

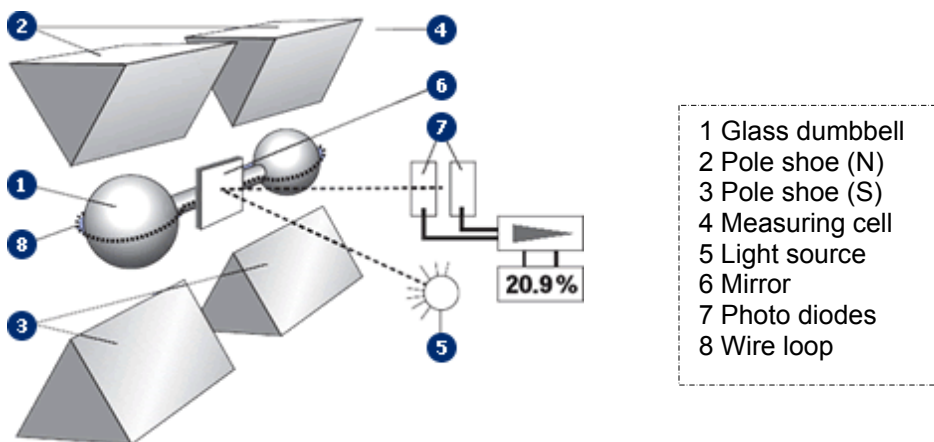
**Paramagnetic Oxygen Analyzer**



**Measuring principle:**

*Paramagnetic (Partial pressure measurement with rotatable glass dumbbell)*

Oxygen is one of the few gases with very strong paramagnetic properties. The oxygen molecules are drawn into an inhomogeneous magnetic field inside the measuring cell. Corresponding to the varying strength of the magnetic field, oxygen partial pressures occur which exerts a torque on the displacement body of glass dumb-bell. When oxygen is present in the gas mixture, the position of the glass body shifts slightly. A visible light beam, located at the optical bench, shines on a mirror which is mounted on the dumbbell. The light is reflected uniformly and symmetrically onto two opposing photo diodes which are arranged side by side so that their position produces a voltage difference assumes a value of zero. When the dumbbell even slightly moves, the reflected light beam shines asymmetrically onto the two photo diodes so that it results a voltage difference.



This voltage difference causes a very small current to flow through the wire loop mounted on the outer surface of the glass body. On the other hand this current flow, inside the inhomogeneous magnetic field, causes a torque to the dumbbell compensating the opposing torque caused by the partial pressure of the oxygen, thereby returning the dumb-bell to its original position. The current flow required to maintain this zero position is directly proportional to the oxygen concentration.

**Brief description:**

The BHOOMI 8000 is a precise oxygen analyzer for continuous monitoring purposes. The instrument is microcontroller based with self-diagnosis capability. The measuring unit is thermostat temperature controlled to 50°C for accurate and stable reading.

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**Measuring data**

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Measurement range:	freely settable by input of parameters
Response time 90% (T90):	≤ 10 s (gas flow dependent)
Measured value characteristic:	linear
Repeatability:	≤ ± 0.03 % O <sub>2</sub>
Zero point drift:	≤ ± 0.05 % O <sub>2</sub> / week (offset)
Sensitivity drift:	< 0.5 % of measured value per week
Temperature influence	
• Zero point	< ± 0.01 % O <sub>2</sub> / °C
• Sensitivity	< ± 0.025 % of measured value / °C
Detection threshold:	0.01 % O <sub>2</sub>
Air pressure effect:	1% air pressure change causes 1% change in reading
Background gas influence:	slight (for guideline data see operating instructions)

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**Display**

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Indication of measured value: LCD digital display 999.9 %O<sub>2</sub>  
Alarms, malfunction, parameters, total 16 digits

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**Measured value, status and control outputs**

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Measurement signal: Selectable signal range 0 – 20 mA or 4 – 20 mA 500 Ω max.  
Status outputs: 2 alarm relays, 1 malfunction relay  
Output connection: 1 pump

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**Sample gas inlet conditions**

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Gas temperature: +5 °C to +45 °C  
Gas overpressure: max. 1000 hPa  
Gas through flow: 10 – 90 l/h (cell through flow ca. 100 ml/min.)  
Sample gas preparation: necessary for damp and/or corrosive gases pre-filter required

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**Calibration**

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2-point calibration with gases as desired, menu-controlled, semi auto and auto calibration

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**Sample Conditioning System**

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Sophisticated Sample Conditioning system is used for the sample gas to be cleaned and dried to a very high standard prior to analysis. The **AGASTHYA 2005** series **Model 8000** provides the facility to automatically check and control zero using clean, dry compressed air or N<sub>2</sub>. Where independent span checks are required, bottled gases of known concentration can be injected directly into the measurement chamber.

## Analyzer Features

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Continuous monitoring  
Combustion efficiency calculation  
Programmable for 22 different fuels  
Full range of outputs & alarms  
Data logging via pc software package  
Auto calibration verification facility  
Self diagnostic checks  
Modular system

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## Ambient conditions

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Ambient temperature: +5 °C to +45 °C  
Transport and storage temp.: -25 °C to +65 °C  
Relative humidity: ≤ 75% as annual average

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## Outputs

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Analogue - up to 2 x 4-20mA, 200V common mode isolation, Max load 600 ohms, fully configure for parameter, span, zero and response time.  
Logic: - up to 4 x volt – free contacts

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## Power

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Cabinet: 110/220V AC, 50Hz, Single phase  
Sample line: 110/220V AC, 50Hz, Single phase

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## Panel

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Wall Mounting (Dimension) 650(W) x 800(H) x 450(D)  
Standing Panel (Dimension) 800 x 2000(H) x 600(D)  
Dimension mentioned here are of standard panels, dimension may vary according to application.

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## Compressed Air or N2 Requirements

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Clean, Oil – free compressed Air or N<sub>2</sub> dried to min –20 °C minimum, 5 bar minimum pressure, 0.25 liter/sec continuous

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## Bhoomi Analyzers

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## Distributor