

AFiM: IN SITU ZIRCONIUM OXYGEN & REDUCTORS ANALYZER FOR MEDIUM TEMPERATURE COMBUSTION CONTROL



- > Analyzer for combustion control up to 600°C and up to 50m distance
- > Key device to be integrated and added in every combustion regulation system
- > Revolutionizes the state-of-the-art in standard design for zirconia sensors used in O2 analysis
- > High throughput manufacturing
- > Streamlined integration:
 - FiNCORE sensor with built-in junction box.
 - Standard filter holder 60mm or 100mm flange made from SS316L.
 - FiNCORE controller transmitter board.
 - FiNCORE standard cabinet with 2 x 4-20mA analog displays or FiNCORE cabinet for 3.5" display HMI
 - Standard 24V DC power connection
 - Modbus RTU RS-485 communication
 - 2x 4-20mA NAMUR analog outputs

ZrO2 FiNCORE OVERVIEW

The oxygen measurement enables the control of burner fuel/air ratios to ensure combustion efficiency and process safety. FiNCORE in-situ Combustion Control Analyzers can be installed in hazardous areas and can withstand critical environments such as:

- > Refinery process heaters
- > Petrochemical reactor furnaces
- > Industrial large-scale boilers
- > Metal fusion/Treatment furnaces
- > Glass industry furnaces
- > Large scale dryers (Paper, Wood...)

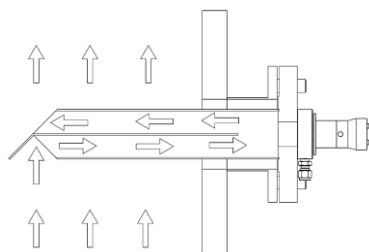
New Generation Analyzer with highest standard of accuracy and reliability

- > Multiplex long life sensor
 - O2 with air/gas reference, acc. to Nernst law
 - pRed (Reducing potential), unburnt compounds production indicator
 - > Sensibility down to 10ppm H2 or CO
 - > Robust versatile electronic board
 - > Low maintenance probe design
 - > Low response time
 - > Built-in heater & thermocouple
 - > Low heating inertia and gradient
 - > Consistent repeatability
 - > Superior linearity
- High reproducibility due to serial production

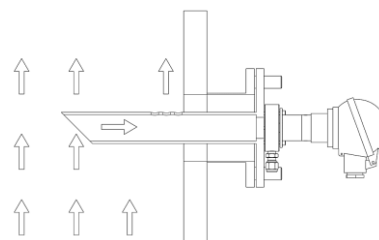
Sampling principle

- > Passive flue gas deviation
- > Low-maintenance cost & robustness
- > Low sampling response Time
- > Range of design, custom made:
 - Flue Dimension: 200mm to 5m
 - Flue gas Temp.: up to 600°C
 - Mating Flange dimension and type

Bypass Tube



Direct Tube



Analysis capabilities and configuration:

- > O2 – 0.1% to 100% for combustion regulation
- > O2 + O2 – Redundancy with two probes or in one probe design
- > O2 + pRed – For combustion efficiency assessment
- > O2 / O2 – Built-in redundancy for enhanced reliability and lower maintenance/calibration

Zr | O2 FiNCORE AFiM CHARACTERISTICS:

APPLICATION	In situ O2%, pRed, in Combustion Flue Gas for process control	CALIBRATION GAS	Recommended concentrations: Offset gas: 20.9% O ₂ (Instr. Air) Span gas: 1.0% O ₂
MEASUREMENT PRINCIPLE	Zirconium Oxide Sensor	IN SITU SAMPLING SYSTEM	Probe mounted on made to order sampling Tube inserted into the flue gas duct. See relevant data sheet
MEASUREMENT RANGE	O2: 0.1 - 100% pRed: 10 - 200 ppm H ₂ , 5000ppm CO	OUTPUT SIGNALS	4-20mA – NAMUR – max 1000 Ω RS485 RTU/MODBUS
MEASURED GAS TEMPERATURE	Up to 600°C	WARM-UP TIME	< 10 min.
MEASURED GAS PRESSURE	-0.5 to +0.5 bar	SENSOR HEATING REGULATION	S type thermocouple
RESPONSE TIME	At sampling port: T ₆₀ < 15s At calibration port: T ₆₀ < 4s	STORAGE	Ambient temperature, <95%RH > 1 year
REPETABILITY	+/- 0.5% of full scale	ACCESSORIES	Sampling tube: Direct, By-pass, Flow booster Calibration set 110-220V DC Power supply 3.5" display HMI
LINEARITY	+/- 2% of value, not lower than 0.1%		
SENSOR TEMPERATURE	600 to 800°C - regulated		
POWER SUPPLY / CONSUMPTION	24V DC Average 10W – Up to 20W		

ORDERING INFORMATION:

Analyzer type AFiM - (process temperature up to 600°C – remote transmitter)

FiNCORE SENSOR	
Product Number	Product Description
ZRPO2S-B	FiNCORE sensor with DIN connector for O2 measurement
ZRPC2S-B	FiNCORE sensor with DIN connector for O2 + pRed measurement

FILTER HOLDER WITH CALIBRATION PORT	
Product Number	Product Description
ZRF6-LO	Filter holder Ø 60 mm with SS316L filter and 6mm calibration port
ZRF0-LO	Filter holder Ø 100 mm with SS316L filter and 6mm calibration port

(¼" calibration port can be fitted upon request)

FiNCORE CONTROLLER BOARD	
Product Number	Product Description
ZRTOS-1G0M0	FiNCORE controller board for O2 measurement
ZRTCS-1G0M0	FiNCORE controller board for O2 + pRed measurement

CABLE	
Product Number	Product Description
ZRZB - **	Analyzer connection cable for junction box (**: cable length up to 50 meters)

SAMPLING TUBE	
Product Number	Product Description
STDL***FDE	Direct sampling tube, SS316L, 4"150 FF flange for probe mounting on straight extension
STBL***FDE	By-pass sampling tube, SS316L, 4"150 FF flange for probe mounting on straight extension

(***: tube length, flange type and dimensions can be adjusted upon request)

CABINET AND ACCESSORIES	
Product Number	Product Description
ZMCR0-013	RAL 7035 painted steel cabinet, wall mounted, 1x 4-20mA display, 24V DC
ZMCRR-013	RAL 7035 painted steel cabinet, wall mounted, 2x 4-20mA display, 24V DC
ZMCRR-113	RAL 7035 painted steel cabinet, wall mounted, 2x 4-20mA display, 110-220V AC
ZMCRH-113	RAL 7035 painted steel cabinet, wall mounted, 3.5" display HMI, 110-220V AC

(Additional solution for mounting on tube can be offered)

OPTION: CALIBRATION SET	
Manual calibration set for O2 or O2+pRed analyzer upon demand	