

# AF16-N

## Single Channel NIR Absorption Sensor



- Inline real-time process monitoring
- Color independent concentration measurement
- High dynamic measuring range
- Extremely low maintenance
- CIP/SIP-compatible
- Broad variety of line sizes, process connections and wetted materials
- NIST-traceable validation accessories

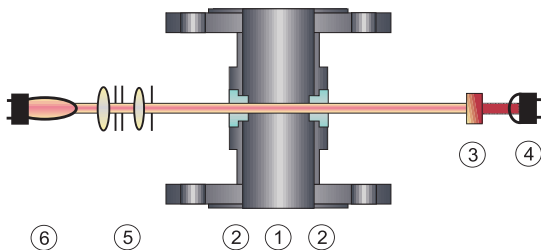
The model AF16-N is a precise, single channel NIR absorption sensor. The inline sensor is designed for a variety of industrial processes. The AF16-N measures concentration or turbidity with great accuracy and repeatability and can be used in demanding applications such as filter control, phase separation and yeast cell concentration.

The AF16-N uses light in the Near Infrared range (NIR) from 730 to 970 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 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 AF16-N is equipped with a special optical filter and performs concentration measurement independent of any color influences.

The special optical window is made from a single crystal sapphire. This provides superior resistance to all abrasive and corrosive media.

The AF16-N 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 assures absolute measurement confidence. Options for hazardous area classification are also available.



### Type AF16-N

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

# Technical Data

## Sensor AF16-N

**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), 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

**Process temperature:**

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

- permanent: 0 °C to +120 °C, (+32 °F to +248 °F)
- peak (15 min/day): 0 °C to +150 °C, (+32 °F to +302 °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:**

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

**Wavelength range:**

730 nm - 970 nm

**Detector:**

silicon photodiode, hermetically sealed

**Calibration:**

basic calibration in CU (concentration units)

**Measuring range:**

any measuring range between  
0 - 0.05 to 5 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: 250 m, (820 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

**AF16-HT-N**

high temperature model  
permanent:  
-20 °C to +240 °C, (-4 °F to +464 °F)  
peak (15 min/day):  
-20 °C to +260 °C, (-4 °F to +500 °F)

**Validation adapter**

modular adapter with application specific  
validation filter for sensor verification

**AF16-EX-N and AF16-EX-HT-N**

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