

Manual

Version 09.04.2013

Turbidity sensors

MoniTurb-F

12° forward scattered light

MoniTurb-FS

combined 12° & 90° scattered light

Chemtronic Waltemode GmbH
Sales- & Service Partner for Your MONITEK Instruments

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Transportation Damages!



Please inspect the instrument immediately after receiving for potential shipping damages.
For any claims to the transportation insurance or warranty repair, it is absolutely required to notify transportation damages immediately after receiving the instrument. In case of obvious damages of the outer packaging, the carrier must give a receipt for this damage to make demands for the insurance. In case of a delayed announcement the insurance will not pay for damages and Chemtronic Waltemode GmbH will not assume liability for these damages.



**Manufacturer and owner of all rights model MoniTurb is
Galvanic Applied Sciences Inc., Lowell MA, USA**

Revised manual by Chemtronic Waltemode GmbH

Content

Transportation Damages!	2
Copyright.....	3
Non-warranty.....	3
Warranty conditions	3
Before installation and start-up	4
Installation guidelines	4
Safety instructions	5
For ALL chemical liquids	5
Electrical installation.....	5
Hazardous area.....	5
Maintenance.....	5
Operating the instrument with open enclosure	5
Improper installation / operation of the system.....	5
Storage	6
Transport damage	6
Shipment of the instrument.....	6
Principle of Measurement.....	7
The most common scattered light turbidity measuring methods are:.....	7
Installation Guidelines	11
Maintenance	12
Replacement of measurement lamp	12
Replacement of measurement lamp (EEx d IIC Version)	16
Replacement of gaskets.....	20
Spare Part List MoniTurb-F	24
Spare Part List MoniTurb-FS	26
Wiring Diagrams MoniTurb-F	28
Wiring Diagrams MoniTurb-FS.....	30
Dimensions	31
Technical Data / Data Sheet MoniTurb-F.....	36
Technical Data / Data Sheet MoniTurb-FS	37

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Non-warranty

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Chemtronic Waltemode GmbH is by no means liable for any consequential damages or miscellaneous damages, which occur during the use or storage of the system.

Some countries do not allow the limitation of liability, so that this exclusion is possibly not valid for you.

Warranty conditions

The warranty for this product takes place according to the legal provisions. As places of warranty we explicitly name Galvanic Applied Sciences USA, Inc. Lowell, MA (USA) or Chemtronic Waltemode GmbH, Monheim am Rhein. In case of warranty service at the customer site, we will charge additional expenses e.g. travel expenses, overnight cost, etc. Consumable parts as well as wearing parts e.g. lamps, gaskets, etc. are not covered by warranty.

Improper use, gross negligence, use of the system outside of the technical specifications, missing or improper maintenance will cause a loss of the warranty claim. Please pay attention to our general terms of contract.

Before installation and start-up

Installation guidelines



Danger: Exceeding the specified maximum pressure and / or the specified maximum temperature will cause a very high safety risk.



Please read the additional safety instructions before installation and start-up.

- The sensor is manufactured according to the customer's application (variable line size, flange type, cleaning jets, gasket material etc.).
- It is recommended to run the calibration of the system before installation of the sensor.
- The location / installation of the sensor should be in a vertical standpipe.
- The process pressure should never exceed the specification of the delivered sensor.
- The process temperature should never exceed the specification of the delivered sensor.
- Avoid air and gas bubbles inside the sensor, they cause disturbances. Air and gas bubbles will cause noise and drift of the measurement signal. (The air bubbles are not expected at pressures upwards of 2 bar in aqueous solutions).
- In case the process temperature should fall under the dew point or rise above 85 °C purge the sensor optic housings with dry instrument air (approx. 10 l/h). Condensed water and excessive temperatures can damage the sensor and cause inaccurate measurements.
- Due to potential noise problems it is recommended not to extend the sensor cables.
- Due to potential noise problems use original cables and parts only.
- In case the optional cleaning jets are being used, make sure the pressure of the cleaning fluid is at least 50% higher than the process pressure.

Safety instructions

Pay attention to the following general safety instructions during use and operation of the system. Ignoring these instructions or special warnings inside of this manual can damage the sensor, cause inaccurate measurements, and possibly result in unsafe installations. Chemtronic Waltemode GmbH will not take any responsibility for consequences arising from ignoring the safety instructions and warnings.

For ALL chemical liquids

The reagents or standards may be toxic or otherwise harmful to human health. Observe appropriate precautions when handling and disposing the reagents. Review the appropriate published material safety data sheets regarding the safe handling and disposal of all reagents or standards.

Electrical installation

Qualified technical personnel must install the electrical installation of the system.

Hazardous area

DO NOT INSTALL the system in hazardous area without the optional Ex-proof equipment. Operation of non Ex- proof systems in hazardous area will cause a high risk. Please check separate Ex-documents and stickers on the sensor.



Using the system in hazardous areas (Ex Zone I) will only be safe with the installation of the optional special Ex-proof designs including all required certifications.



To guarantee the safety in Ex-zone II, a revision of the restricted breathing enclosure of the sensor has to be done every 18 month.

Maintenance

Always disconnect the instrument from power during maintenance, replacement of components, installation of additional components or any other operations at the open instrument.

Only qualified technical personnel must perform this work.

Operating the instrument with open enclosure

Only qualified technical personnel should operate the instrument when the enclosure is open (e.g. during calibration procedure). Be careful that no moisture enters the enclosure.



Some components inside the instrument are energized with voltages, which can cause lethal shocks in case of contact. Be careful during installation, handling and operation of the instrument.



Improper installation / operation of the system

Warranty is void if the system is installed improperly, handled improperly, used outside of the technical specifications (of the instrument), or damaged by gross negligence.

Storage

Please inspect the instrument immediately after receiving for potential shipping damages.

If the instrument has already been unpacked for inspection or testing, or if the instrument has been removed from the process and it is not to be installed or reinstalled for more than 1 day, the following procedure should be observed:

1. If the instrument has been in service, the wetted portion should be thoroughly cleaned (typically with clean water) and then thoroughly dried.
2. The instrument should be placed in the original packing material.
In case the original packing material is not available place the instrument in a sealed heavy plastic bag with a desiccant added to assure clean dry storage.
3. The instrument should then be stored in a protected area until time of installation.

Transport damage

Please inspect the instrument immediately after receiving for potential shipping damages.

For any claims to the transportation insurance or warranty repair, it is absolutely required to notify transportation damages immediately after receiving the instrument. In case of obvious damages of the outer packaging, the carrier must give a receipt for this damage to make demands for the insurance.

In case of a delayed announcement the insurance will not pay for damages and Chemtronic Waltemode GmbH will not assume liability for these damages.

Shipment of the instrument

Please clean the instrument carefully before shipment (e.g. for revision / repair). Please use fixed packaging to protect the instrument against any shipping damages.

If at all possible the original packaging should be used.

Principle of Measurement

What does turbidity mean?

Turbidity is an optical impression, which describes the characteristic of a transparent product, to scatter light. A focused light beam will be attenuated and scattered in hazy products, so that this product can become practically opaque in bigger layers.

What causes turbidity?

Turbidity is caused by particles in transparent products. A particle is defined as something with a different refractive index as the carrier product. Some examples of particles are minerals, yeast cells, metals, oil drops in water, milk in water, gas bubbles and aerosoles.

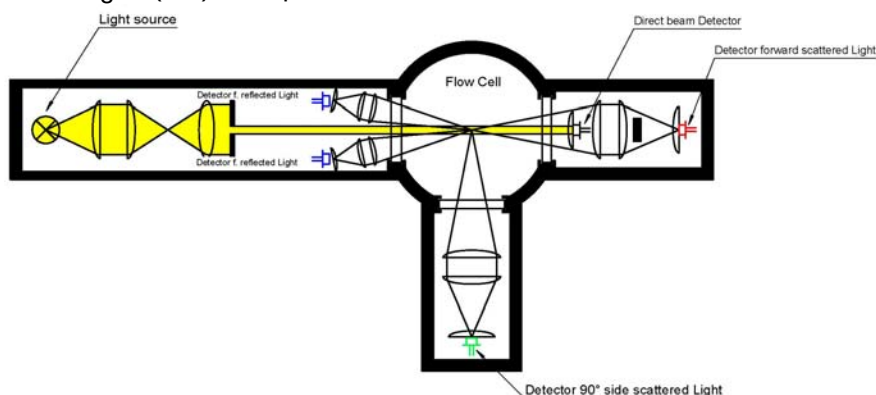
Measurement of turbidity

Turbidity is not a clearly defined magnitude like e.g. temperature or pressure. Turbidity is a subjective impression. For this reason turbidity measurement systems will be typically calibrated by using a comparison's standard such as Formazin and Diatomaceous Earth.

Measuring methods

The most common scattered light turbidity measuring methods are:

- Side scattering (90°) The detector is located in a right angle (90°) to the light beam
- Forward scattering (12°) The position of the detector is 12° shifted to the axis of light beam



As shown in the figure above, an intense collimated beam of light is projected through a sample contained within the sensor. The intensity of this light beam is measured by the direct beam detector, located opposite to the light source.

The light, scattered by particles inside the sample is measured by a scatter light detector. Depending on sensor specification, this detector can be located 12° or 90°, displaced from the direct light axis.

The signals caused by scattered and direct light will be amplified and processed by the electronics. The results displayed, is the turbidity value.

$$\frac{\text{Scattered light signal}}{\text{Direct light signal}} = \text{Turbidity}$$

The particles inside the liquid flow decrease the intensity of direct light, and increase the intensity of the scattered light, i. e. the turbidity rises.

Colour decreases the intensity of direct and scattered light in same ratio i. e. the turbidity value is constant.

Lamp ageing and window coatings are compensated as well by this ratio.

Comparison the different measurement methods

The two different measurement methods (12° forward scattering / 90° side scattering) are not comparable. Even in if you use the same calibration standard to calibrate the systems, different samples will show you different measurement results.

This deviations of the results, is caused by the different particle size distribution inside different samples. The measurement methods will respond different, depending on current particle distribution inside the actual sample.

Please take notice:

When comparing measurement results. The same methods must be compared to one another. For example, 90° vs. 90°, 12° vs. 12°. Never 90° vs. 12°.

Context between particle size, measurement method and measurement results

The most common Calibration standard for turbidity is based on Formazin liquid.

When using Formazin as calibration standard, defined Formazin suspensions have to show identical measurement results with all different methods 12° and 90°.

During observation of a real sample, such as filtrated beer, the different methods will show different measurement results. The measurement results of the 90° side scatter method are typically by factor 3 to 10 above the measurement results of the 12° forward scatter method.

There are typically a lot of small particles left inside the filtrated beer, such as proteins, etc. This colloidal turbidity will be overvalued with the 90° method, due to the fact that this method is more affected by the quantity of the particles as by particle size. The 12° forward scatter method is affected more by particle size.

90° method: small particles and large particles will cause comparable scatter light intensities.

12° method: small particles / low scatter light intensity; large particles / high scatter light intensity.

At a particle size of approx. 0.3 µm (Formazin) both methods will show approx. equal scatter light intensities.

The combination of both measurement results informs about the tendency of the particle size distribution.

Measurement value 90°, above the measurement value 12°, average particle size smaller as 0,3 µm.

Measurement value 90°, below the measurement value 12°, average particle size larger as 0,3 µm.

particle size	result 90° scatter light	result 12° scatter
larger 0,3 µm	lower value	higher value
smaller 0,3 µm	higher value	lower value

Application Example

Example filtration control:

90° side scatter:

Small particles (e.g. proteins, colloides, etc.) within the filtrated beer will be monitored perfectly by the using the 90° instrument. A filter breakthrough will be monitored delayed with this technology due to the fact that this is typically a slow process at witch you will see first just a few large particles within the filtrate. The total amount of particles will be raised minimally; therefore the measurement value will be raised minimal as well.

12° forward scatter:

Small particles (e.g. proteins, colloides, etc.) within the filtrated beer can be monitored well by the using the 12° instrument. The beginning of a filter breakthrough will be monitored immediately due to the large particles (e.g. DE, yeast cells, etc.) within the filtrate. The few large particles will be monitored immediately and the measurement value will rise sharply. This is also a mass related measurement principle which will allow calibration in mg/l if necessary.

Typical Measuring units

ppm:	Parts per million	FNU ¹ :	Formazin nephelometric unit
FTU:	Formazin Turbidity Unit	mg/l:	Milligram per liter
TEF:	Trübungseinheiten Formazin (German for FTU)	gr/l:	Gram per liter
EBC:	European brewery convention	% TS:	Percent total solids
NTU ¹ :	Nephelometric turbidity unit		

The dependencies on the different measuring units

1 FTU = 1 TEF = 1 NTU¹ = 1 FNU¹ = 0,25 EBC

¹ Nephelometry describes the method of side scatter turbidity measurements, these units are used at 90° side scatter turbidimeter only.

Based on comparisons measurements, by using a 12° forward measurement system we have found the following dependencies.

1 FTU = 1 TEF = 0,25 EBC = 2,05ppm = 2,05 mg/l = 0,00205 g/l = 0,00000205 % TS

* At a specific particle weight of 1 kg/dm, 1mg/l particles in 1 kg of water will correspond to 1ppm.

Typical ranges

The original design of scatter light turbidimeter was used for the detection of low turbidities. The resolution of these instruments is suited easily in ranges lower as 0.1ppm (approx. 0.05 TEF / FTU / FNU / NTU or approx. 0.01EBC) and better. The maximum range is in ideal case lower as 200ppm, but there are as well systems available with a range of more as 8000ppm.

Selecting your measuring Method

The 12° forward scatter method:

The forward scatter method is typically used at low turbidities and produces nearly mass related measurement results. Main applications are quality control, filtration control, oil in water, etc.

The 90° side scatter method:

The side scatter method is typically as well used at low turbidities. This principle of measurement will produce measurement results related to the number of particles inside the product.

The main application is the observation of small, well distributed particles e.g. beyond a filter. The second typical application is the monitoring of potable water as well as waste water according ISO7027 or according to the US- FDA requirements.

The measurement results of a 90° scatter light system has to be handled with care, due to the fact, that a turbidity caused by many large particles can show a similar measurement result as a turbidity caused by the same quantity of small particles.

The combined 12°/ 90° forward- / side- scatter method:

The 12° measurement method shows higher sensitivity with large particles. The 90° measurement method shows higher sensitivity with small particles. The most common application for the combined systems is filtration control. A filter break through is recognized early, with the 12° forward scattered instrument. Some particles inside the filtrate will raise the 12° measurement value significant.

The 90° side scattered method shows only a small increase of the measurement values in case some big particles pass the filter. A filter break through would be shown very late, due to the fact that the number of particles will not raise significant in case the filter starts to break.

Please take notice:

The combination of forward- and side- scatter turbidity measurement does not replace a particle size analysis, but it can provide a tendency of the particle size distribution.

Maintenance

Replacement of measurement lamp



Ignoring of the following hints will cause a loss of warranty



Notice:

- Qualified technical personnel must perform repair and maintenance.
- Before beginning any work the sensor must be cleaned and flushed thoroughly. Depending on customers' application product residues can be very dangerous (aggressive, poisonous). Please handle the system very careful due to possible leakage etc.
- Avoid pulling and twisting of the lamp cable.
- Avoid applying excessive force during assembling and disassembling of the sensor.
- Screw in all bolts and cable glands stalwart only.
- Please work carefully during the replacement of the measurement lamp.
- The lamp replacement should be done in a dry and clean location, to protect the optical components from dirt.
- Please be sure that no dust or other particles penetrates into the optical assembly.
- Do not touch the lenses.
- In case of dirty component please clean carefully by using fresh water and a cloth (lint-free), dry all components by using instrument air.
- Use suitable tools only.

Required tools:

- Special Monitek lamp spanner wrench
- 2 x open end wrench - 22 mm
- Flat blade screwdriver - 2 mm
- Phillips screwdriver – medium size
- Hexagonal spanner – 1.5 mm
- Hexagonal spanner – 2.5 mm
- Needle nose pliers – small
- Small bowl to drop components



- Please loosen the upper hexagonal nut of the cable gland by using a 22 mm open-end wrench. Use the second 22 mm open-end wrench to hold the lower hexagonal nut of the cable gland in position. This will assure that you do not twist the lamp cable.

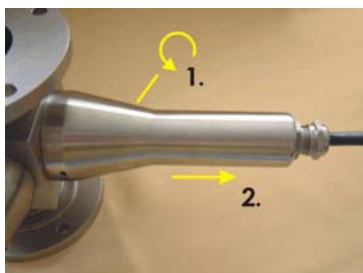
Attention!

The lamp cable is marked with "lamp"



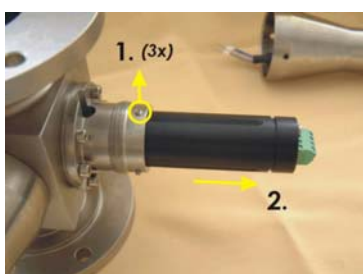
- Remove Allen screws and / or air purge connectors.





- Screw off lamp arm.
- Shift the lamp arm until you have access to the electrical/cable connections.

- Loosen all wires of the lamp cable by using the 2 mm flat blade screwdriver.
- Remove lamp arm and cable carefully.

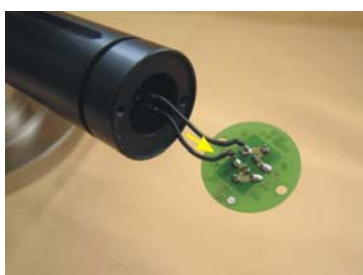


- Loosen Allen screws (3x) by using the 1.5 mm hexagonal spanner.
- Remove lamp assembly carefully.

Attention!

We recommend removing the lamp assembly and performing the lamp replacement procedure in a dry and clean location.

- Remove screws by using the medium size Phillips screwdriver.



- Carefully remove the printed circuit board including cable and socket from the measurement lamp.

- Remove screw joint carefully by using the special Monitek lamp spanner wrench.





- Pull out the measurement lamp carefully by using the small needle nose pliers.

Attention!

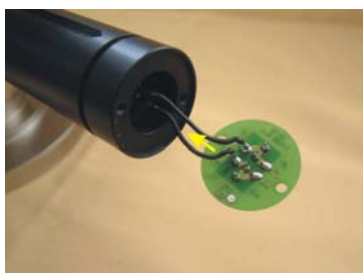
Avoid extreme force in pulling out the lamp.

- Adjust the pins of the new measurement lamp before installation by using the lamp socket. This will allow an easy final assembly of the components.



- Remove plug from the measurement lamp and push the lamp into the barrel.

- Tighten the packing nut by using special Monitek lamp spanner wrench.



- Push the lamp connection plug carefully onto the contact pins of the lamp.

- Put the printed circuit board to the barrel and screw on by using the medium sized Phillips screwdriver.



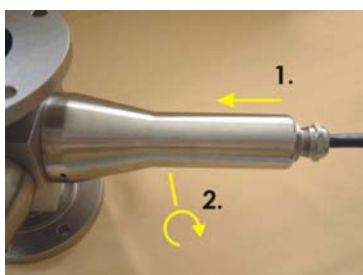
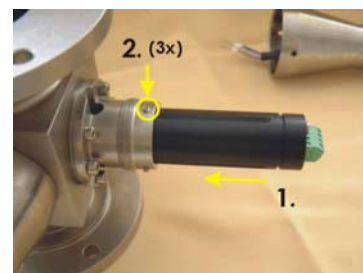


- Reconnect the wires of the lamp cable and perform a lamp test.

- Push the optical assembly into the holder.
- Tighten Allen screws (3x)

Attention!

Please pay attention to the position of the optical assembly. The three grooves on the outside of the barrel must be in line with the three Allen screws.



- Push lamp arm to the thread.
- Tighten lamp arm.

- Tighten cable gland



- Screw in Allen screws and / or air purge connectors
- Functional test and eventual calibration.

Replacement of measurement lamp (EEx d IIC Version)

Please take notice to the introduction of this chapter (page 7)!

- Loosen cable gland by using a spanner wrench.



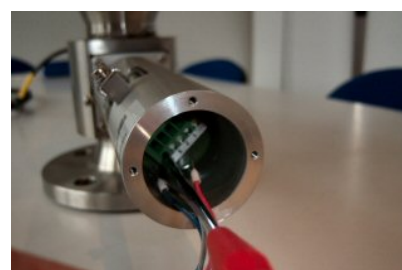
- Loosen the cable gland completely.

- Remove the four screws of the back plate by using a hexagonal spanner.



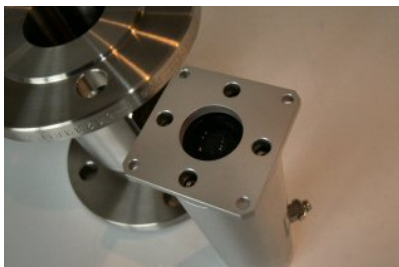
- Open the back plate.

- Disconnect wires by using a screw driver.



- Remove the four screws of the mounting flange by using a hexagonal spanner.

- Remove lamp enclosure from the flow cell.



- Remove the four screws located at the surface of the mounting flange by using a hexagonal spanner.

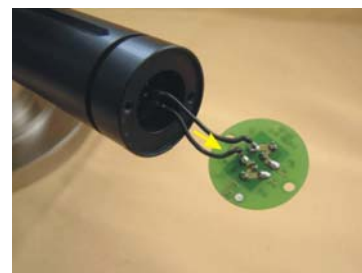


- Open the lamp enclosure and disconnect the wires by using a small screw driver.



- Loosen the two screws located at the connection plate of the lamp optic.

- Remove cable and plate.



- Loosen the pressing nut by using the Monitek lamp tool.

Remove measurement lamp carefully by using a needle nose plier.

Take notice!
Do not take excessive force to optical components!



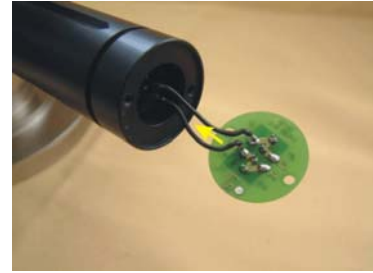
- Adjust the pins of the new measurement lamp before installation by using the lamp socket. This will allow an easy final assembly of the components.

- Disconnect the lamp socket and insert the lamp into the optical assembly.



- Tighten the packing nut by using special Monitek lamp spanner wrench.

- Push the lamp connection plug carefully onto the contact pins of the lamp.



- Reassemble the connection plate of the lamp optic.

Reassemble the sensor.

Replacement of gaskets



Ignoring of the following hints will cause a loss of warranty



The interval to replace the gaskets depends on the specific application.

The replacement cycle depends on process pressure, process temperature, sealing material and product characteristics. In worst case (high temperature, high pressure, aggressive medium) the gaskets must be replaced every month. Under normal conditions the gaskets should be replaced every year. The maximum lifetime in easy applications can go up to 2 years.

We strictly recommend that the customer establishes a maintenance interval based on local conditions. If you have any questions or if you require more information contact Chemtronic Waltemode GmbH.

Notice:

- Qualified technical personnel must perform repair and maintenance.
- Before beginning any work the sensor must be cleaned and flushed thoroughly. Depending on customers' application product residues can be very dangerous (aggressive, poisonous). Please handle the system very carefully due to possible leakage etc.
- Avoid pulling and twisting of the lamp cable.
- Avoid applying excessive force during assembling and disassembling of the sensor.
- Screw in all bolts and cable glands stalwart only.
- Please work carefully during the replacement of the measurement gaskets.
- The lamp replacement should be done in a dry and clean location, to protect the optical components from dirt.
- Please be sure that no dust or other particles penetrates into the optical assembly.
- Do not touch the lenses.
- In case of any dirty component please clean carefully by using fresh water and a cloth (lint-free), dry all components by using instrument air.
- Use suitable tools only.

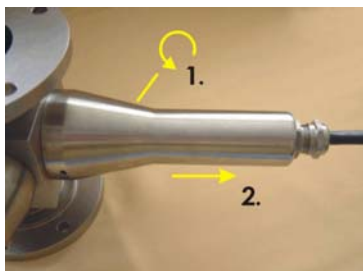
Required tools:

- 2 x open end wrench - 22 mm
- Flat blade screwdriver - 2 mm
- Hexagonal spanner – 1.5 mm
- Hexagonal spanner – 2.5 mm
- Hexagonal spanner – 3.0 mm
- Small bowl to drop components



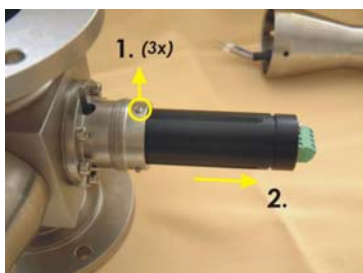
- Please loosen the upper hexagonal nut of the cable gland by using a 22 mm open-end wrench. Use the second 22 mm open-end wrench to hold the lower hexagonal nut of the cable gland in position. This will assure that you do not twist the lamp cable.

- Remove Allen screws and / or air purge connectors.



- Screw off lamp / detector arm.
- Shift the lamp / detector arm until you have access to the electrical/cable connections.

- Loosen all wires of the lamp cable by using the 2 mm flat blade screwdriver.
- Remove lamp arm and cable carefully.



- Loosen Allen screws (3x) by using the 1,5 mm hexagonal spanner.
- Remove lamp assembly carefully.

- Loosen Allen screws (6pc. M4 x 16 [DIN 912]) by using the 3 mm hexagonal spanner.



- Carefully remove sapphire window out of the window holder.

Attention!

If the window sticks in the holder, remove the holder first after that carefully push the window out of it's sealing.

- Remove the window holder carefully out of the flow cell.

Attention!

If the holder sticks inside the flow cell, please use the mounting screws to push the holder out of its sealing. Please make sure that the holder does not tilt during this procedure. Do not apply excessive force during this procedure; be careful not to damage the sealing surfaces for the holder or flow cell.



- Replace the outer O-ring of the holder.

- Insert the window holder including the new O-ring into the flow cell.
- Adjust the holder so that the mounting holes of the plate match the mounting threads of the flow cell.

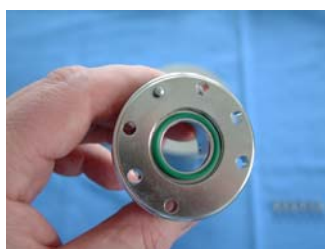
Attention!

Please clean the sealing surfaces carefully before reassembling the unit. If necessary use lubrication grease to guarantee proper sealing. Do not damage or shear the O-rings.



- Put the new O-ring into the groove of the window holder.

- Put the window into the holder.



- Put a new O-ring into the optic holder.

Attention!

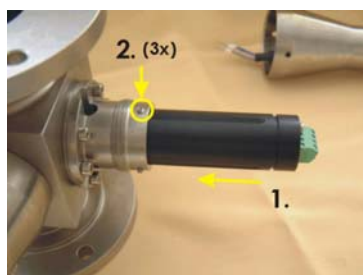
This O-ring does not have a sealing function; it protects the window against damages.

- Put the optic holder over the window and screw it by using the mounting screws.

Attention!

Please make sure that the O-rings stay inside their grooves during this procedure. We strictly recommend a 30-minute pressure test under process conditions (without the optical components) to guarantee proper sealing. This procedure will avoid possible damages in case of leakage.



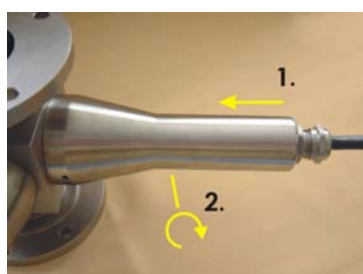


- Push the optical assembly into the holder.
- Tighten Allen screws (3x)

Attention!

Please pay attention to the position of the optical assembly. The three grooves on the outside of the barrel must be in line with the three Allen screws.

- Reconnect the wires of lamp / detector cable and perform a lamp test.



- Push lamp / detector arm to the thread.
- Tighten lamp / detector arm

- Tighten cable gland



- Screw in Allen screws and / or air purge connectors
- Functional test and eventual calibration.

Spare Part List MoniTurb-F

Chemtronic Waltemode GmbH Tel.: +49 - (0)2173/57007
 Niederstr. 14 Fax: +49 - (0)2173/56007
 40789 Monheim E-mail: info@chemtronic-gmbh.de
 Home: www.chemtronic-gmbh.de



Ersatzteilpreisliste / Price list spare-parts

27.04.2011

Pos.	Qty required	Article-No.	Article-Description
001	1	S-0000-0003-00	Stückliste MoniTurb-F
002	2	C208-3007-00	O-Ring (MT, MS • EPDM • 33x2)
003	2	C208-3007-01	O-Ring (MT, MS • VITON • 33x2)
004	2	C208-3007-02	O-Ring (MT, MS • KALREZ • 33x2)
005	2	2001-0925-01-1	Fenstereinsatz - Standard (MT, MS)
006	2	C208-3006-00	O-Ring (MT, MS • EPDM • 20x2)
007	2	C208-3006-01	O-Ring (MT, MS • VITON • 20x2)
008	2	C208-3006-02	O-Ring (MT, MS • KALREZ • 20x2)
009	2	2001-1221-01	Messfenster / measuring window (Saphir 7,0mm) - (MT, MS)
010	2	C208-3008-01	O-Ring - GRÜN (MT, MS • VITON-G • 20x2)
011	2	2001-0911-19-1	Optikhalterung m. Luftanschl./Optic bracket w. air purge
012	2	2001-0911-19-2	Optikhalterung o. Luftanschl./Optic bracket w/o air purge
013	1	2001-1301-01	Klemmenanschlußplatine (Detektor)/Connection board (detector)
014	1	2001-1301-02	Klemmenanschlußplatine (Lampe)/Connection board (lamp)
015	1	2001-1004-01	Messarmgehäuse - Sensor housing Standard (MT, MS)
016	1	C305-1034-00	PG-Verschraubung VA/Cable gland 316SS (PG11)
017	1	C402-1001-00	Messlampe / measuring lamp - (MT, MS)
018	2	C305-1002-00	Luftanschluss 90°/Connector air purge 90°
019	1	2001-1030-02	Lampenschlüssel / lamp tool (MT, MS)
020	2	2001-1017-01	Flachdichtung Ex / Flat gasket Ex (MT, MS)
021	2	2001-1009-01	Adapterplatte(Ex) / Adapter plate (Ex) - (MS, MT)
022	2	2001-1018-01	Platte für Luftanschluß Ex / plate for air purge conn. Ex (MT, MS)
023	1	C608-1002-00	Reinigungs-sonde, 120mm lang / Cleanig probe 120mm length (MT, MS)
024	1	C608-1003-00	Reinigungs-sonde, 80mm lang / Cleanig probe 80mm length (MT, MS)
025	1	2001-1000-01	Verschraubung Reinigungsdüse (1/4" MNPT • MT, MS)
026	1	2001-0503-00	Baugruppe Messlampe / Kit lamp assy. (MTF, MTS, MTFS)
027	1	2001-0504-00	Baugruppe 12° Detektor / Kit 12° detector assy. (MTF, MTS, MTFS)
028	1	C604-1002-00	Lampenkabel / lamp cable - (MT, MS)
029	1	C604-1001-00	Detektorkabel / detector cable - (MT, MS)
030	2	C208-3009-01	O-Ring - GRÜN (MT, MS • VITON-G • 50x2)

Please take notice: Minimum order EUR 100,00

Bitte beachten Sie: Mindestbestellsumme EUR 100,00

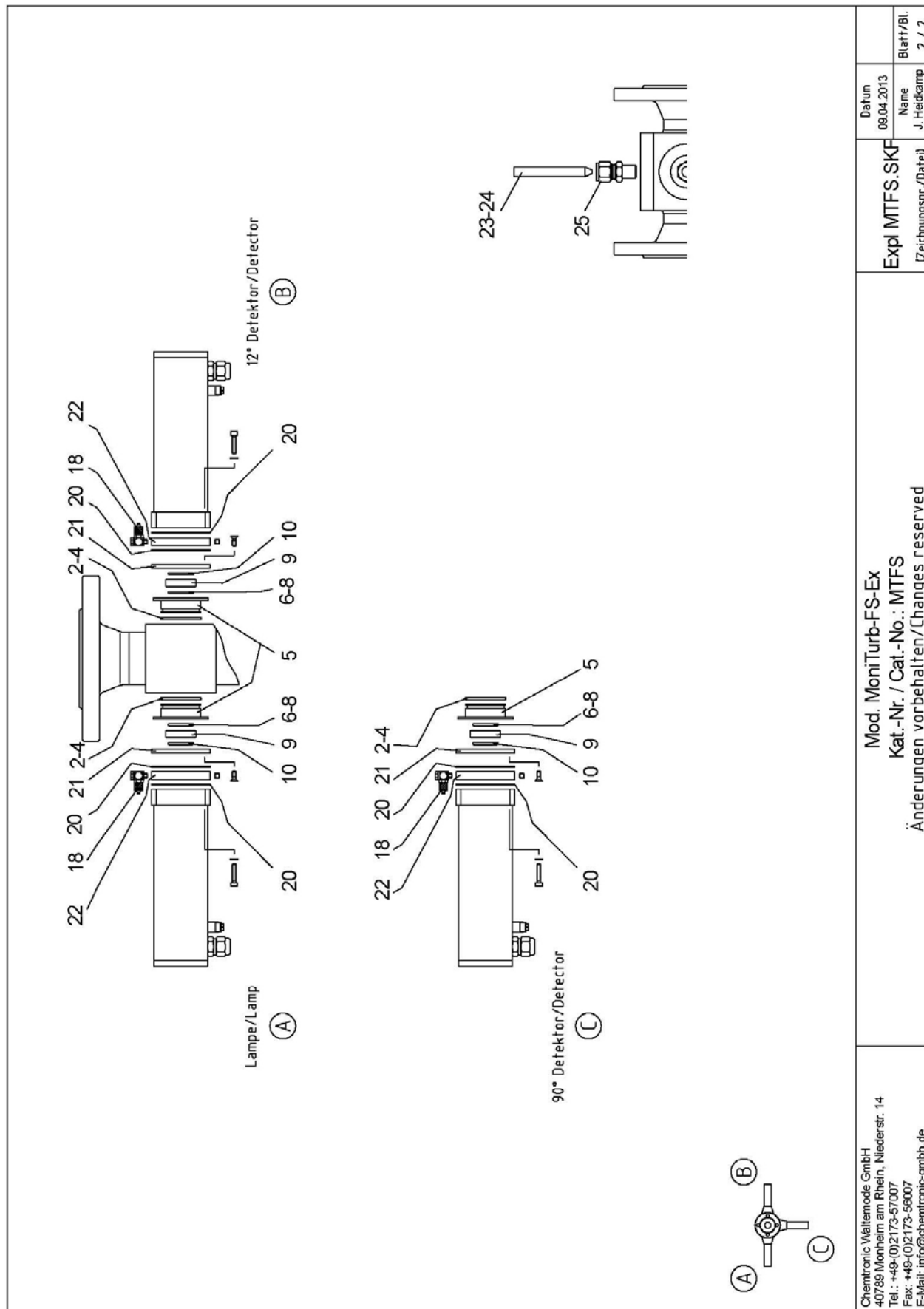
Die Liste enthält die gängigsten Ersatzteile für nicht gelistete Teile kontaktieren Sie Chemtronic / This list contains the most common spare parts, for non listed parts contact Chemtronic.

Site of Company: 40213 Düsseldorf, Amtsgericht Düsseldorf, HRB 45293

Seite Nr. Seite 1

Spare Part List MoniTurb-FS

	Chemtronic Waltemode GmbH 40789 Monheim am Rhein, Niederstr. 14 Tel.: +49-(0)2173-57007 Fax: +49-(0)2173-56007 E-Mail: info@chemtronic-gmbh.de Mod. MoniTurb-FS Kat.-Nr. / Cat.-No.: MTF5 Änderungen vorbehalten/Changes reserved Expl MTF5.SKF (Zeichnungsnr./Datei) Datum 09.04.2013 Name J. Heidkamp Blatt/Bl. 1 / 2
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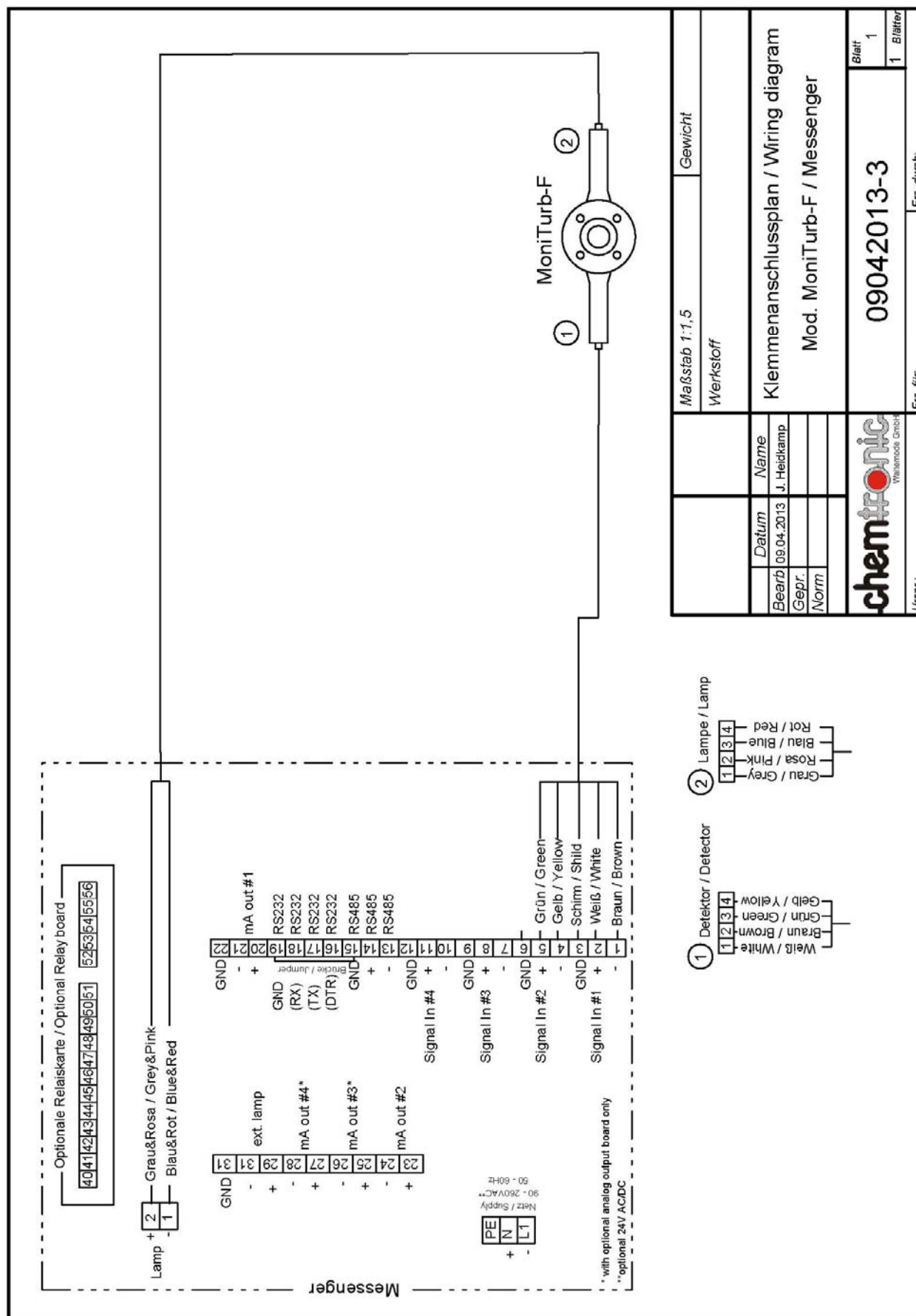
Chemtronic Waltemode GmbH
40789 Monheim am Rhein, Niederstr. 14
Tel.: +49-(0)2173-57007
Fax: +49-(0)2173-59007
E-Mail: info@chemtronic-gmbh.de

Mod. MoniTurb-FS-Ex
Kat.-Nr. / Cat.-No.: MTFS
Änderungen vorbehalten/Changes reserved

Expl MTFS.SKF
(Zeichnungsnr./Datei)

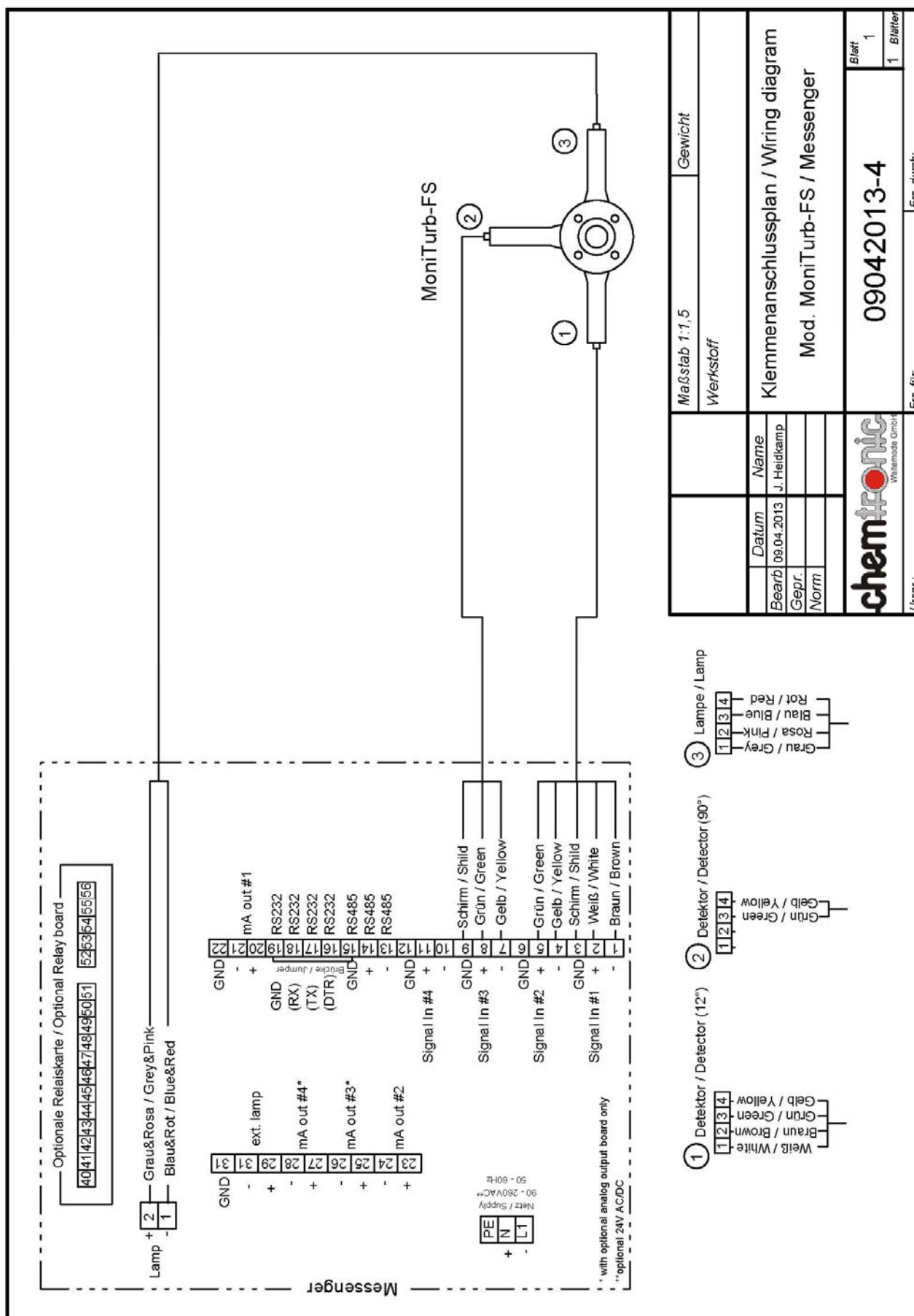
Datum
09.04.2013
Name
J. Heidkamp
Blatt/Bi.
2 / 2

Wiring Diagrams MoniTurb-F



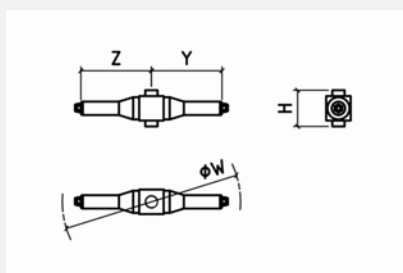
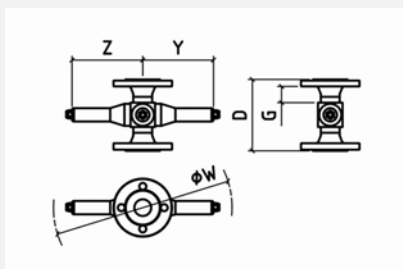


Wiring Diagrams MoniTurb-FS

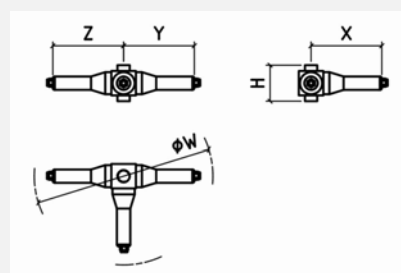
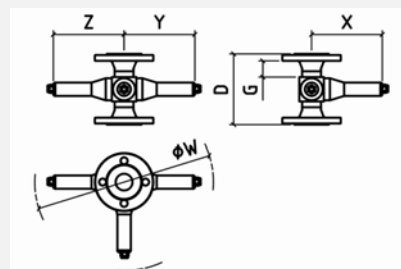


Dimensions

MoniTurb-F



MoniTurb-S und/and MoniTurb-FS



alle Angaben in mm/all dimensions in mm • Änderungen vorbehalten/Changes reserved

Flansch/Flange:

DIN 2632/PN 10 und/and DIN 2633/PN 16

± 1 mm	Z	Y	X	D	W
DN 25	184	184	184	169	800
DN 32				173	
DN 40				177	
DN 50				183	
DN 65	193	193	193	180	900
DN 80	199	199	199	190	
DN 100	212	212	212	194	
DN 125	223	223	223	200	
DN 150	238	238	238	200	1000

Flansch/Flange:

DIN 2634/PN 25 und/and DIN 2635/PN 40

± 1 mm	Z	Y	X	D	W
DN 25	184	184	184	173	800
DN 32				177	
DN 40				183	
DN 50				189	
DN 65	193	193	193	194	900
DN 80	199	199	199	206	
DN 100	212	212	212	220	
DN 125	223	223	223	226	
DN 150	238	238	238	240	1000

Flansch/Flange:

ANSI B 16.5 / 150 lb in²

± 1 mm	Z	Y	X	D	W
1"	184	184	184	204,2	800
1 ¼"				207,4	
1 ½"				217,0	
2"				220,0	
2 ½"	191	191	191	229,8	900
3"	199	199	199	229,8	
4"	212	212	212	242,4	
5"	223	223	223	267,8	
6"	238	238	238	267,8	1000

Flansch/Flange:

ANSI B 16.5 / 300 lb in²

± 1 mm	Z	Y	X	D	W
1"	184	184	184	217,0	800
1 ¼"				223,0	
1 ½"				229,6	
2"				232,8	
2 ½"	191	191	191	242,4	900
3"	199	199	199	248,4	
4"	212	212	212	261,8	
5"	223	223	223	287,2	
6"	238	238	238	287,2	1000

Flansch/Flange:

ANSI B 16.5 / 400 lb in²

± 1 mm	Z	Y	X	D	W
1"	184	184	184	229,8	800
1 ¼"				238,8	
1 ½"				245,6	
2"				252,2	
2 ½"	191	191	191	261,2	900
3"	199	199	199	268,0	
4"	212	212	212	280,6	
5"	223	223	223	306,0	
6"	238	238	238	309,0	1000

Flansch/Flange:

ANSI B 16.5 / 600 lb in²

± 1 mm	Z	Y	X	D	W
1"	184	184	184	229,8	800
1 ¼"				238,8	
1 ½"				245,6	
2"				252,2	
2 ½"	191	191	191	261,2	900
3"	199	199	199	268,0	
4"	212	212	212	306,0	
5"	223	223	223	331,4	
6"	238	238	238	337,4	1000

Milchgewinde/Milk fitting:

DIN 11851

± 1 mm	Z	Y	X	W
DN 25	184	184	184	800
DN 32				
DN 40				
DN 50				
DN 65	193	193	193	900
DN 80	199	199	199	
DN 100	212	212	212	
DN 125	232	232	232	
DN 150	238	238	238	1000

Milchgewinde/Milk fitting:

± 1 mm	Z	Y	X	W
1"	184	184	184	800
1 ¼"				
1 ½"				
2"				
2 ½"	191	191	191	900
3"	199	199	199	
4"	212	212	212	
5"	nicht auswählbar / not available			
6"				

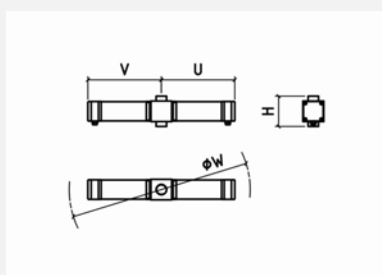
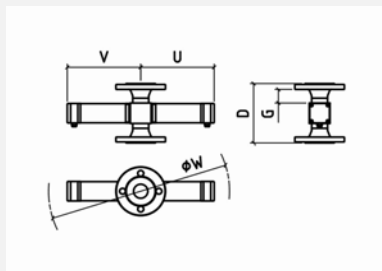
APV:

± 1 mm	Z	Y	X	D	W
DN 25	184	184	184	141	800
DN 32	nicht auswählbar / not available				
DN 40	184	184	184	141	800
DN 50				141	
DN 65	193	193	193	138	
DN 80	199	199	199	138	900
DN 100	212	212	212	138	
DN 125	232	232	232	144	
DN 150	238	238	238	144	1000

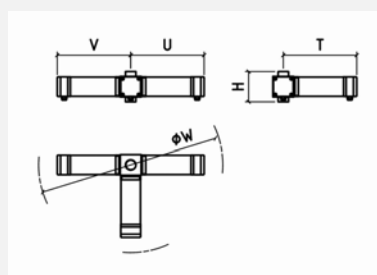
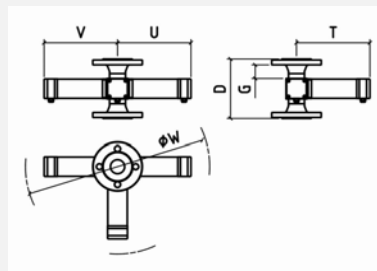
NPT:

± 1 mm	Z	Y	X	H	W
1"	184	184	184	93	800

MoniTurb-F (Ex-Version)



MoniTurb-S und/and -FS (Ex-Version)



alle Angaben in mm/all dimensions in mm • Änderungen vorbehalten/Changes reserved

Flansch/Flange:

DIN 2632/PN 10 und/and DIN 2633/PN 16

± 1 mm	V	U	T	D	W
DN 25	226	226	226	169	800
DN 32				173	
DN 40				177	
DN 50				183	
DN 65	235	235	235	180	900
DN 80	241	241	241	190	
DN 100	254	254	254	194	
DN 125	265	265	265	200	
DN 150	280	280	280	200	1000

Flansch/Flange:

DIN 2634/PN 25 und/and DIN 2635/PN 40

± 1 mm	V	U	T	D	W
DN 25	226	226	226	173	800
DN 32				177	
DN 40				183	
DN 50				189	
DN 65	235	235	235	194	900
DN 80	241	241	241	206	
DN 100	254	254	254	220	
DN 125	265	265	265	226	
DN 150	280	280	280	240	1000

Flansch/Flange:

ANSI B 16.5 / 150 lb in²

± 1 mm	V	U	T	D	W
1"	226	226	226	204,2	800
1 ¼"				207,4	
1 ½"				217,0	
2"				220,0	
2 ½"	233	233	233	229,8	900
3"	241	241	241	229,8	
4"	254	254	254	242,4	
5"	265	265	265	267,8	
6"	280	280	280	267,8	1000

Flansch/Flange:

ANSI B 16.5 / 300 lb in²

± 1 mm	V	U	T	D	W
1"	226	226	226	217,0	800
1 ¼"				223,0	
1 ½"				229,6	
2"				232,8	
2 ½"	233	233	233	242,4	900
3"	241	241	241	248,4	
4"	254	254	254	261,8	
5"	265	265	265	287,2	
6"	280	280	280	287,2	1000

Flansch/Flange:

ANSI B 16.5 / 400 lb in²

± 1 mm	V	U	T	D	W
1"	226	226	226	229,8	800
1 ¼"				238,8	
1 ½"				245,6	
2"				252,2	
2 ½"	233	233	233	261,2	900
3"	241	241	241	268,0	
4"	254	254	254	280,6	
5"	265	265	265	306,0	
6"	280	280	280	309,0	1000

Flansch/Flange:

ANSI B 16.5 / 600 lb in²

± 1 mm	V	U	T	D	W
1"	226	226	226	229,8	800
1 ¼"				238,8	
1 ½"				245,6	
2"				252,2	
2 ½"	233	233	233	261,2	900
3"	241	241	241	268,0	
4"	254	254	254	306,0	
5"	265	265	265	331,4	
6"	280	280	280	337,4	1000

Milchgewinde/Milk fitting:

DIN 11851

± 1 mm	V	U	T	D	W
DN 25	226	226	226	151	800
DN 32				157	
DN 40				159	
DN 50				163	
DN 65	235	235	235	170	900
DN 80	241	241	241	180	
DN 100	254	254	254	198	
DN 125	265	265	265	182	
DN 150	280	280	280	190	1000

Milchgewinde/Milk fitting:

± 1 mm	V	U	T	D	W
1"	226	226	226	151	800
1 ¼"				157	
1 ½"				159	
2"				163	
2 ½"	233	233	233	170	900
3"	241	241	241	170	
4"	254	254	254	198	
5"	nicht auswählbar / not available				
6"					

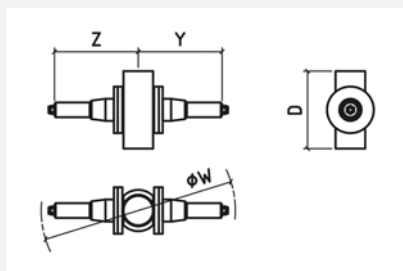
APV:

± 1 mm	V	U	T	D	W
DN 25	226	226	226	141	800
DN 32	nicht auswählbar / not available				
DN 40	226	226	226	141	800
DN 50				141	
DN 65	235	235	235	138	900
DN 80	241	241	241	138	
DN 100	254	254	254	138	
DN 125	265	265	265	144	
DN 150	280	280	280	144	1000

NPT:

± 1 mm	Z	Y	X	H	W
1"	226	226	226	93	800

MoniTurb-F (BioControl®)



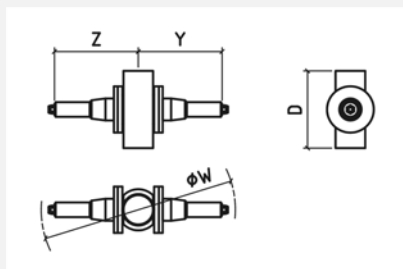
Achtung!
Abmessungen ohne Prozessanschlüsse

Please pay attention!
Dimension without process connection

± 1 mm	Z	Y	D	W
DN 25	nicht auswählbar / not available			
DN 32				
DN 40	202	202	180	800
DN 50	208	208		
DN 65	216	216	200	
DN 80	222	222		
DN 100	235	235		
DN 125	nicht auswählbar / not available			
DN 150				

alle Angaben in mm/all dimensions in mm
Änderungen vorbehalten/Changes reserved

MoniTurb-F (Varivent®-In-Line)



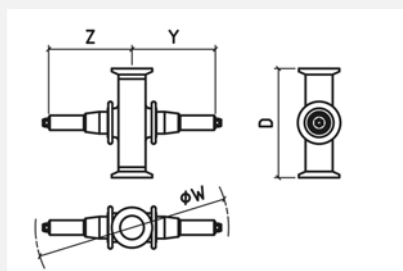
Achtung!
Abmessungen ohne Prozessanschlüsse

Please pay attention!
Dimension without process connection

± 1 mm	Z	Y	D	W
DN 25	nicht auswählbar / not available			
DN 32				
DN 40	190	190	180	800
DN 50	197	197		
DN 65	205	205	250	
DN 80	213	213		
DN 100	222	222		
DN 125	nicht auswählbar / not available			
DN 150				

alle Angaben in mm/all dimensions in mm
Änderungen vorbehalten/Changes reserved

MoniTurb-F (TriClover)



± 1 mm	Z	Y	D	W
½"	nicht auswählbar / not available			
¾"	185	185	152,4	800
1"	191	191		
1 ½"	194	194	165,1	
2"	200	200		
3"	213	213	228,6	900
4"	226	226		
5"	nicht auswählbar / not available			
6"				

alle Angaben in mm/all dimensions in mm
Änderungen vorbehalten/Changes reserved

Technical Data / Data Sheet MoniTurb-F

Model MoniTurb-F (MTF)

Process- Turbidimeter, Monitek Product Line of Galvanic Applied Sciences Inc.



- Low maintenance
- Extended calibration interval: Typical 24 month
- Sight glass material: Sapphire
- Sight glass cleaning: Via cleaning jet probe
- Cleaning in place (CIP)
- Process connection: DIN, ANSI, SMS, NPT, APV, TH, ...
- Optional air purge connection: 4mm

Description:

The turbidity sensor Model MoniTurb-F uses the principle of 12° forward scattered light to detect suspended particles in liquids. The transmitter model Messenger is required to use this sensor. The system has been designed for continuous operation with long life time. A ratio measurement of direct- / scatter light assure highly reliable and repeatable measurement results. Inaccuracies caused by product colour, lamp ageing or window coating will be compensated. The forward scatter measuring results are nearly independent of particle size and will correlate to product concentration. Calibration can be done in multiple ranges and measurement units like EBC, ppm, mg/l, etc.. The sensors can be installed into almost any type of pipe. Process connection, pressure, temperature, gasket material, etc will be application specific. Optional cleaning jets will allow a cleaning of the sapphire windows in determined intervals.

Applications:

- Filtration control
- Product quality
- Water in fuel
- Oil in water / Water in oil

Operational areas:

- Chemical industry
- Petrochemical industry
- Power plants
- Brew & Beverage

Technical Data:

Line size: DN 25 – DN 125 / 1/2" - 5"
 Process pressure: PN16 / ANSI class 150
 Process temperature: maximum 140°C
 Sensor material: 1.4404 / 316L
 Sight glass material: Sapphire
 Gasket material: application specific
 Protection class: IP65 / NEMA 4X

Measurement range: typical 0–1ppm, 0–500ppm
 Reproducibility: ± 1 %
 Detector system: Silica diodes
 Cleaning: optional cleaning jet probe
 Sterilization: CIP (cleaning in place)
 optional hazardous area: ATEX Zone I or Zone II

Technical Data / Data Sheet MoniTurb-FS

Model MoniTurb-FS (MTFS)

Process- Turbidimeter, Monitek Product Line of Galvanic Applied Sciences Inc.



- Low maintenance
- Calibration interval: typical 24 month
- Sight glass material: Sapphire
- Sight glass cleaning: Via cleaning jet probe
- Cleaning in place (CIP)
- Process connection: DIN, ANSI, SMS, NPT, APV, TH, ...
- Optional air purge connection: 4mm

Description:

The turbidity sensor model MoniTurb-FS uses the principles of 12° forward- and 90° side scattered light to detect particles in liquids. The transmitter model Messenger is required to use this sensor. The system has been designed for continuous operation with long life time. The measuring results of the 12° system are not affected by particle size. The 90° system shows a high sensitivity for small particles ($< 0.3 \mu\text{m}$). Comparing both measurement values will allow conclusion of particle size distribution inside the liquid. The sensors can be installed into almost any type of pipe. Process connection, gasket material, etc. will be application specific. A ratio measurement of direct- / scatter light assure highly reliable and repeatable measurement results. Inaccuracies caused by product colour, lamp ageing or window coating will be compensated. Calibration can be done in multiple ranges and measurement units like EBC, ppm, mg/l, etc. Optional cleaning jets will allow a cleaning of the sapphire windows in determined intervals.

Applications:

- Filtration control
- Product quality
- Water / Waste water

Operational areas:

- Chemical industry
- Petrochemical industry
- Power plants
- Brew & Beverage

Technical Data:

Line size: DN 25 – DN 125 / ½" - 5"
 Process pressure: PN16 / ANSI class 150
 Process temperature: maximum 140°C
 Sensor material: 1.4404 / 316L
 Sight glass material: Sapphire
 Gasket material: application specific
 Protection class: IP65 / NEMA 4X

Measurement range: typical 0–1ppm, 0–500ppm
 Reproducibility: $\pm 1 \%$
 Detector system: Silica diodes
 Cleaning: optional cleaning jet probe
 Sterilization: CIP (cleaning in place)
 optional hazardous area: ATEX Zone I or Zone II