



ANALOX MINI O2DII USER MANUAL

Analox Sensor Technology
 Wainstones Court
 Stokesley Industrial Park
 Stokesley
 TS9 5JY UK
 Tel: +44 (0)1642 711400
 Fax: +44 (0)1642 713900
 info@analox.net
 www.analox.net

- 1 PACKAGING AND CONTENTS CHECK**
- On receipt of your O2 DII please check you have the following:
- a) Mini! O₂
 - b) DII adaptor
 - c) Compensation card
 - d) Any accessories ordered for your O2 DII
- 2 ABOUT THE O2DII**

The Mini! O₂DII is designed to measure Oxygen levels in the range 0.1-100%.

The analyser can be used for cylinder oxygen level verification or for monitoring a gas mixing panel but should not be used for both. If the analyser is used for measuring the oxygen level in the output from a mixing panel, another Mini! O₂DII or O₂EII should be used for cylinder verification purposes.

The Mini! O₂DII has a large digital display and operates from an internal temperature compensated minimum 2 year life electrochemical oxygen sensor. Power is provided by a 9V, 4000 hour life battery giving up to 3 year operation before replacement is necessary. The Mini! O₂DII is a water resistant drop resistant totally self contained unit designed specifically for all the diving industry Sport (NITROX), Commercial and Military - where hostile environmental conditions are the norm not the exception.

3 CONTROLS

The analyser is fitted with an on/off switch located on the front of the unit. Push the switch up or down to turn the unit on and return it to the central position to turn it off. When it is switched on the analyser's display will show an oxygen reading but do not use before calibration (see section 4.0).

The low battery warning is displayed as battery symbol in the corner of the display. When this appears change the batteries before using the instrument (see section 9.0 Maintenance).

A waterproof calibration knob is located on the front. Turn it fully from left to right and then fully left, the reading should increase and then decrease. (If the reading does not change see section 9.0 Maintenance).



WARNING
 Do NOT use when
 the LOW BATTERY
 symbol is on!

SPECIFICATIONS

Range	0.1 -100.0% Oxygen
Typical Accuracy	+/-1% of reading over range 0-50% when calibrated on air in accordance with the manual. +/-2% of reading over range 0-100% when calibrated on certified pure Oxygen in accordance with the manual.
Resolution	0.1% Oxygen
Response time	90% in less than 15 seconds
Sensor Type	Analox 9212-5
Sensor Life	More than 36 months in air. 24 month guarantee in air.
Battery	9V Alkaline (PP3)
Battery Life	4000 Hours. Upto 36 months intermittent use.
Operating temp	-5 to 50 C
Storage temp.	-5 to 50 C
Pressure	Sensitive to the partial pressure of Oxygen.

CONTENTS

1.0	Packaging & Contents	2
2.0	About the O2DII	2
3.0	Controls	3
4.0	Air Calibration	4
5.0	Pure Air Calibration	5
6.0	Operation	5
7.0	Accessories / Spares	6
8.0	Troubleshooting	7
9.0	MaintenanceI	8
10.0	Care of the Mini O2DII	9
11.0	Safety Information	10
12.0	Specifications	11

- 4.0 AIR CALIBRATION**
- 4.1 Air calibration is essential before every use and is performed as follows.
- 4.2 Ensure that the sensor seal and any flow adaptors are removed and the reading on the display has stabilised.
- 4.3 Expose the analyser to clean air for two minutes and adjust the calibration knob until the display reads the correct value using the humidity chart.
- 4.4 It is possible that at very high altitude normal calibration is not achievable. In this event you must ascertain the actual pressure in BAR and multiply the atmospheric oxygen percent (20.9%) by this pressure and set the reading during calibration to the calculated level (this is the surface equivalent oxygen percentage). When you measure the level of oxygen in the sample you must divide the reading by the same atmospheric pressure value to obtain the true percentage of Oxygen in your sample.
- For Example: At an atmospheric pressure of 0.8 BAR the surface equivalent oxygen percentage is 20.9% x 0.8 = 16.7% O₂ Surface Equivalent. If the reading you then obtain from your sample is 32.0% you must divide this by 0.8 to obtain the true Oxygen percentage. $32.0/0.8 = 40.0\%$ True Percentage.
- 4.5 The analyser is now ready for oxygen measurement.

WARNING

The analyser is sensitive to Oxygen partial pressure. Calibration must always be carried out at the same atmospheric pressure as Oxygen measurement.

5.0 Pure Oxygen calibration for measuring oxygen purity up to 100%.

- 5.1 Connect 100% bottled oxygen (certified) to the flow adaptor and adjust the flowrate to between 0.5 and 1.0 litre per minute.
- 5.2 Allow the reading to settle.
- 5.3 Expose to atmosphere, the reading should display +/- 0.4 of corrected humidity value i.e. between 20.5 and 21.3

OPERATION

- 6.1 The Analox Mini O2DII comes complete with the unique DII adaptor which allows to you to directly apply the analyser to the outlet on your nitrox tank.
- 6.2 Ensure the sensor seal is removed. Connect the DII adaptor to the analyser by pushing the adaptor over the sensor turret. The O ring on the sensor should ensure a comfortable fit.
- 6.3 Hold the DII adaptor firmly against the cylinder outlet facing you. Very slowly open the pillar valve until gas can just be heard hissing through the flow adaptor.

WARNING

Open cylinder valve EXTREMELY CAREFULLY

MO2-800-04 O2DII Technical Manual PAGE5

MAINTENANCE

- 9.1 Battery replacement.
 - a) Remove the 4 screws located at each corner of the unit and carefully lift the lid.
 - b) Slide the battery out of its spring bracket and disconnect the lead.
 - c) Connect the lead to the new battery and slide the battery behind the spring bracket.
 - d) Replace the lid carefully and screw down taking care that the sensor locates properly.
 - e) Ensure that you do not trap any wires.
- 9.2 Sensor replacement.
 - a) Replacement sensor part number: 9100-9212-5D
 - b) Remove the 4 screws located at each corner of the unit and carefully lift the lid.
 - c) Remove the flow adapter if fitted and slide the sensor out of the lid.
 - d) Disconnect the in line sensor connector.
 - e) Dispose of the old sensor according to local regulations for Lead and Potassium Hydroxide solution.
 - f) Remove the new sensor from its bag and check it for leaks, connect to the inline connector and slide through the lid.
 - g) Replace the lid carefully and screw down taking care that the sensor locates properly. Ensure that you do not trap any wires.

MO2-800-04 O2DII Technical Manual PAGE8

- 6.4 Close the pillar valve after fifteen seconds when a stable reading is observed on the Mini O2DII.

If in doubt repeat the procedure taking care to ensure a very low gas flow.

- 6.5 Note that after a few seconds of the gas flow being stopped the reading will begin to change towards the level in the surrounding air of 20.9% O2 you should therefore take the reading while flow is ON.

WARNING

Do not pressurise the sensor as inaccurate readings will result.

7.0 ACCESSORIES/SPARES

Your Mini O2DII unit is supplied with an Analox Oxygen sensor 9212-5D, a 9v battery and 1 high pressure DII adaptor.

9100-9212-5D Spare oxygen cell for the Analox Mini O2DII

8000-0002A High pressure DII adaptor

Carrying/storage Analox supply a range of peli cases to house your Analox Mini O2DII.

MO2-800-04 O2DII Technical Manual PAGE6

CARE OF THE MINI O2DII

- 10.1 Although designed to be water resistant the Mini O2DII should not be intentionally immersed in liquid or left outside unprotected.
- 10.2 The Mini O2DII is built to resist the effects of day to day shocks and drops but remember it is a precision oxygen analyser and should be looked after carefully to give long trouble free service.
- 10.3 To clean the Mini O2DII use a damp soft cloth.
- 10.4 Protect the Mini O2DII from long periods of direct sunlight and do not subject it to high or low temperature extremes.
- 10.5 The sensor in the Mini O2DII is an electrochemical device and contains a caustic electrolyte. Always check to make sure that it is not leaking and do not allow it onto any part of your body or clothing. In the event that you do come into contact with the electrolyte wash the contaminated part with copious amounts of water -see Safety Information.

WARNING

If after handling the sensor your fingers or other part of your body feels slippery or stings wash with a lot of water. If stinging persists get medical attention

MO2-800-04 O2DII Technical Manual PAGE9

8.0 TROUBLESHOOTING

SYMPTOM	REASON	SOLUTION
Battery symbol	Low battery	Change battery
No display	Switched off Bad connection	Switch on Check display connection Check battery connection
Zero reading	Sensor disconnected Sensor expired	Check connection Change sensor
Reading erratic	Pressure on sensor Radio transmission Sensor old or faulty Condensation on sensor	Check flow Move unit away Change sensor Dry sensor face
Reading does not change when calibration knob is turned	Faulty connections Sensor failure	Check connections Change sensor
Display segments missing	Display faulty	Return to dealer
Will not calibrate	Sensor faulty Sensor not in air High altitude	Change sensor Check flow adapter Calculate percent equivalent =20.9%xbar
Reading drifts	Rapid temperature change	Do not move analyser from one temperature to another immediately before use

MO2-800-04 O2DII Technical Manual PAGE7

SAFETY INFORMATION

- 11.1 When the life of the battery has expired it should be disposed of safely in accordance with local regulations.
- 11.2 When the life of the sensor has expired or it is leaking or otherwise damaged it must be disposed of safely in accordance with local regulations.
- 11.3 The sensor contains KOH Potassium Hydroxide solution which is hazardous and can have the following effects:

Skin	Potassium Hydroxide is corrosive – skin contact could result in a chemical burn.
Ingestion	Can be harmful or FATAL if swallowed.
Eye	Contact can result in the permanent loss of sight.

First Aid Procedures.

Skin	Wash the affected part with a lot of water and remove contaminated clothing. If stinging persists get medical attention.
Ingestion	Drink a lot of fresh water. Do not induce vomiting. Get medical attention.
Eye	Wash with a lot of water for at least 15 minutes and get medical help immediately.

MO2-800-04 O2DII Technical Manual PAGE10