

ZIRKOR302 Zirconia Dioxide Oxygen Analyzer

Precise, Rapid Oxygen Measurement for Optimization of Industrial Combustion Processes

Requirements

Reliable and rapid measurement of oxygen for:

- determining reference values for other gas components, e. g. SO₂, NO, NH₃, NO₂
- optimizing combustion processes
- monitoring of O₂ excesses

Application areas

- Power stations and cement plants
- Steel/iron industry, glass and aluminium production
- Refuse incineration plants
- Refineries, chemical and petrochemical industry
- Others e. g. pharmaceutical, paper, food and wood industry

System overview

ZIRKOR302 is designed as a modular measuring system and is available in the following configurations:

- **ZIRKOR302-P**
Analyzer with measuring gas pump and integrated control unit.
- **ZIRKOR302-E**
Analyzer with ejector and integrated control unit – operating with compressed air.
- **Evaluation unit (option)**
for extending the system up to 3 O₂ analyzers and/or for remote control functions (e. g. in a control room) over a max. distance of 1,200 m (3,940 ft).

The ZIRKOR302 is mounted on a flange directly on the duct wall. Various bus connections to a host computer are possible. Designed in line with current safety standards the device does not represent a potential ignition source in the measured gas

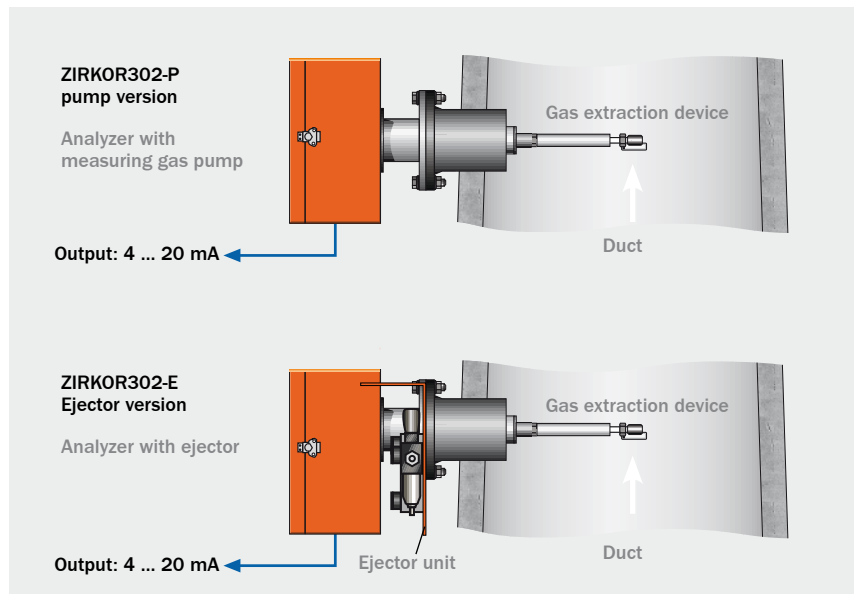


Key features

- Modular design: up to 3 probes on 1 separate evaluation unit
- Short response time for process control demands
- Applicable up to 1,400 °C (2,550 °F); higher on request
- No reference gas necessary
- All gas guiding parts are heated
- Auto. test/calibration function with ambient air (20,96 %); no specific test gases needed
- No restrike into the measuring gas possible

Measuring principle

ZIRKOR302 offers exact measurements according to the current sensor measuring principle. This means that a linear sensor signal is achieved over the total measuring range with a fixed physical zero point. A constant measured gas flow passes through the heated solid electrolytical cell. A DC voltage is applied to the cell electrodes at $\geq 650^\circ\text{C}$ ($\geq 1,200^\circ\text{F}$) to determine the O_2 concentration. The O_2 ion current in the electrolytes is then measured. This is derived from the linear correlation betw. O_2 concentration and gas quantity passing through the cell per time constant.



Technical Data		ZIRKOR302
Measuring parameters		
Measuring principle	zirconia dioxide, current sensor	
Measuring components	O_2	
Available measuring ranges	<ul style="list-style-type: none"> • Minimum range: 0 ... 10 vol %; • Maximum range: 0 ... 25 vol % 	
Response time	≤ 15 s (with measuring gas sampling equipment of 1 m/3.3 ft)	
Measurement conditions		
Measuring gas temperature	<ul style="list-style-type: none"> • 700°C ($1,290^\circ\text{F}$) (stainless steel probe) • 950°C ($1,740^\circ\text{F}$) (inconel probe) • $1,400^\circ\text{C}$ ($2,550^\circ\text{F}$) (ceramic probe) 	
Measuring gas pressure	700 ... 1,100 hPa (280 ... 440 in WC) for standard device; other on request	
Ambient conditions		
Ambient temperature	$-20 \dots +55^\circ\text{C}$ ($-4 \dots +130^\circ\text{F}$)	
Approvals		
Compliances	TÜV-tested for plants of the 27 th FICA ¹⁾ , EN 14181, GOST	
Protection class	IP 65, IP67 (for ZIRKOR302 E and evaluation unit possible)	
Electrical safety	CE, EMC guideline 2004/108/EC	
Inputs, outputs and Interfaces		
	O_2 analyzer	Evaluation unit (option)
Analog outputs	1 output: 0/4 ... 20 mA, 500 Ω (float. output); option 4: 0/4 ... 20 mA; 500 Ω (el. isolat.)	3 outputs: 0/4 ... 20 mA; max. 500 Ω burden, el. isolated; measuring value output
Digital outputs	Optional 4 relay outputs: 48 V AC/DC; 1 A; 60 W DC/30 W AC	3 relay outputs: 48 V AC/DC, 1 A, max. 30 W/60 VA; normally open contact
Digital inputs	Optional 4 inputs: 24 V for floating distance contact	3 inputs: 24 V for floating distance contact
Interfaces	<ul style="list-style-type: none"> • RS232 service interface • CAN bus or RS422 • Ethernet 	<ul style="list-style-type: none"> • RS232 service interface • CAN bus to additional analyzers
Bus protocol	Option: PROFIBUS DP, Modbus RTU, Interbus S	Option: PROFIBUS
General, versions		
	ZIRKOR302 P - pump version	ZIRKOR302 E - ejector version
System components	<ul style="list-style-type: none"> • O_2 analyzer with integrated measuring gas pump: sheet steel housing • Evaluation unit (option): cast aluminium 	<ul style="list-style-type: none"> • O_2 analyzer with ejector driven by compressed air: sheet steel housing • Evaluation unit (option): cast aluminium
Control function	Automatic test and adjustment function with ambient air	
Mounting	Tube 125 mm DN 80, PN6; ANSI B 16.5/DN 3" (150 lbs)	

¹⁾ FICA ... Federal Immission Control Ordinance (BImSchV)