Приборы контролирующие уровень углекислого газа и кислорода Mini O2

Руководство по эксплуатации

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1.0 Introduction

1.1 The Mini-O2 Oxygen Analyser is designed to measure Oxygen levels in the range 0.1 – 100% O2.

1.2 The analyser should 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- O2 should be used for cylinder verification purposes.

1.3 The Mini-O2 has a large digital display and operates from an internal, temperature compensated, electrochemical oxygen sensor (expected life 2 years). Power is provided by a 9V, 4000 hour life battery giving up to 3 year operation before replacement is necessary.

1.4 The Mini-O2 is a water resistant, drop resistant, totally self- contained unit, designed specifically for the diving industry – sport (NITROX), Commercial and Military – where hostile environmental conditions are the norm, not the exception.

1.5 Your Mini-O2 is supplied ready to use. To preserve the life of the sensor it is supplied with a seal which must be removed before use. Please check the unit for damage and make sure the sensor seal is intact. If there is any damage, or the sensor seal is broken, or not in place, contact your supplier.

WARNING!

It is important that these instructions are read before the analyser is used.

2.0 Controls

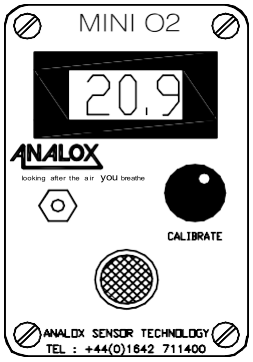
2.1 The analyser is fitted with an on/off switch located on the side or front of the unit. Push the switch up or down to turn the unit on and return it to its central position to turn it off. When it is switched on the analyser's display will show an oxygen reading but do not use before calibration (see paragraph 2.4 below).

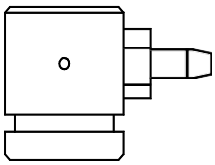
2.2 The low battery warning is a battery symbol in the corner of the display. When present, change the batteries before using the instrument (see section 7.0 Maintenance).

2.3 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 7.0 Maintenance).

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

ANALOX MINI – O2 OXYGEN ANALYSER





3.0 Air Calibration

3.1 Air calibration is essential before every use and is performed as follows.

3.2 Ensure that the sensor seal and any flow adaptors are removed and the reading on the display has stabilised.

3.3 Expose the analyser to clean air for two minutes and adjust the calibration know until the display reads 20.9. (If this is not possible refer to paragraph 3.4 or to section 7.0 Maintenance).

3.4 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 present (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%O2 True Percentage.

3.5 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.

4.0 Operation

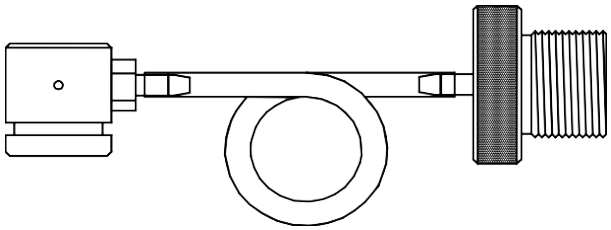
4.1 Connect the flow adaptor to the sensor and pass the gas to be analysed over the sensor slowly at 1 to 2 litres pre minute until the reading stabilizes. There should be no significant rapid change in reading when the gas flow is stopped as this indicates that the flow was too high and the sensor pressurised. If a rapid change is seen within 2 or 3 seconds of the gas being turned off, repeat at a lower flow.

4.2 When a stable reading is observed with the gas flow on and 2 to 3 seconds after being turned off, take the reading.

4.3 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.

ANALOX M102SK SAMPLE KIT



5.0 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 adaptor Calculate percent equivalent = 20.9% x bar
Reading drifts	Rapid temperature change	Do not move analyser from one temperature to another immediately before use

6.0 Maintenance

6.1 Battery replacement.

a) Remove the 4 screws located at each corner of the unit and carefully life 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.

6.2 Sensor replacement

a) Remove the 4 screws located at each corner of the unit and carefully life the lid.

b) Remove the flow adaptor if fitted and slide the sensor out of the lid.

c) Disconnect the in-line sensor connector.

d) Dispose of the old sensor according to local regulations for Lead and Potassium Hydroxide solution.

e) Remove the new sensor from its bag and check it for leaks, connect to the in-line connector and slide through the lid.

f) Replace the lid carefully and screw down, taking care that the sensor locates properly. Ensure that you do not trap any wires.

7.0 Care of the Mini-O2

7.1 Although designed to be water resistant the Mini-O2 should not be intentionally immersed in liquid or left outside unprotected.

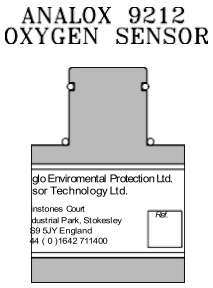
7.2 The Mini-O2 is built to resist the effects of day to day shocks and drops but remember it is a precision oxygen analyser and should be looked after carefully to give long trouble-free service.

7.3 To clean the Mini-O2 use a damp soft cloth.

7.4 Protect the Mini-O2 from long periods of direct sunlight and do not subject it to high or low temperature extremes.

7.5 The sensor in the Mini-O2 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 seek medical attention!



8.0 Safety Information Mini-O2

8.1 When the life of the battery has expired it should be disposed of safely in accordance with local regulations.

8.2 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.

8.3 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 seek medical attention.
Ingestion	Drink a lot of fresh water. Do not induce vomiting. Seek medical attention.
Eye	Wash with a lot of water for at least 15 minutes and seek medical help immediately.

If leakage of the Potassium Hydroxide electrolyte has occurred use rubber gloves and wear chemical splash goggles to handle and clean up. Rinse contaminated surfaces with water.

9.0 Specifications

Range	0.1-100.0% Oxygen
Accuracy	+/- 1% of readout
Resolution	0.1% Oxygen
Response time	90% in less than 15 seconds
Sensor Type	Analox 9212-5
Sensor Life	24 months, graded warranty, in air.
Battery	9V Alkaline (PP3)
Battery Life	4000 hours. Up to 36 months intermittent use.
Operating temp	-5 to 50 C
Storage temp	-5 to 50 C
Pressure	Sensitive to the partial pressure of oxygen.

10.0 Sampling from High Pressure Cylinders

CYLINDERS FITTED WITH A DIN PILLAR VALVE

10.1 The sampling kit MIO2SK1 is required for sampling from high pressure cylinders.

10.2 The flow restrictor MIO2RE has a standard male 5/8 DIN fitting which should be connected directly into the DIN pillar valve 5/8 DIN female fitting.

10.3 The hose part number MIO2HO should be connected to the barbed connector on the MIO2RE flow restrictor.

10.4 Fit the MIO2FA flow through adaptor to the Mini-O2 sensor, making sure that the sensor seal is removed and the O-ring MIO2OR is in place.

10.5 The pillar valve should be opened slowly until the gas can just be heard hissing through the tubing. While the gas is flowing connect the hose MIO2HO to the 5mm barbed connector on the MIO2FA flow through adaptor. Close the pillar valve after 15 seconds or when a stable reading is observed on the Mini-O2. The reading should not drop in the first 2-3 seconds after the valve is closed as this indicates that the sensor was pressurised. If it does, repeat the procedure with a lower flow.

If in doubt, this step can be repeated as many timed as necessary until a stable reading is achieved.

12.6 If the system is left in this position, air will gradually find its way back into the sensor and the reading will move towards 20.9%.

CYLINDERS REQUIRING AN A-CLAMP

10.6 Obtain an A-Clamp with a 5/8 DIN female connection and fit the MIO2RE flow restrictor. Now follow the above procedure from paragraph 12.3.

WARNING!
Open cylinder valve EXTREMELY CAREFULLY!

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