

## USER MANUAL

### MINI DISSOLVED OXYGEN PROBE (MINI-DO)

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#### Specifications

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Dimensions	dia 15mm, length 90mm
Measuring principle	galvanic cell, self temperature compensating
Type	% saturation
Output	c. 25 mV at 100% O <sub>2</sub> saturation, output impedance is c. 2 kOhm
Wiring	White wire is zero (0 or GND,) brown wire is positive
Flow requirements	typically 1 cm/sec, depending on oxygen saturation and temp
Cable	3 m, other lengths available on request
Measuring range	0-200%
Accuracy	typically better than $\pm 1\%$ of measured value, depending on calibration
Repeatability	typically better than $\pm 0.5\%$ of measured value
Response time	T <sub>90</sub> (90% of end value) is <20 sec

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#### Maintenance

Between sample measurements, immerse the tip of the probe in distilled water. For long-time storage keep the probe in the moist storage chamber to avoid evaporation of the electrolyte fluid.

#### Calibrating the probe

1. Connect the probe to an oxygen analyzer.
2. Place the probe in a calibration chamber with a water saturated atmosphere or in a mixed air-equilibrated water sample.
3. When the reading stabilizes, adjust the meter reading according to the chart in table 1, following the meter manufacturer's instructions. If measuring in a saline solution, remember to correct for changes in oxygens solubility in water according to tabulated values, *i.e.* Green&Carrit, 1967. Journal of Marine Biology 25:140-147 (*appendix*).
4. Next, place the tip of the probe in oxygen free distilled water. Oxygen free distilled water can be achieved by purging nitrogen gas into the sample water or by dissolving approximately 10 grams of Na<sub>2</sub>SO<sub>3</sub> in 500 mL of distilled water.
5. When the reading is stable, adjust the zero control on the meter until the reading displayed indicates zero.
6. Rinse the probe with distilled water.
7. Place the probe into the sample, and record the sample dissolved oxygen when the reading is stable.

**Table 1. Table of oxygen saturation in water**

<b>Temperature (deg C)</b>	<b>Air saturated water (ppm or mgO<sub>2</sub> l<sup>-1</sup>)</b>	<b>Atmospheric pressure (mmHg)</b>
10	11.3	157.3
11	11.1	157.1
12	10.8	156.9
13	10.6	156.7
14	10.4	156.5
15	10.2	156.3
16	10.0	156.0
17	9.7	155.8
18	9.5	155.6
19	9.4	155.4
20	9.2	155.2
21	9.0	154.9
22	8.8	154.7
23	8.7	154.4
24	8.5	154.1
25	8.4	153.8
26	8.2	153.5
27	8.1	153.2
28	7.9	152.8
29	7.8	152.5
30	7.6	152.2
35	7.1	150.0
40	6.6	148.0
45	6.1	145.5

### **Changing membranes**

Changing the membrane should not be necessary during normal use, unless it has been damaged or got very dirty. A damaged or dirty membrane will result in poor performance and erroneous readings, and eventually will require changing.

For changing the membrane, follow the procedure as explained in the following pages.

### Membrane replacement for the MINI-DO oxygen probe

Clean the probe, unscrew the cap and press a knife into the gap between the ring and the cap to remove the ring. Discard the old membrane, clean and dry the parts. Then proceed as follows:



1) Place the ring, chamfered edge down, into the base



2) Place a new membrane on the base above the ring.



3) Place the guide over the base, and



4) place the cap in the hole in the guide



5) Press the cap firmly down by hand

6) Fill the cap with electrolyte fluid and screw it slowly up onto the  
Excess electrolyte fluid should dribble from the thread