

# AF16-EX-F

## Single Channel Absorption Sensor



- Inline real-time process monitoring
- Accurate measurement of color or color changes
- Designed for high temperatures, high pressures and hazardous locations
- Extremely low maintenance
- CIP/SIP-compatible
- Broad variety of line sizes, process connections and wetted materials
- NIST-traceable validation accessories

The model AF16-EX-F is a precise, single channel absorption sensor designed especially for hazardous environments.

The AF16-EX-F is used for inline applications in a variety of industrial processes.

The modular sensor consists of a flameproof stainless steel lamp housing and an intrinsically safe detector module.

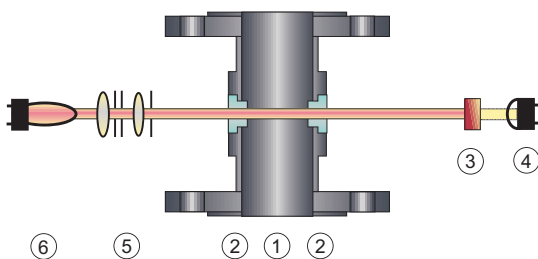
The appropriate converter can be located either in a safe area or in a flameproof or pressurized enclosure directly in the hazardous location.

The AF16-EX-F uses the light in the wavelength range from 385 to 1100 nm at selected wavelengths and measures precise color or color changes. 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 in the medium, is detected by a hermetically sealed silicon photodiode.

Optical path lengths (OPL) are available from 1 to 1000 mm for process versatility. The special optical sapphire window provides superior resistance to all abrasive and corrosive media.

The AF16-EX-F 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 assure absolute measurement confidence.



### Type AF16-EX-F

- |               |                 |
|---------------|-----------------|
| 1 Sensor body | 4 Detector      |
| 2 Windows     | 5 Optics module |
| 3 Filter      | 6 Lamp          |

# Technical Data

## Sensor AF16-EX-F



### 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, 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), Silicone, Viton® /FEP (FDA), and others on request.

### Windows:

Pyrex®, Sapphire

### Optical path length:

1 mm – 1000 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 +120 °C, (-22 °F to +248 °F)

periodic 15 min/day (no hazardous environment):

-30 °C to +150 °C, (-22 °F to +392 °F)

periodic 30 min/day (no hazardous environment):

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

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

### Air purge:

connectors available as standard

### Light source:

incandescent tungsten lamp: 5.0 V DC, 775 mA,  
typical life span 3 to 5 years

### Wavelengths:

specific to application from 385 nm - 1100 nm

### Detector:

silicon photodiode, hermetically sealed

### Calibration:

basic calibration in CU (concentration units)

### Measuring range:

any measuring range between  
0 - 0.05 to 3 CU (dependent on the used filter)

### 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 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 converter!**

## Options



Measuring cells for any application

### AF16-EX-HT-F

high temperature ex-proof model  
perman.:

-30 °C to +240 °C, (-22 °F to +464 °F)

periodic 15 min/day:

-30 °C to +260 °C, (-22 °F to +500 °F)

periodic 30 min/day:

-30 °C to +250 °C, (-22 °F to +482 °F)

### Validation adapter

modular adapter with application specific  
validation filter for sensor verification