

AE Series ZrO₂ Oxygen Analysers

Typical applications

- **Power plants and heating industry:** optimization of the combustion efficiency to reduce fuel consumption and emissions.
- **Waste incineration:** control of the burning process to reduce environmental emissions.
- **Iron & steel production:** regulating the oxygen content in the blasting air increases the productivity of the blast furnace
- **Annealing furnaces:** oxygen control and tempering of metal products is important for the surface quality
- **Cement plants:** control of the burning process in high temperature flue gases to reduce environmental emissions
- **Ceramic production:** simultaneous control of oxygen content and the transition to combustion reduction in certain phases of firing guaranty the quality of ceramic products.
- **Chemical and other process industries:** oxygen level control to prevent explosion risks
- **Glass industry:** oxygen monitoring is a key factor in terms of technology, energy savings and emission control
- **Lime production:** oxygen monitoring is important for the final product quality

General description

The basic measurement element is a solid electrolyte ZrO₂ sensor enclosed in a ceramic envelop with heating element (for flue gases up to 500°C) or without heating element (for flue gases from 700 to 1000°C) which keeps the sensor in its working temperature, approx. 700°C.

The stainless steel protective probe with the ZrO₂ sensor is placed inside the boiler or the stack in the flow of analysed combustion products. The analyser is fixed to the boiler or stack by a mounting flange.

The control unit contains the electronics and other equipment necessary for the operation of the analyser as the reference air filter, power supply, communication connectors and the optional calibration gas inlet.

Each Series is available in several models, from the basic version with 500 mm probe insertion length and 2 points calibration (air + 1 calibration gas) to the more complete version with 1200 mm probe insertion length and 4 points calibration capability (air + 3 calibration gases) via the optional calibration inlet.

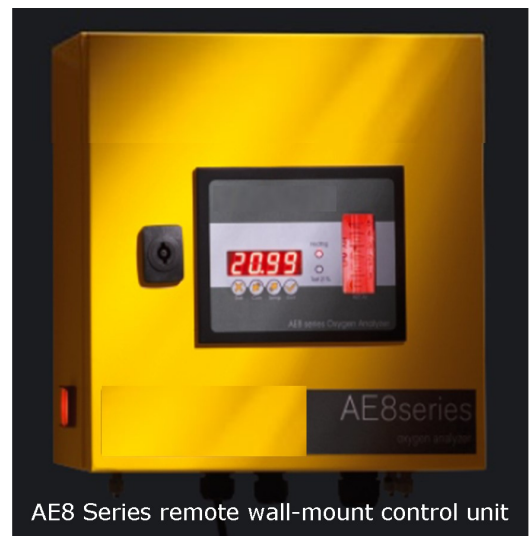


AE Series ZrO₂ analysers are used for the determination of oxygen in flue gases.

This oxygen measurement provides one of the most important indicators to control the burning process because it helps reaching the optimal heating efficiency and minimizing environmental pollution.

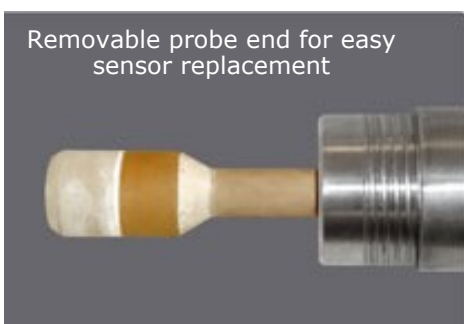
AE5 Series: up to maximum 400°C with heated element. Control unit directly on the probe.

AE8 Series: up to 500°C with heated element or from 700°C to 1000°C with un-heated element. Remote wall-mount type control unit for connection to the probe



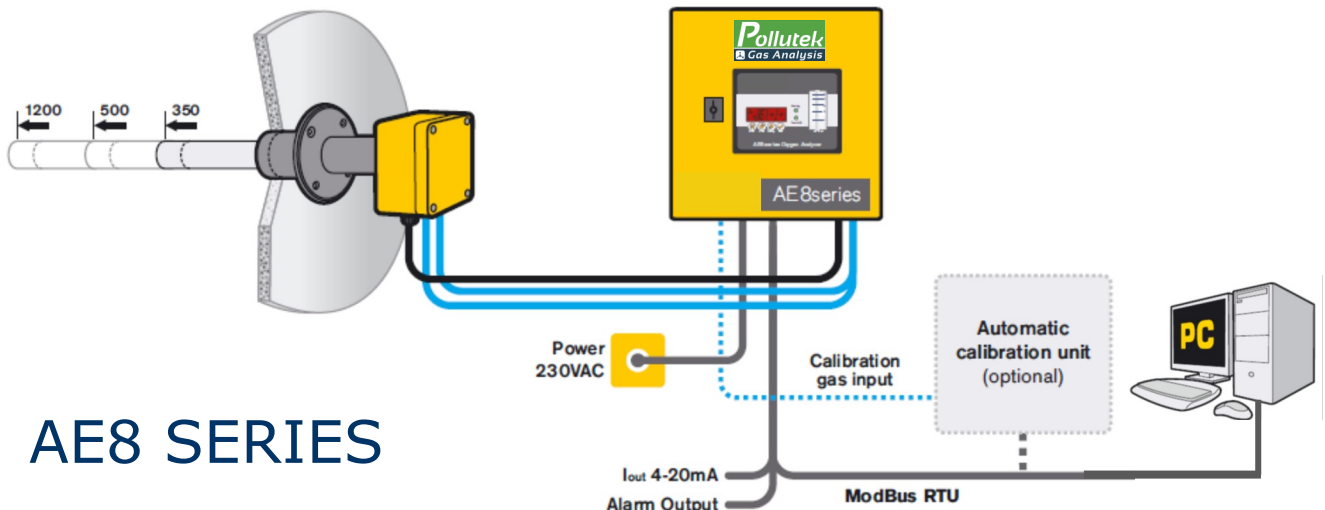
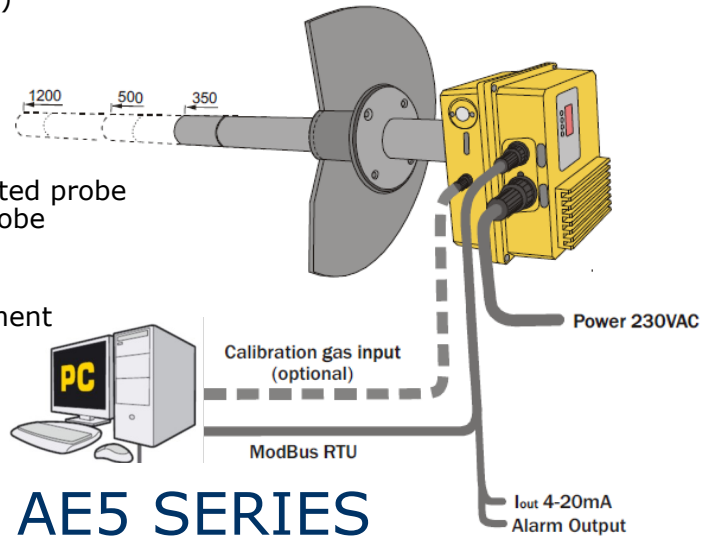
Advantages

- User-friendly operation
- Compact design
- Easy assembly of the probe
- Low operation costs
- In-situ oxygen measurement, no sampling equipment requirement
- Easy installation and setup
- Immediate response to the oxygen content change
- Simple semi-automatic calibration
- Easy replacement of the sensor
- Calibration without removing the measurement probe from the stack.



Technical specifications

- Mechanical composition: compact design (AE5) or probe with remote control unit (AE8)
- Probe ingress protection: IP65 (outside of boiler)
- Measurement range: 0,1-21% O₂
- Typical accuracy: <0,2% O₂
- O₂ change response time: typical 1 sec.
- Probe length: 350mm, 500mm, 1200mm
- Flue gases temperature:
 - Up to 400°C (AE5) and 500°C (AE8), with heated probe
 - From 700 to 1000°C (AE8), with un-heated probe
- Max. gas pressure/vacuum: 4 kPa
- Outputs: 4-20mA, ModBus RTU, 1 alarm relay
- Error state signalling, Probe wear-out measurement
- Measurement of reference air flow (AE8)
- Max. ambient operating temperature:
 - flange outside of the stack: -10 to +80°C
 - control unit: -20 to + 55°C
- Calibration type:
 - 2 points (air + 1 gas) or
 - 4 points (Air + 3 cal gases)
- Semi-automatic calibration check (AE5, AE8)
- Automatic calibration check (AE8, option)
- Remote control unit dimensions (AE8): H300 x W300 x D150mm



Probe selection AE5 Series

| Model | Probe length | Version |
|--------------|--------------|---|
| AE501 | 350 mm | Heated probe Max. 400°C Basic version 2-point calibration |
| AE502 | 500 mm | |
| AE503 | 1200 mm | |
| AE511 | 350 mm | Heated probe Max. 400°C With calibration gas input 4-point calibration |
| AE512 | 500 mm | |
| AE513 | 1200 mm | |

Probe selection AE8 Series

| Model | Probe length | Version |
|--------------|--------------|--|
| AE811 | 350 mm | Heated probe version Max. 500°C With calibration gas input Up to 4-point semi-automatic calibration |
| AE812 | 500 mm | |
| AE813 | 1200 mm | |
| AE821 | 350 mm | Un-heated probe version From 700 to 1000°C With calibration gas input Up to 4-point semi-automatic calibration |
| AE822 | 500 mm | |
| AE823 | 1200 mm | |

Non contractual pictures and technical specifications - Doc. issue - EN17v1



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