

# AF45

## Single Channel UV Absorption Sensor



- Inline real-time process monitoring
- Extremely low maintenance
- Lamp reference channel compensates for intensity variation
- Designed for CIP/SIP and ultra-sanitary applications
- Broad variety of line sizes, process connections and wetted materials
- NIST-traceable validation accessories

The model AF45 is a single channel UV absorption sensor with an additional lamp reference channel. The sensor is designed for inline operation and provides accurate concentration measurements with great repeatability, linearity and resolution.

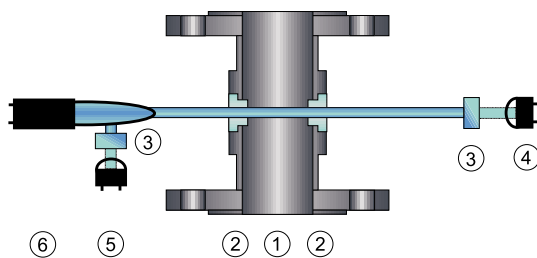
The AF45 can be used e.g. for HPLC control, detection of aromatic compounds, organic load, protein concentration and other demanding applications. The AF45 uses light in the UV range at wavelengths of either 254, 280, 290, 300 or 313 nm.

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 a sealed silicon photodiode.

The light intensity of the low pressure mercury lamp itself is measured by a second hermetically sealed silicon photodiode and compensates for any lamp intensity variation. This assures the highest level of precision and long-term performance.

The special optical window is made from a single crystal sapphire, providing superior resistance to all abrasive and corrosive media. The AF45 is available with a broad variety of line sizes, process connections and wetted materials and can be adapted easily to the process.

NIST-traceable validation accessories provide absolute measurement confidence.



### Type AF45

- |               |                             |
|---------------|-----------------------------|
| 1 Sensor body | 4 Detector                  |
| 2 Windows     | 5 Reference detector        |
| 3 UV filter   | 6 Low pressure mercury lamp |

# Technical Data

## Sensor AF45

**Material:**

sensor body 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, Varivent, 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

**Process temperature:**

values are only valid with appropriate material of sensor body and gaskets. No icing on sensor!

- permanent: 0 °C to +70 °C, (+32 °F to +158 °F)
- peak (15 min/day): 0 °C to +135 °C, (+32 °F to +275 °F)

**Ambient temperature:**

- operation: 0 °C to +40 °C, (+32 °F to +104 °F) (elevated or reduced ambient temperatures may require restrictions to the operating temperatures stated above!)
- transport: -20 °C to +70 °C, (-4 °F to +158 °F)

**Air purge:**

connectors available as standard

**Light source:**

low pressure mercury lamp  
typical life span 1 to 2 years

**Wavelengths:**

254 nm, 280 nm, 290 nm, 300 nm, 313 nm, others on request

**Detector:**

two silicon photodiodes, hermetically sealed

**Calibration:**

basic calibration in CU (concentration units)

**Measuring range:**

sensor specific  
0 to 3 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 IP65

**Cable lengths:**

standard: 5, 10, 20, 35, 50 m, (16, 33, 66, 115, 164 ft.)  
maximum: 100 m, (328 ft.)

**VA-plug-protection:**

special ultra-shielded cable sets,  
optional rigid stainless steel connector

**Certificates:**

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

**Use with C4000 converter!**

## Options



Measuring cells for any application

**AF45-HT**

high temperature model  
permanent:  
-20 °C to +120 °C, (-4 °F to +248 °F)  
peak (30 min/day):  
+140 °C, (+284 °F)  
peak (15 min/day):  
+150 °C, (+302 °F)

**Validation adapter**

modular adapter with application specific validation filter for sensor verification

**AF45-EX and AF45-EX-HT**

ATEX and FM flameproof versions for safety and confidence in all hazardous area classification. Approval report: DMT ATEX E176, FMG J.I. 3013884 (please contact us for separate data sheet)