

P8863

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Data sheet

2018

Robust analyser for safe and hazardous areas, suitable for Oxygen enriched samples

Oxygen Analyser

with paramagnetic (dumbbell) system



Paramagnetic P8863 Oxygen analyzer allows the selective analysis of the O₂ concentration in process gases taking advantage of its evident paramagnetic property that makes it attracted by a magnetic field.

The weatherproof and explosion proof P8863 is designed for field installation.

The specific features of the measuring principle makes the analyser virtually free from cross sensitivity by other gases, allowing its use in a variety of applications that range from purity measurement to O₂ analysis in complex stream gases containing Hydrogen, Hydrocarbons and many others.

Technical Specification

P8863 Paramagnetic Analyser

Performance Specification

Accuracy	General accuracy: $\pm 1\%$ of span (output signal). See note below for considerations on accuracy
Repeatability	$\pm 0.3\%$ of span (short term).
Reproducibility	24 hours: $\pm 1\%$ of span.
Linearity	Better than $\pm 1\%$ of full scale
Response Time	Initial: < 1 sec.; 90% of step-change: < 3 sec. (with max. 1000 cc/min. flow rate)
Drift	Zero: max. $\pm 1\%$ of span per week Span: max $\pm 1\%$ of span per week (without autocalibration)
Ambient Temp. Influence (-10°C ÷ +50°C)	$\pm 0.002\%$ O ₂ per °C or $\pm 0.02\%$ of span per °C (whichever is greater)
Atm. Pressure Influence	$\pm 0.1\%$ of reading per hPa
Flow Rate Influence	$< 0.5\%$ of span over flow range of 100 to 1000 cc/min.
Line Voltage Influence	max. 0.02% of span, for each 1% change of voltage.

Note About Accuracy

The accuracy $\pm 1\%$ of full scale declared on specification is widely precautionary and it's referred to the real worst case with pressure and/or flow rate variations of the sample (always within the specified operative limits) and effects of barometric pressure variation.

Keeping constant inlet sample flow rate and pressure, the declared accuracy is $\pm 0.5\%$ O₂ (not compensated for barometric pressure variations).

With optional Zero & Span autocalibration function (only combined with control unit), the achievable accuracy is $\pm 0.2\%$ O₂. Contact ADEV for details.

Operative Specification

Sample Requirements	Flow Rate: 250 ÷ 1000 cc/min. Pressure: 3000 Pa minimum (with filter and flow meter).
Range	Refer to ordering information
Output	4-20 mA proportional to ordered range on max. load of 250 Ω (or 125 Ω if galvanically insulation module is used)
Relative Humidity	90% maximum.
Operation Temperature	-10 ÷ +50°C (14 to 122 °F).
Temperature controlled	at 50°C
Storage Temperature	+70°C (158 °F) max.
Power Requirements	24 Vac $\pm 10\%$, 50 VA from dedicated power supplier.
Pneumatic Connections	1/4" or 6 mm OD tubing (compression fittings supplied)
Wiring Connections	General purpose: 2 openings for G 3/8" (PG 13 cable grip). Ex-Proof: 2 openings for GK 1/2" (cable grip or conduit).



Key Applications

- Oxygen purity measurements
- Air separation plants
- Oxygen measurements in Hydrogen stream
- Inerting Control
- Power Plants
- Biogas & Landfill Gas
- Steel & Metal Processing
- Combustion gas



Sampling System

Due to the presence of delicate and optical parts inside the dumbbell cell, the P8863 needs an external sampling system able to deliver a perfectly clean and dry sample gas to the analyser at the proper temperature, pressure and flow rate.

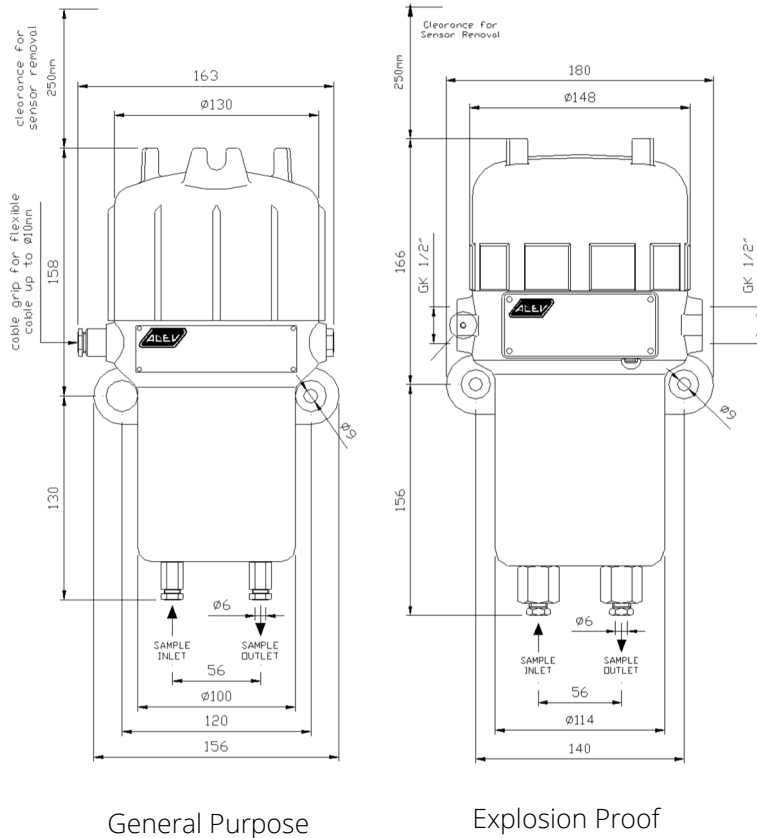
ADEV has a wide experience in process and can provide the P8863 analyser combined with a sample and condition system designed for the specific application requirements. Contact ADEV for details.



Physical Specification

Wet Parts Materials	316SS, 303SS, Chromel, Platinum-Iridium, Teflon, Viton (Buna, others), Glass., PPS filled with PTFE
Dimensions	150 x 150 x 290 mm (general purpose) 180 x 155 x 325 mm (explosion proof)
Weight	7 kg in general purpose housing 8,5 Kg. in explosion proof housing
Finish	Epoxy grey textured enamel
Protection	IP 65 (watertight and dust tight)

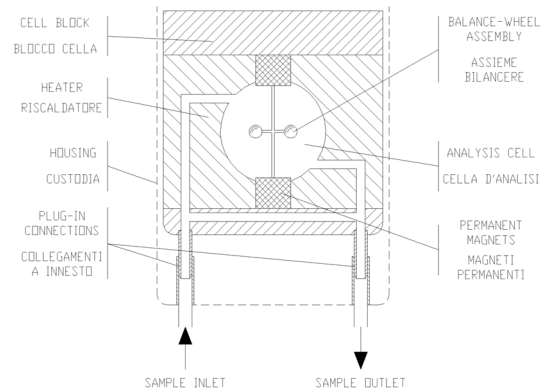
Outline Dimensions



Cell Assembly

The Cell Block assembly is made of stainless steel and contains the cell cavity and pole pieces which produce two powerful magnetic fields in the cavity.

The magneto-dynamic cell consists of two nitrogen-filled quartz spheres arranged in the form of a dumb-bell. A single turn coil of platinum wire is placed around the dumb-bell which is suspended in a symmetrical non-uniform magnetic field. At its center the dumb-bell bears a small mirror.



When the surrounding gas contains Oxygen the spheres are pushed out of the magnetic field caused by the relatively strong Para magnetism of Oxygen. The force on the dumb-bell is corrected by a current through the coil which is controlled by a photo-detection system via a light beam and the mirror on the dumb-bell.

The feedback current, required to compensate the torque acting on the dumb-bell will be proportional to the Oxygen concentration in the gas sample through the cell.

High Accuracy

The P8863 is an high accuracy analyzer with the inner sensing unit is temperature controlled in order to be completely insensitive to ambient temperature variations.

ATEX

ATEX certification for Zone 1 / Zone 21. Protection mode:



II 2 G D

Ex db IIC T6 Gb

Ex tb IIIC T85°C Db IP65

Certificates

ATEX Certificate Number CESI 03 ATEX 130

European Compliance

- Complies with Low Voltage Directive 2014/35/EU
- Complies with EMC Directive 2014/30/EU
- Complies with Directive ATEX 2014/34/EU



Very Easy Maintenance

Modular construction makes maintenance extremely easy. It's enough to unscrew the cap of the housing to have access to inner sensing unit that can be removed only by disconnecting 3 wires and unscrewing 2 screws.



Ordering

Contacts



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Oxygen Analyser	P8863
Range				
0-2%		01		
0-5%		02		
0-10%		03		
0-15%		04		
0-20%		05		
0-25%		06		
0-100%		07		
80-100% *		08		
90-100% *		09		
95-100% *		10		
On spec.		99		
Housing				
General purpose IP65			G	
Explosion Proof (ATEX)			X	
Output Signal				
4-20 mA output				2
Special				9

* Suppressed ranges available only combined with control unit

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