Model TF56-N Sensor

Installation and Maintenance Instructions

Preface

This instruction manual is written to assist the user in proper procedures for trouble-free operation.

It is explicitly pointed out that optek-Danulat GmbH assumes no responsibility forloss or damage caused due to improper use of this instruction manual orproducts described herein.

On request, this manual is available in other languages as well as in digital format (Acrobat® Reader 7.0 required).

Our products are being continuously improved. Technical data is subject to change without notice.

Essen, May 2012

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1 Using the instruction manual

1.1 Validity of the instruction manual

This instruction manual is valid for TF56-N sensor and its variants. There are the following variants*:

- N
- HT-N

* Other variants available on request.

Abbreviations mean the following sensor options:

- N near infrared (wavelength range 730 - 970 nm)
- HT high temperature

Follow the instruction manual for every operation. If the sensor is not used as described in this instruction manual, your safety and the sensor function could be affected.

To keep up reliability of the product, enhance its life cycle and avoid down times, you have to follow the instructions given in this manual.

Furthermore, please follow the existing accident prevention and environmental protection instructions, as well as recognized technical instructions for safe and professional working.

1.2 Pictograms and signal words

Important information in this instruction manual is marked with the following pictograms:

Danger!
This pictogram indicates immediate danger to life and health of persons.
The text next to the symbol gives information on how to avoid bodily injuries.

If the possible cause of risk can be specified, the corresponding pictogram precedes instructions:

Danger!
Electrical voltage.
This pictogram indicates danger due to electrical voltage.

Caution!
This pictogram indicates information on how to avoid material damage.

Note!
This pictogram indicates instructional or general advice.

2 Returns and disposal

2.1 Declaration of decontamination

For the safety of our employees and because of legal regulations we need a signed "declaration of decontamination" before your return can be handled. This signed declaration must be included with the shipping documents on the outside of the packaging.
Any returns which were exposed to hazardous substances and were not professionally decontaminated are not accepted and will be sent back on your cost.

optek's declaration of decontamination and contact information can be found on our website www.optek.com.

2.2 Disposal

Special legal regulations apply to the return and disposal of industrial waste equipment. However, manufacturer and user can contractually agree on which party is to fulfill these legal obligations.

Observe current national disposal regulations.
To dispose packaging material, please separate materials into the following groups:

- Paper / paperboard
- Plastic

For disposal, disassemble the system components and separate them according to different material groups.

Dispose of materials according to national and local regulations.

If no agreement has been made, products may be shipped to optek for disposal.

3 Intended use

The optek-sensors TF56-N and their variants are to be applied only as scattered light turbidimeters for liquids and gases in inline applications according to the technical data.

The use of the sensors in hazardous locations is prohibited.
You can purchase flameproof sensors for hazardous locations from optek. For these sensors, special instruction manuals are delivered with the sensor.

Unauthorized constructional changes, additional fittings or rebuildings regarding the sensor are prohibited. The only exception are rebuildings into one of the variants listed in the chapter "Validity of the instruction manual". Changes to and interference with the converter program are prohibited as well.

To lay sensor cables underground without protection is prohibited.

The manufacturer is not liable for damage resulting from use contrary to intended use.

Following this instruction manual is part of the intended use.

4 Description of the TF56-N sensor

The TF56-N model is a high precision dual channel scattered light turbidimeter. It measures direct light and light scatterd from particles in the process medium at an angle of 11°. The sensor is made entirely of stainless steel and designed for direct installation into pipelines.

Fig. 1 TF56-N

The following are the main sensor components:

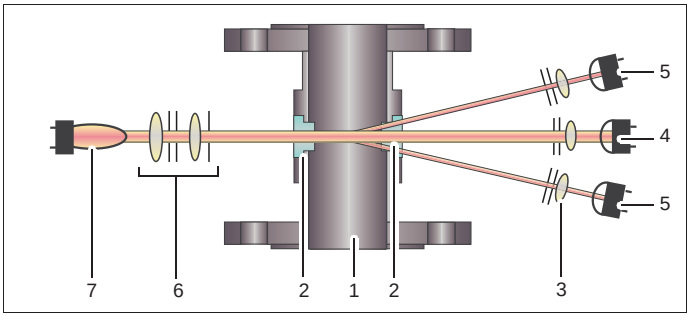

Fig. 2 Schematic TF56-N

1. Sensor body
2. Windows
3. Optics module
4. Detector (direct light)
5. Detector (scattered light)
6. Optics module
7. Lamp

Its modular construction offers maximum flexibility in adapting to the process, without affecting the property of measurement. An appropriately defined light beam penetrates the process medium. The light scattered from particles in the process medium, e. g. traces of suspended solids, immiscible liquids or gas bubbles, is detected by four hermetically sealed silicon photodiodes at an angle of 11°. Simultaneously, the unscattered light is detected as direct light by another photodiode. The receiver optics design guarantees that extraneous lights created inside the sensor body are not included in measurements. Due to the small scattering angle, direct light and scattered light practically travel the same distance in the process medium. This is why product specific disturbances such as color or color changes of the carrier medium as well as soilings on windows may be optimally compensated.

5 Technical data and exploded views

*Tab. 1 Technical data TF56-N**

Technical Data	TF56-N (valid for all options)
	Measurement
Measurement principle:	2-Channel Scattering of light (11°)
Measurement wavelength(s):	730 nm - 970 nm
Detector(s):	1 silicon photodiode (hermetically sealed) (Abs.) 4 sillicon photodiodes (hermetically sealed) (11°)
Measuring range:	any measuring range between 0 - 25 to 500 ppm (DE) 0 - 10 to 200 FTU 0 - 2.5 to 50 EBC
Optical path length:	40 mm standard (50 - 60 mm with reduced accuracy)
Calibration:	basic calibration 11°: in ppm (DE) / FTU / EBC
Light source:	special incandescent tungsten lamp 5.0 V DC, 775 mA typical life span: 3 to 5 years (25,000 to 40,000 hours)
Resolution:	< ± 0.5 % of respective measuring range
Repeatability:	< ± 1 % of respective measuring range
Linearity:	< ± 2 % of respective measuring range (specific to application)
Protection:	all optical parts have an IP rating of IP65 or higher
	Sensor body
Material:	Stainless steel 1.4435 (SS 316L), 1.4539, 1.4571 (SS 316Ti), 1.4462, Titanium 3.7035 (Grade 2), Hastelloy 2.4602 (C22), Plastic TFM4215, PVC, ... others on request
Line size:	1/4 in. to 6 in. (DN 6 to DN 150), ... others on request
Process connection:	Flanges (ASME, DIN, JIS), Clamps (TC, ISO, DIN), Female Threads (NPT, DIN), Sanitary Threads (DIN 11851), Tube Ends (DIN, ISO, OD), Varivent, ... others on request
Process pressure:	10 mbar to 100 bar (0.15 psi to 1450 psi) - higher on request depending on process connection, materials and design
Windows:	1-Pyrex®, 2-Sapphire, 3-Sapphire Biotech
Window gaskets:	Silicone (FDA), Viton® (FDA), EPDM (FDA / USP Class VI), Kalrez® 4079, ... others on request
Airpurge:	connectors available as standard, air purge pressure 0.5 bar max.
	Temperature ratings (Data is only valid for appropriate choice of material of sensor body and gaskets! No ice formation on sensor!)
Process temperature:	permanent: 0 - 100 °C (32 - 212 °F) / peak 15 min/day: 0 - 120 °C (32 - 248 °F)
Process temperature OPTION HT:	permanent: -20 - 190 °C (-4 - 374 °F) / peak 15 min/day: -20 - 210 °C (-4 - 410 °F)
Ambient temperature:	Elevated or reduced ambient temperatures may require restrictions to the admissible process temperature! operation: 0 - 40 °C (32 - 104 °F) operation: -20 - 40 °C (-4 - 104 °F) with options HT transport: -20 - 70 °C (-4 - 158 °F)

Tab. 1 Technical data TF56-N (cont.)*

	Cables
Cable length:	standard: 2, 3, 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 60, 70, 80, 90, 100 m (7, 10, 16, 33, 49, 66, 82, 98, 115, 131, 148, 164, 197, 230, 262, 295, 328 ft.)
Cable material:	non-metallic sheathed cable with finely stranded copper conductor according to IEC 228 CL.5, insulation PVC (-40 °C ... +70 °C, -40 °F ... +158 °F)
Plug connection:	plastic connector or SS plug protector
Cable weights:	Lamp cable (1.5 mm^2): 0.9 kg / 10 m Lamp cable (2.5 mm^2): 1.2 kg / 10 m Detector cable (0.5 mm^2): 1.2 kg / 10 m
Cable diameter:	Lamp cable (1.5 mm^2): approx. 7 mm / approx. 8 mm with shrink hose Lamp cable (2.5 mm^2): approx. 8 mm / approx. 9 mm with shrink hose Detector cable (0.5 mm^2): approx. 6 mm / approx. 8 mm with shrink hose and shield connection
	Certificates
	ISO 9001:2008, PED, CE, HP0

*. Pressure and temperature ratings specified herein may be subject to limitations.
The appropiate choice of material for all wetted parts is the sole responsibility of the user.
Data given are subject to changes without prior notice.

Detailed technical information about the armature is given in the armatures instruction manual and the sensor body data sheet of your sensor body.

5.1 Exploded view of TF56-N sensor

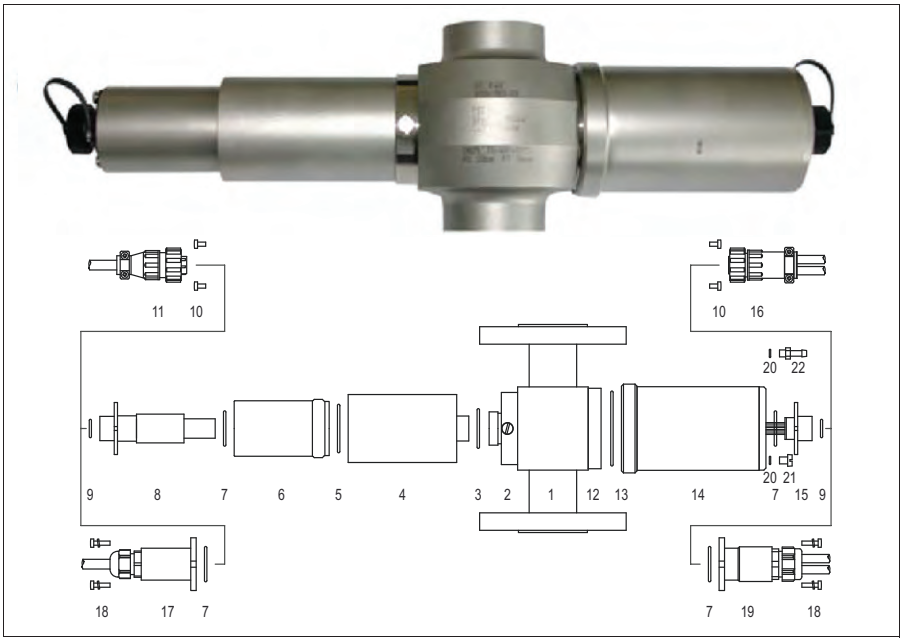

Fig. 3 Photo and exploded view of TF56-N

Tab. 2 Exploded view explanations

No.	Explanation	No.	Explanation
1	Sensor body	12	Window ring M58 x 1.5, incl. 8 screws M5
2	Window ring M24 x 1.5, incl. 8 screws M5	13	O-Ring 50.52 x 1.78, Viton®
3	O-Ring 25.12 x 1.78, Viton®	14	Detector assembly TF56-N, 1.4571 (316 Ti)
4	Lamp adapter TF56-N, 1.4571 (316 Ti), incl. wavelength module (see table 8 on page 22)	15	Detector socket, 9-pin
5	O-Ring 31.47 x 1.78, Viton®	16	Detector cable TF56-N
6	Optical housing OH06, 1.4571 (316Ti)	17	Lamp cable TF56-N with SS-plug-protection
7	O-Ring 21.95 x 1.78, Viton®	18	4 screws M3 x 12 (DIN 7985), 1.4571 (316Ti), incl. washer
8	Lamp module TF56-N	19	Detector cable TF56-N with SS-plug-protection
9	O-Ring 10.10 x 1.60, Viton®	20	O-Ring 4.00 x 1.00 Viton®
10	4 screws M3 x 6 (DIN 7985), 1.4571 (316Ti)	21	Screw M5 x 6 (DIN 84), 1.4571 (316 Ti)
11	Lamp cable TF56-N	22	Purge connection M5, Ms/Ni

5.2 Exploded view of TF56-HT-N sensor

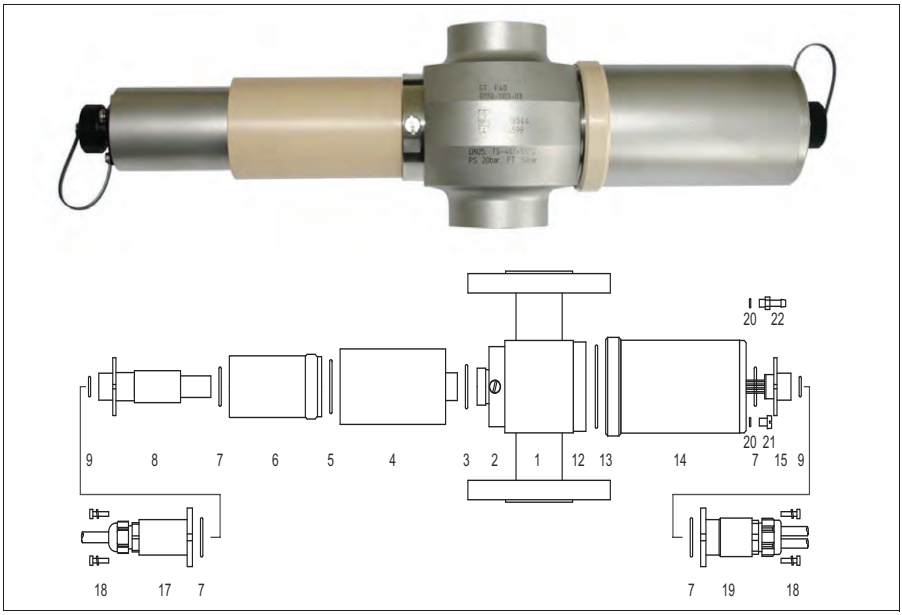

Fig. 4 Photo and exploded view of TF56-HT-N

Tab. 3 Exploded view explanations

No.	Explanation	No.	Explanation
1	Sensor body	12	Window ring M58 x 1.5, incl. 8 screws M5
2	Window ring M24 x 1.5, incl. 8 screws M5	13	O-Ring 50.52 x 1.78, Viton®
3	O-Ring 25.12 x 1.78, Viton®	14	Detector assembly TF56-HT-N, 1.4571 (316 Ti) / PEEK
4	Lamp adapter TF56-HT-N, PEEK, incl. wavelength module (see table 8 on page 22)	15	Detector socket, 9-pin
5	O-Ring 31.47 x 1.78, Viton®	16	-
6	Optical housing OH06, 1.4571 (316Ti)	17	Lamp cable TF56-N with SS-plug-protection
7	O-Ring 21.95 x 1.78, Viton®	18	4 screws M3 x 12 (DIN 7985), 1.4571 (316Ti), incl. washer
8	Lamp module TF56-N	19	Detector cable TF56-N with SS-plug-protection
9	O-Ring 10.10 x 1.60, Viton®	20	O-Ring 4.00 x 1.00 Viton®
10	-	21	Screw M5 x 6 (DIN 84), 1.4571 (316 Ti)
11	-	22	Purge connection M5, Ms/Ni

6 Installation

6.1 Standard sensor bodies – installation instructions

Installation instructions are provided in the armatures instruction manual.

6.2 Installation of the sensor

Tool

- not needed

Install sensor as described below:

Note!
O-Rings are delivered separately and are not installed at delivery.

1. Check that there are O-Rings for the sensor assemblies.
2. Place one O-Ring each into the groove of the window rings (see fig. 5).

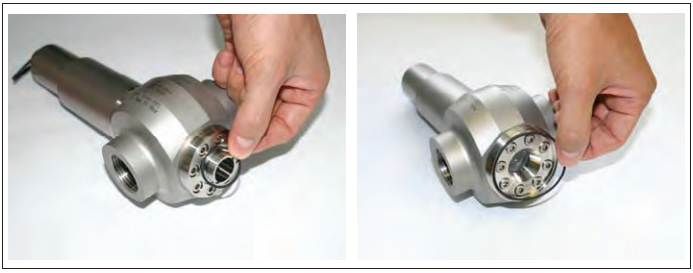

Fig. 5 O-Ring at window ring

Danger!
Isopropanol is irritating!
Observe the safety regulations when handling Isopropanol!

3. Make sure that the windows of the sensor body are clean. If not, clean them with Isopropanol.
4. Check the window ring threads for damage and soiling and clean them if necessary.
5. Screw on sensor assemblies for detector and lamp sides to the sensor body hand-tight (right-hand thread, fig. 6). It is recommended to use the supplied installation paste.

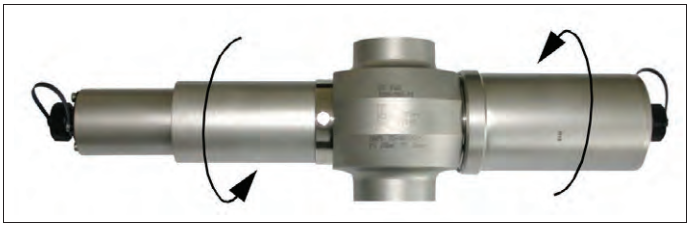

Fig. 6 Installed sensor, example TF16-N sensor

6.3 Air purge

Should the temperature of the process medium be too low, the temperature of the air inside the optical housing might fall below dew point. This leads to condensation deposits on the window surfaces. For this event, the sensor body is equipped with an air purge connection on a window ring or the sensor is as well equipped with one air purge connection on the detector assembly.

Note!
If the product is more than 10 °C (18 °F) cooler than the ambient air of the sensor, always connect air purge.

Tool

- Screw driver
- Wrench 7 mm

At delivery, the drill holes of the air purge connections are sealed with O-Ring and sealing screws M5 x 6 (DIN 84).

1. Remove the sealing screws and O-Rings.
2. Check if there are O-Rings on air purge connections.
3. Install air purge connections (22, fig. 7) screwing.
4. Place the air purge hoses on the air purge connections (22).

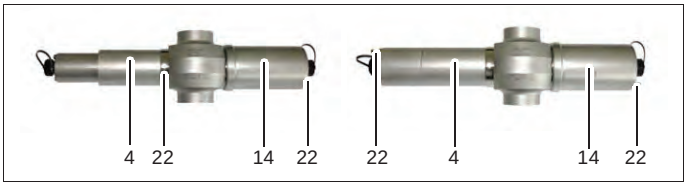

Fig. 7 Window ring and detector assembly air purge connections (left) as well as optical housing and detector assembly air purge connections (right)

After connecting the sensor to the power supply and putting it into operation, rinse it as described below:

1. Loosen lamp adapter (4) and detector assembly (14) turning each 2-3 turns anticlockwise.
2. Rinse the optical housing by aerating it with dry, oil and dust free air for approx. 10 minutes at a maximum of 0.5 bar (7.25 psi) gauge pressure. In case you do not have air purge supply of appropriate quality, you can use the optek Air Drying System ADS.
3. Reduce air pressure to approx. 0.1 bar (1.45 psi).
4. Retighten lamp adapter (4) and detector assembly (14). Keep up the gauge pressure. Air consumption in this operational state is minimal.
5. Make sure the O-Rings are fitted correctly.

7 Connection to converter

For connecting the sensor cables, observe the following basic conditions:

- Bring the sensor cable to the cable entry from underneath.
- Form a loop with the sensor cable close to the cable entry.
- Do not lay sensor cables in ducts of current-carrying lines.
- Observe cable specifications (see technical data).
- To lay sensor cables underground without protection is prohibited.

For the connection of the sensor to the converter, there are sensor cables with plug-protection on the sensor side (17, 19; fig. 8) or without plug-protection (11, 16).

Connection to the sensor

On the sensor side, mixing up sensor cables is not possible, as plugs are distinctive:

- 9-pin plug on the detector side (16, 19),
- 4-pin plug on the lamp side (11, 17)

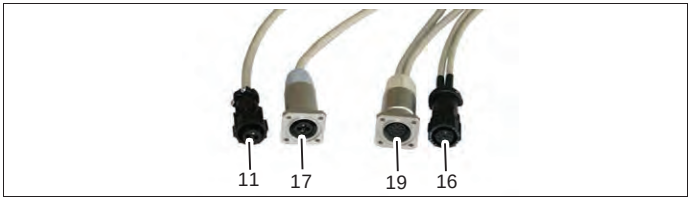

Fig. 8 Plug with and without plug-protection

Tool

- not needed

Connection of the sensor cable *without* plug-protection on the detector and lamp side:

1. Loosen the connection cover of the sensor.
2. Plug in the sensor cable.
3. Screw-tighten the protection cover.

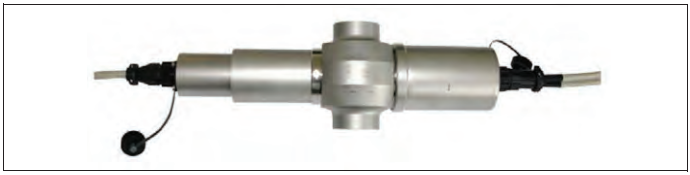

Fig. 9 Connection of the sensor cable without plug-protection

Tool

- Screw driver

Connection of the sensor cable *with* plug-protection on the detector and lamp side:

1. Loosen the connection cover of the sensor.
2. Ensure there is an O-Ring (7, fig. 10) for plug-protection.
3. Plug in the sensor cable.
4. Fasten each of the four screws of the plug-protection (19) with washer.

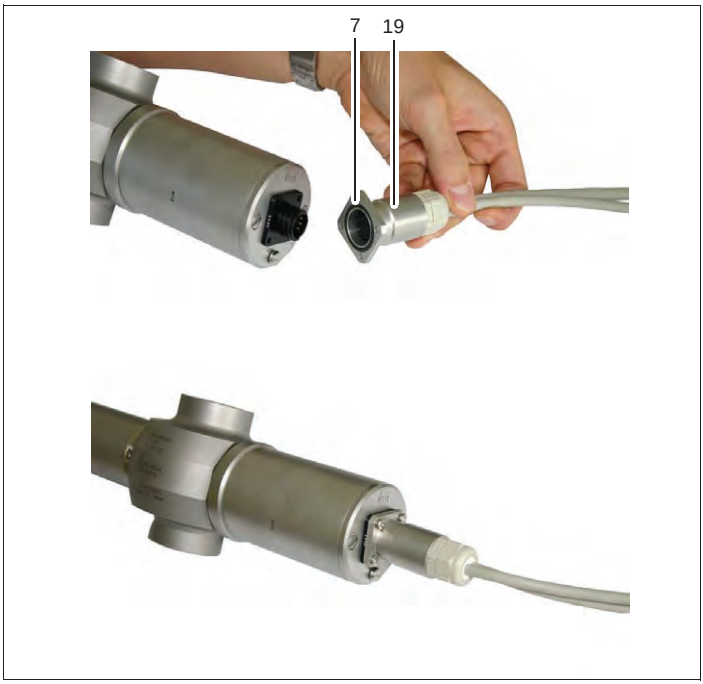

Fig. 10 Connection of the sensor cable with plug-protection

Note!
Detailed information on the connection of a sensor to a converter is given in the corresponding instruction manual of the converter. There you can also find the corresponding wiring plans.

8 Faults

Among other possibilities, you can detect faults whenever an error message on the converter appears. Try to clear the fault using the following table and the instructions given in the chapter "Software" in the instruction manual of the converter. Should you have any difficulty clearing the fault, feel free to contact our customer service.

Please find our contact data at Contacts (see chapter 11, page 27).

Tab. 4 Possible faults and remedies

Possible fault	Possible remarks	Cause	Remedy
Failure of lamp module	• "Lamp failure" LED of converter flashes. • Signal loss	Lamp cable between sensor and converter defective	• Continuity test of lamp cable • Exchange lamp cable for new one.
		Lamp module defective	• Exchange lamp module.
Detector failure	-	Detector cable between sensor and converter defective	• Continuity test of detector cable • Exchange detector cable for new one.
		Detector defective	• Exchange detector.
Condensate formation	Unrealistic, random measuring results	Humidity gets into optical housing and forms condensation deposits on windows.	• Use airpurge.
		O-Ring missing or defective	• Disassemble sensor assemblies and check O-Rings, exchange if necessary.
Wrong results	• Results are fluctuating. • Zero point is drifting.	• Sensor body windows are dirty. • Sensor body windows are corroded. • Lamp module near failure, lamp module near the end of its life.	• Clean sensor body window. • Exchange sensor body window for sapphire window. • Exchange lamp module.
Connection error	• No function • No "Lamp failure" LED message	Detector cable between sensor and converter defective	• Continuity test of detector cable • Exchange detector cable for new one.
		Sensor cable incorrectly connected to converter	• Check and revise connections.
Measuring range exceeded	☽☽☽ Converter indicates flashing	Process conditions	• Amplify measuring range. • If the measuring range cannot be amplified, reduce optical path length.
		Wavelength-dependent detector module reduces the dynamic measuring range, optical filters reduce wanted signal.	• Reduce optical path length and / or change measuring wavelength. • Exchange lamp module.
mA-signal (output)	mA-output delivers correct current results if measuring results are low and too low current results if measuring results are high.	Connected load > 500 ohms	• Check resistance of wiring. • Use appropriate mA-input.
	Small deviations given in %	Poor calibration of the receiving mA-input	• Compensation by adjusting calibration of the sending mA-output.
Converter defective	None of the above mentioned errors can be detected.	-	• Send system (converter and sensor) to optek for checking purposes. If necessary, the sensor body can remain in the pipeline so that only the optical arms and the converter have to be sent.

9 Maintenance

9.1 Preventive maintenance

Tab. 5 Preventive maintenance

Component	Maintenance activity	Maintenance interval	Information
Wetted parts	inspection with regard to leakages	as part of standard installation maintenance	Possible damaged sealing faces of the sensor body can lead to leakages (see instruction manual of the sensor body).
Lamp module	exchange	1 - 2 years	Operation of the lamp below its nominal voltage (4.8 V DC instead of 5.0 V DC) enhances lamp life. Strong vibrations, high temperatures or frequent on and off switching of the system can have negative effects on the service life. Statistical service life amounts to 3 years, for UV lamps to 1–2 years.

Note!
The used detector is not subjected to measurable aging when used properly.

9.2 Exchange of the lamp module

Tool

- Screw driver

1. Switch the converter voltage-free.
2. Loosen the sensor cable from the lamp module.
3. Loosen the four screws connecting the lamp module to the stainless steel housing.
4. Pull out the lamp module (8, fig. 11).
5. Check if there is an O-Ring (7) for the lamp module.
6. Insert the new lamp module into the sensor.
7. Fasten the four screws.
8. Re-connect the sensor cable.
9. Switch on the converter.
10. Follow the instructions given in chapter 9.4, page 21.

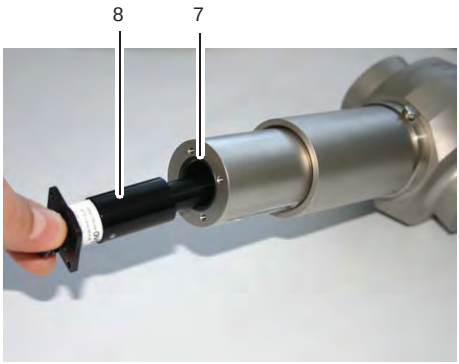

Fig. 11 Exchange of the lamp module

9.3 Exchange of detector module

The detector module may only be exchanged at the factory. Please contact your contact person at optek.

9.4 Return to operation after the exchange of lamp module and detector module

Before return to operation of the entire measuring system, undertake the following activities:

1. Switch on the converter.
2. Wait for approx. 15 minutes, until the converter has reached the working temperature.
3. Check the system's zero-point (see instruction manual of the converter).
4. Document your settings using the form (see instruction manual of the converter).
5. Check measuring results with regard to plausibility.
6. If settings and measuring results are correct, enable measuring.

9.5 Spare parts and accessories

9.5.1 Lamp modules

Tab. 6 Spare parts — lamp modules

Description	Name / type	Part number
Lamp modules*	Lamp module TF56-N	1426-3147-1501-01

* Recommended spare part for 2-3 years of operation.

9.5.2 Detector assemblies

Tab. 7 Spare parts — detector assemblies

Name / type	Part number
Detector assembly TF56-N	1421-4700-0000-00
Detector assembly TF56-HT-N	1421-4701-0000-00

9.5.3 Wavelength modules

Tab. 8 Spare parts — wavelength modules

Name / type	Part number
Wavelength module TF56-N	1430-3137-7300-00

9.5.4 Installation kits

Tab. 9 Spare parts — installation kits

Description	Name / type	Part number
Consisting of: 1 x (0217-0014-00) Klueber paste UH1 96-402 12 gr 2 x (0203-0016-02) O-ring 25.12 x 1.78 Viton 1 x (0203-0021-02) O-ring 50.52 x 1.78 Viton 2 x (0220-0019-00) Purge connection M5 2 x (0203-0001-02) O-ring 4.00 x 1.00 Viton	Installation Kit AF/TF	1201-3131-0004-00
Consisting of: 12 x (0220-0077-01) Screw M3 x 12 DIN 7985 12 x (0220-0011-01) Washer M3 DIN 7980 3 x (0203-0015-02) O-ring 21.95 x 1.78 Viton 1 x (0203-0018-02) O-ring 31.47 x 1.78 Viton	Installation Kit SS-Cable	1201-3131-0003-00

9.5.5 Gaskets (not wetted)

Tab. 10 Spare parts — gaskets (not wetted)

Description	Name / type	Part number
4 x (0203-0008-02) O-ring 10.10 x 1.60 Viton	O-ring 10.10 x 1.60 Viton	1203-0004-0008-02
4 x (0203-0015-02) O-ring 21.95 x 1.78 Viton	O-ring 21.95 x 1.78 Viton	1203-0004-0015-02
4 x (0203-0016-02) O-ring 25.12 x 1.78 Viton	O-ring 25.12 x 1.78 Viton	1203-0004-0016-02
4 x (0203-0018-02) O-ring 31.47 x 1.78 Viton	O-ring 31.47 x 1.78 Viton	1203-0004-0018-02
4 x (0203-0021-02) O-ring 50.52 x 1.78 Viton	O-ring 50.52 x 1.78 Viton	1203-0004-0021-02

9.5.6 Screw sets

Tab. 11 Spare parts — screw sets

Name / type	Part number
10 x (0220-0023-03) Screw M3 x 6 DIN 7985	1206-0010-0023-03

9.5.7 Accessories — cable sets plastic connector

*Tab. 12 Accessories — cable sets plastic connector**

Length	Name / type	Part number
2 m (7 ft.)	Cable Set AF26 002 m ST-1.5	2312-0115-0002-00
3 m (10 ft.)	Cable Set AF26 003 m ST-1.5	2312-0115-0003-00
5 m (16 ft.)	Cable Set AF26 005 m ST-1.5	2312-0115-0005-00
10 m (33 ft.)	Cable Set AF26 010 m ST-1.5	2312-0115-0010-00
15 m (49 ft.)	Cable Set AF26 015 m ST-1.5	2312-0115-0015-00
20 m (66 ft.)	Cable Set AF26 020 m ST-1.5	2312-0115-0020-00
25 m (82 ft.)	Cable Set AF26 025 m ST-1.5	2312-0115-0025-00
30 m (98 ft.)	Cable Set AF26 030 m ST-1.5	2312-0115-0030-00
35 m (115 ft.)	Cable Set AF26 035 m ST-1.5	2312-0115-0035-00
40 m (131 ft.)	Cable Set AF26 040 m ST-1.5	2312-0115-0040-00
45 m (148 ft.)	Cable Set AF26 045 m ST-1.5	2312-0115-0045-00
50 m (164 ft.)	Cable Set AF26 050 m ST-1.5	2312-0115-0050-00
60 m (197 ft.)	Cable Set AF26 060 m ST-1.5	2312-0115-0060-00
70 m (230 ft.)	Cable Set AF26 070 m ST-1.5	2312-0115-0070-00
80 m (262 ft.)	Cable Set AF26 080 m ST-1.5	2312-0115-0080-00
90 m (295 ft.)	Cable Set AF26 090 m ST-1.5	2312-0115-0090-00
100 m (328 ft.)	Cable Set AF26 100 m ST-1.5	2312-0115-0100-00

* Also applies to TF16 and TF56.

9.5.8 Accessories — cable sets SS plug protector (Installation Kit SS-Cable — PN: 1201-3131-0003-00 included)

Tab. 13 Accessories — cable sets SS plug protector (Installation Kit SS-Cable — PN: 1201-3131-0003-00 included)*

Length	Name / type	Part number
2 m (7 ft.)	Cable Set AF26 002 m SS-1.5	2312-0315-0002-00
3 m (10 ft.)	Cable Set AF26 003 m SS-1.5	2312-0315-0003-00
5 m (16 ft.)	Cable Set AF26 005 m SS-1.5	2312-0315-0005-00
10 m (33 ft.)	Cable Set AF26 010 m SS-1.5	2312-0315-0010-00
15 m (49 ft.)	Cable Set AF26 015 m SS-1.5	2312-0315-0015-00
20 m (66 ft.)	Cable Set AF26 020 m SS-1.5	2312-0315-0020-00
25 m (82 ft.)	Cable Set AF26 025 m SS-1.5	2312-0315-0025-00
30 m (98 ft.)	Cable Set AF26 030 m SS-1.5	2312-0315-0030-00
35 m (115 ft.)	Cable Set AF26 035 m SS-1.5	2312-0315-0035-00
40 m (131 ft.)	Cable Set AF26 040 m SS-1.5	2312-0315-0040-00
45 m (148 ft.)	Cable Set AF26 045 m SS-1.5	2312-0315-0045-00
50 m (164 ft.)	Cable Set AF26 050 m SS-1.5	2312-0315-0050-00
60 m (197 ft.)	Cable Set AF26 060 m SS-1.5	2312-0315-0060-00
70 m (230 ft.)	Cable Set AF26 070 m SS-1.5	2312-0315-0070-00
80 m (262 ft.)	Cable Set AF26 080 m SS-1.5	2312-0315-0080-00
90 m (295 ft.)	Cable Set AF26 090 m SS-1.5	2312-0315-0090-00
100 m (328 ft.)	Cable Set AF26 100 m SS-1.5	2312-0315-0100-00

* Also applies to TF16 and TF56.

10 Declaration of conformity

Declaration of conformity
in accordance with the

Directive 2004/108/EC relating to electromagnetic compatibility of 15 December 2004

and the

Directive 2006/95/EC relating to electrical equipment designed for use within certain voltage limits of 12 December 2006

Herewith we declare that the measuring systems

each comprising one converter of the series
X56 with X=1 or 5

and one sensor of the
AF56, AS56, TF56 series

have been developed, constructed and manufactured in conformity with the mentioned EC directives.

Harmonized standards applied:

- EN 61326-1:2006
- EN 61326-2-3:2006
- EN 61010-1:2001

Manufacturer: optek-Danulat GmbH, Emscherbruchallee 2, 45356 Essen, Germany

Essen, 2011/08/25

Dipl. Ing. Jürgen Danulat
General Manager

11 Contacts

For further help or information regarding your product or its application into your system please contact your local spirax sarco representative. Alternatively visit our international website, select your global location and search / request a visit or telephone call from a Spirax Sarco engineer.

www.spiraxsarco.com