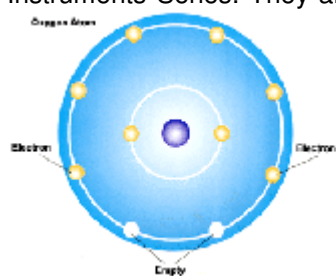


BAGGI BA-DO2 Dissolved Oxygen Analyzer (Galvanic Cell Sensor)

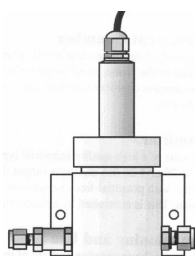
The BAGGI BA-DO2 is part of the **BAGGI BASE®** Instruments Series. They are the result of combining the latest state-of-the-art-technology with over 50 years of industry experience.



The BA-DO2 analyzer is designed for the measurement of dissolved oxygen in water, with low oxygen

content (in the order of parts per billion). Its main application is for water treatment facilities in the petrochemical field. Therefore it can be delivered in a multipurpose package containing also an Oil-in-Water analyzer (fluorescence spectroscopy based) and an H₂S concentration analyzer (UV spectroscopy based).

The probe is of the Mackereth cell type (a variant of the polarographic type). It measures the partial pressure of oxygen present at the cell membrane. The chemistry of the probe consumes all oxygen inside it. There is therefore a pressure difference across the membrane that only depends on the partial pressure outside the membrane; there is no oxygen on the inner side of the membrane. Oxygen thus diffuses through the membrane at a rate proportional to its partial pressure outside the membrane. Each molecule that enters the probe transfers an electrical charge between the cathode and anode, creating an electrical current proportional to the oxygen partial pressure outside the probe. This current, either directly or transformed to a voltage, forms the output of the probe. When measuring dissolved oxygen in mg/l or in ppb, then temperature must be taken into account. After calibrating the instrument, the probe remains internally temperature compensated.



The figure shows the probe version used for the PPB range. The cell membrane is an oil proof one.

As an option, the sampling system comes with an inlet to be connected to an instrument air supply. In such a way, an air flow can be directed towards the probe, allowing either calibrating the sensor or cleaning the membrane, under the supervision of the Control Unit.

The system is completed by the Control Unit, made by the BASE® Series embedded computer and the related actuators. This unit runs the application software for:

- collecting the measurement values from the sensor(s); if other instruments (such as H₂S or Oil in Water analyzers) are integrated in the system, they share the same control unit;
- archiving the results in standard CSV format;
- presenting a graphical user interface (GUI) to the Operator;
- transmitting remotely the information via current loops, relay signals, serial lines and WiFi;
- calibrating the instrument by replacing the water sample with instrument air in front of the probe (optional);
- purging the cell membrane with bursts of instrument air (optional).

The Control Unit is available also in ATEX certified versions.

This rugged system is designed for low maintenance. The electrolyte in the probe does not wear. The anode is oxidised, but there is enough anode material for many years of use, even when measuring pure oxygen. Oxide on the anode does not affect the performance of the probe.

The only factor affecting the accuracy of the measurement is the presence of deposits on the membrane. That is why an automatic cleaning procedure can be provided by the system.



The figure beneath shows the Control Unit in the ATEX certified version. This one is contained within a Stainless Steel 316L enclosure provided with a protective air purge system and a Vortex cooler (connected to the plant instrument air). Magnetic push buttons allow controlling



the system without opening the cabinet.

ATEX compliance:

- II 2 G Ex px II T6
- II 3 G Ex pz II T6

The Control Unit allows prompt software upgrades by means of USB keys. Therefore it is very easy to add applications for managing additional galvanic sensors (e.g. for dissolved CO₂ or O₃ measurements) and spectrophotometers (e.g. for H₂S measurement).

Sensor Specifications	
Type	Self polarizing (galvanic) membrane covered amperometric cell
Sample temperature	5 °C to 60 °C
Sample pressure	From atmospheric to max. 6 bar
Range	0 ÷ 1000 ppb (according to the version)
Accuracy	Typically ±3% of full scale
Limit of detection	0.8 ppb
Long term stability	0.5 ppb (1 month)
Response time	Typically 25 seconds to T90
Dimensions	128 mm W x 76 mm D x 150 mm H (approx.)
Control/Verification Unit Specifications (ATEX version)	
External input/output	<ul style="list-style-type: none"> - Analog input: four inputs filtered with transient protection - Analog output: three isolated outputs, 4 – 20 mA (standard) - Analog output: three additional isolated outputs (optional) - Digital input: six digital inputs (optional) - Digital output: four isolated relay signals (alarm and warning) - Digital output: four additional relay signals (optional) - Serial line: RS-232/RS-422/RS-485 with Modbus/Profibus/FieldbusFoundationProtocol - Ethernet card: two 10/100 mbps with RJ-45 port - One integrated WiFi card 11 Mbit/s
Power	90-264 VAC, 47-63 Hz; 6A max
Operating environment	<ul style="list-style-type: none"> - 0 °C to 40 °C (32 °F to 104 °F) - 0 °C to 55 °C (32 °F to 131 °F) with vortex cooler
Enclosure protection	IP66
Dimensions/Weight	<ul style="list-style-type: none"> - Wall Mount: 500mm H x 400mm L x 250mm D (19.68" H x 15.74" L x 9.84" D) - Weight: 15 Kg approx.
ATEX Compliance	<ul style="list-style-type: none"> II 2 G Ex px II T6 II 3 G Ex pz II T6

All the specifications subject to change without notice

For specific requirements, please contact the e-mail address below:

baggi@baggi.com

