

Manual

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Oil on Water Monitor Model FLUCOmat (FLU 103)

Chemtronic Waltemode GmbH
Sales & Service Partner for your Monitek Products

Niederstr. 14
40789 Monheim am Rhein
Germany

Phone: +49 (0)2 173 / 57007
Fax: +49 (0)2 173 / 56007
E-mail: info@chemtronic-gmbh.de



Transmitter Oil on Water Monitor FLU-103-WA



Transmitter Oil on Water Monitor FLU-103-19



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.

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There are no further reaching warranty claims to take because of the content of existing document.

Warranty conditions

The warranty for this product takes place according to the legal provisions. As places of warranty we explicitly name Chemtronic Waltemode GmbH, Monheim am Rhein (Germany). 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.

Non-warranty

Chemtronic Waltemode GmbH takes no responsibility or warranty for technical or editorial mistakes or omissions in this document. The information in this publication will be provided without warranty for their correctness. Chemtronic Waltemode GmbH reserves all rights to make changes to this document without announcement.

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.

Before installation and start-up

Installation guidelines



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



Transmitter

- Qualified technical personnel must perform installation, repair and maintenance.
- The transmitter should be installed in a dry and dust-free location.
- Avoid direct sunlight.
- The ambient temperature should be in range between -15°C up to +40°C.
- The electronic has to be purged with dry instrument air at ambient temperatures above 40°C.
- Temperature range of the instrument air should be 20°C up to 30°C.
- For installation in Hazardous area use certified equipment with Ex- approval only.
- Supply voltage corresponding to the current IEC regulation.
- Connect specified supply voltage only.
- Do not connect the transmitter to circuits with disturbance sources like motors, pumps, etc pp.
- Follow the wiring diagram page 14.
- Do not install the measuring- and control cables closer than 0.5 meters to power transmission lines and keep the lines as short as possible.

Sensor

- The sensor has to be installed in vertical position to the water surface.
- The distance between sensor and water surface has to be 350 mm (± 30 mm).
- Avoid a location with direct sunlight or any other light sources shining into the detector optic.
- The background of the measuring place must be dark and non-reflecting.
- Operating temperature should be between -15 °C to +40 °C.
- Make sure that the water will not freeze (Ice may damage sensor or pontoons).
- The water surface has to be flat without waves.
- The water-flow must be as slow as possible (max. 1m/s).
- Avoid swimming material like wood, plastic, paper, etc. in the detection area.
- Avoid permanent oil contamination within the detection area.
- Connect air jets in case of haze formation over the water surface, for example fog.
- The sensor can be cleaned with a standard cleaning agent.
- Make sure that the sensor window or the optical system does not become dirty. Avoid water drops or condensation (use purge jets).
- Choose the cable length of the sensor in that way that you have enough length available to move the sensor for calibration and maintenance.

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 water is may be toxic or otherwise harmful to human health. Observe appropriate precautions when handling and disposing the liquid. 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.



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



**Take notice:
The UV- transparent window of the sensor has to be replaced every 5 years to avoid material embrittlement, in case of installation in hazardous area.**



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.

Take care 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 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.

Shipment of the instrument

Please clean the instrument carefully before shipment (e.g. for revision / repair). Please use robust packaging to protect the instrument against any shipping damages. If possible the original packaging material should be used.

Principle of Measurement

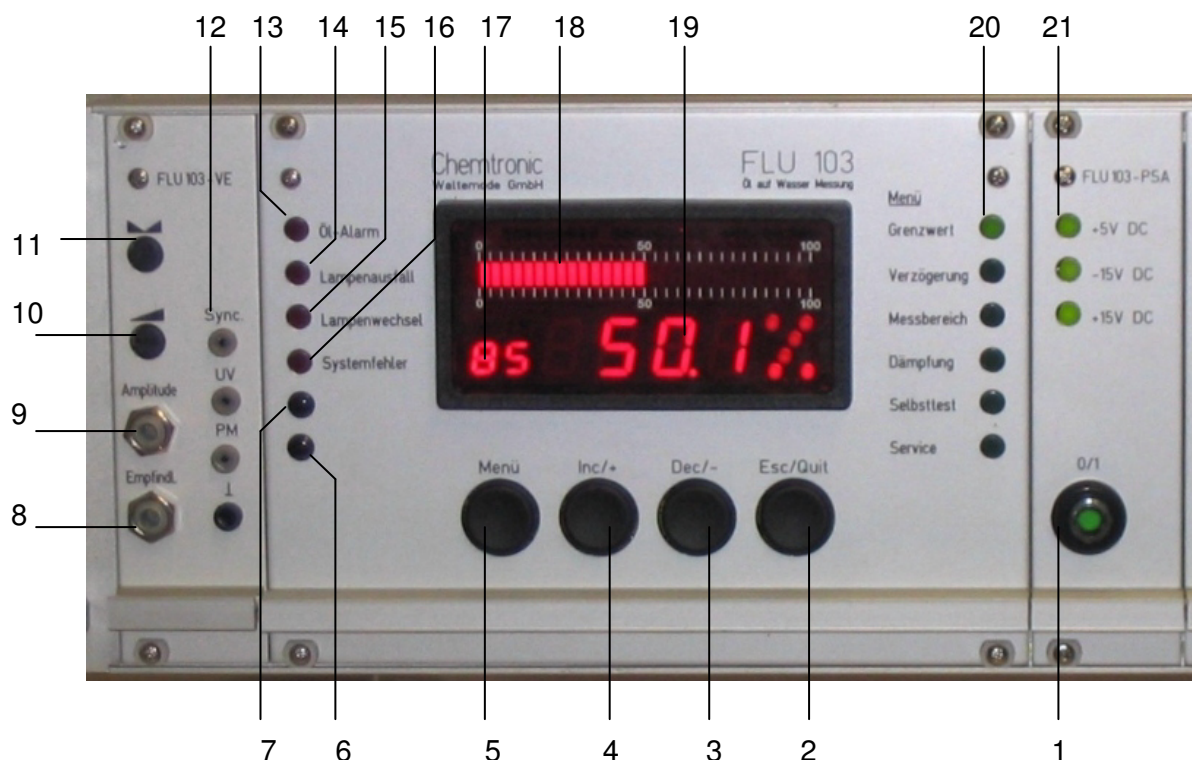
The oil on water monitor model FLUCOmat is used for continuous oil monitoring on water surfaces. The instrument provides a very high sensitivity. Oil leakage can be recognised at an early stage. This immediate oil detection will avoid or minimize damages to facilities and environment. The system uses the principle of UV stimulated fluorescence. The use of modulated light compensates for ambient light, ageing of lamps and coatings of the detector optic and assures highly stable and reproducible monitoring results.

The sensor requires a constant distance of approx. 35cm above the water surface to guaranty its best sensitivity. Level fluctuations in open channels can be compensated by using pontoons or the NiveauTron ultrasonic level elevation. An optional bypass container is also available to allow flow through measurements.

Indicated value

- The system detects oil layers at the surface only. The thickness of the oil layer does not affect the instrument reading and the quantity of oil under the water surface is as well unknown. Therefore it is not possible to make a statement about the absolute quantity of oil in mg/l or ppm, but the instrument is designed to detect low level oil contaminations of less than 1ml/m² water surface.
- Take notice: The sensitivity will be reduced in case oil produces only drops on the water surface due to a high cohesion or in case the oil has a low content of unsaturated hydrocarbons.
- The use of the optional bypass container allows a calibration in ppm at low ranges of less than 50ppm

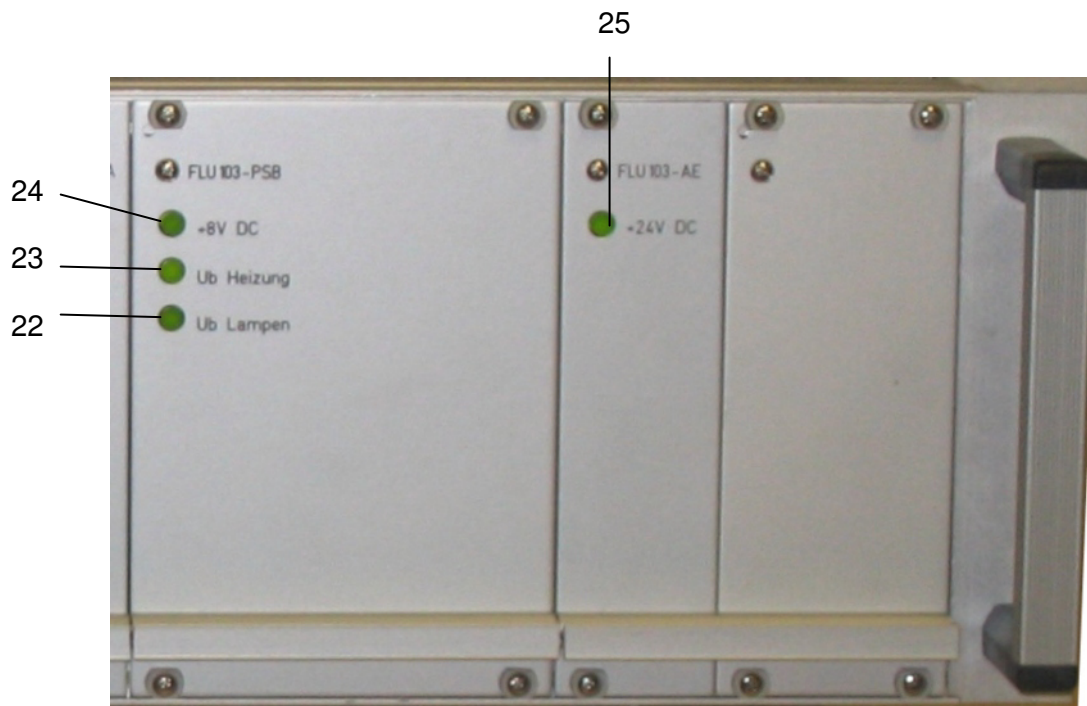
Front Panel Transmitter Model FLU-103



Item number:

- | | | |
|----|-----------------------|--|
| 1 | Main switch | turns the device on / off |
| 2 | Button ESC / Quit | push to leave menus and / or reset the oil alarm |
| 3 | Button Dec/- | decrease the displayed value |
| 4 | Button Inc/+ | increase the displayed value |
| 5 | Button menu | push button to access or change the current menu |
| 6 | Key to reset all | key hidden behind a hood to restart the microcontroller |
| 7 | Service potentiometer | to adjust the intensity for self check/-control |
| 8 | Service potentiometer | to adjust the basic sensitivity |
| 9 | Service potentiometer | to adjust the basics parameter of the photomultiplier |
| 10 | Span potentiometer | to calibrate the system |
| 11 | Zero potentiometer | to adjust the zero point |
| 12 | Service test socket | sockets to check the trigger signal, UV-intensity, photomultiplier amplitude |
| 13 | LED for oil alarm | red LED (on) if alarm limit is exceeded |
| 14 | LED for lamp fail | red LED (on) if one or more lamps are defect |
| 15 | LED change lamp | red LED (on) if UV intensity is low |
| 16 | LED system fail | red LED (on) if the "self-check" procedure detects an error |
| 17 | Digital display | display to set the different parameters |
| 18 | LED-bar graph | result in % of range |
| 19 | Digital display | result in % of range (or test-signals in volt) |
| 20 | Menu LED's | display the current menu parameter |
| 21 | Voltage indicator | green LED indicates the 5V DC supply voltage. |

Additional Elements Model FLU-103-19



Item number:

22	Voltage indicator	green LED indicates the correct lamp voltage.
23	Voltage indicator	green LED indicates the heating voltage the LED brightness depends by heating level.
24	Voltage indicator	green LED indicates the 8V DC supply voltage.
25	Voltage indicator	green LED indicates the 24V DC supply voltage.

Setup Transmitter Model FLU-103

Connect device as shown in the wiring diagram.

Switch instrument on.

Double check if you receive any error message (chapter 11).

Wait for a warm up period of 1h to make sure that the all components has been stabilized.

Set Zero

Make sure that the water surface of the detection area is free of oil.

The display (19) shows the current indicated value (not in service mode).

Use the potentiometer (11) to adjust zero.



We recommend adjusting the instrument to 5% - 10% reading at clear water without oil (live zero).



Set Span

To adjust the sensitivity, use the span potentiometer (12). The display (19) shows the current indicated value (not in case the menu point service is selected).



Please see chapter 12 "Calibration Procedure Model FLU-103" for details of span and zero adjustment



Set Alarm / Set point

Select alarm limit (set point) by using the button menu (LED alarm limit[on]).

Adjust an alarm set point between 5% and 99 % of range.

The display (17) shows the current set point in %.

Use buttons (Dec[3] and Inc[4]) decrease or increase the set point.

Press button Dec/- or Inc/+ for two seconds to change set point rapidly.

Leave the menu by using the ESC (2) button or the menu (5) button.

Using the menu button will select the next parameter.

Set Delay time

Select alarm delay by using the button menu (LED delay[on]).

Adjust the delay time of the oil alarm between 1 and 60 seconds.

The display (17) shows the delay time in seconds.

Use buttons (Dec [3] and Inc [4]) decrease or increase the time.

Press button Dec/- or Inc/+ for two seconds to change delay rapidly.

Leave the menu by using the ESC (2) button or the menu (5) button.

Using the menu button will select the next parameter.

Set signal-range

Select signal range by using the button menu (LED range [on]).

The parameter range is used to set the sensitivity of the instrument.

Range 01 low sensitivity

Range 02 medium sensitivity

Range 03 high sensitivity

The current range is shown in display (17).

Use buttons (Dec [3] and Inc [4]) decrease or increase the sensitivity.

Leave the menu by using the ESC (2) button or the menu (5) button.

Using the menu button will select the next parameter.

Set damping (noise reduction)

The menu allows to change the damping (noise reduction) of the detected result.

01 fast response of the instrument

02 normal response of the instrument

03 slow response of the instrument

Select damping by using the button menu (LED damping [on])

The display (17) shows the selected damping stage.

Use buttons (Dec [3] and Inc [4]) decrease or increase the response time.

Leave the menu by using the ESC (2) button or the menu (5) button.

Using the menu button will select the next parameter.

Self Check

The menu "self check" starts a system test of the instrument or allows setting a periodic 24h test.

Select "self check" by using the button menu (LED self-check [on])

The display (17) shows the current setting:

Display		
00	self check not active	24h self check off
01	self check not active	24h self check on
10	self check active	24h self check off
11	self check active	24h self check on

Use button (Dec [3] to change current setting.

Manual self check

In case display (17) has been set to 00 or 01 you can start a self check by pushing button Inc/+.

The display (17) changes to 10 or 11, as long as the test procedure runs.

The test procedure will be repeated every 24 hours after the last test has been done.

[Only if the 24h self check is activated (01)].

Leave the menu by using the ESC (2) button or the menu (5) button.

Using the menu button will select the next parameter.

Service Menu

This menu shows you the most important system parameters.
Select service by using the button Menu (LED service [on]).
The display (17) shows the item number of the displayed parameter.
Use buttons (Dec [3] and Inc [4]) to select the displayed parameter.
Leave the menu by using the ESC (2) button or the menu (5) button.
Using the menu button will select the next parameter.

Item	Name	Nominal values
00	indicated value	0,00 to +10,0 V DC
01	UV- intensity by the lamps	+2,00 to +10,0 V DC
02	Voltage at reference diode green	+0,90 V DC (+/- 0,2 V)
03	photomultiplier programming voltage	+1,80 V DC (+1,5 V –1,0 V)
04	voltage from photomultiplier	0,00 to+10,0 V DC
05	voltage + 5V DC	approx. 5 V DC
06	voltage heating	0,00 to 17,5 V DC
07	voltage lamps	+12,5 to 15,0 V DC

Configure Oil alarm

An oil alarm is shown; if the detected result exceeds the set point (alarm limit) and the delay time has been expired. The red LED "oil-alarm" and the alarm relay become activated.

The system can set in two ways.

Der Öl Alarm wird nach Überschreiten des eingestellten Grenzwertes und Ablauf der

Alarm without confirmation

In case the monitoring results fall below the alarm threshold LED (13) "Oil Alert" and relays "oil alarm" will be automatically turned off

Alarm with confirmation

Alternatively, the unit can be set so that after an oil alarm, the alarm remains even if the monitoring results fall below the alarm threshold.

The alarm message must be confirmed by pressing the ESC key (2).

Display	Oil alarm
00	without confirmation (alarm switches itself off if detection result is lower as set point)
01	with confirmation (requires external confirmation by using ESC button)

To configure this function press the ESC (2) Keys and Menu (5) at the same time and hold.

The digital display (17) will show the current status after 3 seconds.

Use buttons (Dec [3] and Inc [4]) to select the alarm mode.

Leave the menu by using the ESC (2) button or the menu (5) button.

Using the menu button will select the next parameter.

Set analog Output (0/4-20mA)

FLU-103-WA (wall mount enclosure)

Jumper

Remove the cover to access connectors.
Find the jumper to set 0-20mA or 4-20mA next to the analog output terminal.



FLU-103-19 (19" rack)

Switch instrument off and disconnect from the mains.
Pull PC-board marked with FLU-103-AE out of its socket.
Set jumper next to the relays for 4-20mA or 0-20mA.
The left position is for 4-20mA and the right is for 0-20mA.

Plug the board to the 19" frame and fix the screws.
Connect system to the mains and switch on.

Jumper



Error messages

Lamp failure (14) red LED [ON]:

One or more measurement lamps are off (defective).
The system operates with no or low detection sensitivity.

Change Lamp (15) red LED [ON]:

Low UV-intensity, replace the lamps.

System failure (16) red LED [ON]:

Self test procedure has detected a problem.
The sync signal is lost or a DC- supply is defective.
The relay "technical alarm" is activated.

First Calibration Model FLUComat

Factory preset

Range = 02

Damping = 02,

Zero = 0

Span = 0.

The calibration adapter will create a reading of about 50% with this setting.

Calibration is based on calibration oil type CLP220.

Application specific Calibration

1. Connect instrument according wiring diagram.
2. Switch instrument on.
3. Check instrument for any error messages.
4. Wait for a warm up period of 1h to make sure that the all components has been stabilized.
5. Make sure that the instrument is in measurement mode (not menu service).
6. Place a black plastic bowl with clean, oil free water under the sensor.
7. Make sure that the distance between sensor and water is 350mm $\pm$ 30mm.
8. Use the potentiometer (11) to adjust the instrument for zero (5% - 10%) reading.
9. We recommend adjusting the FLUCOmat to a value to 5% - 10% reading to get a live zero.
10. Add the maximum allowed quantity of oil to the water surface.
11. Make sure that the oil has a homogeneous distribution on the water surface.
12. If the instrument reading is above 80% change the range to get a lower value.
13. If the instrument reading is lower then 35% change the range to get a higher value.
14. Adjust the instrument reading 70% - 75% by the using span potentiometer.
15. Repeat items 6 to 14.
16. Adjust the oil alarm limit (set point) to your specified value. For example 70%.
17. Adjust the delay time if it is needed (in case of noisy results).
18. Install the instrument at its final measuring position.
19. Make sure that the distance between sensor and process water is 350mm $\pm$ 30mm.
20. Double check if the instrument reads 5% -10% at clean oil free water.
21. Use potentiometer (11) for an eventual correction.
22. Double check if you get stable and reproducible results. In case of noisy results select a higher damping. In case to slow reaction of the system select a lower damping.

Specify your calibration adapter

1. Calibrate the system as explained in chapter 12.2.
2. Install the calibration adapter under the sensor by using the 4 clamps of the adapter.
3. If the instrument reading is higher than 99% select a lower range.
4. Note the instrument reading caused by the calibration adapter and note the current range.
5. Go back to origin range, in case a reduced was required to get a reading less than 99%.

Calibration by using calibration adapter

1. Switch instrument on.
2. Check instrument for any error messages.
3. Wait for a warm up period of 1h to make sure that the all components has been stabilized.
4. Make sure that the instrument is in measurement mode (not menu service).
5. Place a black plastic bowl with clean, oil free water under the sensor.
6. Make sure that the distance between sensor and water is 350mm $\pm$ 30mm.
7. Use the potentiometer (11) to adjust the instrument for zero (5% - 10%) reading.
8. We recommend adjusting the FLUCOmat to a value to 5% - 10% reading to get a live zero.
9. Install the calibration adapter under the sensor by using the 4 clamps of the adapter.
10. Switch the instrument to the range noted in chapter 13.
11. Adjust instrument reading to the value noted in chapter 13.
12. Switch the instrument back to the range of first calibration (chapter 12.2).
13. Install the instrument at its final measuring position.
14. Make sure that the distance between sensor and process water is 350mm $\pm$ 30mm.
15. Double check if the instrument reads 5% -10% at clean oil free water.
16. Use potentiometer (11) for an eventual correction.
17. Double check if you get stable and reproducible results. In case of noisy results select a higher damping. In case to slow reaction of the system select a lower damping.

Replacement of the measurement lamps



Procedure is not required in case of using the optional LED- modules!



The measurement lamps of the sensor lamps should usually be replaced as a complete set (4 lamps). The sensor uses the UV- light of the lamps to create the fluorescence of oil.

These UV- light is not visible for the human eye. Therefore the instrument may signalize “change lamp”, even if the lamps look still OK! This means that the lamps still have an emission of visible light, but no UV intensity anymore.



Exchange the lamps as follows:

1. Switch instrument off
2. Disconnect instrument from the mains.
3. Remove sensor from the water surface to a comfortable accessible position.
4. Open the door of the sensor.
5. Pull out the two boards (marked “LM 02”). Use the green handles.
6. Turn the boards over and replace the lamps.
7. Use only origin spare lamps only.
8. Origin lamps are pre selected and tested for its UV intensity.
All lamps must be modified with a copper electrode.
9. Re install the two boards after lamp replacement (lamp position face down).
10. Take notice that you do not touch or bend the golden contacts of the boards.
11. Close the sensor door.
12. Re connect instrument to the mains.
13. Switch the instrument on.
14. Check calibration (see chapter 14).
15. Put the system back to measurement position.

Trouble-shooting

The device has no function:

- Check supply voltage
- Double check instrument wiring
- Double check if the main switch is on
- Check instrument fuse located next the mains power terminals.
- Check the connection terminals.

Instrument reading permanent over-range:

- Check if there is oil in the detection area
- Check if there is swimming material like branches, plastic, paper, etc. in detection area
- Check if the instrument is set to correct range and sensitivity
- Check I window or optical components are clean
- Check instrument wiring
- Check the calibration by using the calibration adapter

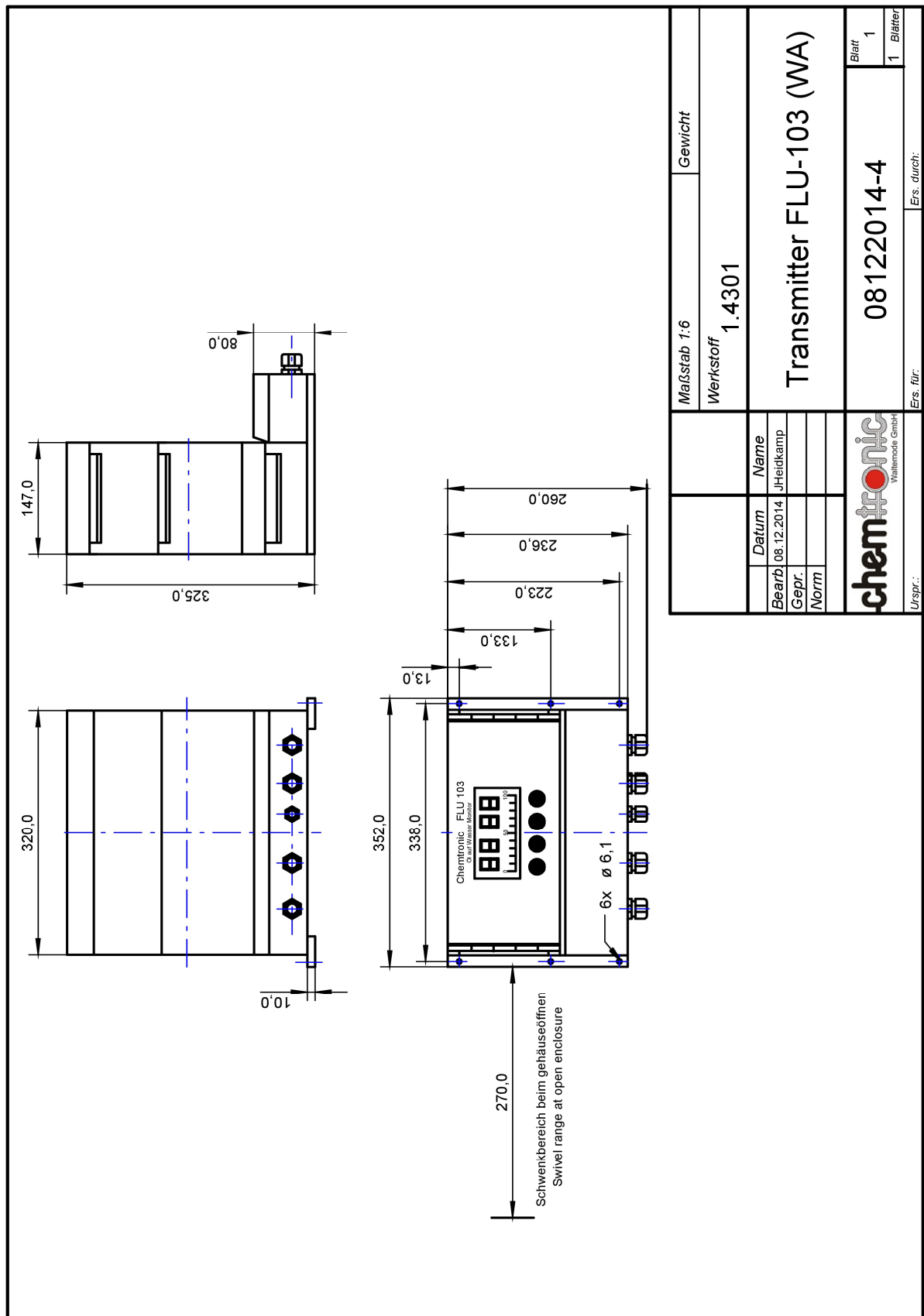
Instrument reading permanent zero:

- Check if all lamps look OK.
- Check if the instrument signalizes "change lamp" (to low UV intensity of the lamps)
- Check if the instrument is set to correct range and sensitivity
- Check instrument wiring
- Check the calibration by using the calibration adapter

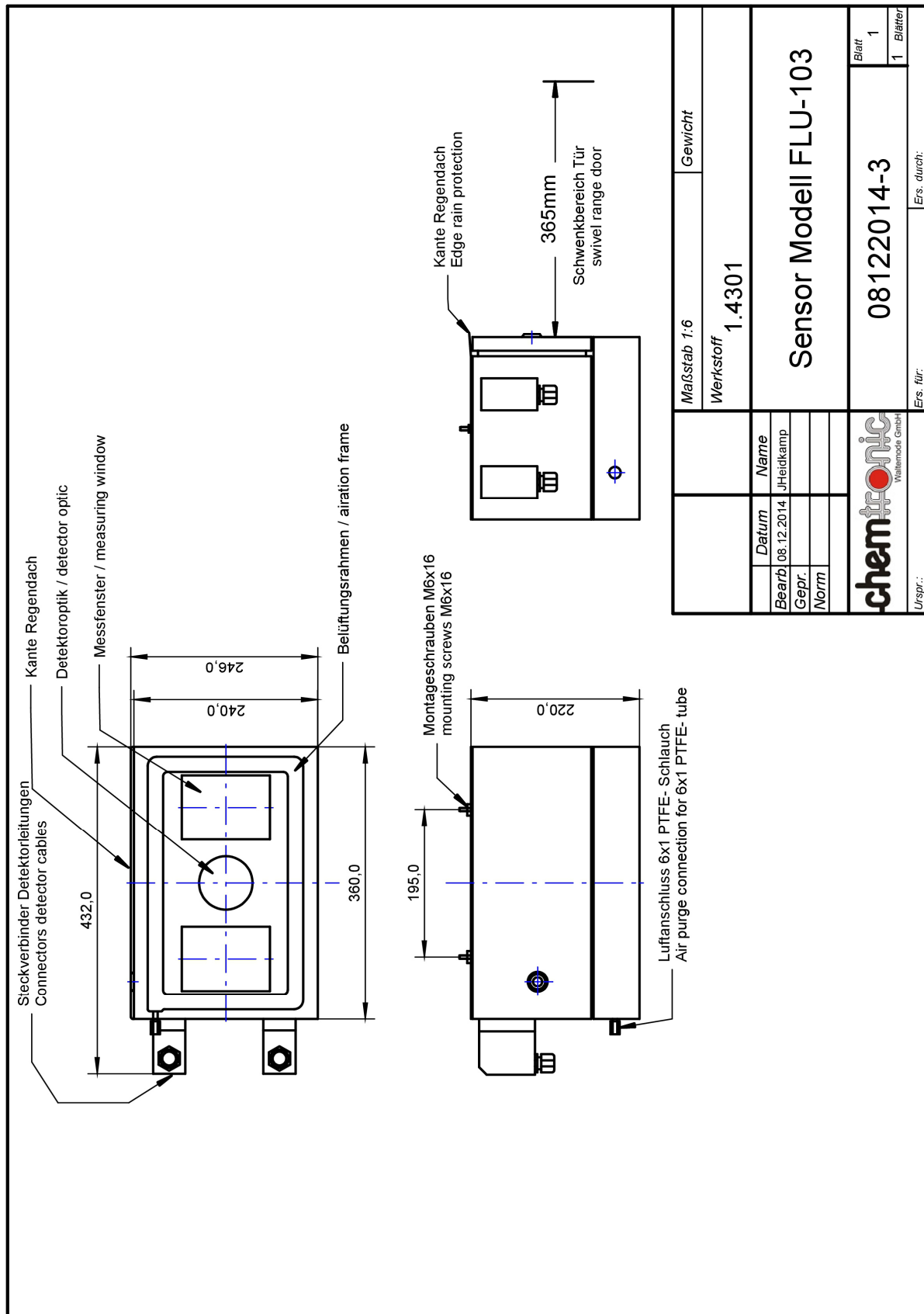
Instrument reading is noisy:

- Check if window or optic components are covered with oil, dirt or steamed up
- Check the sensor location / installation. See chapter 4.
- Check the calibration by using the calibration adapter

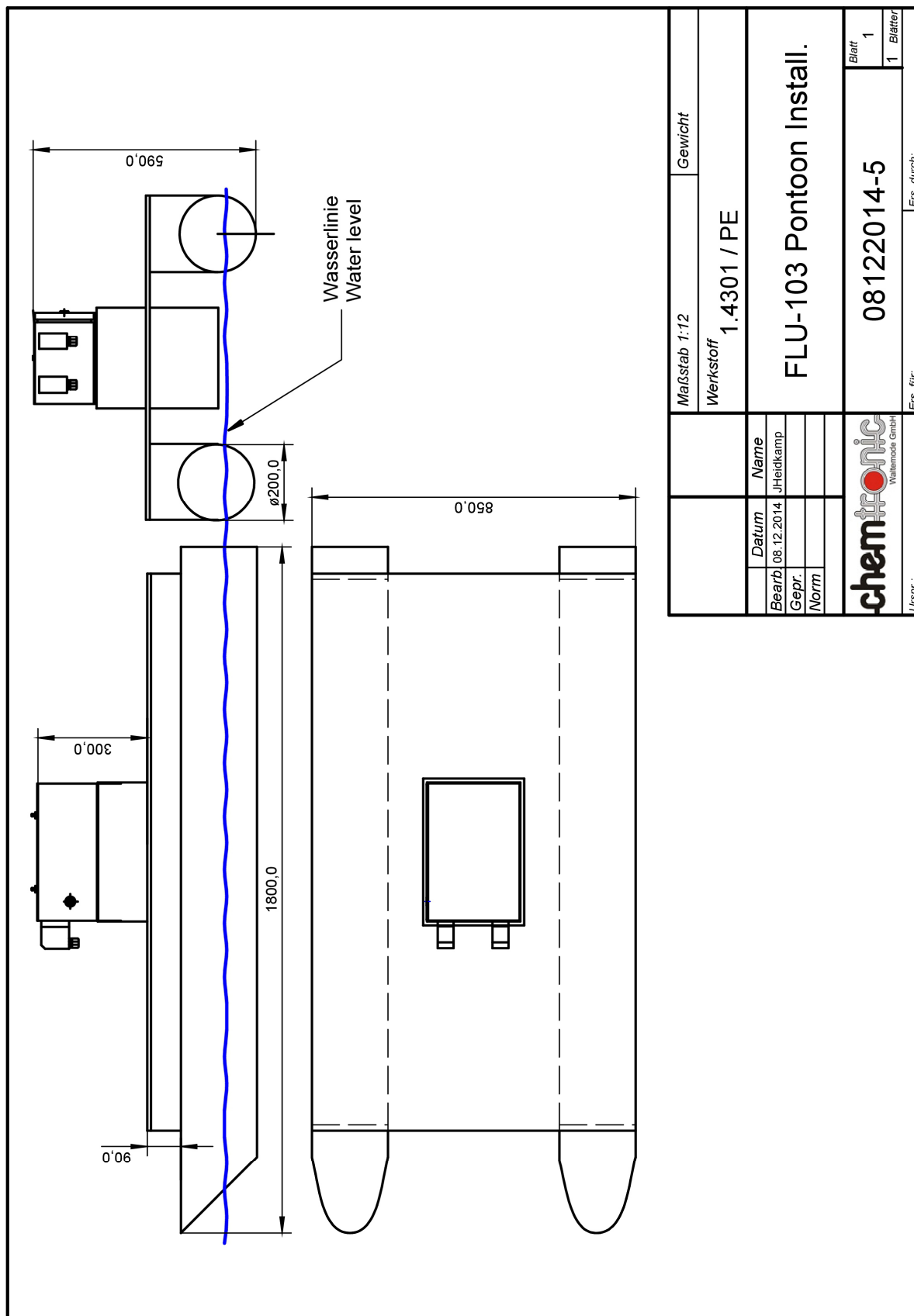
Dimensional Drawing Transmitter Model FLU-103



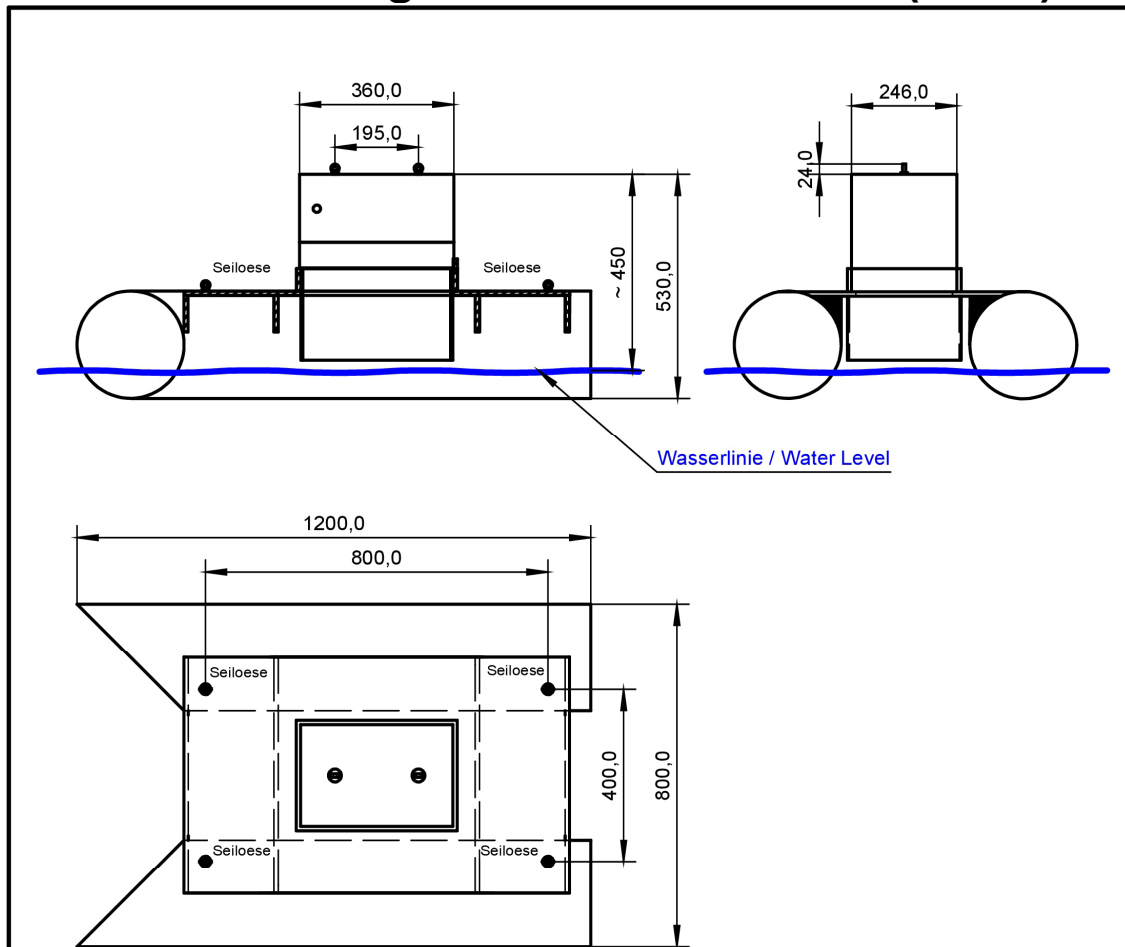
Dimensional Drawing Sensor Model FLU-103



Dimensional Drawing Pontoon installation (long)

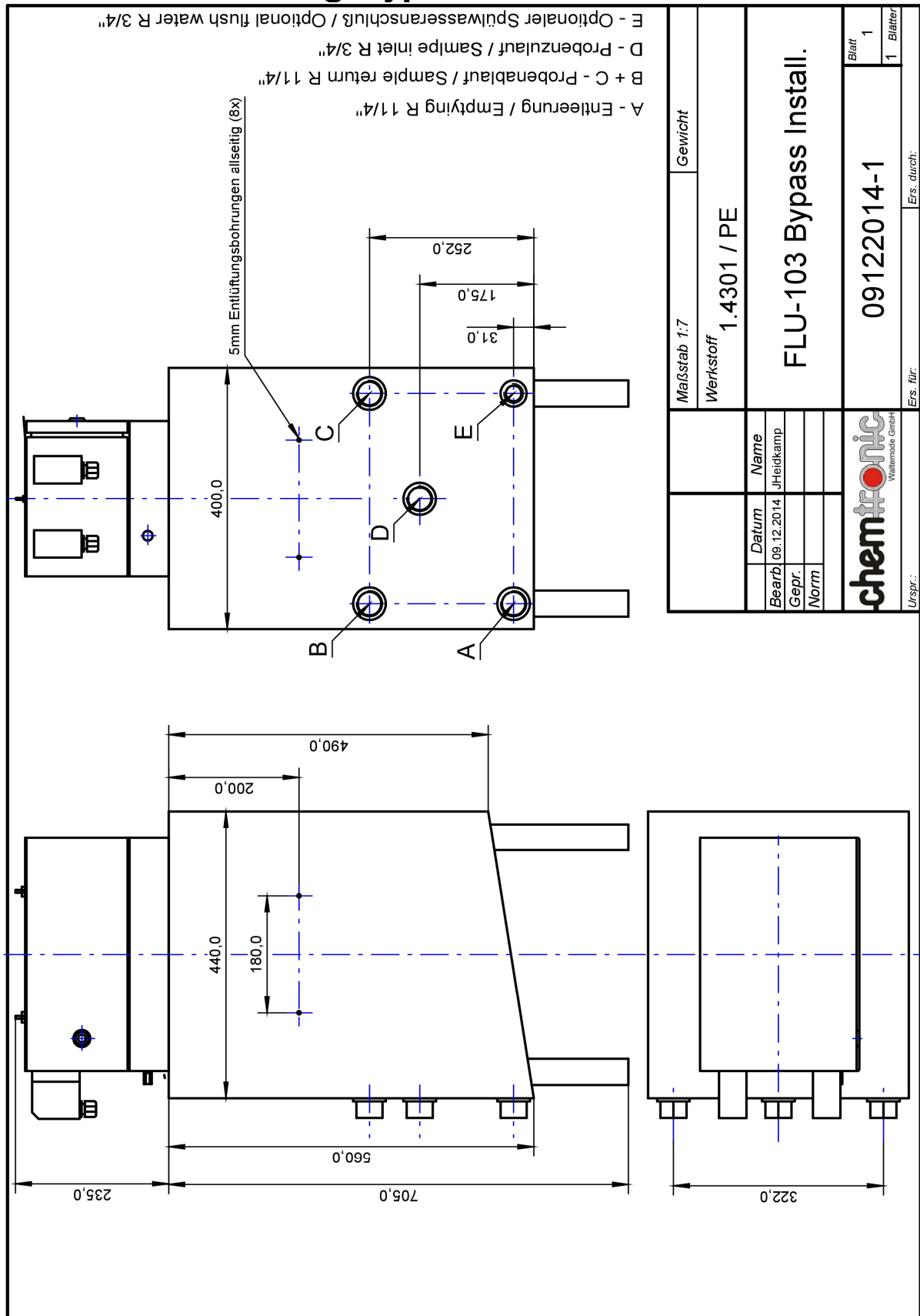


Dimensional Drawing Pontoon installation (short)

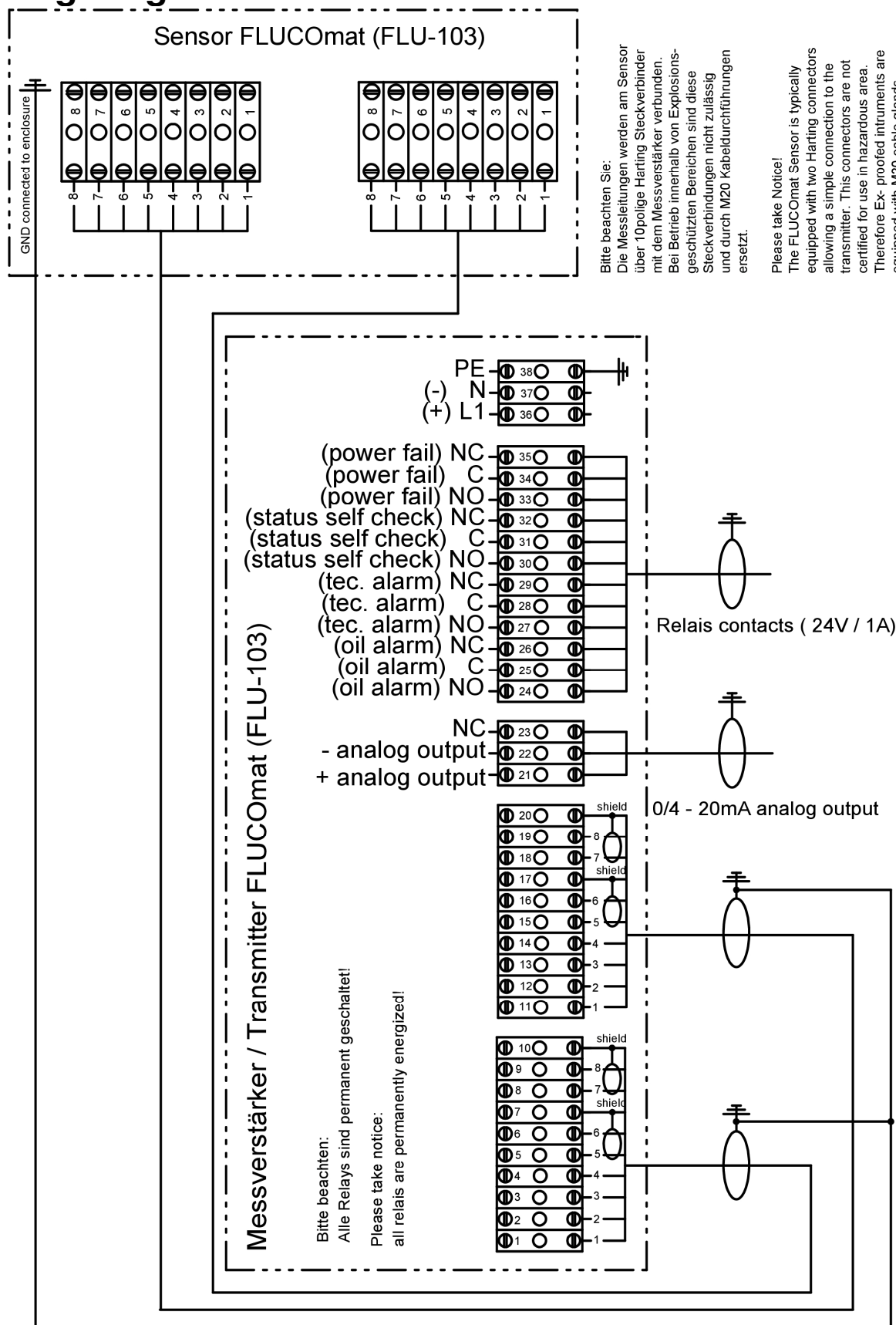


						Maßstab 1:14		Gewicht		
						Werkstoff PE				
					Datum	Name	FLU-103 Pontoon Install.			
				Bearb.	08.12.2014	JHeidkamp				
				Gepr.						
				Norm						
							08122014-6			Blatt 1
										1 Blätter
Zust.	Änderung	Datum	Name	Urspr.:	Ers. für:			Ers. durch:		

Dimensional Drawing Bypass Container

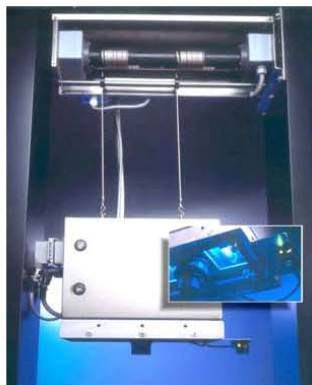


Wiring Diagram



Technical Data

Model FLUCOMat (FLU 103)



- Low maintenance
- High detection sensitivity
- Non-contact measurement
- Large measurement surface approx. 0,3 m²
- Adjustable setpoint
- Automatic self diagnostic routine
- 3 1/2 digit LED display and additional bargraph
- Installation via bypass container, pontoons or NiveauTron
- Long live UV- lamps / alternative UV- LED's

Description:

The oil on water monitoring system Model FLUCOMat is used for continually monitoring of water surfaces for the presence of oil. The instrument provides a very high sensitivity. Oil leakage can be recognised at an early stage, and damage to facilities and the environmental can be avoided or minimised. The system uses the principle of UV stimulated fluorescence. To raise the sensitivity, the instrument is adjustable to detect fractions of reflection in addition to the fluorescence signal. The use of modulated light compensates, for ambient light, ageing of lamps and contamination of the detector, to a high degree. Thus assures highly stable and reproducible monitoring results. The sensor requires a constant distance of approx. 40cm above the water surface. Level fluctuations in open channels can be compensated by using pontoons or the ultrasonic level elevation. An optional bypass container is also available to allow flow through measurements and a calibration in ppm.

Applications:

- Cooling water
- Rainwater catchment's
- Water reservoirs
- Turbine Water

Operational areas:

- Chemical industry
- Petrochemical industry
- Drinking water
- Power stations

Technical Data:

Supply voltage: 115, 230 AC / 50 – 60 Hz
 Power consumption: maximum 150 VA
 Set point: 1 Relay (48V / 2A)
 System fail: 1 Relay (48V / 2A)
 Self test: 1 Relay (48V / 2A)
 Analogue output: 0/4 - 20mA / 800Ohm

Measurement range: typical 1 drop/m²
 Reproducibility: ± 1 %
 Detector: Photo Multiplier
 Protection: IP65 / NEMA4X
 Enclosure: 1.4571 / 316SS (alternative ABS)
 optional hazardous area: ATEX div. I or div. II

EU- Konformitätserklärung

EU- Declaration of Conformity

Für das folgend bezeichnete Erzeugnis:

For the following named product:

Modell FLUCOmat / FLU-103 (ÖL auf Wasser Monitor) / Model FLUCOmat / FLU-103 (Oil on Water Monitor)

wird hiermit bestätigt, dass es den Schutzanforderungen entspricht, die in der Richtlinie des Rates zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten über die elektromagnetische Verträglichkeit festgelegt sind. Zur Beurteilung des Erzeugnisses hinsichtlich elektromagnetischer Verträglichkeit wurden folgende Normen herangezogen:
89 / 336 / EWG
93 / 68 / EWG

Herewith it is certified, that it corresponds to the protection requirements laid down in the guidelines of the board for equivalence of legal regulations of the member states about the electromagnetic compatibility.
For the judgement of the product regarding electromagnetic compatibility following standard were consulted:
89 / 336 / EWG
93 / 68 / EWG

EN61000-6-1 (2001)	Störfestigkeit
EN61000-6-3 (2001)	Emission
EN61000-3-2 (2000)	Oberwellen
EN61000-3-3 (1995)+A1	Flicker

Diese Erklärung wird, verantwortlich für den Hersteller / Importeur

This declaration is given, in responsibility for the producer / importer

Chemtronic Waltemode GmbH
Niederstraße 144
D-789 Monheim am Rhein

abgegeben durch Herrn

by Mr.



G. Waltemode

Monheim den 27.09.2004

Appendix 1 → Optional Ex- Design for FLU-103

General

Please take notice:



The safe operation within hazardous areas (Ex Zone I & II) requires the optional Ex p-purge system (pressurized enclosure) including Ex- approvals and certificates.



The UV-transparent window of the FLUCOmat sensor must be replaced every 5 years to avoid material embrittlement and guarantee for safety.

The explosion protection is defined by technical solutions, such as types of protection and zoning. The protection principles are described with standards (e.g. IEC or EN) and based on legal provisions, such as the ATEX Directives of the European Union.

The model FLUCOmat (FLU-103) is equipped with a pressurized enclosure (Ex p) for safe operation in hazardous areas. The Ex p- pressurization system model F850S of Gönnheimer guarantees the safe operation of model FLUCOmat in hazardous areas of Zone 1, 21, 2 and 22. The protection type 'pressurization' is based on the principle of maintaining a constant air pressure inside of the enclosure. In the first step the enclosure becomes purged with air and then the housing keeps a small but constant overpressure of air. The Ex p- system controls the purge cycle and the pressure. This prevents for the infiltration of combustible gases or dusts into the enclosure.

The required quantity of dry instrument air is approximately 30 litres per minute within the first 5 minutes after switching on (cleaning cycle), then the system switches to pressure keeping and reduces air consumption to an average of 0,5 - 3 litres per minute, depending on the tightness of the housing. The Ex p - system compensates the losses caused by leakages. The device switches off automatically in case the air pressure inside the housing becomes to low (e.g. by interrupting the air supply or by opening the enclosure door).

Versions

Sensor in hazardous area and Transmitter in safe area (e. g. control room)

The most used and most recommended method, since the measuring system can be remote controlled from the safe environment without additional safety requirements.

Sensor and Transmitter in hazardous area

Recommended in case of large distances between the location of the sensor and safe environment. The maximum cable length between sensor and transmitter should not exceed 60 meter.

Technical Modifications of explosion proofed FLUCOmat sensors

Connector FLUCOmat Sensor

Harting Connectors suitable for industrial applications in harsh environments are used to connect the cables to the FLUCOmat sensor in case of installation in safe environment. These connectors are not suitable for use in hazardous area due to the possible formation of sparks. The connectors are replaced with M20 cable glands in case of installation in hazardous area.

Enclosure gasket of FLUCOmat Sensor

An improved sealing the sensor housing ensures for low leakage, increases the reliability of the measurement system and minimizes the quantity of instrument air.

Measuring Window of FLUCOmat Sensor

The FLUCOmat sensor is equipped with special UV-transparent measuring windows. Please take notice, that the window must be replaced every 5 years, to prevent material embrittlement.

Technical Modifications of explosion proofed FLUCOmat Transmitter

Enclosure FLUCOmat Transmitter

The standard plastic housing of the amplifier is not approved for use in hazardous areas. The transmitter must be equipped with its optional conductive 19 "/ 3U steel housing, for use in hazardous area. The window of the housing is made from approved safety glass.

Enclosure gasket of FLUCOmat Transmitter

An improved sealing the transmitter housing ensures for low leakage, increases the reliability of the measurement system and minimizes the quantity of instrument air.

Individual components of the Gönzheimer Ex-P system model F850S



Please observe the separately supplied documentation (manual, safety instructions, certificates, etc.) for the Ex p- pressurized enclosure system model Gönzheimer F850S.



- a. F850S control unit, with pressure and flow sensor for installation in hazardous areas. Used to control the purge cycle, monitor the internal housing pressure and controlling the proportional valve.
- b. SPV.x proportional valve for installation in hazardous area. Used for controlling and regulation of the air supply to the housing of the measuring system.
- c. SR852x Ex-interface relays with 8 contacts for installation in hazardous area. The interface relay interrupts all control wires (analog output / relay) leading into the device, so that in case of shut down no energy can flow into the measuring system.

Accessories and Components for use in hazardous Area



Please take notice:

Passive accessories such as floats, bypass container, etc., has to be suitable for operation in hazardous area. The parts must be either made of anti-static, electrically conductive plastic material or stainless steel. Use original accessory only!



Please take notice:

Active accessories such as electric pumps, cranes or motor controllers always require a separate approval & certification to guarantee the safe use in hazardous area! Please contact the manufacturer!



Sensor FLUCOMat (FLU-103)

Messverstärker / Transmitter FLUCOMat (FLU-103)

EEx P control unit F850S

Proportional solenoid valve mod SVP.x

Supply Voltage 115 / 230 VAC

EEx I-control circuit

Ex- Disconnecter unit for relay and analog outputs SR852.x

Dimensions:

Maßstab 1:1	Gewicht
Werkstoff	

Identification Data:

Name	Datum
Bearb. J. Heidkamp	08.04.2013
Gepr.	Norm

KA FLUCOMat (FLU-103) sensor w. purge system for use in hazardous area zone I

chemtronic
Wellenmode GmbH

08042013-1

Blatt 1

Ers. durch:

Urspr.:

Wiring- / Air- flow Diagram (FLUCOMat Sensor & Transmitter in hazardous Area)

