

HT 350

**TWO WIRES SMART TYPE
RESIDUAL OXYGEN ANALYZER
IN THE COMBUSTION CHAMBER,
HIGH TEMPERATURE (500-1600 °C)**



Zirconium oxide (ZrO₂)-based cells use an electrochemical principle to measure the concentration of oxygen in gases. Their operation is based on a few key properties:

1. Ionic conductivity: At high temperatures (over 500°C), yttria stabilized ZrO₂ (YSZ) exhibits high ionic conductivity for oxygen ions.

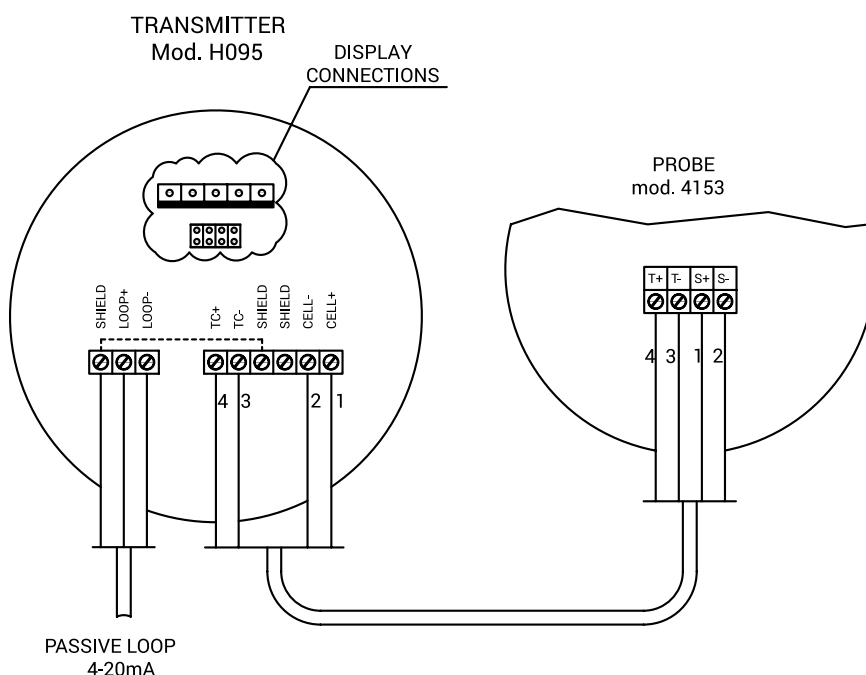
2. Separation properties: ZrO₂ acts as an oxygen ion permeable membrane, separating two chambers: - Reference chamber: Exposed to a gas with known oxygen concentration (ambient air) - Measuring chamber: Exposed to the gas to be analyzed.

3. Oxygen partial pressure difference: A partial pressure difference of oxygen is created between the two chambers which induces the migration of oxygen ions through the ZrO₂ membrane.

4. Electromotive Force Generation (FEM): The migration of oxygen ions generates an electric current proportional to the partial pressure difference of oxygen. This FEM is measured as a useful signal.

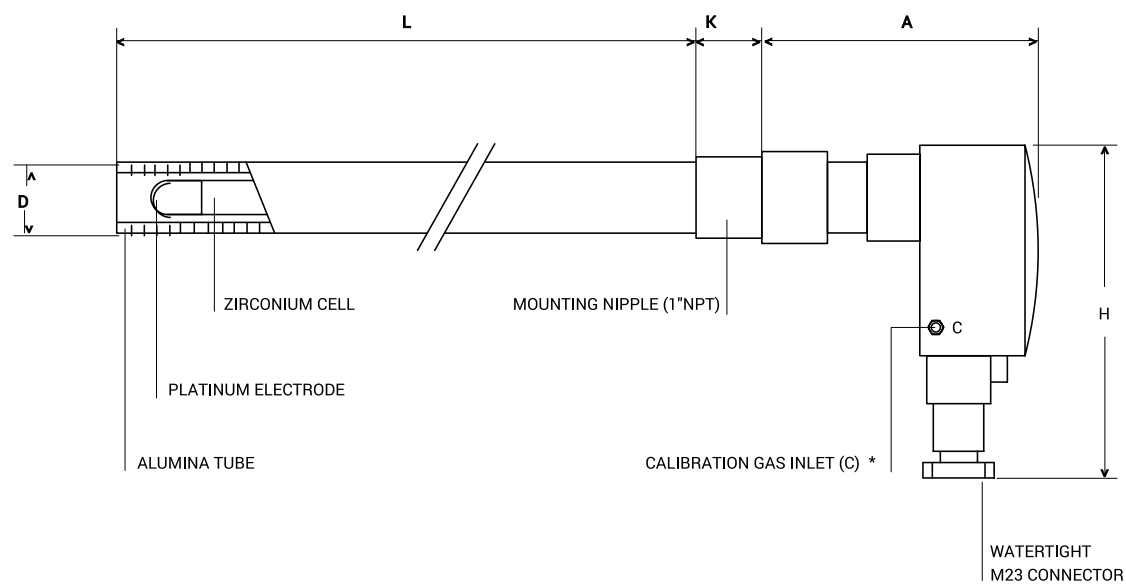
- + Direct insertion into the process
- + Perfect for NO_x containment
- + Fast response time
- + Suitable for hostile and dusty processes
- + No need of calibration
- + Ideal for automatic adjustment

Connections



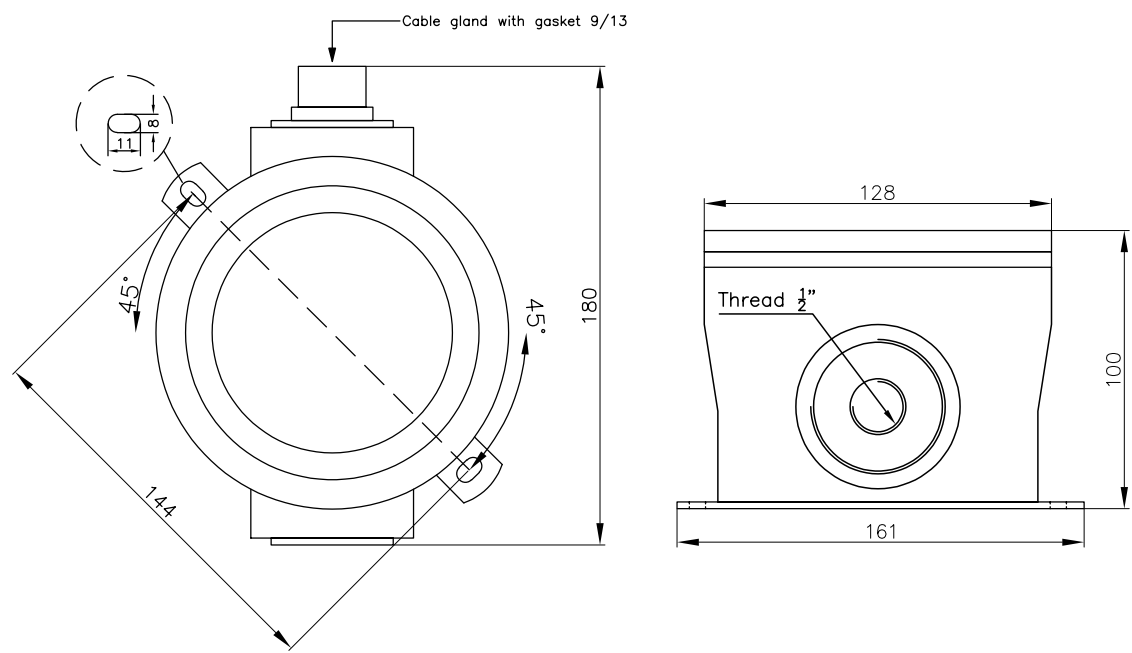
Dimensional drawings

+ Probe



	L (mm)	*
A= 155 mm	310	
H = 133	350	6x4
K = 25 mm	500	1/4NPT-F
D = 28 mm	650	
	900	

+ Transmitter



Description

The reference and measuring gases flow into the two chambers respectively. Oxygen ions migrate through the ZrO₂ membrane based on the partial pressure difference when it is at a temperature greater than 500 °C Ion migration generates a FEM proportional to the oxygen concentration in the gas to be analyzed.

Applications

All industrial combustion plants where the temperature can reach 500 °C.

Certifications and Marking



MC according to EN 50081 and EN 50082



EAC declaration of conformity according to TR-CU-004 and TR-CU-020

Accessories

- Flow meters boxes models 60 and 62
- AISI 316 stainless steel containers
- Mounting flanges and tubes for probe protection
- 4x1.5 shielded connection cables and 6x4 mm hoses
- Electrical and pneumatic connections can be customized upon request

Technical specification

Accuracy	Oxygen: In the % range: $\pm 0.5\%$ of the theoretical value or 0.5% of O ₂ (whichever is greater). In the ppm range: 0.5% of FS
Stability	Within 1% of range
Response time (90%)	(90%): 1" < cell, 15" < system

Technical specification Probe (Analyzer) 4153

Power supply	Not necessary
Measuring range	Oxygen : $0.0001 \div 25\%$ O ₂ by volume
Compensation thermocouple	Integrated type B as standard others available
Storage temperature	-40°C/+80°C
Operating temperature	Flue gas from 500°±1600°C , < 200° C for the probe head
Process connection	1" NPT-M Thread
Pneumatic connections	Compression fittings for 6x4 mm hose (EDxID)
Electrical connections	Watertight connector
Enclosure protection rating	IP66

Technical specification H095 Transmitter

Power supply	24 Vdc
User Interface	LCD Display & Magnetic Keypad
Analog outputs	4 ÷ 20 mA max. load 500 ohms linear on one of the following ranges: 0 ÷ 5% vol. O ₂ 0 ÷ 10% vol. O ₂ 0 ÷ 21% vol O ₂ 0 ÷ 25% vol O ₂
Other outputs	Hart Protocol Version 6.0
Electrical connections	1/2" gas inlet
Storage temperature	-40°C/+80°C
Calibration	Display-guided manual, flowmeter box available as an option
Operating temperature	-20÷ +45° C; Relative humidity < 90% non-condensing
Degree of protection	IP65

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