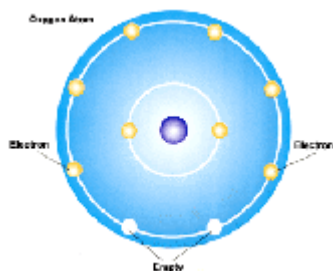


BASE BA-O2FLR Oxygen Analyzer (Fluorescence Spectroscopy based)

The BASE BA-O2FLR 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-O2FLR analyzer is designed for the measurement of the partial pressure of oxygen, either gaseous or dissolved in liquids. The lowest detectable limit in liquid is 0.02 ppm (part per million); the lowest limit of O2 gas (at 1 atmosphere) is 0.05%. 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 principle of operation is fluorescence based as

described hereafter:

- A lamp (LED) sends excitation light to one leg of a bifurcated optical fiber (refer to the figure); the light is in the UV-Visible band.
- The fiber carries the light to the oxygen probe, polished to a 45° angle. The distant end of the probe tip contains the sensor material (ruthenium or porphyrin) trapped in a sol-gel matrix.
- The light excites the sensor material that fluoresces, emitting energy at 600nm or 650nm, according to the material.
- If the excited material encounters an oxygen molecule, the excess energy is transferred to the molecule decreasing (quenching) the fluorescence signal. The degree of quenching is correlated to the partial pressure of oxygen.
- The fluorescence is collected by the probe and carried to the spectrophotometer via the second leg of the bifurcated optical fiber. The fluorescence intensity is measured and related to the partial pressure of oxygen using the relevant equations. A dedicated probe measures the sample temperature, because the equations depend on temperature.



The figure at the right shows the probe tip.

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;
- evaluating the mathematical formulas for Oxygen pressure calculation;
- archiving the results in standard CSV format;
- presenting a graphical user interface (GUI) to the Operator;
- transmitting remotely the information/alerts via current loops, relay signals, serial lines and WiFi;
- calibrating the instrument;

The Control Unit is available also in ATEX certified versions.

This rugged system is designed for low maintenance.

The sensor is immune to environmental changes in pH, salinity and ionic strength.

The sensor is immune to interference from moisture, carbon dioxide, methane and other substances.



The figure beneath shows the Control Unit in the ATEX certified version. This one is contained, together with the spectrophotometer, 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 galvanic sensors (e.g. for dissolved CO₂ or O₃ measurements) and spectrophotometers (e.g. for H₂S measurement).

Sensor Specifications

Type	Photoluminescence quenching
Sample Temperature	-50 °C to 80 °C
Sample pressure	300 psi (can vary with the model)
Range (O₂ dissolved in liquid)	0 - 40 ppm 0 - 760 mm Hg partial pressure
Range of O₂ gas (at 1 atmosphere)	0 - 100 % (mole percent) 0 - 760 mm Hg partial pressure
Accuracy	Typically 5% of reading
Limit of detection (O₂ dissolved in liquid)	0.02 ppm
Limit of detection of O₂ gas (at 1 atmosphere)	0.05 % (0.4 mm Hg)
Response time	In seconds, depending on the presence of a protective silicone coat
Control Unit Specifications (ATEX version)	
External input/output (according to the software packages installed)	<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	- 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	- 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	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:

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or visit our site:

<http://sensevolution.baggi.com>

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