

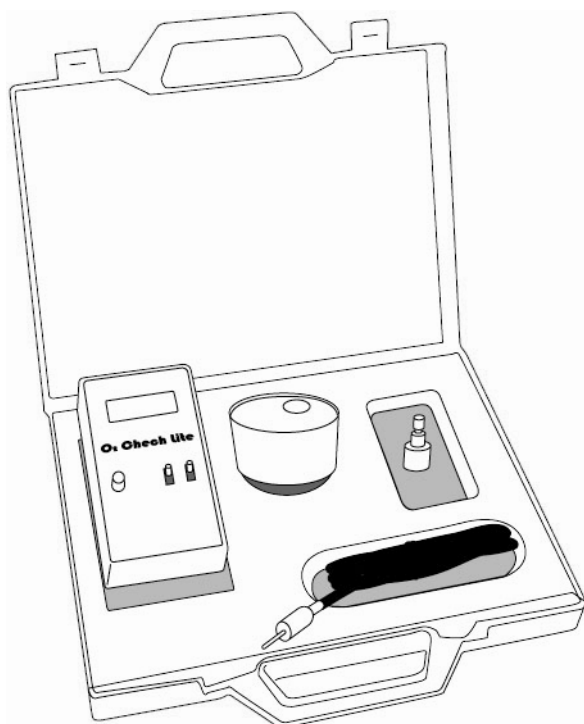
# O<sub>2</sub> Check Lite

**HAND-HELD OXYGEN ANALYZER**

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## **User's Manual**

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**CE**

**ENGLISH**

**O<sub>2</sub> Check lite** – User's Manual  
Edition 2007- Revision 8  
English Version

Published by **UNDERWATER TECHNOLOGY**®  
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## Safety and General Information

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This manual has been developed for user's safety. Please read and understand it completely before using the analyzer.

You also should understand that this user manual is a remarkable component of **O<sub>2</sub> Check lite**, so it should be always kept together with instrument itself.

User assumes all responsibility for use of **O<sub>2</sub>Check lite** and by using it indicates that she/he has read and understands the owner's manual.

Please refer to the *Warranty* chapter in this manual and to the provided *Product Warranty Registration Card* for details about the Limited Two-Years Warranty.

### **WARNING**

*Because of high flammability, pure oxygen handling requires particular procedures/ tools and may be extremely dangerous. Nitrox diving (with mix containing more than 21% of oxygen) may be dangerous. SCUBA diving, including the use of compressed air and any gas mixture underwater, is an activity that has inherent risks.*

Underwater Technology shall not be liable for incidental or consequential damages resulting from use, misuse, abuse, neglect, alteration, failure to perform maintenance as instructed, or unauthorized repair or service of the instrument.

You should use another similar instrumentation to verify results of your gas mixture analysis.

The information contained in this document and the technical specifications of instrument itself are provided 'as is' and are subject to change without any notice.

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## Package Contents

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The **O<sub>2</sub>Check lite** package includes the following items:

- **O<sub>2</sub>Check lite** portable oxygen Analyzer
- Connection Cable
- Sensor/Inflator Hose adapter
- Oxygen Sensor
- Carrying Case
- This User's Manual
- Warranty Card

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## Product Overview

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The **O<sub>2</sub>Check lite** oxygen analyzer is a hand-held device specifically designed to confirm the oxygen content in diving cylinders and is an invaluable tool for all nitrox breathing divers. Fast and easy to use, it can be connected directly to the low pressure jacket inflation hose or directly to the cylinder valve using an optional DIN adapter.

The **O<sub>2</sub>Check lite** is one of the simpler and easy to use oxygen analyzer available on the worldwide market.

The gas mix oxygen fraction is measured by a unique electrochemical transducer which functions as a fuel cell; in this instance, the fuel is oxygen. Oxygen diffusing into the cell reacts chemically to produce an electrical current that is proportional to the oxygen concentration in the gas phase immediately adjacent to the transducer's sensing surface. The linear, but minute signal produced by the transducer from oxygen is then measured and displayed as oxygen percentage.

The instrument calibration must be performed manually with an input reference gas mix (air) by turning the adjustment knob placed on the front panel until 21.0 is displayed.

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## Technical Specifications

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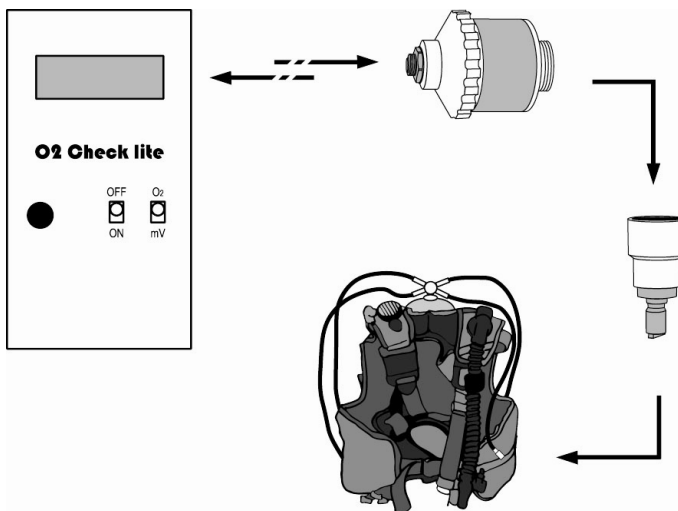
- Oxygen measurement range from 0.0 to 100.0 %
- Easy readable Alphanumeric LCD Display
- Analysis max Error + / - 1%
- Manual calibration by air mix
- Powered by 9 Volts alkaline battery
- Empty battery power alarm showing on LCD display
- External Mounted Oxygen Sensor
- Sensor Voltage Level Gauge
- Sensor/Inflator Hose Adapter
- Sensor link cable
- Limited warranty from material defects in workmanship and materials of 24 months

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## Connections Setup

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Connect **O<sub>2</sub> Check lite** to the oxygen transducer by the provided electrical patch cable and use the transducer/hose adapter to connect it to your BC inflator low pressure hose.



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## Gas Mixture Analysis Recommendations

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Before starting gas mixture analysis, you should be sure that there is no water or moisture at any connection point or in the tank. Be careful to not move or shaker transducer during measurement.

Keep the BC inflator hose adapter downward, so that electrical connector plug is turned upward. The gas mix flow that came in contact with transducer sensitive surface should be in the range of 2 to 4 liters per minute; such flow rate is guaranteed by the sided holes on the BC inflator hose adapter. Be sure that at time of calibration and measurement, these holes do not become obstructed and that a constant gas flow came out from holes.

The instrument must be calibrated by reference gas (air) before every analysis session. If you miss calibration before measurement you could get erroneous indication.

Remember that appreciable variation of pressure, temperature and moisture may lead to loss of accuracy in measurement and may also damage the transducer itself.

### **WARNING**

*Medical Researches state that you should not be exposed to oxygen partial pressure in excess of **1.6** ATA and for time period in excess of **40** minutes. The overcoming of these limits may trigger a Central Nervous System Oxygen Toxicity Syndrome.*

*(See NOAA tables in appendix).*

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## Analysis Operations

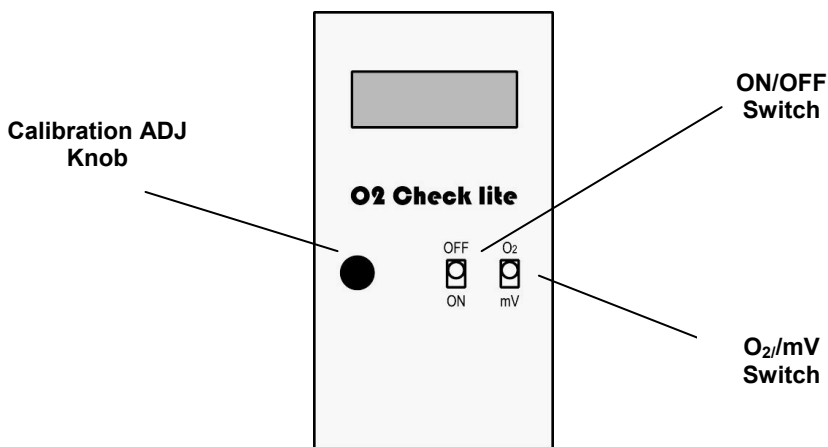
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Before powering on **O<sub>2</sub> Check lite** you should make sure that power battery (not supplied in the package) is in place and correctly connected. Be sure also that connection setup described at page 4 of this manual is already done.

Verify that **O<sub>2</sub>/mV** switch is in **O<sub>2</sub>** position (analysis mode). Connect the quick-connect fitting to inflator hose and start gas flow opening the tank valve containing air (*remember to calibrate on air before every measurement session*).

Turn on **O<sub>2</sub> Check lite** operating **ON/OFF** switch and wait a few seconds. When transducer is exposed to the reference mix (air), verify that display show **21%** value: if not turn **ADJ** knob until showed percentage of oxygen reach correct value (21%).

Starting from now, **O<sub>2</sub> Check lite** is ready to perform all next measurements.



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## Empty Battery Alarm

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For proper operation **O<sub>2</sub> Check lite** requires a 9 Volts alkaline battery, not supplied in the package.

The alkaline battery must be swapped out when display report the **LOW BATTERY** message (empty power battery alarm).



### Battery replacement:

- Power off **O<sub>2</sub> Check lite** operating the **ON/OFF** switch;
- open the battery compartment placed on the rear of device;
- remove the empty battery and change it with a new one;
- put in place again the battery compartment closure;
- power on **O<sub>2</sub> Check lite** and make sure that the **LOW BATTERY** message on display is off.

### WARNING

*There are no user serviceable parts inside the instrument. Removing the four locking screws will void all warranties. Do not leave batteries inside the instrument if you are planning to not use it for a long time period.*

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## The Sensor

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The **O<sub>2</sub>Check lite** uses an electrochemical transducer to sense oxygen amount in gas mix.

The Sensor Technical specifications are stated in the following:

### IT D-01 Sensor



**Measurement range**  
**Electrical connector**  
**Nominal Sensor life**  
**Operation conditions**

0 – 100 % oxygen  
3.5 mm mono jack  
< 3 years in dry air  
Temperature: 0 - 45° C  
Pressure: 600 – 1750 hPa

**Output voltage**  
**Response time (90%)**  
**Linearity error**  
**Weight**  
**Storage environmental condition**

From 8,5 to 12 mV in dry air  
≤ 12 seconds  
< 2% @ 100% O<sub>2</sub> per 6 min.  
about 25 grams  
Temperature: -20 / +60° C  
Recommended: +5 / +30° C  
Pressure: 600 – 1750 hPa

### **WARNING**

*Do not try to open or disassemble the sensor case. The micro-fuel cell contains KOHK solution, which is caustic and can cause burns if it comes in contact with skin or eyes. If it comes in accidental contact with skin or eyes, wash skin or flush eyes with fresh water for long time and call a physician immediately.*

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## Sensor Status Check

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The **O<sub>2</sub> Check lite** allow to verify transducer remaining life time by displaying current voltage output of transducer self. To verify transducer status, get ready the instrument for an air gas mix analysis and set the **O<sub>2</sub>/mV** switch on **mV** position (transducer status mode). The display will show output voltage of the oxygen transducer. Check if showed value is higher than 80% of the nominal value state in technical data sheet. If value is lower than the one above mentioned, you should plan the transducer swapping.

**Example:** In the case of the **O<sub>2</sub>Check lite** package supplied transducer you will find the output voltage value at page 10 of this manual. If value is less than 80% of indicated value, namely less than 80% of 8,5 mV (as stated in technical sheet), you should swap out oxygen transducer.

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## Warranty

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The **O<sub>2</sub> Check lite** is covered by a limited warranty from material defects in workmanship and materials of 24 months.

To make a claim under this warranty, the owner must have both completed and returned (by mail or fax) at the time of purchase the warranty registration card. The owner must then return the damaged items to Underwater Technology, along with a copy of the original purchase invoice or receipt.

*No warranty service will be performed for other than registered owners.*

For any question or problem write to:

**clienti@underwatertechnology.com**

or send a fax to: **+39-06-45445708**

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# CE Conformity Declaration

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As required by relevant and applicable EN directive

**Dir. 89/336/CE**  
*(Electro Magnetic Compatibility)*

**We certify that product**

**PORTABLE OXYGEN ANALYZER**

**O<sub>2</sub> Check lite**

It comply with requirement of the followings harmonized standards:

<b>Dir. 89/336/CE (Electro Magnetic Compatibility)</b>	
EN 61000-6-3 (Ed. 2002-10)	EN 55022 (Ed. 1999-06) + A1 (Ed. 2001-10) + A2 (Ed. 2003-08)
EN 55024 (Ed. 1999-04) + A1 (Ed. 2002-07) + A2 (Ed. 2003-06)	EN 61000-4-3 (Ed. 2003-06) EN 61000-4-3 (Ed. 1997-11) + A1 (Ed. 1999-07) + A2 (Ed. 2001-10)
EN 61000-4-2 (Ed. 1996-09) + A1 (Ed. 1999-02) + A2 (Ed. 2001-10)	

The product is then affixed with **CE** mark, in the way demanded and conformed to the relevant directives.

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## **NOAA Oxygen Limit Exposition**

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The diving oxygen exposure time limits are stated by the National Oceanographic and Atmospheric Administration (NOAA) in United States. These limits are usually accepted worldwide. Maximum depth for nitrox gas mix dives is settled by the **1.6 ATA PO<sub>2</sub>**. You can consider effective this limit only for a max exposure of 45 minutes in a single dive or 150 minutes diving more than one time in a 24 hours, with at least 2 hours surface break between each dive. To be able to exceed this time limit, you must **lower max PO<sub>2</sub>**. The table below gives the recommended maximum oxygen exposure time limits for a single dive and in a 24 hours, operated by oxygen partial pressure.

**NOAA Oxygen Exposure Time Table**

<b>PO<sub>2</sub> ATA</b>	<b>Max single exposure Duration</b>	<b>Max total exposure In any 24 hours</b>
<b>1.6</b>	<b>45</b>	<b>150</b>
<b>1.5</b>	<b>120</b>	<b>180</b>
<b>1.4</b>	<b>150</b>	<b>180</b>
<b>1.3</b>	<b>180</b>	<b>210</b>
<b>1.2</b>	<b>210</b>	<b>240</b>
<b>1.1</b>	<b>240</b>	<b>270</b>
<b>1.0</b>	<b>300</b>	<b>300</b>
<b>0.9</b>	<b>360</b>	<b>360</b>
<b>0.8</b>	<b>450</b>	<b>450</b>
<b>0.7</b>	<b>570</b>	<b>570</b>
<b>0.6</b>	<b>720</b>	<b>720</b>







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