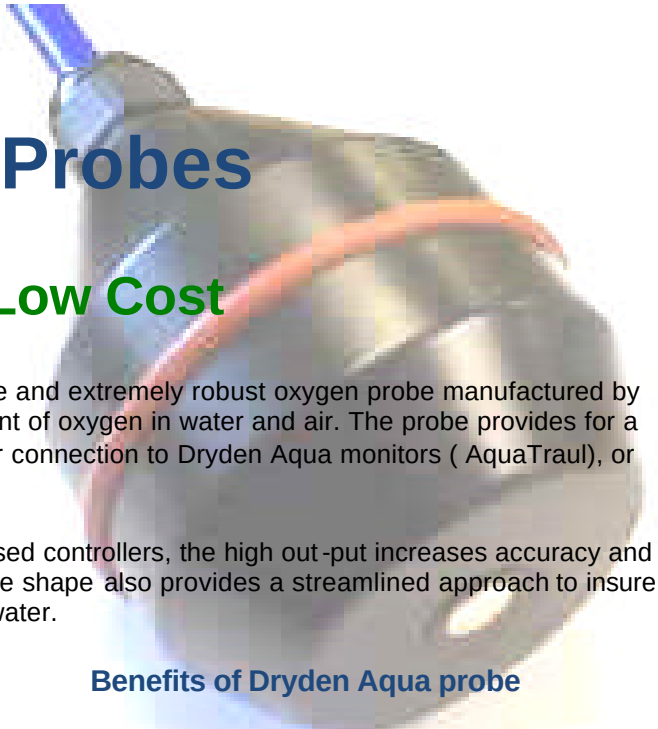
OxyGen Probes



Robust, Accurate & Low Cost

Our oxygen probe is a very high performance and extremely robust oxygen probe manufactured by Dryden Aqua in Scotland for the measurement of oxygen in water and air. The probe provides for a low cost, easy to maintain sensor suitable for connection to Dryden Aqua monitors (AquaTraul), or your own instrumentation.

The probe has a high mv out-put for PLC based controllers, the high out-put increases accuracy and reduces electrical noise problems. The unique shape also provides a streamlined approach to insure minimal turbulence when suspended in the water.

Typical Applications

- Aquaculture
- Rivers and lakes
- Sewerage effluent
- Industrial waste water treatment systems
- Hydroponics
- Mining industry
- Air quality monitoring, environmental warehouses & storage

Benefits of Dryden Aqua probe

- Robust, reliable & accurate
- Very stable, no zero point error
- Galvanic cell for simplicity
- Kevlar reinforced urethane cable
- Fully epoxy filled for durability
- User serviceable (never needs to return to Dryden Aqua)
- Self cleaning devise available when used in polluted water.

1 year product guarantee against defects due to manufacture, however given the very robust design of our probes we normally expect them to last 5 to 10 years.

Technical Properties

Our oxygen probe is a galvanic cell, basically the probe acts like a battery in which there are two dissimilar metals in a conducting electrolyte solution. The anode is zinc and the cathode is silver, oxidation takes place on the surface of the anode to form a white deposit of zinc oxide. The rate of oxidation is a function of the diffusion of oxygen through a semi permeable Teflon membrane, which is in turn directly related to the partial pressure of oxygen in solution, or in the air. A potential difference is established in the probe, the milli volt out-put being approx. 6 to 12mv per 1 mg/l of dissolved oxygen. This gives the probe a reading of approximately 80mv when in air at 20 deg C.

Any length of good quality two core (0.5mm squ, multi-strand) cable can be connected to the probe, technically there is no limit to the length of cable that you can attach, however we have only tested to 2000 meters. General maintenance is also very easy, all that you need to do is keep the probe membrane reasonably clean, this is achieved by giving the membrane a wipe with a cloth once a week. In situations where the probe is used in activated sludge or grossly polluted water we can provide an automatic probe cleaner.

Our probes are manufacture from acetyl plastic (POM) which is 10mm thick, the cable is hard wired into the probe and the probe is then filled with epoxy. The cable is a North Sea sub-sea cable, with a urethane sheath and Kevlar reinforcement. Our oxygen probe is a serious product which you find hard to break and impossible to beat on price and performance.

Dryden Aqua Ltd
Butlerfield, Bonnyrigg, Edinburgh EH19 3JQ, Scotland, UK
Tel 018758 22222 Fax 018758 22222 www.DrydenAqua.com

Oxygen Probe Specifications:

- No zero point error
- Very accurate usually better than +/- 0.2mg/l
- Calibrate to 100% in air
- Self-temperature compensating from 5 to 40 deg C for 2 & 5 wire probes
- Connect with good quality two core cable, tested up to 2000m with ordinary cable
- Very stable, usually 3 to 6 months between calibration checks
- Very easy to maintain, can be serviced in the field
- Strong Teflon membrane
- Very heavy duty sub-sea urethane cable, into epoxy sealed internals
- Diameter = 63 mm, length = 73 mm. Cable length = 5 m (standard)
- Weight 1000 g incl. cable 5m
- 6 to 12 mill volt per ppm (mg/l) (depends on temp)
- pressure to 10 atmospheres
- Water flow should be at least 4 cm/sec
- Response time, to change in, approx 15 to 30 seconds
- Standard probe is a 2 wire, with temp sensor there are 5 wires
- Temperature sensor PT100 built in to probe is available as an option, alternative sensors can also be used.

Oxygen probe manufacturing

DIN rail Transmitters

We have available DIN rail mounted transmitters that display the out-put from the probe as raw data in milli volts or as an oxygen concentration as mg/l. The transmitters accept 12 to 24v dc/ac or up to 230v ac 50/60 Hz.

Each transmitter can transmit the data in a multiple number of formats programmed from the unit; such as 0 to 20 or 4 to 20mamp analogue. In addition each transmitter is fitted with two relay out-puts rated at 2 amps 230v act which may be used for the control of aeration or oxygen systems. The combination of Dryden Aqua probes and individual transmitters makes for a very simple, low cost and robust system.

Din rail transmitters

Solubility of Oxygen in water

The solubility of oxygen in water in equilibrium with air at 760mm Hg pressure and 100% relative humidity Units:mg/1 . The data gives the mg/l of oxygen in solution that is equivalent to 100% saturation at the specified temperature

T deg C	0.0	0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0	14.60	14.65	14.52	14.48	14.44	14.40	14.36	14.33	14.29	14.25
1	14.21	14.17	14.13	14.09	14.05	14.02	13.98	13.94	13.90	13.87
2	13.83	13.79	13.75	13.72	13.68	13.64	13.61	13.57	13.54	13.50
3	13.46	13.43	13.39	13.36	13.32	13.29	13.25	13.22	13.18	13.15
4	13.11	13.08	13.04	13.01	12.98	12.94	12.91	12.88	12.84	12.81
5	12.78	12.74	12.71	12.68	12.64	12.61	12.58	12.55	12.52	12.48
6	12.45	12.45	12.39	12.36	12.33	12.29	12.26	12.23	12.20	12.17
7	12.14	12.11	12.08	12.05	12.02	11.99	11.96	11.93	11.90	11.87
8	11.84	11.81	11.78	11.76	11.73	11.70	11.67	11.64	11.61	11.58
9	11.56	11.53	11.50	11.47	11.44	11.42	11.39	11.36	11.34	11.31
10	11.28	11.25	11.23	11.20	11.17	11.15	11.12	11.10	11.07	11.04
11	11.02	10.99	10.97	10.94	10.91	10.89	10.86	10.84	10.81	10.79
12	10.76	10.74	10.72	10.69	10.67	10.64	10.62	10.59	10.57	10.55
13	10.54	10.50	10.47	10.45	10.43	10.40	10.38	10.36	10.34	10.31
14	10.29	10.27	10.24	10.22	10.20	10.18	10.15	10.13	10.11	10.09
15	10.07	10.04	10.02	10.00	9.98	9.96	9.94	9.92	9.89	9.87
16	9.85	9.83	9.81	9.79	9.77	9.75	9.73	9.71	9.69	9.67
17	9.65	9.63	9.61	9.59	9.57	9.55	9.53	9.51	9.49	9.47
18	9.45	9.43	9.41	9.39	9.37	9.36	9.34	9.32	9.30	9.28
19	9.26	9.24	9.23	9.21	9.19	9.17	9.15	9.13	9.12	9.10
20	9.08	9.06	9.05	9.03	9.01	8.99	8.89	8.96	8.94	8.92
21	8.91	8.89	8.87	8.86	8.84	8.82	8.81	8.79	8.77	8.76
22	8.74	8.72	8.71	8.69	8.67	8.66	8.64	8.63	8.61	8.59
23	8.58	8.56	8.55	8.53	8.51	8.50	8.48	8.47	8.45	8.44
24	8.42	8.41	8.39	8.38	8.36	8.35	8.33	8.32	8.30	8.29
25	8.27	8.26	8.24	8.23	8.21	8.20	8.18	8.17	8.16	8.14
26	8.13	8.11	8.10	8.08	8.07	8.06	8.04	8.03	8.01	8.00
27	7.99	7.97	7.96	7.94	7.93	7.92	7.90	7.89	7.88	7.86
28	7.85	7.84	7.82	7.81	7.80	7.78	7.77	7.76	7.74	7.73
29	7.72	7.70	7.69	7.68	7.66	7.65	7.64	7.63	7.61	7.60
30	7.59	7.57	7.56	7.55	7.54	7.52	7.51	7.50	7.49	7.47

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