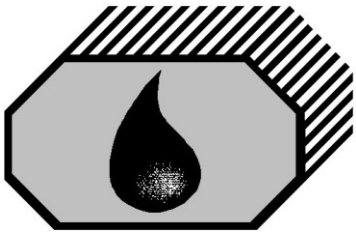

INSTRUCTION MANUAL

Oil-in-Water-Monitor

Type

OMD-32
OMD-32A

DECKMA HAMBURG GmbH

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IMPORTANT NOTICE

REPLACEMENT OF ELECTRONIC COMPONENTS

General

All our monitors are inspected and tested to meet Deckma Hamburg requirements at our factories prior to delivery.

In normal use the units should operate correctly and without fault over a long period of time requiring only small amounts of maintenance to be carried out as outlined in the instruction manuals.

Service Exchange Units

In the event of a monitor malfunction due to electrical or electronic component failure it is our recommendation that a service exchange unit be ordered.

The defective instrument should be returned to our works within 30 days of supplying the service exchange unit, then only the repair charge is payable. Otherwise the whole cost of a service exchange unit becomes payable.

This procedure is by far the easiest and most cost effective way of ensuring reliable and continuous operation of the instrument.

Remark

The OMD-32 is constructed in such a way that exchanging the Measuring Cell with a calibrated Measuring Cell is considered a calibration of the instrument. The Measuring Cell contains all relevant parts and all information for the calibration.

If, for whatever reason the Computer Unit is exchanged as well, the unit's memory card should be retained on site. The memory card contains the data recorded, and the data can be viewed in the new unit. The new Computer Unit is delivered with a new memory card, the old memory card is read-only. For more Details refer to Section 13.1.

ANY DISMANTLING OR BREAKING OF A SEAL WILL VOID THE WARRANTY

CONTENTS

1.0 INTRODUCTION

The OMD-32 Oil-in-Water Monitor has been designed specifically for use in conjunction with oil-water separator units. The OMD-32 has been constructed using technology of the DECKMA HAMBURG OMD series industrial instruments and 15ppm Bilge Alarm Monitors, that have a specification and performance which exceeds the requirements of the International Maritime Organization specifications for 15ppm Oil-in-Water Monitors contained in Resolution MEPC. 107 (49).

The OMD-32 unit is supplied with 2 works-adjusted alarms at 10 ppm. Other set points are possible (e.g. 100ppm) and can be adjusted on site at any time by using the buttons at the front panel.

If an alarm set point is exceeded, the alarms are visible at the front panel and the appropriate relays are switched. In case of malfunction the System LED at the front panel will change from blinking green to permanent red, and a system fault relay contact is switched.

An analog 0(4) - 20 mA signal output is available for driving a recorder or external meter.

The OMD-32A version of the instrument is equipped with an additional pneumatic cleaning device for the Measuring Cell sample glass tube.

2.0 IMPORTANT NOTES

a) This equipment must be installed and operated in strict accordance with the instructions contained in this manual. Failure to do so will impair the protection provided.

b) Some components mentioned in this manual may be not be present on the instrument on site, and/or the instrument may have additional components. Technical specifications are subject to change without notification.

c) Installation and servicing must be undertaken by a competent and suitable skilled person.

d) The equipment must be connected to the ground according relevant requirements.

e) The unit must be isolated from the electrical supply before any maintenance of the equipment is attempted.

f) All National or local codes of practice or regulations must be observed and, where applicable, are deemed to take precedence over any directive or information contained in this manual.

g) In case of freezing conditions the measuring cell must be drained completely.

h) If uncertain how to proceed, contact the maker.

3.0 PRINCIPLE OF OPERATION

3.1 Measuring Principle

An optical sensor array measures a combination of light scattered and absorbed by oil droplets in the sample stream. The sensor signals are then processed by a microprocessor to produce linearized output.

If an alarm (works set point 10 ppm) occurs, the two oil alarm relays are activated after the adjusted time delay.

The microprocessor continuously monitors the condition of the sensor components and associated electronics to ensure that calibration accuracy is maintained over time and extremes of environmental conditions.

3.2 Features

- Robust construction
- Solid suppression capability
- Automatic supply voltage selection
- Low maintenance
- Easy installation
- Constant readiness
- Low spare part stock holding
- Works adjustment
- Calibrated Measuring Cell
- Easy settings via menu

3.3 Adjustment

The unit is delivered with a works calibration. The alarm points are set to 10 ppm.

The "Zero" point is also works calibrated and can be re-adjusted on site by using the programming mode and clean water. See Section 10.4 “Settings-Offset”.

3.4 Displays and Alarms

In the unit there are two independent oil alarm circuits available. Both can be set separately. Factory setting for both alarms is 10 ppm. The set points can be changed according to the requirements on site, over the instrument’s range.

The adjustment can be done in the programming mode as described in Section 10.4.

In this mode also the individual adjustment of the time delays for the alarms, and the scale for the signal output can be adjusted.

Both alarm circuits are also related to an alarm LED on the front panel. In case of malfunction the “System” LED will indicate a fault of the unit. This LED is flashing green in normal conditions and is red in alarm conditions. A system fault relay contact is switched accordingly.

Additional to the alarm LEDs each alarm circuit is equipped with a relay with potential free alarm contacts. These contacts can be used for external processing of the signal or for control of further functions. If a malfunction or failure of the power supply occurs, all three relays will switch to alarm condition.

3.5 Data recording

During operation of the OMD-32 measured oil content, every 15 seconds state of the alarm contacts, and state of the signal inputs IN1 and IN2 is permanently stored in the memory card. The memory card capacity is calculated to allow storage of 18 months worth of operating data. After that the oldest data will be overwritten. There is no need to replace the memory card ever.

The content of the memory card can be browsed on the display. The data is stored with the date and time information set on the instrument at the time of the data being generated.

It is possible to adjust the internal clock of the instrument. Whenever the clock is adjusted to a new setting, the memory storage starts a new page in memory; this means that by setting the clock the recorded data may have more than one entry for a given point in time, or a time gap without entries. Normally this should not enable any loss of data, but can be confusing. It is therefore recommended to externally document any changes in the clock setting.

4.0 Specification OMD-32 / OMD-32A

Range	0 – 200 ppm
Resolution	1ppm (0.1 ppm below 10ppm)
Accuracy	up to +/- 1ppm below 10ppm
Response time	< 5s
Sample Water Pressure	max. 10 bar
Sample Flow	typ. 2 Liter / min
Sample Water Temperature	up to 90° C
Power Supply	24 V – 240V AC or DC
Power Consumption	< 10 VA
ppm Alarm	2 adjustable (independent, entire range, default setting 10.0ppm)
ppm Alarms delay	2 adjustable (independent from 1 sec. up to 540 sec.)
ppm Alarm visual indication	2 red LEDs
ppm Alarms Contact Rating	Potential free 1 pole change over contacts, 3 A / 240 VAC
System Fault Alarm visual indication:	red LED
System Fault Alarm Contact Rating	Potential free 1 pole change over contact, 3 A / 240 VAC
Output Signal	0(4) – 20 mA, ext. Load < 150 Ω Output range adjustable
Cleaning System (OMD-32A)	Automatic, pneumatically operated
Cleaning system air pressure	4 - 6 bar, typ. <1 Liter / Hour
Ambient Temperature	+ 1 to + 55° C
Size	360 mm W x 240 mm H x 120 mm D
Distance (Computer Unit to Measuring Cell)	Option: up to 5m upon request
Degree of Protection	IP 65
Weight	7.5 kg
Pipe Connections	R ¼" Female

Technical specifications are subject to change without notification

5.0 CONSTRUCTION

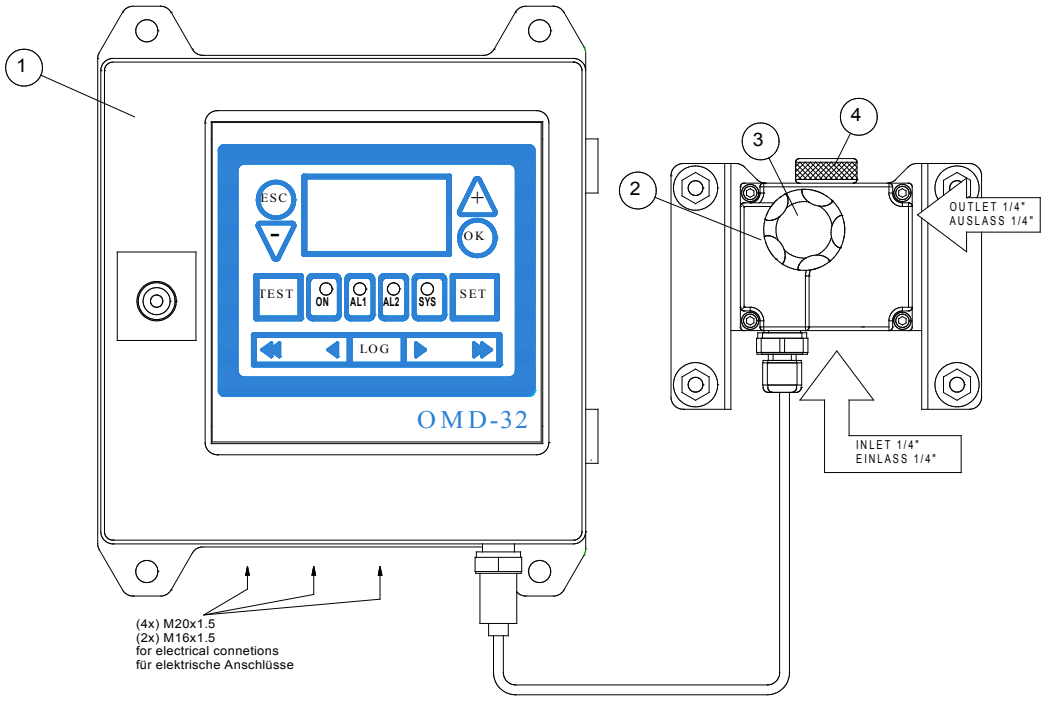
5.1 OMD-32

The OMD-32 has two main components:

The Computer Unit contains the display PCB with the data logger and the terminals for external connections.

The Measuring Cell is built out of an anodized all-metal body with inlet and outlet block in stainless steel. This rugged cell contains optics and electronics and is connected to the computer unit via a plugged data cable. The Measuring Cell is mounted on a Heat Exchanger.

Both components can easily be mounted in wall installation. It is also possible to split the computer unit from the measuring cell if the available space is not sufficient. Optionally a connection cable for up to 5m distance from Computer Unit to Measuring Cell is available.



1	Computer Unit	4	Head Screw or		
2	Measuring Cell		Head Screw with cleaning unit or		
3	Desiccator Cap		Head Screw with automatic cleaning unit (OMD-32A only)		

Fig. 1

5.2 OMD-32A

In addition to the setup for OMD-32 the OMD-32A is equipped with the components of the autoclean system.

The Measuring Cell has a pneumatically operated cell cleaning device instead of the standard cell cap. A magnetically coupled wiper is moved into the sample glass tube at set intervals to remove debris that otherwise could settle on the glass tube surface and obstruct measurement.

Wiper operation is controlled by a separate valve unit. The control unit is electrically connected to both Computer Unit and Measuring Cell. Pressurized air is supplied to this unit. A flexible air connection allows to remove the cleaning without disconnecting the pneumatic connection.

It is recommended to only use clean, dry instrumentation air of 3-4 bar. Air consumption is less than 1 Liter per Hour.

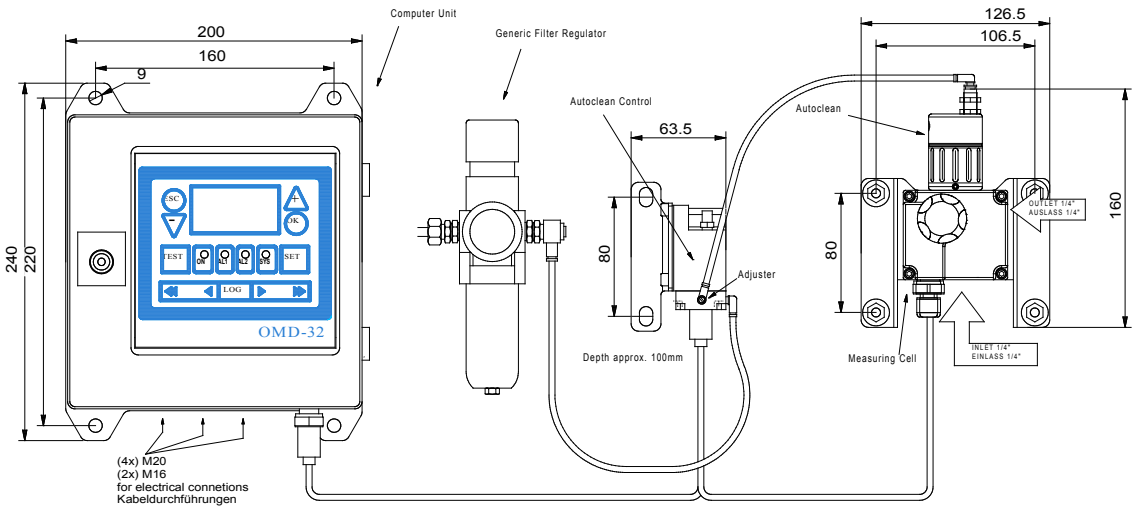


Fig. 1a: OMD-32A

The Autoclean system can not replace regular maintenance, but it may allow for longer uninterrupted operation. Autoclean intervals must be adjusted to the conditions on site. The Autoclean unit replaces the head screw and can be unscrewed without disconnecting the air supply.

6.0 INSTALLATION (Refer to Fig. 2 and Fig. 3)

See Section 2 for important notes concerning installation.

The OMD-32 Monitor should be located as close as possible to sampling point to minimize response delays.

Mount the OMD-32 Monitor on to a rigid vertical surface and preferably with the display panel of the monitor at eye level. For service and maintenance sufficient space to all sides should be available.

Care must be taken at mounting of the pipes connections to avoid any torsion of the housing and damage of the instrument.

Free airflow should be allowed to the Measuring Cell. Parts of the Measuring Cell may heat up if sample temperature is high. If high sample temperatures are to be expected, warning signs and if necessary means of protection against touching hot parts have to be installed, to avoid danger of injury.

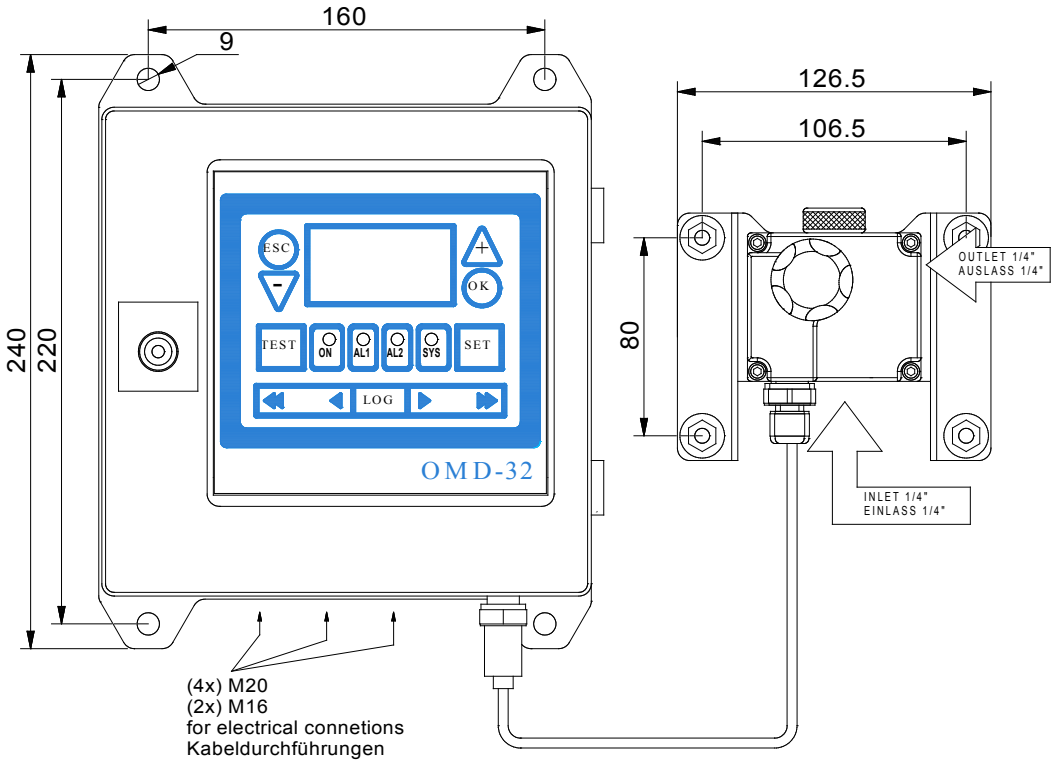


Fig. 2

7.0 PIPING (Refer to Fig. 3)

Connect the OMD-32 Monitor to the sampling point employing 6 mm to 10 mm OD copper or stainless steel pipe. The sample point should be located on a vertical section of the piping to minimize the effects of any entrained air. The tapping point should be at a level above the outlet of the monitor to ensure the sample cell is flooded at all times. Recommended sample flow rate is approx. 2 Liters per Minute.

If connection to a vertical section of the piping is impractical, the tapping may be made into the side of a horizontal pipe. Avoid top or bottom entry.

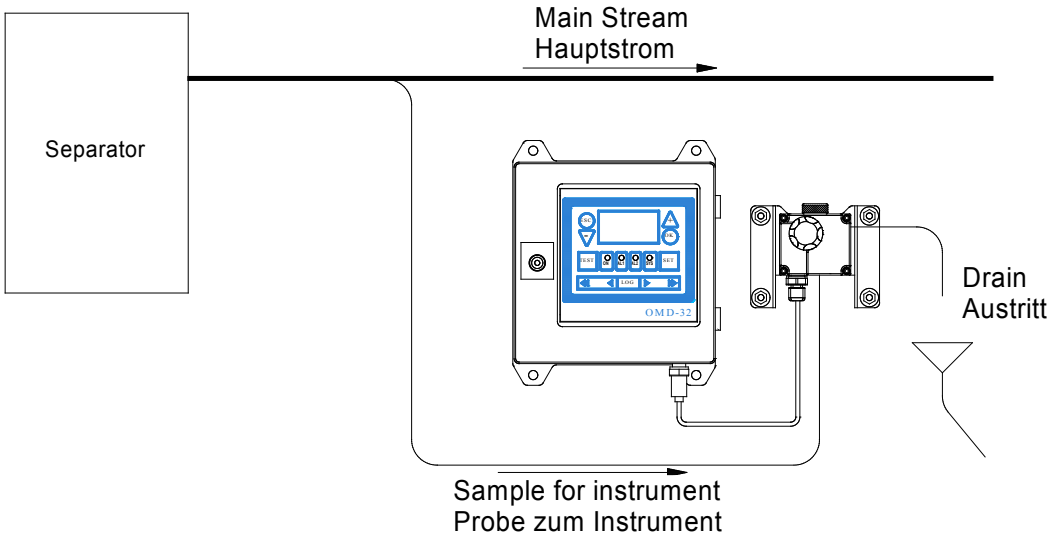


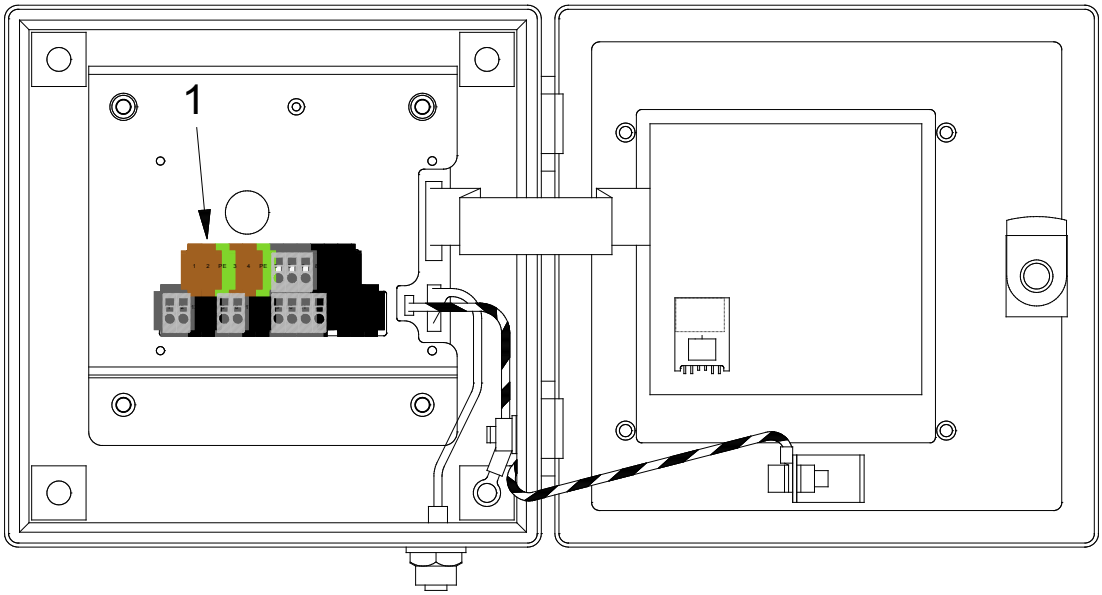
Fig. 3: Basic example of OMD-32 installation

8.0 WIRING (Refer to Fig. 4 + 5)

See Section 2 for important notes concerning wiring.

This unit must be connected to the power supply via a suitable rated and approved fused isolator unless such fusing / isolation is provided by associated equipment. When fitted, the isolator should be close, readily accessible and marked as to function.

Electrical connections are made through the metric cable gland openings prepared underneath the instrument.



1 Terminals

Fig. 4: Electrical Connections

Precise wiring details will vary dependent upon the control system to be employed but the most frequently used systems employ alarm relay 1 for alarm only and alarm relay 2 for control purposes.

Electrical connections are made to the terminal blocks inside the computer housing. Wires are connected to the terminals by pushing a suitable screwdriver into the clamp holes to release the internal spring loaded clamps. After the wire is inserted to the terminal and the screwdriver is removed, the wire is fixed.

If the instrument is operated at high voltages, additional care has to be taken to provide reliable ground connections. Ground (PE) can be connected directly to the terminal.

The instrument provides a pilot voltage output at Terminals 3&4. This is internally connected to the power supply input (Terminals 1&2) via a fuse T2A. The pilot voltage can be used to supply additional external circuitry, e.g. alarm lamps or electrical valves.

Please note: any device connected to the pilot voltage output must be rated for the voltage the instrument is supplied with. Do not use the pilot voltage for driving motors, heaters or other high load devices. The pilot voltage is intended for alarm purposes only.

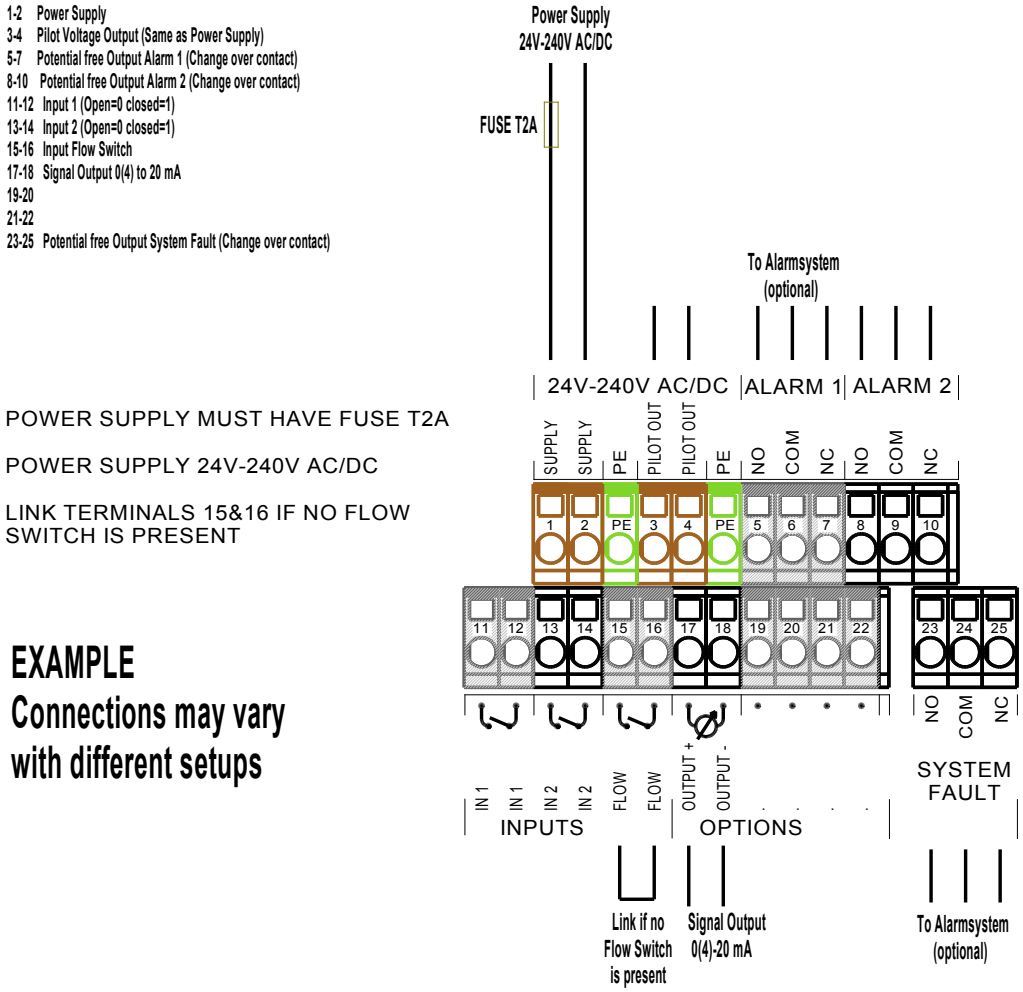


Fig. 5

Close front cover completely after electrical installation. Water inside the instrument may result in corrosion and malfunction. Alarm contacts description is in alarm (non-energized) condition.

8.1 Typical Control System

The installation on site has to make sure that in case of any loss of power supply and/or loss of air supply a safe configuration will be entered (e.g. all discharge will be stopped).

9.0 POWER SUPPLY

See Section 2 for important notes.

The unit is designed for a power supply of 24 V – 240V AC or DC with automatic range selection. The power supply must have a suitable fuse.

The instrument is necessarily mounted closely to water. Consequently it should be checked, if operation with 24VDC or 24VAC is possible in the installation on site. If higher voltages are used, proper grounding (PE) of the instrument and its components has to be ensured.

10.0 COMMISSIONING

See Section 2 for important notes.

On completion of the installation, wiring and piping carry out the following checks:

10.1 Electrical

a) Check that the power supply of 24V to 240V AC/DC is connected to the terminals 1 & 2 of the terminal block.

b) Check the wiring of the alarm system is according to the requirements.

c) Check that the grounding has been made according to the relevant regulations.

10.2 Piping

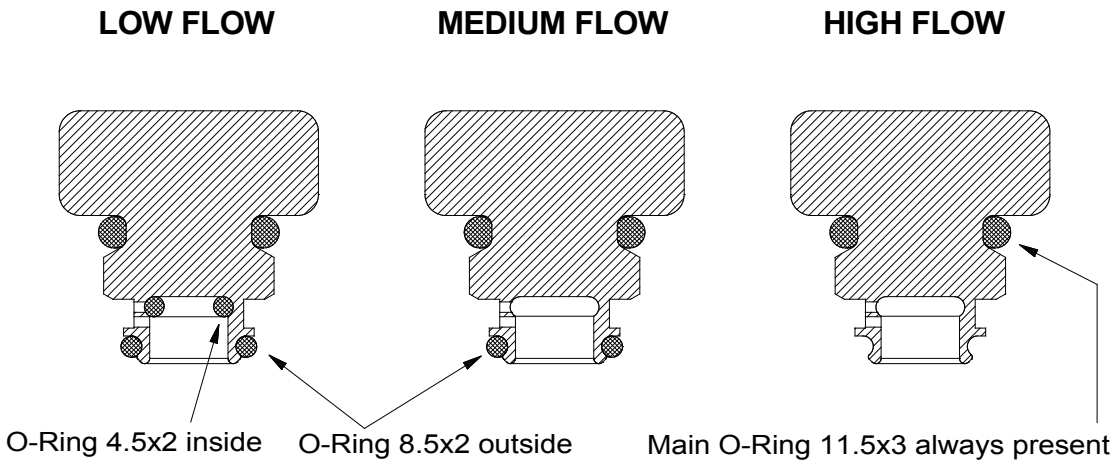
a) Check all piping connections for leaks and rectify as appropriate.

b) For OMD-32A, check if pressurized air (4-6 bar) is available and connected

10.3 Functional Tests

a) Run oil free water through the instrument to purge the system.

b) (OMD-32 without cleaning unit) Adjust the flow rate through the unit by using the small O-Rings in the cell cap. The flow rate should be approx. 2 Liters/Minute.



(OMD-32A and OMD-32 with manual cleaning unit)

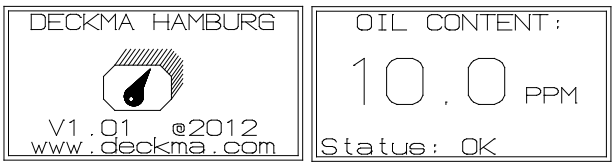
Flow rate is regulated by using a small O-Ring inside the Cleaning device. Take out the wiper piston. It is magnetically coupled, so it can just be pulled out.

There a groove for an O-Ring. No O-Ring allows the higher flow rate, an O-Rings in the groove means a lower flow rate.

NB: If the installation has a clean water feed, the flow rate should be checked on both, the clean water supply and the sample supply. If the clean water supply is obtained from a high pressure source, the flow rate will be higher than from the sample point.

The flow rate is not influencing the accuracy of the instrument. The adjustment is only important for the time delay between the sample point and the monitor.

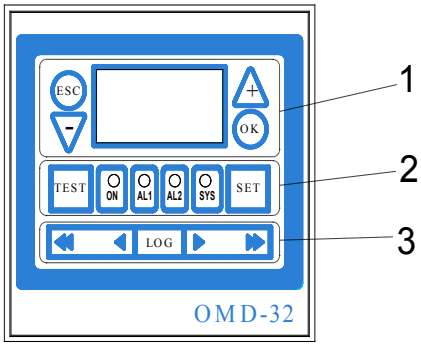
c) Switch on the instrument and make sure, that the Power LED is illuminated and the display is showing the initializing display for about 15 sec. After that time it will change to the standard display, showing the actual measurement.



d) While oil free water is running through the monitor check the Zero adjustment. The display should be "0" to “2” ppm. If the display varies by greater amounts, it may be that air entrainment is present, or the sample glass tube is not clean If this is the case, the cause must be located and rectified.

f) If the Zero need to be adjusted, this can be done in the programming mode as described in section 10.4. (Settings – Offset)

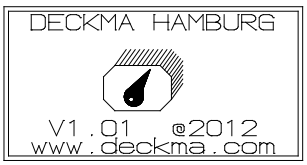
10.4 Programming Mode

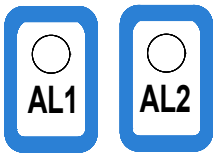


There are 3 groups of push buttons to control the functions of the display. Navigation buttons are in group 1. Functional buttons are group 2. Group 3 is for data logger operation.

In the programming mode the alarm set points, the time delays, and the offsets can be modified. It is also possible to reset to the factory default values at any time.

The clock is factory set for GMT, **G**reenwich **M**ean **T**ime.

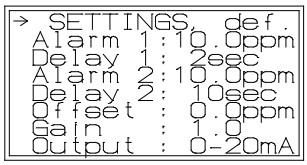
 Initial Display. Will disappear a few seconds after power up.	 Normal Operation Display. Pressing the + button will display additional information. Pressing the OK button will display more detailed information about the current status.	 Exit from SYSTEM-info menu by pressing the ESC button. Refer to Fault finding table in manual for explanations of status information.



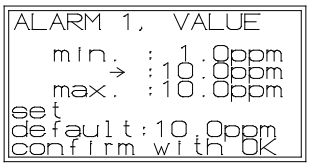
Pressing the AL1 button leads into SETTINGS menu, Alarm1 settings preselected.

Pressing the Al2 button leads into SETTINGS menu, Alarm2 settings preselected.

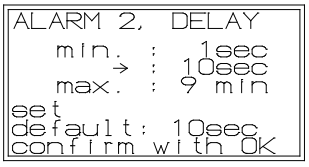
Pressing the SET button from Normal Operations Display leads into SETTINGS menu, set default option preselected.



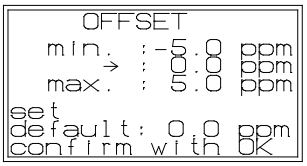
At the SETTINGS menu the alarms, time delays, the Offset and optionally the output signal can be modified within the limitations. Select the required point by using the „+“ or „-„ button. To modify settings press the SET button.



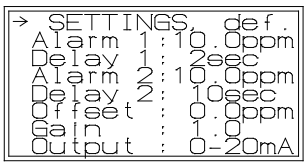
To change the value, press the “+” or “-“ button. Confirm with “OK”.



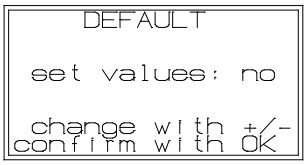
To change the value, press the “+” or “-“ button. Confirm with “OK”.



To change the value, press the “+” or “-“ button. Confirm with “OK”.

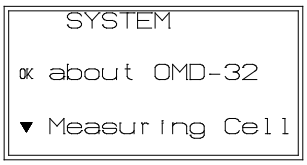


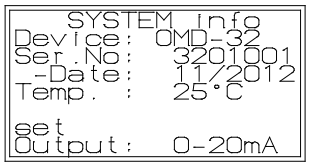
At the SETTINGS menu the all settings can be reset to the factory default values. To reset to factory values once again press the SET button.



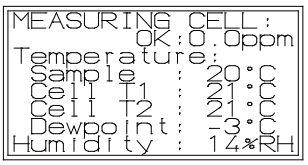
To change to “yes”, press the “+” button. Confirm with “OK” to reset all settings to the factory default settings.

<table>
<tr>
<td> 

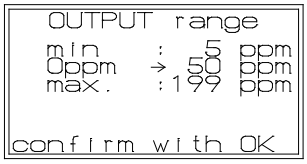
Pressing the SYS button directly leads into SYSTEM menu.</td>
<td> 

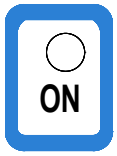
Select if you want information about the instrument or information about the measuring cell.</td>
<td> 

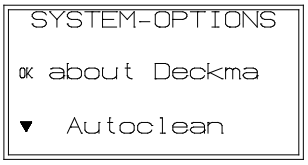
Exit from SYSTEM-info menu by pressing the ESC button.

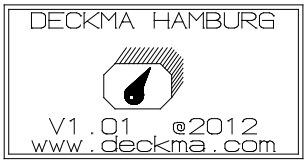
 

Exit from MEASURING CELL menu by pressing the ESC button.</td>
</tr>
<tr>
<td> 

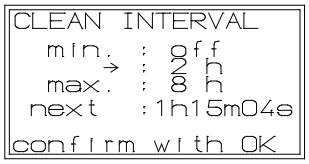
This combination allows setting of the range for the signal output</td>
<td>Here the ppm value associated with an output signal of 20mA is set. Starting from 0 mA or 4 mA (depending on the configuration of the output) for zero ppm, the output signal increases linearly with the measured ppm value.</td>
<td> 

Confirm setting with “OK”.</td>
</tr>
<tr>
<td> 

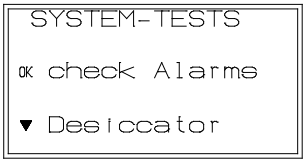
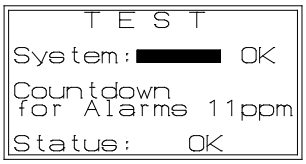
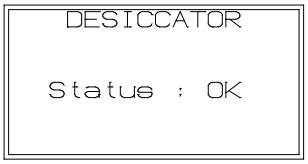
Pressing the ON button directly leads into the SYSTEM-OPTIONS menu.</td>
<td> 

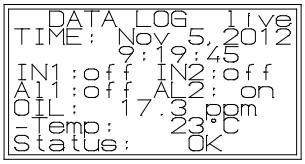
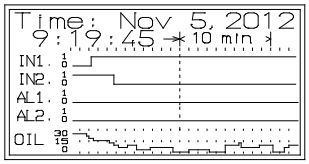
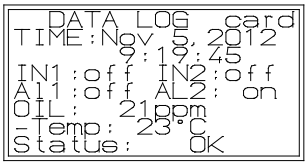
Select if additional information should be displayed.</td>
<td> 

Exit from information display by pressing the ESC button.

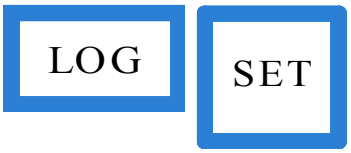
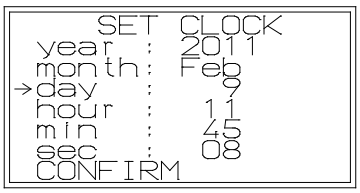
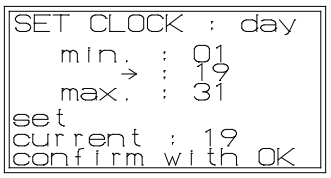
 

Select a time intervall for automatic cleaning (OMD-32A).
Confirm changes with “OK”.</td>
</tr>
</table>

TEST Pressing the TEST button directly leads into the SYSTEM-TESTS menu.	 Select if you want to activate the Alarms Test or if Desiccator status information should be displayed.	 Wait until Alarms Test, value countdown, and progress bar are completed  Exit from Desiccator status display by pressing the ESC button.

LOG The LOG button leads into the data logger function.	 Initially the data logger displays the live data. With the button it can be switched to the graphical display mode. LOG	
LOG LOG By pressing the LOG button twice the recorded data display mode is invoked.	 The data logger displays recorded data. With the LOG button it can be switched to the non-graphical display mode.	 The data logger displays recorded data. With the LOG button it can be switched to the graphical display mode.
	 In both data display modes the arrow buttons can be used to navigate to another date/time of recorded data.	

NB: *Changed values have to be confirmed by pressing the "OK" button. Otherwise the existing values remain valid.*

 Press LOG Button and SET button subsequently to go to the time setting display.	 To change settings of the instrument clock select by using the "+" and "-" buttons and press SET to alter the setting. To change the clock to the new settings, select CONFIRM and press the SET Button.	 Change the setting with the "+" and "-" buttons. To confirm press the OK Button Hours are in 24-hours format. Dates will be corrected to the next possible date.

10.5 Change of cleaning frequency (OMD-32A only)

To adjust the frequency of the autoclean according the water quality on site, the programming mode has to be entered by pressing the ON Button, and selecting "autoclean". Refer to Section 10.4.

The autoclean menu allows to check and set the time delay setting for the autoclean operation. The Automatic Clean device will operate the cleaning piston multiple times and the pause for the interval duration.

Maximum setting is 8 hours between two subsequent operations, minimum setting is 1 minute. Factory setting is 2 hours.
Line „next" shows the remaining time towards the next cleaning cycle. This is especially useful if maintaining very long (several hours) cleaning intervals.
Leaving the autoclean settings menu (using the OK button) triggers the cleaning cycle immediately, and resets the timing counter to the next full time interval.
If no instantaneous cleaner operation is desired, leave the autoclean settings menu without the OK button, just wait approx. half a minute to automatically drop back to the main menu.
If autoclean interval setting is set to „off", no cleaner operation will be triggered at all. The setting „off" will shut off autoclean operation completely.
It is recommended to adjust the frequency to the longest time that still provides acceptable results. Unnecessary frequent cleaning may introduce wear to the sample glass tube, and to the wiper seal. It is recommended to avoid cleaner operation without water in the sample glass tube. Repeated dry operation of the cleaner may damage the sample glass tube, and the wiper seal.

11.0 OPERATING INSTRUCTIONS

Instrument start-up sequence:

a) Switch on the power supply.

b) Allow a period of time for water entering the sample tube.

c) Flow oil free water through the system for a few minutes and check that the display shows 0 to 2 ppm. If not, clean proper before adjusting the unit according section 10.4 “Settings - Offset”.

d) Switch the instrument sample supply from the clean water supply to the separator sampling point connection.

e) The instrument is now ready for use.

11.1 Operator Notes

a) When oily water flows through the instrument the display will show the measured value of oil content.

b) If the oil concentration exceeds the adjusted the alarm indicator 1 will be illuminated in intervals during the selected time delay before it changes to steady light and the associated alarm relay will operate. Accordingly also the alarm indicator 2 will be illuminated and its associated alarm relay will take the appropriate shut down action.

12.0 OPERATOR MAINTENANCE

See Section 2 for important notes.

AT WEEKLY INTERVALS:

a) Flush the cell with oil free water.

b) Stop sample and oil free water flow.

c) Unscrew and remove the cell cap.

d) Insert a suitable Cell Cleaning brush (Art. No. 77555) into the cell and clean it with upwards and downwards motion through the entire length of the cell several times.

e) Remove the Cell Cleaning brush and replace the cell cap.

f) Open clean water valve and allow oil free water to flow through the instrument for a few minutes.

g) Observe that the display is showing "0" to “2”. If not, clean again.

h) Examine the status of the desiccator (Chapter 10.4, TEST button). The Desiccator status display will indicate if the desiccator is worn out and working insufficient. If the desiccator status is any other then OK, the desiccator should be replaced. Additionally, the Measuring Cell dewpoint can be checked. The dewpoint should be lower then both sample temperature and clean water temperature.

   Insufficient desiccator performance could result in condensation inside the measuring cell and wrong measurement and/or damage to optical components. Saturated desiccant container can easily be exchanged. Just unscrew the desiccator cap, replace the desiccator and cap with a new one (Art. No. 79550). Do not open the new desiccator before the moment of installation to avoid exposing it to ambient air. Make sure to close the desiccator cap properly, and avoid ingress of any water drops into the Measuring Cell or onto the desiccator thread. Allow the new desiccator some time to absorb the humidity inside the measuring cell.

i) Restore sample flow

Additional maintenance items for OMD-32A, and for OMD-32 with Manual Cleaning Unit:

1) Pull wiper piston from cleaning unit and check that no debris or deposits can limit wiper piston operation.

2) Check that the wiper seal is in good condition.

3) Put wiper piston back in place

4) (OMD-32A only) Check that air connections are correct (Refer to Fig. 1a, p.10)

5) (OMD-32A only) Check air pressure (4 bar at air pressure regulator).

12.1 Manual Cell Clean Unit DH77780

Optional item if fitted - not for OMD-32A

This unit facilitates cleaning of the cell without the need of removing the cell cap. Regular use of this device should prevent malfunction of the monitor due simply to fouling of the sample tube and all the inconvenience which this can cause.

Operating Instructions

a) Ensure that the monitor is switched off and that there is a clean water supply through the cell.

b) Activate the manual cell clean unit by pressing the handle several times.

c) Switch the monitor back on and check the reading is between 0 to 2 ppm.

d) Repeat a) to c) at least once a week or as necessary.

NB: The Manual Cell Clean Unit may also be used during normal operation with sample water, but in this case an alarm may occur because the wiper is passing the light path.

Spares: Wiper Seal DH77606

12.2 Automatic Cell Clean Unit

OMD-32A only

This unit facilitates automatic cleaning of the cell. Regular use of this device should prevent malfunction of the monitor due simply to fouling of the sample tube and all the inconvenience which this can cause.

Part of the Automatic Cell Clean Unit is a Valve Unit that is connected to both the Measuring Cell and the Computer Unit. The wiper of the Automatic Cell Cleaning Unit is operated pneumatically.

Note: during wiper operation measurement is halted, and results are not updated. Wiper operation should finish within 20 seconds, and result update resumes.

Operating Instructions

a) Provide clean, dry, oilfree instrumentation air.

b) Assist the automatic Cleaning System by manual maintenance. Refer to Section 12.0 for cleaning the Measuring Cell.

c) Adjust automatic cleaning frequency according to conditions on site. Refer to Section 10.5 for changing of cleaning frequency.

12.3 Automatic Cell Clean Unit Fault Finding (OMD-32A only)

Fault	Explanation	Solution	Comment	
Cleaner not operating	Air pressure low	Restore air pressure		
	Air connections missing or wrong	Sort air connections. Refer to Fig. 1a	Air connections are Push-In type. Press release ring to release hose.	
Wiper moving very slowly	Air flow adjuster too stringent	Turn Adjuster on Autoclean Control counter-clockwise with a screw driver	Refer to Fig. 1a	
Wiper moving very fast	Air flow adjuster too wide	Turn Adjuster on Autoclean Control clockwise with a screw driver	Refer to Fig. 1a	
Cleaning insufficient	Cleaner not operating	Check wiper and air supply	Refer to this section.	
	Debris deposits	Try additional manual cleaning		
	Cleaner frequency not adjusted to situation on site	Adjust cleaner frequency	Refer to section 10.5	
	Wiper seal worn out or damaged	Replace wiper seal		
	Wiper piston missing	Re-install wiper piston		

13.0 FAULT FINDING

See Section 2 for important notes.

The OMD-32 will indicate several malfunctions in the status line of the display. Pressing the “OK” button will lead into an information window, similar to the items listed in the table below.

Status	Reading	System-Alarm-LED	Alarm-circuit 1,2	Reason	Servicing
OK	0..200	Green / Blinking	Normal operation	Normal operation	-
OK	EE	Green / Blinking	Alarm	Sample reading is out of range: Oil content too high, dirty sample tube	Wait until oil content is within the range, clean sample tube
Sample?	EE	Red / Steady	Alarm	Meter is not able to measure the sample: no water in, oil content much too high, no light transmission possible	Check sample, clean sample tube according Page 21
Flow!	0..200 / EE	Green / Blinking	Alarm	Flow Switch (Terminals 15&16) open and/or Sample Valve Lever out of operation position	Check sample flow and valve positions
Com?	EE	Red / Steady	Alarm	No communication between computer unit and measuring cell	Check connection between computer unit and measuring cell
Datalog?	0..200 / EE	Red / Steady	Alarm	Datalogging is not possible: no DECKMA memory card inserted	Insert the active memory card
				Datalogging is not possible: a read only card has been inserted	Insert the active memory card
				Datalogging is not possible: a new DECKMA memory card has been inserted, but has not been activated	Activate card or insert the active memory card
Desicc	0..200 / EE	Green / Blinking	Normal operation	Measuring Cell humidity critically high (>40%RH)	Check/Replace Desiccator
Humid	0..200/ EE	Green / Blinking	Normal operation	Sample temperature below dewpoint. Instantaneous condensation possible	Check/Replace Desiccator
Int.Err		Red / Steady	Alarm	Internal error	Restart the system

Important Information!

Cleaning of Glass Tube of Oil-in-Water Monitor OMD-32

IMPORTANT:

NEVER DISASSEMBLE THE UNITS AS THIS MAY VOID THE CALIBRATION AND THE CERTIFICATION!

CLEANING HAS ONLY TO BE DONE TROUGH THE REMOVED CELL CAP BY

USING THE CLEANING BRUSH!

In most cases of high reading with clean water the measuring cell has a problem with internal coating of the glass tube. Just cleaning with brush and clean water will not help in this case.

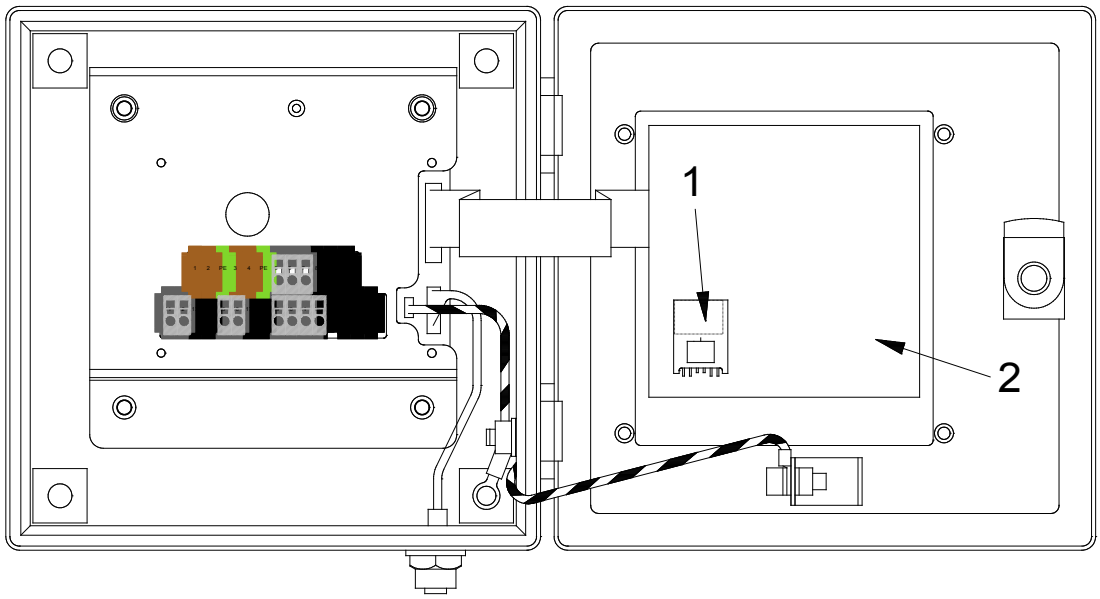
Please carry out the following instructions to make sure, that the glass tube is really clean. Than the unit will show 0 to 2 ppm with clean water.

Check Measuring cell humidity readings and desiccator status. Desiccator status must be OK and dew point temperature should be considerably lower then both sample temperature and clean water temperature. If not, change desiccant container and allow new desiccator to absorb the humidity inside the measuring cell.

Clean the glass tube by using the cleaning brush under assistance from some cleaner.

In certain cases iron oxide can be deposited inside the glass tube (brownish surface deposit on the glass tube), depending on environmental conditions on site. In this case some citric acid may help. Fill the glass tube with clean water, add citric acid, and let it soak overnight, before using the cleaning brush for removing the last dirt from the glass tube. Also, in cases of calceous deposits in the glass tube, treatment with some mild acidic cleaner, or citric acid may allow removal of the deposits. Make sure, that the cleaning fluid will stay in the tube and is not draining. Sometimes cleaning with citric acid has to be repeated, depending on the thickness of the coating.

Additional use of some slightly abrasive cleaning powder or tooth paste may also assist in cleaning as a last resort. Please note that some powerful abrasives may scratch the glass surface, permanently damaging the instrument.



1: Memory Card

2: Display PCB

Fig. 6

13.1 **Memory Card** (refer to Fig. 6)

The Memory Card is located in the computer housing. It is suitable for the life of the instrument, and has a storage time of at least 18 month. When the card is full, the oldest entry will be overwritten, so that a replacement is not necessary. Under normal use the card should not be taken out, as this is linked with the specific system. The card can be read in other OMD-32 units, but writing is only possible in the related system.

If no Memory Card is mounted or a card from another system is mounted, the unit will be in alarm conditions.

14.0 Calibration

The Measuring Cell of the OMD-32 is calibrated in works. It is always possible to adjust the instrument's offset and gain settings. This affects the display, the alarm settings, and the signal output. If lab samples are taken for adjustment, it is recommended to take the samples after the instrument (downstream) without changing the flow conditions.

To provide a simple procedure for check the instrument on site, the OMD-32 is constructed in that way, that the zero check also confirms the instrument drift within the specifications.

14.1 Calibration and repeatability check

a) Switch off the power supply and stop any water flow.

b) Clean the sample tube accurately by using a suitable cell cleaning brush as described under Section 12.0. Make sure that the offset is correct at ± 0, by observing the raw measuring cell readings.

c) Run clean water through the instrument.

d) If it is sure, that non aerated, clean water is in the instrument, the reading should be 0 ppm ± 2 ppm.

f) Continue as described under Section 11.0.

14.2 Function Test

To provide a simple procedure to check the instrument on site, the OMD-32 is constructed in that way, that the zero check also confirms the instrument drift within the specifications. The Test button starts a self test routine and allows to put both alarms contacts into alarm condition. The instrument will count down from a assumed high reading downwards until the assumed value is equal to the actual measured ppm value. Note that this test will only switch the alarm contacts to non-alarm condition, if the sample contains less oil than the alarm point settings and all other conditions for proper measurement are OK.

15.0 SPARE PARTS

When ordering spares, it is important to supply details of the type of monitor, part number of each spare required, its description and any relevant serial number.

DESCRIPTION	ART-NUMBER
Desiccator	79550
Cell Cleaning Brush	77555
O-Ring Set	77775

15.1 Recommended On Site Spares

2 off Desiccator	79550
1 off Cell Cleaning Brush	77555
1 off O-Ring Set	77775
Optional Item	
1 off Manual Cell Clean Unit	77780
1 off Wiper Seal for Cell Clean Unit	77606

For OMD-32A Autoclean system

1 off Wiper Piston	77785
1 off Wiper Seal for Cell Clean Unit	77606
1 off Solenoid Valve	78797
1 off Push-In Connector with adjuster	40619
1 off Push-In Connector M5x4	40618
1 off Pneumatic Cylinder	78785

16.0 REMARKS

All the modifications and deviations from the standard form, which have to be carried out in the supply, should be attached at this paragraph.

Commissioned on: ..... by: .....

Date Firm's Name

Remarks: