# *INSTRUCTION MANUAL*

## *15ppm Bilge Alarm*
### *with Electric Sample and Fresh Water Valve*

## *Type: OMD-24 EV*


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## *IMPORTANT NOTICE*

**Replacement components for 15ppm Bilge Alarms.**

**General**

All monitors in our range are inspected and tested to the related I.M.O. 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 the monitor on board conforms to I.M.O. resolution MEPC.107 (49).

***Remark:***

*According the MEPC.107(49) § 4.2.11 the unit has to be checked at IOPP Certificate renewal survey by the manufacturer or persons authorized by the manufacturer. Alternatively the unit may be replaced by a calibrated 15 ppm Bilge Alarm. The OMD-24 EV is designed in that way, that only the measuring cell needs to be changed, as this unit carry the calibration onboard. The Calibration Certificate with the date of the last calibration check should be retained onboard for inspection purposes.*

If for some reasons the computer unit needs to be changed, it has to make sure, that the memory card will remain on board for at least 18 month. The new computer unit will carry its own memory card. The old card can be insert into the new unit only for reading. Writing is only possible with the card delivered with the new computer unit. For details see section 13.1.

***Warranty***

Our warranty terms are12 months after installation but maximal 18 months after delivery ex works. The maker undertakes to remedy any defect resulting from faulty materials of workmanship except wearing parts.
The maker's obligation is limited to the repairs or replacement of such defective parts by his own plant or one of his authorized service stations.
The purchaser shall bear the cost and risk of transport of defective parts and repaired parts supplied in replacement of such defective parts.

***ANY DISMANTLING OR BREAKING OF A SEAL WILL VOID THE WARRANTY***

## *CONTENTS*

## 1.0 INTRODUCTION

The OMD-24 EV Bilge Alarm Unit has been designed specifically for use in conjunction with 15 ppm oil-water separator units and has a specification and performance which exceeds the requirements of the International Maritime Organization specifications for 15ppm Bilge Alarms contained in Resolution MEPC. 107 (49).

The unit is supplied with 2 works-adjusted alarms at 15 ppm. Other set points (10 ppm or 5 ppm) are possible and can be adjusted on site at any time by using the buttons at the front panel.

If an alarm set point is exceed, 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.

For the data logging function the unit requires an status input from the separator.

The OMD-24 EV has an active 0(4) - 20 mA (equal to 0 - 30 ppm) signal output for driving a recorder or external meter.

The OMD-24 EV variant is different from the standard OMD-24 in that it has an electrically operated switchover valve for clean water usage instead of the manually operated valves. The electric valve allows remote control for flushing the measuring cell. The OMD-24 EV monitor will switch to alarm condition, but will continue to display the measurement result, whenever the valve is set to clean water usage.

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

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

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

e) 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.

f) In case of freezing conditions the measuring cell should be emptied complete.

# 3.0 PRINCIPLE OF OPERATION

## 3.1 Measuring Principle

An optical sensor array measure 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 linearised output.

If an alarm (works set point 15 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.

An electric valve is operated directly by the OMD-24 EV Bilge Alarm. Whenever fresh water is allowed to flow to the measuring cell, the OMD-24 EV will switch over to alarm condition as required by MEPC.107(49).

## 3.2 Features

- Robust construction
- Solid suppression capability
- Low maintenance
- Easy installation
- Constant readiness
- Low spare part stock holding
- Works adjustment
- Easy settings via menu

## 3.3 Adjustment

The unit is delivered with a works calibration according the IMO-requirements. The alarm points are set to 15 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”. A calibration is not permitted. This has to be done according IMO Regulations by the manufacturer or persons authorized by the manufacturer.

## 3.4 Displays and Alarms

In the unit are two independent oil alarm circuits available. Both can be set separately from 1 to 15 ppm. From the manufacturing both alarms are set to 15 ppm (according IMO). The set points can be changed according to the requirements on site, for example to 10 ppm or 5 ppm. An alarm point setting above 15 ppm is not possible. 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 can be done.

Both alarm circuits are also related to an alarm LED on the front panel.

In case of malfunction the “System” LED will indicate any type of internal fault of the unit. This LED is flashing green in normal conditions and is red in alarm conditions.

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, both relays will switch to alarm condition.

## 4.0 SPECIFICATION OMD-24

| | |
|---|---|
| Range: | 0 – 30 ppm, Trend indication 50ppm |
| Accuracy | According IMO MEPC. 107(49) |
| Linearity | Up to 30 ppm better than ± 2 % |
| Display | Yellow Graphic Display |
| Power Supply: | 24 V AC or DC +/- 10% |
| Consumption: | < 15 VA |
| Alarm Points 1 + 2: | Adjustable between 1 - 15 ppm<br>(Works adjustment 15 ppm) |
| Alarm 1 Operating Delay:<br>(for annunciation purpose) | Adjustable between 1 – 540 sec.<br>(Works adjustment 2 sec) |
| Alarm 2 Operating Delay:<br>(for control purposes) | Adjustable between 1 – 10 sec.<br>(Works adjustment 10 sec) |
| System Fault Alarm: | Red LED |
| Alarm Contact Rating: | Potential free 1 pole change over contacts, 3 A / 240 V |
| Alarm Indication: | Red LEDs |
| Output Signal: | 0 – 20 mA or 4 – 20 selectable<br>active current loop, ext. Load < 150 Ω |
| Clean Water Pressure | 0-6 bar |
| Sample Water Pressure: | 0,1 – 6 bar |
| Sample Flow: | Approx. 0,1 - 3 l/min depend. to pressure |
| Ambient Temperature: | + 1 to + 55° C |
| Sample Water Temperature: | + 1 to + 65° C |
| Roll: | Up to 45° |
| Size (Computer Unit) | 185 mm W x 210 mm H x 65 mm D |
| Size (Measuring cell Assembly): | 140 mm W x 160 mm H x 120 mm D |
| Distance (Computer Unit to Measuring Cell) | Up to 0.5m<br>Option: up to 5m upon request |
| Degree of Protection: | IP 65 |
| Weight: | 2.5 kg |
| Pipe Connections: | R ¼" Female |

Technical specifications are subject to change without notification

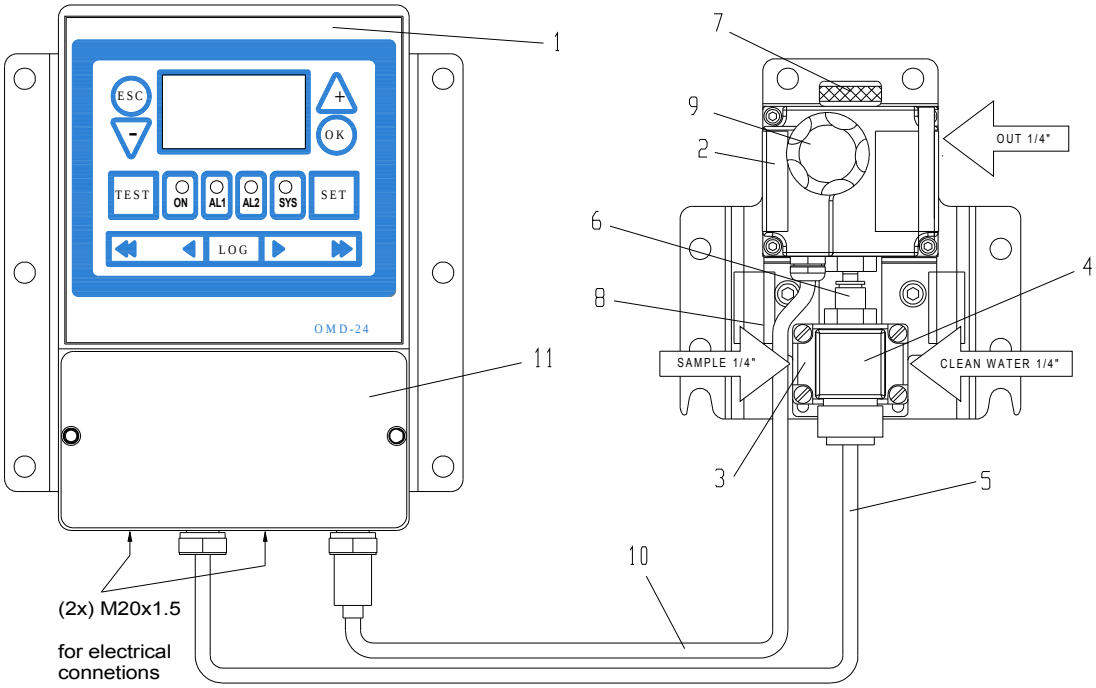
## 5.0 CONSTRUCTION

There are 2 main parts which contained in an OMD-24:

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-aluminium body with inlet and outlet block in stainless steel. This rugged cell contains optics and electronics and is connected with the computer unit via a plugged data cable. It is mounted onto a stainless steel support that also holds the valve assembly. Sample water flow and clean water usage are controlled by an electric switchover valve. This assembly is connected to the measuring cell by a push-in connector.

Both components can easily be mounted in wall or bulkhead installation. It is also possible to split the computer unit from the measuring cell if the available space is not sufficient.




| | | | | | |
|---|---|---|---|---|---|
| 1 | Computer Unit | 5 | Valve Cable | 9 | Desiccator Cap |
| 2 | Measuring Cell | 6 | Push-In Connector | 10 | Communication Cable |
| 3 | Electric Valve | 7 | Head Screw | 11 | Terminal Cover |
| 4 | Valve Connector | 8 | Valve Plate | | |

Fig. 1

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

*See Section 2 for important notes concerning installation.*

The OMD-24 EV Monitor should be located as close as possible to the oily water separator to minimize response delays. According MEPC.107(49) the layout of the installation should be arranged so that the overall response time (including the response time of the 15 ppm Bilge Alarm, which is less than 5 s.) between an effluent discharge from the 15 ppm Bilge Separator exceeding 15 ppm, and the operation of the Automatic Stopping Device preventing overboard discharge, should be as short as possible and in any case not more than 20 s.

Mount the OMD-24 EV Monitor by means of M6 or M8 screws 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.

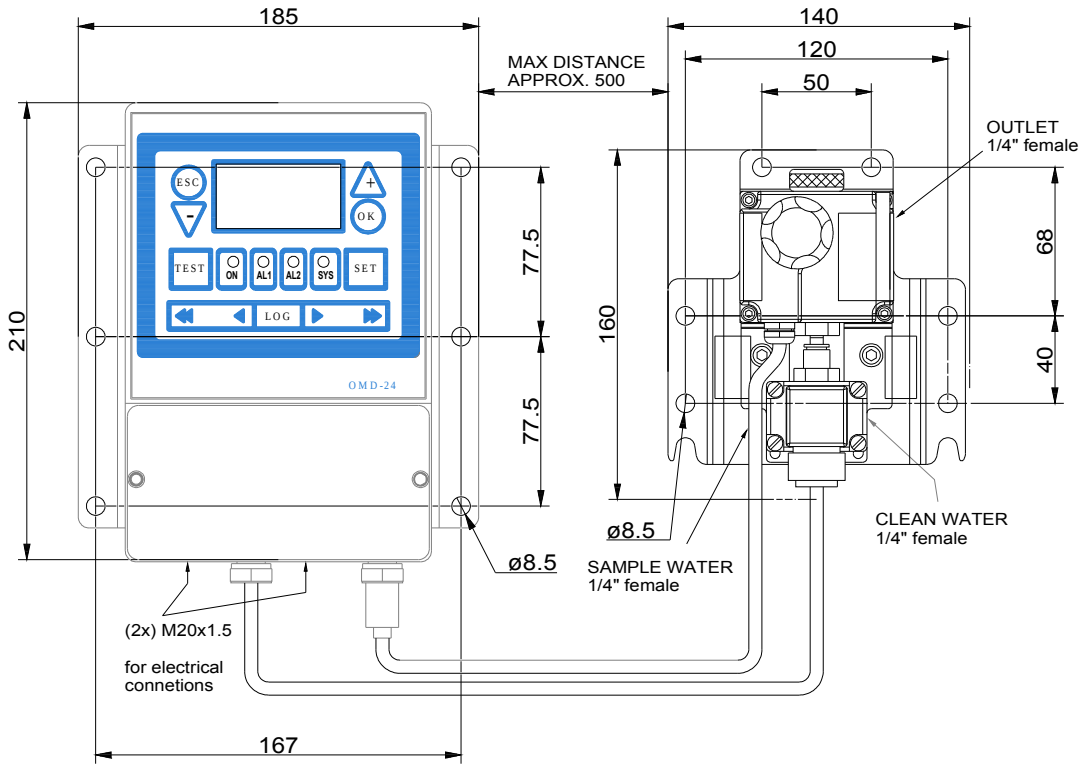



Fig. 2

## 7.0 PIPING (Refer to Fig. 3)

Connect the OMD-24 EV Monitor to the sample point of the oily-water separator outlet and to a source of oil free water employing 10 mm OD copper or stainless steel pipe. The sample point should be located on a vertical section of the separator outflow 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.

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

For separator discharge pipes up to 75 mm OD a standard "T"-type junction of the welded or screwed type is satisfactory for the tapping point. For the separator discharge pipes of 80 mm OD and above a sample probe should be employed which protrudes into the discharge piping by approx. 25 % of the ID of the pipe.

If possible it is recommended to install a manual valve into the clean water line next to the OMD-24. This allows to stop any water flow through the instrument for easy manual cleaning. No additional valve in the sample line can be allowed.

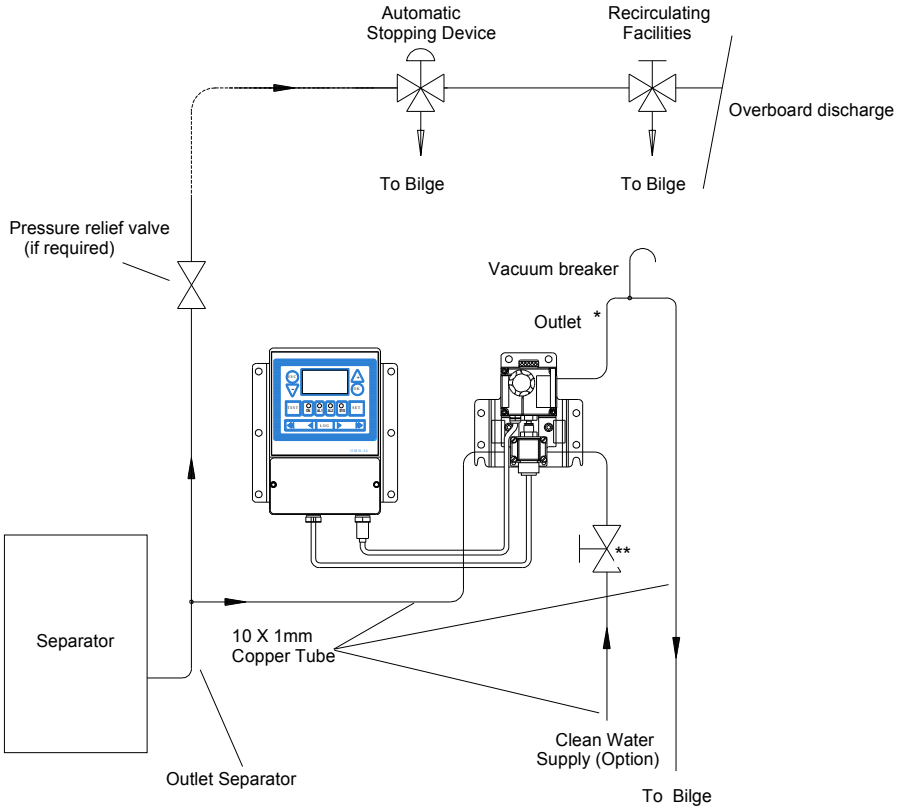



Fig. 3

* Inlet & Outlet connections R1/4" Female
** Additional valve recommended

## 8.0 WIRING (Refer to Fig. 4 + 5)

*See Section 2 for important notes concerning wiring.*

This unit must be connected to the mains 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.

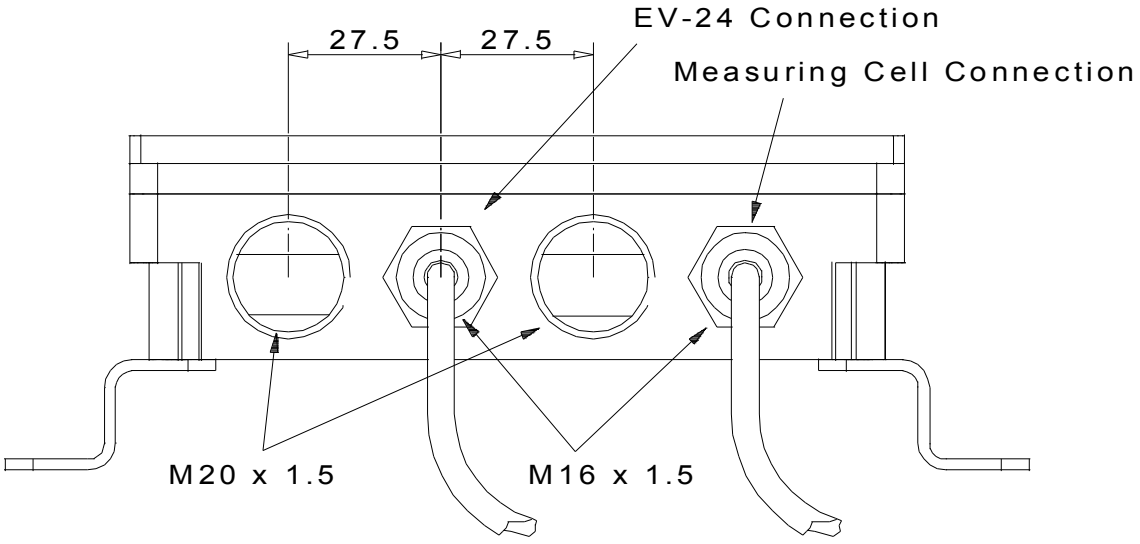



Fig. 4

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 direct to the terminal or, if this is not sufficient according local rules, to the computer housing left side.

The instrument provides a pilot voltage output at Terminals 3&4. This is internally connected to the power supply input (Terminals 1&2). 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.*

1-2 Power Supply
3-4 Pilot Voltage Output (Same as Power Supply)
5-7 Potential free Output Alarm 1 (Change over contact)
8-10 Potential free Output Alarm 2 (Change over contact)
11-12 Input Status Switch from Separator (Close when running)
13-14 Input Reserved for future use
15-16 Input Flow Direction Switch (Deckma Delivery)
17-18 (Optional) Signal Output 0(4) to 20 mA
19-20 Input External Fresh Water Usage
21-22 Output External Fresh Water Valve (Deckma Delivery)

POWER SUPPLY MUST HAVE FUSE T2A

POWER SUPPLY 24V AC/DC ONLY

LINK TERMINALS 15&16 IF NO FLOW SWITCH IS PRESENT

**EXAMPLE**
**Connections may vary with different separator control boxes**

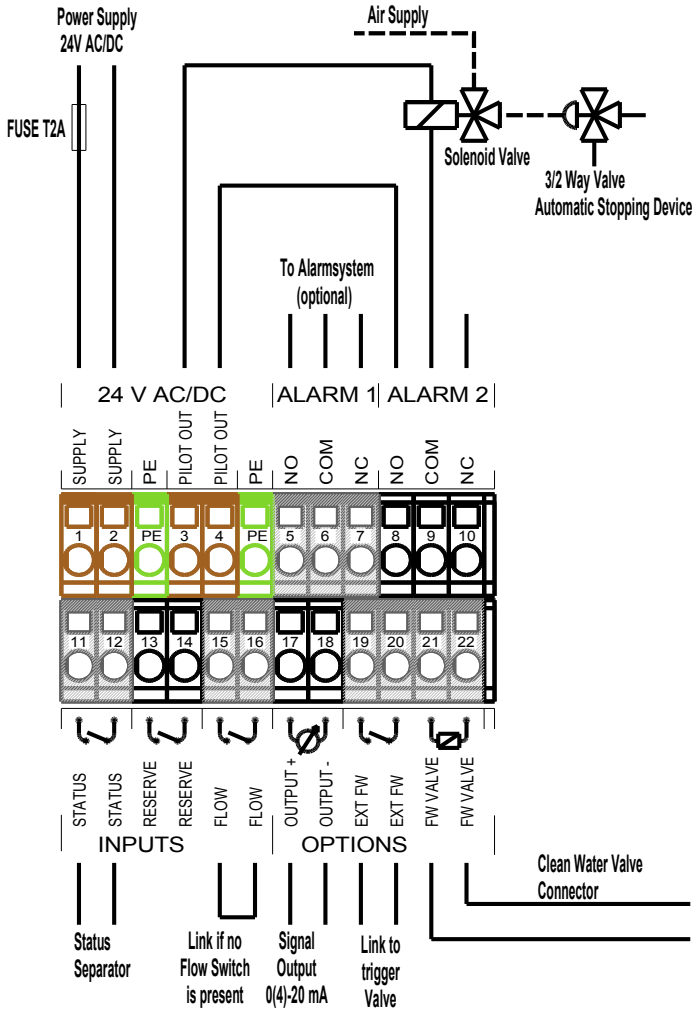



Fig. 5

*Close front cover complete 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 for the automatic stopping device the overboard discharge valve close the overboard line and open the re-circulating line.

The system showed in the example, employs alarm relay 2 to control a pneumatic solenoid valve which energises or de-energises a pneumatically operated 3 - way valve as depicted in Fig. 5.

The separation process will continue until such time as the pollution level falls below the alarm set point at which time the discharge will be directed overboard.

A pump stop system is according MEPC.107 (49) not allowed.

### 8.2 Remote fresh water switching

The OMD-24 EV allows to remotely control the valve operation. To switch the OMD-24 EV to clean water terminals 19&20 have to be linked. The OMD-24 EV will stay in clean water condition, and will remain in alarm condition, as long as the link (terminals 19&20) is present. It is recommended to use a potential free relay switch for the link to electrically insulate the OMD-24 EV from any external voltages.

## 9.0 POWER SUPPLY

*See Section 2 for important notes.*

The unit is designed for a power supply of 24 V AC or DC. The power supply must have a fuse rated no more then 2A. Power consumption of the OMD-24 EV is increased by approx. 10VA to about 15VA while the Clean water valve is energized (clean water flushing).

## 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 is connected to the terminals 1 + 2 of the terminal block.

b) Check the wiring of the automatic stopping device and to the alarm system is according the IMO Requirements.

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

d) Check that the Clean Water Valve is connected to the terminals 21&22 of the terminal block and that the connector is seated firmly on the valve.

e) Check that the remote trigger wiring (if any) is connected to terminals 19&20 of the terminal block.

### 10.2 Piping

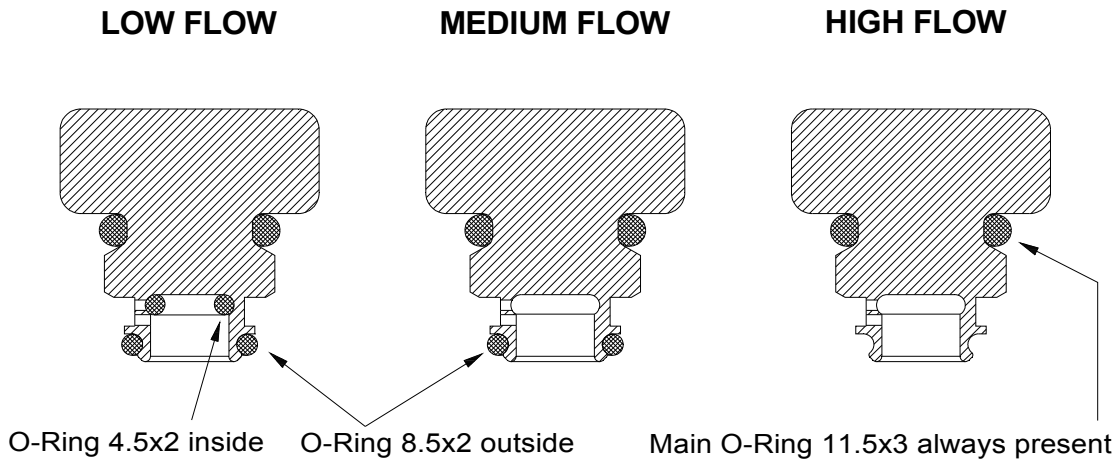
a) Check all piping connections for leaks and rectify as appropriate.

### 10.3 10.3 Functional Tests

a) 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.

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

c) Adjust the flow rate through the unit by using the small O-Rings in the cell cap.



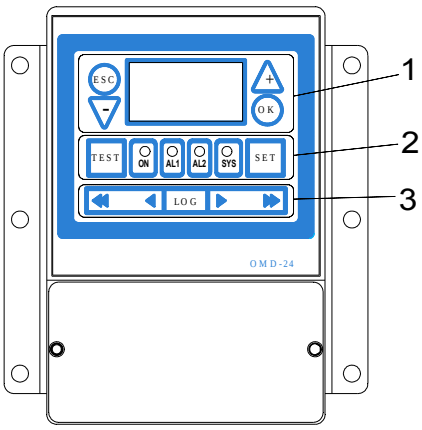

**NB**: The flow rate should be checked on both, the clean water supply and the separator sample supply. If the clean water supply is obtained from a high pressure source, the flow rate will be higher than from the sample point.

*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.*

d) During oil free water is running through the monitor check the Zero adjustment. The display should be "0" to “2” and the status will show “FW”. If the display varies by greater amounts, it may be that air entrainment is present. 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



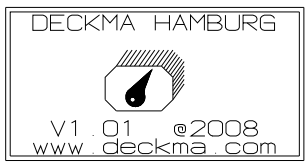

There are 3 groups of push buttons to control the functions of the display. Navigation buttons are in group 1. Functional buttons are group 2. Group 3 is for data logger operation.

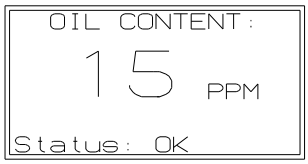
In the programming mode the alarm set points, the time delays, and the offsets can be modified. It is also possible to reset to the factory default values at any time.

The clock is factory set for GMT, **G**reenwich **M**ean **T**ime, and cannot be changed.

For operating the Electric Clean Water Valve press the “ON” button, select “FW FLUSH”, change the Status to “ON”. The OMD-24 EV will switch over to fresh water immediately, and remain in fresh water setting for 2 minutes before switching back to normal operation. If a prolonged flushing is desired, it can be retriggered within the 2 minutes, or repeated afterwards.

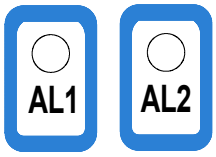
Any time is is switched to fresh water, the OMD-24 EV will be in alarm condition, as required by IMO MEPC.107(49).

<table>
<tr>
<td> 

<br>Initial Display.<br><br>Will disappear a few seconds after power up.</td>
<td> 

<br>Normal Operation Display.<br><br>Pressing the + button will display additional information.<br><br>Pressing the OK button will display more detailed information about the current status.</td>
<td> 

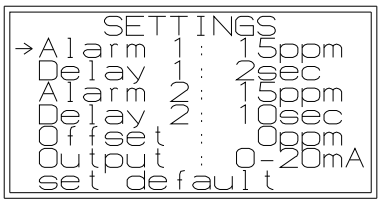
<br>Exit from SYSTEM-info menu by pressing the ESC button.<br><br>Refer to Fault finding table in manual for explanations of status information.</td>
</tr>
</table>




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

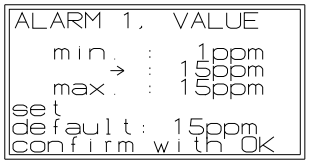
Pressing the Al2 button leads into SETTINGS menu, Alarm2 settings preselected.


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

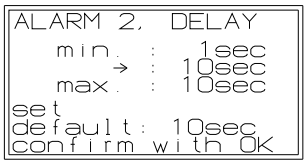



At the SETTINGS menu the alarms, time delays, the Offset and optionally the output signal can be modified within the limitations. Select the required point by using the „+“ or „-„ button. To modify settings press the 

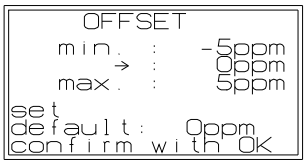
button.



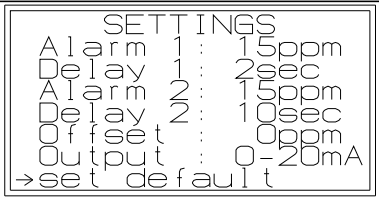

To change the value, press the “+” or “-“ button. Confirm with “OK”.




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

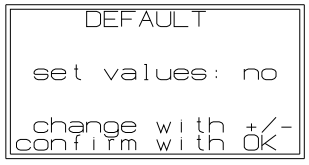



To change the value, press the “+” or “-“ button. Confirm with “OK”.



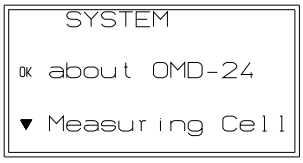

At the SETTINGS menu the all settings can be reset to the factory default values. To reset to factory values once again press the 

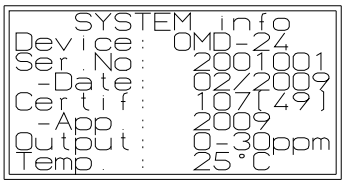
button.




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

<table>
<tr>
<td rowspan="2"> 

<br>Pressing the SYS button directly leads into SYSTEM menu.</td>
<td rowspan="2"> 

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

<br>Exit from SYSTEM-info menu by pressing the ESC button.</td>
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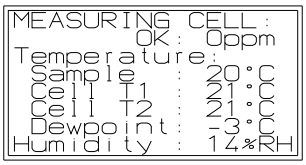
<td> 

<br>Exit from MEASURING CELL menu by pressing the ESC button.</td>
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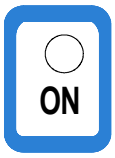
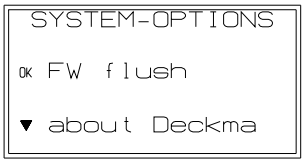
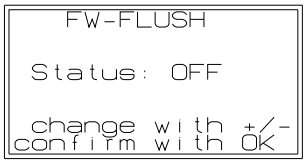
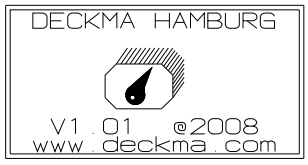
<td rowspan="2"> 

<br>Pressing the ON button directly leads into the SYSTEM-OPTIONS menu.</td>
<td rowspan="2"> 

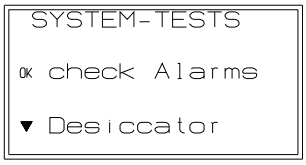
<br>Select if you want to activate the (optional) clean water valve or if additional information should be displayed.</td>
<td> 

<br>To change to “ON”, press the “+” button. Confirm with “OK” to activate the optional clean water valve for a limited time.</td>
</tr>
<tr>
<td> 

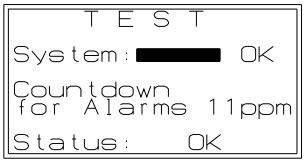
<br>Exit from information display by pressing the ESC button.</td>
</tr>
</table>

TEST

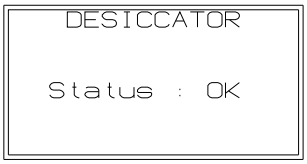
Pressing the TEST button directly leads into the SYSTEM-TESTS menu.




Select if you want to activate the Alarms Test or if Desiccator status information should be displayed.



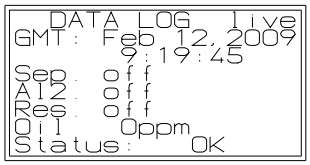

Wait until Alarms Test is completed, as indicated by countdown value and progress bar.




Exit from information Desiccator status display by pressing the ESC button.

LOG

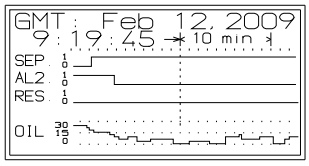
The LOG button leads into the data logger function.



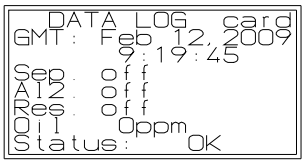

Initially the data logger displays the live data. With the LOG button it can be switched to the graphical display mode.

By pressing the LOG button twice the recorded data display mode is invoked.

LOG LOG




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.*

## 11.0 OPERATING INSTRUCTIONS

Instead of the two independent mechanically interlocked manual valves for sample and clean water at the standard OMD-24, an OMD-24 EV has no manually operable valve handles. Any operation is triggered via the front panel, or triggered remotely. The OMD-24 EV will only allow overboard discharge in Normal Operation setting.

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 show 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 actual value of oil content.

b) If the oil concentration exceeds the adjusted threshold (works adjustment 15 ppm), the alarm indicator 1 will be illuminated in intervals during the selected time delay before it change 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 (Part. 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) Switch Clean Water Valve to fresh water 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 dew point can be checked. The dew point 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. Insufficient desiccant container can easily be exchanged by removing the desiccator cap. Just unscrew the desiccator cap, replace the desiccant container by a new one (Part. No. 79550). Make sure to close the desiccator cap properly. Allow the new desiccator some time to absorb the humidity inside the measuring cell.

j) Switch valve to Normal Operation position

## 12.1 Manual Cell Clean Unit DH 77780

*Optional item if fitted*

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 occurs because the wiper is passing the light source.

Spares: Wiper Seal DH 77606

## 13.0 FAULT FINDING

*See Section 2 for important notes.*

The OMD-24 EV 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..49 | Green / Blinking | Normal operation | Normal operation | - |
| OK | EE | Green / Blinking | Alarm | Sample reading is out of range:<br>Oil content too high, dirty sample tube | Wait until oil content is within the range, clean sample tube |
| FW ! | 0..49 / EE | Green / Blinking | Alarm | Instrument using freshwater (via user interaction or linked Terminals 19&20) | remove/check external wiring |
| 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..49 / EE | Green / Blinking | Alarm | Flow Switch (Terminals 15&16) open | Check flow input |
| Com? | EE | Red / Steady | Alarm | No communication between computer unit and measuring cell | Check connection between computer unit and measuring cell |
| Datalog? | 0..49 / 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..49 / EE | Green / Blinking | Normal operation | Measuring Cell humidity critically high (>40%RH) | Check/Replace Desiccator |
| Humid | 0..49 / 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 at 15 ppm Bilge Alarms OMD-24

### 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.

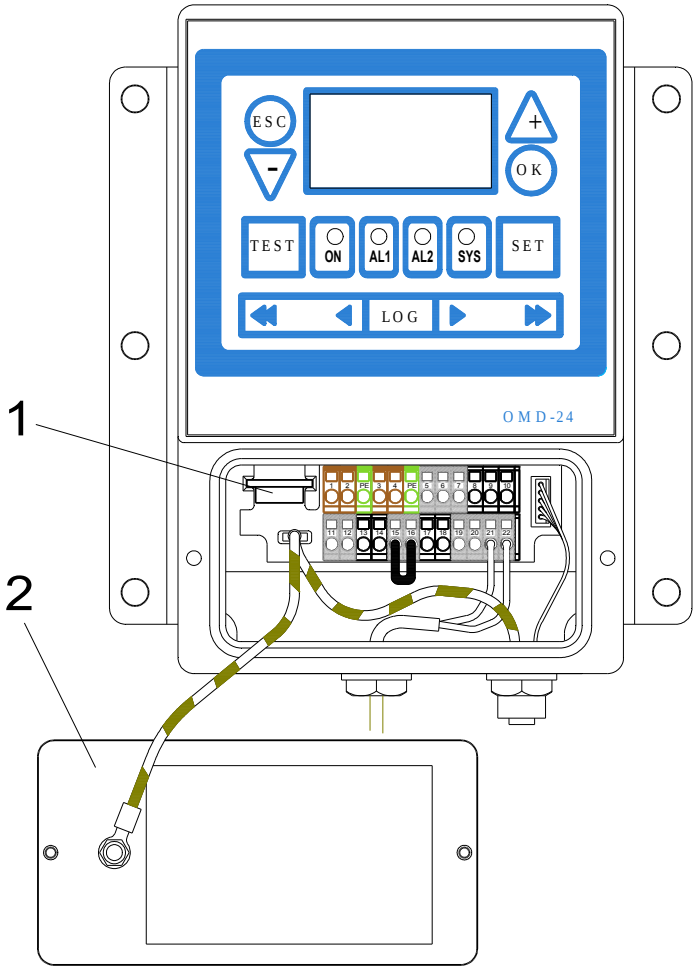
Please carry out the following instructions to make sure, that the glass tube is really clean. Than the unit will show 0 to 2 ppm with clean water.

Check Measuring cell humidity readings and desiccator status. Desiccator status must be OK and dew point 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, juice from a fresh lemon may help, if you fill it into the glass tube and leave it at least over night 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, citric acid, or vinegar may allow removal of the deposits. Make sure, that the cleaning fluid will stay in the tube and is not draining. Sometimes the cleaning with citric acid or vinegar has to be done 2 or 3 times for at least 12 hours, 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: Terminal Cover

Fig. 6

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

The Memory Card is located next to the terminals in the computer housing. It is suitable for the life of the instrument, as it is calculated to the according MEPC.107(49) required 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-24 or OMD-24 EV 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

15 ppm Bilge Alarms built according MEPC.107(49) have to be protected against access beyond the checks of instrument drift, repeatability of the instrument reading and zero adjustment. For this reason the instrument is electronically sealed, so that only the manufacturer or his authorized persons, equipped with the related tools, are able to get access for changing the calibration.

To provide a simple procedure for check the instrument aboard ship, the OMD-24 EV 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 accurate by using a suitable cell cleaning brush as described under Section 12.0. Make sure, that the offset is correct at ± 0.

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.

e) Continue as described under Section 11.0.

**Note § 4.2.11 of MEPC. 107(49):**

The accuracy of the 15 ppm Bilge Alarms should be checked at IOPP Certificate renewal surveys according to the manufacturers instructions. Alternatively the unit may be replaced by a calibrated 15 ppm Bilge Alarm. The calibration certificate for the 15 ppm Bilge Alarm, certifying date of last calibration check, should be retained onboard for inspection purposes. The accuracy checks can only be done by the manufacturer or persons authorized by the manufacturer.

## 14.2 Function Test at Classification Survey and Port State Control

All 15 ppm Bilge Alarms leaving our works are calibrated according the requirements with an accuracy of better than +/- 5 ppm within the measuring range. The alarm points are pre-set to 15 ppm and can only be changed to a lower value on site. A setting to a higher value is not possible.

To provide a simple procedure for check the instrument aboard ship, the OMD-24 EV 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 an assumed high reading (30ppm) 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 than 15ppm oil content 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 |
| | |
| Electric Valve for OMD-24 EV | 13215 |
| | |
| Measuring Cell | 77500 |
| | |

### 15.1 Recommended On Board Spares

| | |
|---|---|
| 2 off Desiccator | 79550 |
| 1 off Cell Cleaning Brush | 77555 |
| 1 off O-Ring Set | 77775 |
| | |
| 1 off Electric Valve for OMD-24 EV | 13215 |
| | |
| Optional item | |
| 1 off Manual Cell Clean Unit | 77780 |

## 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: