

8866

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Data sheet

2020

Top reliability analyser based on Thermal Conductivity for harsh environment use

Thermal Conductivity

Binary Gas Analyser for industrial applications



8866 analyzer allows very accurate and stable in line analysis of a gas in a binary (or almost binary) mixture, taking advantage of its own specific thermal conductivity, respect to the background gas.

The weatherproof and explosion proof 8866 is designed for field installation in the most severe conditions, minimizing the sample conditioning requirements.

Easy access for maintenance, selected materials and modular design makes this analyser practically indestructible and the ideal solution for industrial applications.



Technical Specification

8866 Thermal Conductivity Analyser

Performance Specification

Accuracy	± 1% of span (output signal). Further improvable with autocalibration and four port version with reference gas
Repeatability	± 0.3% of span (short term).
Reproducibility	24 hours: ± 1% of span.
Linearity	better than ± 0.5% of full scale
Response Time	H2: Initial < 1 sec.; 60%: 13 sec.; 90%: 23 sec.; 99%: 40 sec. CO2: Initial < 2 sec.; 60%: 24 sec.; 90%: 45 sec.; 99%: 80 sec. (with max. 2000 cc/min. flow rate) Fast response version: T90 : < 5 sec.
Drift	Zero: max. ± 1% of span per week Span: max ± 1% of span per week (without autocalibration).
Ambient Temp. Influence	depend on range; typically < 1% of FS over the entire temperature range (-10°C ÷ +50°C)
Pressure Influence	none for pressure variations between 0.1 and 10 bars (a)
Flow Rate Influence	less than 0.5% of span over flow range of 250 to 1000 cc/min.
Line Voltage Influence	max. 0.02% of span, for each 1% change of power voltage.

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	non-normalized output current that functions as input of the selected ADEV control unit
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 ÷ 30 Vdc, 45 VA from dedicated power supplier.
Pneumatic Connections	¼" 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).

Physical Specification

Wet Parts Materials	316SS, Glass, Viton (or others depending on application)
Dimensions	150 x 150 x 290 mm (general purpose housing) 180 x 155 x 325 mm (explosion proof housing)
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)



Key Applications

- Heat treatments
- Iron and steel industry
- Galvanizing furnaces
- Copper melting furnaces
- Nuclear plants and electric power industry
- Hydrogen cooled generators
- Measure of H2 in hydrocarbons in petroleum industry
- Biogas
- Hydrogen generators
- Gas production industry (purity monitoring of H2, Ar, N2, He, CO2, N2O)
- Synthesis gas & Fertilizers



Reference Side

The standard two port version is used for zero-based ranges and has reference side sealed (air-filled). For suppressed ranges from 95%, the use of the four port version, with specific flowing reference gas, increase the accuracy to the maximum level.



Sampling System

The 8866 needs an external sampling system able to deliver an almost clean sample gas to the analyser at the proper temperature, pressure and flow rate.

ADEV has a wide experience in process and can provide the 8866 analyser combined with a sample and condition system designed for the specific application requirements. Contact ADEV for details



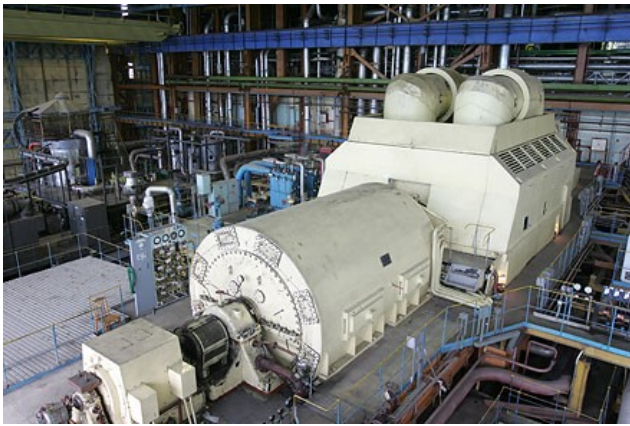
Triple Range Version for Hydrogen Cooled Generator Application

Model 8866 can be provided with calibration for Hydrogen cooled generators and thus ideally suited to providing the highly sensitive and accurate analysis for the required measurement:

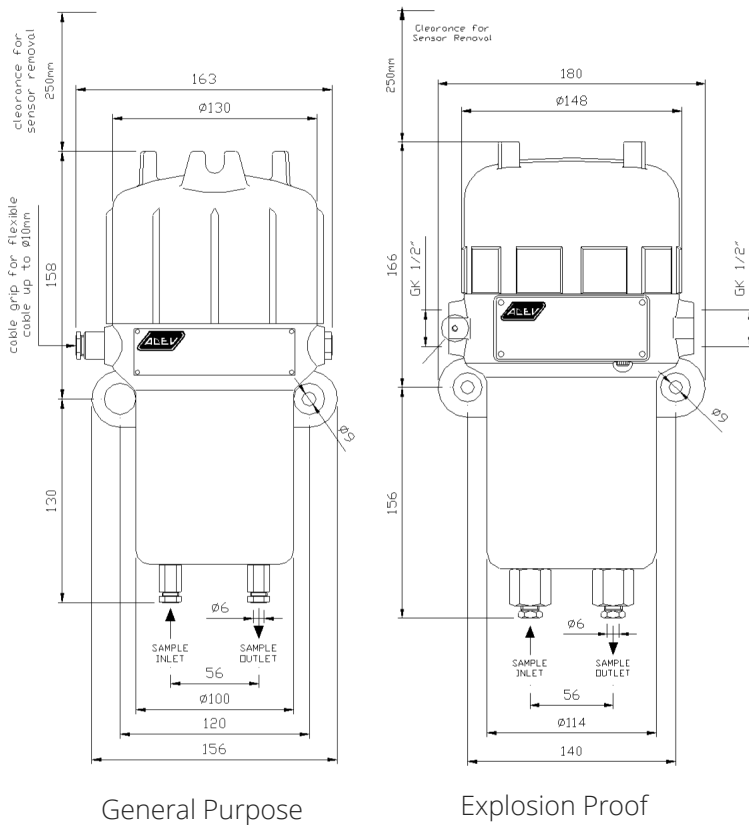
H₂ in Air H₂ in CO₂ Air in CO₂

with the great advantage that all measures can be made with a unique analyser, simply setting the wanted range in accordance to the phase. Operation that can be manually made by a local selector or remotely by customer DCS. Example of typical triple ranges are:

1. 0-100% CO₂ in Air
2. 0-100% CO₂ in H₂
3. 100-75% H₂ in Air



Outline Dimensions



High Accuracy

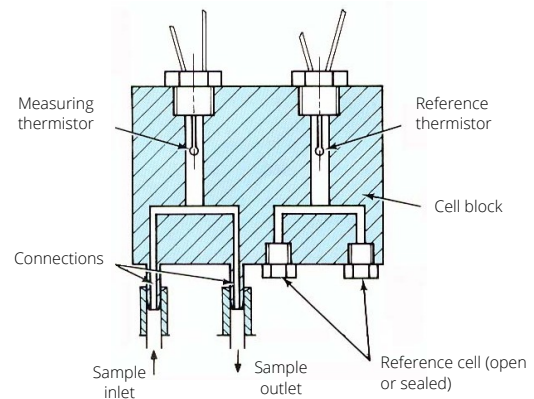
The 8866 is an high accuracy analyzer with the inner sensing unit is temperature controlled in order to be completely insensitive to ambient temperature variations. There are no inner moving parts; installation position and eventual vibrations don't alter the accuracy and stability of the measure.

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.

Cell Assembly

The Cell Block assembly is made of stainless steel construction with two identical internal cells: the measuring cell and the reference cell. A highly stable thermistor is mounted in each cell. These matched thermistors form the active arms of a bridge circuit: the unbalanced current of the bridge provides the means of measuring the relative ability of the sample and reference gases to conduct heat away from their respective thermistors to the cell wall, which is held at a constant temperature.



The reference gas chamber, with inlet and outlet openings drilled into the chamber from the base, may be open or sealed. The cells in which the thermistors are mounted are deadened so the sample gas enters only by diffusion, minimising the effect of sample flow variations. In addition, the entire cell-block assembly is maintained at a constant optimum temperature through two heaters and a control thermistor which are located in the cell-block assembly.

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



Ordering

TC Analyser	8866
Range					
0-1% *		01			
0-2%		02			
0-5%		03			
0-10%		04			
0-15%		05			
0-20%		06			
0-30%		07			
0-75%		08			
0-100%		09			
80-100%		10			
95-100%		11			
98-100%		12			
Dissociated Ammonia		90			
On spec.		99			
Calibration					
<u>Gas to Analyze</u>		<u>Background</u>			
H2..... [1]	H2..... [1]	[...]	[...]		
CO2..... [2]	CO2..... [2]				
Air..... [3]	Air..... [3]				
He..... [4]	He..... [4]				
Ar..... [5]	Ar..... [5]				
SO2..... [6]	O2..... [6]				
CH4..... [7]	CH4..... [7]				
N2..... [8]	N2..... [8]				
N2O..... [9]	N2O..... [9]				
Calibration for Hydrogen Cooled Generator				TR	
On spec.				OS	
Housing					
General purpose - Two port, sealed reference					2G
Ex-Proof (ATEX) - Two port, sealed reference					2X
General purpose - Four port, flowing reference					4G
Ex-Proof (ATEX) - Four port, flowing reference					4X
Output Signal					
Non-normalized current output **					1
4-20 mA output ***					2
Special					9

* Range available only for H2

** Sensing must be combined with an ADEV control unit

*** Zero & Span calibration by trimmers. Only available for some ranges

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