

TF16-N

Dual Channel Scattered Light Sensor



- Inline real-time process monitoring
- Extremely low maintenance
- CIP/SIP-compatible
- Broad variety of line sizes, process connections and wetted materials
- Designed for high temperatures and pressures

The model TF16-N is a precise dual channel, scattered light turbidimeter. This sensor is designed to provide inline control solutions for a variety of industrial processes, from sanitary CIP/SIP applications to high-pressure, high temperature industrial applications. High particle concentrations can be monitored color independent at the direct light detector.

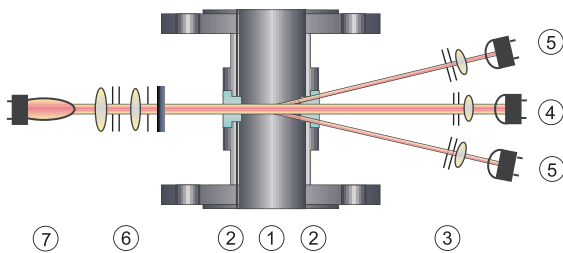
The TF16-N uses light in the Near Infrared (NIR) from 730 to 970 nm. A precisely defined, constant light beam penetrates the process medium. Light scattered from particles (trace suspended solids, undissolved liquids or gas bubbles) in the medium is detected by eight hermetically sealed silicon photodiodes at an angle of 11°.

Simultaneously, the unscattered light is detected by a reference photodiode. The sensor can be calibrated in ppm, EBC or FTU and measures extremely low particle sizes and concentrations.

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

The TF16-N is available with a broad variety of line sizes, process connections and wetted materials and can be adapted easily to the process.

High temperature and flameproof options are also available.



- Type TF16-N**
- | | |
|-----------------|---------------------------------|
| 1 Sensor body | 4 Detector (direct light) |
| 2 Windows | 5 Detector (scattered light) |
| 3 Optics module | 6 Optics module with NIR filter |
| | 7 Lamp |

Technical Data

Sensor TF16-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:

40 mm standard

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

Wavelengths:

730 nm - 970 nm

Detector:

silicon photodiodes, hermetically sealed

Calibration:

basic calibration in ppm (DE), FTU, EBC

Measuring range:

any measuring range between
0 - 0.5 to 500 ppm (DE)
0 - 0.2 to 200 FTU
0 - 0.05 to 50 EBC
0-0.1 to 3.0 CU (absorption)

Resolution:

< ± 0.05 % of respective measuring range

Repeatability:

< ± 0.3 % of respective measuring range

Linearity:

specific to application, < ± 1 % with standard solution

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

TF16-HT-N

high temperature model

permanent:

-20 °C to +240 °C, (-4 °F to +464 °F)

periodic 15 min/day:

-20 °C to +260 °C, (-4 °F to +500 °F)

TF16-EX-N / TF16-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

Maximum cable length: 1000 m (3280 ft.)
(please contact us for separate data sheet)