconel® 625, PP, and others on request.

**Line size:**

¼" to 8", (DN 6 to DN 200)

**Process connections:**

ASME Flange, DIN Flange, JIS Flange, Tri-Clamp, BBS-Clamp, Female Thread NPT, Female Thread DIN ISO 228/1 G, Sanitary Thread (DIN 11851), and others on request.

**Gaskets:**

Viton®, EPDM (FDA), EPDM (USP Class VI), Kalrez®, Chemraz®, Fluoraz®, Buna (NBR), Viton®/FEP (FDA), and others on request (Silicone is not permitted).

**Windows:**

Sapphire, (Pyrex® is not permitted)

**Optical path length:**

1 mm – 500 mm

**Process pressure:**

10 mbar to 325 bar, (0.15 psi to 4713 psi),  
depending on process connection, material and design

**Temperature specification:**

elevated or reduced ambient temperatures may require restrictions to the operating temperatures.

ambient temperature: -30 °C to +40 °C, (-22 °F to +104 °F)

process temperature: -30 °C to +70 °C, (-22 °F to +158 °F)

periodic 15 min/day (no hazardous environment):

-30 °C to +135 °C, (-22 °F to +275 °F)

periodic 30 min/day (no hazardous environment):

-30 °C to +120 °C, (-22 °F to +248 °F)

during transport: -20 °C to +70 °C, (-4 °F to +158 °F)

**AirPurge:**

connectors available as standard

**Light source:**

low pressure mercury lamp  
typical lamp life 1 to 2 years

**Wavelengths:**

254 nm, 280 nm, 290 nm, 300 nm, 313 nm (340 nm only as reference wave length), others on request

**Detector:**

four silicon photo diodes, hermetically sealed

**Calibration:**

basic calibration in CU (concentration units)

**Measuring range:**

any measuring range between  
0 - 0.05 to 2 CU

**Resolution:**

< ± 0.05 % of respective measuring range

**Repeatability:**

< ± 0.5 % of respective measuring range

**Linearity:**

specific to application, < ± 1 % of respective measuring range

**Protection:**

all optical parts protected according to NEMA 4X (IP65)

**Cable specification:**

fixed cable connection 2 m, both side  
0 - 400 m, (0 - 1312 ft.) appr. IIC T6/T5 (Groups A, B, C, D)  
401 - 1000 m, (1313 - 3280 ft.) appr. IIB T6/T5 (Groups C, D)

**Hazardous locations:**

II 2G EEx ia IIC/IIB T6/T5  
Class I, Div. 1, Groups A, B, C, D

**Approval report:**

DMT ATEX E176  
FMG J.I. 3013884

**Certificates:**

ISO 9001:2000, ATEX, FM, PED, CE, HPO

### Use with C4000 Converters

## Options



Measuring cells for any application

**AF46-EX-HT**

high temperature ex-proof model  
perman.:

-30 °C to +120 °C, (-22 °F to +248 °F)

periodic 15 min/day (no hazardous environment):

-30 °C to +150 °C, (-22 °F to +302 °F)

periodic 30 min/day (no hazardous environment):

-30 °C to +140 °C, (-22 °F to +284 °F)

**Validation adapter**

modular adapter with application specific  
validation filter for sensor verification

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