

Gas Analyzers

NDIR / Laser / Zirconia / Paramagnetic / Thermal Conductivity

Dependable analyzers offered through long experience and with advanced technologies



Product Variety to Meet Your Needs

NDIR Gas Analyzer Systems > P. 4-5

Monitors up to 7 gas components Long-term superior stability

Applications Waste incinerators, boilers

NOX SO2 CO2 CO O2 HCI Dust

NDIR Gas Analyzers P. 6-7

Simultaneous and continuous measurement of up to 5 components Long-term stability for wide measurement range

Applications

Steel plants (converter furnaces, blast furnaces), gas manufacturing facilities

NOX SO2 CO2 CO CH4 O2

NDIR Gas Analyzer for heat treatment furnace **P.8**

Simultaneously and continuously measures 2 components among CO₂, CO, and CH₄

Applications

Heat treatment furnaces (gas generators, carburizing furnaces)

CO₂ CO CH₄

Compact NDIR Gas Analyzers **P**. 9

Gas sampling devices incorporated Simultaneous measurement of up to 5 components

NOX SO2 CO2 CO CH4 O2

Applications

Chemical labs, plant labs





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Laser Gas Analyzers > P. 10-11

Fast measurement with insertion type sensor Reduced cost of ownership

Applications

Waste incinerators, large industrial boilers, chemical plants







Zirconia Oxygen Analyzers P. 12–13

Ex-proof

Ideal for combustion management Fast response with no need for gas sampling devices

Applications

Boilers, incinerators, industrial furnaces, petrochemical plants



Paramagnetic Oxygen Analyzers **P. 14**

Non-contact sensor offers long-term superior stability Fast response ideal for combustible gas measurement

Applications Incinerators, industrial furnaces



Thermal Conductivity Gas Analyzer **P. 15**

Reliable and continuous measurement of H₂, He, Ar, etc.

Applications

Semiconductor manufacturing facilities, industrial gas generating facilities, H2 gas related facilities









NDIR Gas Analyzer Systems

Monitors up to 7 gas components Long-term superior stability

Simultaneous measurement of up to 5 components in flue gas

NOX SO2 CO2 CO O2

ZSJ

Japanese type approval SAS182 (SO₂ analyzer) SAC182 (CO analyzer) SAN181 (NOx analyzer) SE171 (zirconia O₂ analyzer) SF172 (paramagnetic O₂ analyzer)



Features

- Single-beam NDIR
- Long-term superior stabilitySample switching system
- ensures zero-point stability
- Automatic calibration
- Space-saving design that enables the maintenance work from front side

Specifications

Target	Flue gas from incinerators and boilers	
Measurable	$NOX SO_2 CO_2 CO_0^2$	
components		
Principle	Single-beam NDIR + zirconia or paramagnetic O2 sensor	
	NOx: 0 50 5000 ppm	
Magguramont	SO2: 0 50 5000 ppm	
rango	CO2: 0 10% / 0 20%	
range	CO: 0 50 5000 ppm	
	O2: 0 10 vol% / 0 25 vol%	
Repeatability	±0.5% FS	
Linearity	±1% FS	
Zero drift	±1% FS per week (O2: ±2% FS per month)	
Span drift	±2% FS per week (O2: ±2% FS per month)	
Response time	NOx, CO2, CO, O2: 2 min,	
nesponse time	SO2: 4 min (for 90% response, from the analyzer inlet)	
Output signal	4–20 mA DC	
Contact output	During auto calibration, during maintenance, concentration	
	alarm, CO peak count alarm, range identification, etc.	
Contact input	Auto calibration start, range switchover, pump on/off, etc.	
Functions	Auto calibration, O2 correction, O2 corrected average	
FUNCTIONS	value, concentration alarm, CO peak count alarm, etc.	
Display	Backlit LCD	
Recorder	Paperless recorder (option)	
Standard gas	Six 3.4L cylinders can be housed (option)	
Power supply voltage	100, 110, 115, 200, or 230 V AC, 50/60 Hz	
Dimensions	815 (W) × 1780 (H) × 700 (D) mm, outdoor use	

Simultaneous measurement of up to 5 components in flue gas

NOx SO2 CO2 CO O2



Japanese type approval SAS172 (SO₂ analyzer) SAC172 (CO analyzer) SAN173 (NOx analyzer) SE171 (zirconia O₂ analyzer) SF172 (paramagnetic O₂ analyzer)

Features

- Double-beam NDIR
- Long-term superior stability
- Twin detectors for interference compensation
- Automatic calibration
- Space-saving design that enables the maintenance work from front side

Target	Flue gas from incinerators and boilers		
Measurable	NOX, SO2, CO2, CO, O2		
Principle	Double-beam NDIR + zirconia or paramagnetic O ₂ sensor		
	NOx: 0 50 5000 ppm		
	SO2: 0 50 5000 ppm		
Measurement	CO2: 0 10% / 0 20%		
range	CO: 0 50 5000 ppm		
	O2: 0 10 vol% / 0 25 vol%		
Repeatability	±0.5% FS		
Linearity	±1% FS		
Zero drift	±2% FS per week (O2: ±2% FS per month)		
Span drift	±2% FS per week (O2: ±2% FS per month)		
Response time	NOx, CO2, CO, O2: 2 min,		
	SO2: 4 min (for 90% response, from the analyzer inlet)		
Output signal 4–20 mA DC			
Contact output	During auto calibration, during maintenance, concentration alarm, CO peak count alarm, range identification, etc.		
Contact input	Auto calibration start, range switchover, pump on/off, etc.		
Functions	Auto calibration, O2 correction, O2 corrected average		
T unctions	value, concentration alarm, CO peak count alarm, etc.		
Display	Backlit LCD		
Recorder	Paperless recorder (option)		
Standard gas	Six 3.4L cylinders can be housed (option)		
Power supply voltage	100, 110, 115, 200, or 230 V AC, 50/60 Hz		
Dimensions	815 (W) × 1780 (H) × 700 (D) mm, outdoor use		





Simultaneous measurement of up to 7 components in flue gas

NOx SO₂ CO₂ CO O₂ HCI Dust

ZSU-7

Japanese type approval SAS172 (SO₂ analyzer) SAC172 (CO analyzer) SAN173 (NOx analyzer) SE171 (zirconia O₂ analyzer) SF172 (paramagnetic O₂ analyzer)



- Features
- Monitors up to 7 gas concentrations
- All the necessary equipment are housed in a space-saving cabinet
- Less electrical work because signal and power terminals are in one place
- Low-maintenance laser HCI analyzer
- 40% less power consumption compared to conventional models

Target	Flue gas from incinerators and boilers	
Measurable components	NOx, SO2, CO2, CO, O2, HCl, dust	
Principle NOx, SO ₂ , CO ₂ , CO: NDIR O ₂ : zirconia HCI: laser Dust: electrostatic induction		
Measurement	NOX: 0 50 5000 ppm SO2: 0 50 5000 ppm CO2: 0 10% / 0 20% CO: 0 50 5000 ppm	
range	O2: 0 10 vol% / 0 25 vol% HCl: 0 15 5000 ppm Dust: 0.01 1000 mg/m ³	
Repeatability	±0.5% FS (NDIR), ±2% FS (laser)	
Zero & span drift	±2% FS per week (NDIR) ±2% FS per 6 months (laser)	
Response time	120 s (NDIR), 1 5 s (laser)	
Output signal	4–20 mA DC	
Contact output 8 points (during maintenance, during auto calibrational analyzer abnormality, etc.)		
Contact input	Auto calibration start, average value reset, measurement stop, etc.	
Recorder	Paperless recorder (option)	
Standard gas	Six 3.4L cylinders can be housed (option)	
Power supply voltage	100 V AC, 50/60 Hz	
Dimensions	1215 (W) × 1780 (H) × 700 (D) mm, outdoor use	

NDIR Gas Analyzers



From low range (0–5 ppm) to 100%

Low-concentration measurement and drift-less measurement available



Features

■ Wide measurement range: from 0–5 ppm to 100%

- Excellent zero-point stability: ±0.5% FS per week (ZPB, ZPG)
- Simultaneous and continuous measurement of up to 5 components (ZPA, ZPB)
- \blacksquare Compact and lightweight: 483 (W) \times 133 (H) \times 382 (D) mm, \leq 13 kg
- Simple structure for ease of maintenance
- Built-in magnetic or galvanic O₂ sensor (optional)

Compo- nents	Standard type (ZPA)	Drift-less type (ZPB)	Low-concentration measurement type (ZPG)
NO	0 200 ppm	0 50 ppm	0 10 ppm
SO ₂	0 200 ppm	0 50 ppm	0 10 ppm
CO ₂	0 100 ppm	0 50 ppm	0 5 ppm
CO	0 200 ppm	0 50 ppm	0 5 ppm
CH4	0 500 ppm	-	-
O2	05%	05%	05%

Minimum measurement range

Туре		Standard type		Drift-less type		Low-concentration measurement type		
Model ZPA			ZPB		ZPG			
Princ	iple	NDIR (single beam)	O2: magnetic, galvan	nic, or external zirconia analyzer				
Num pone	Number of measurable com- ponents				Up to 2 (including O2)			
Mea and	surable components ranges	Min	Max	Min	Max	Min	Мах	
	NO	0 200 ppm	0 5000 ppm	0 50 ppm	0 5000 ppm	0 10 ppm	0 100 ppm	
	SO2	0 200 ppm	0 10 vol%	0 50 ppm	0 5000 ppm	0 10 ppm	0 100 ppm	
	CO2	0 100 ppm	0 100 vol%	0 50 ppm	0 25 vol%	0 5 ppm	0 50 ppm	
	CO	0 200 ppm	0 100 vol%	0 50 ppm	0 5000 ppm	0 5 ppm	0 50 ppm	
	CH4	0 500 ppm	0 100 vol%	-	-	-	-	
	O2 (built-in galvanic analyzer)	0 10 vol%	0 25 vol%	0 10 vol%	0 25 vol%	0 10 vol%	0 25 vol%	
	O2 (built-in magnetic	0 5 vol%	0 100 vol%	0 5 vol%	0 100 vol%	0 5 vol%	0 100 vol%	
	analyzer)	None	100 95 vol%	-	-	-	-	
	O2 (external zirconia analyzer)	0 5 vol%	0 25 vol%	0 5 vol%	0 25 vol%	0 5 vol%	0 25 vol%	
No.	of measurement ranges	Up to 2 ranges per co	mponent					
Repe	eatability	ility ±0.5% FS						
Linearity		±1% FS						
Zero drift		±2% FS per week ±0.5% FS per week						
Span drift		±2% FS per week ±2% FS per week						
Response time (for 90%)							sample switching.	
Output signal		4–20 mA DC or 0–1 V DC (ZPA and ZPB: ≤ 12 points, ZPG: ≤ 4 points)						
Display		LED-backlit LCD, instantaneous value, O2 corrected instantaneous value, O2 corrected average value, O2 average						
Range switching		by key operation, automatic, or remotely (option)						
Contact input (option)		Voltage input: remote range-switching, auto-calibration remote start, remote hold, average reset						
Contact output (option) SPDT relay contact: analyzer error, calibrati auto-calibration, H/L limit alarm, CO peak a		n error, range identificat arm	ion, during auto-calibra	ation, solenoid valve op	eration for			
Atmospheric pressure cor- rection (option) Provided as needed								
Standard functions Output hold, auto/manual range switching								
Optional functions Auto calibration, auto calibration remote start O2-corrected average values, average resetti		:, remote output-hold, range identification contact output, H/L limit alarm, O2 correction, ng contact input, CO peak alarm contact output						
Com	munication (option)	RS-485 (Modbus)						
Sam	ple gas flow checker	Not provided	Not provided Provided					
Gas inlet/outlet Rc 1/4 or NPT 1/4 internal thread		·						
Purg	ge gas flow rate 1 L/min							
Reference gas Not required		Required (dry N2 or dry air)						
Operating environment -20°C +60°C, RH 90% or lower (no conde		ensation)						
Mounting 19-inch rack mount								
Power supply voltage 100–240 V		100-240 V AC, 50/60	00–240 V AC, 50/60 Hz					
Power consumption Approx.		Approx. 100 VA	Approx. 100 VA		Approx. 120 VA Approx. 100 VA			
Dime	ensions	483 (W) × 133 (H) × 3	82 (D) mm			1		
Weight Approx. 11 kg				Approx. 13 kg		Approx. 11kg		





Simultaneous and continuous measurement of up to 5 components

Double-beamed and high-performance model

Features

- Simultaneous and continuous measurement of up to 5 components
- Hardly affected by interference from other gases
- Superior functionality-calibration, alarm, calculation
- Easy-to-see LCD
- Maximum range ratio of 1 : 25
- Excellent zero-point stability: ±1% FS per week

Measurement range

Component	Minimum range	Maximum range
NO	0 50 ppm	0 5000 ppm
SO ₂	0 50 ppm	0 10 vol%
CO ₂	0 20 ppm	0 100 vol%
CO	0 50 ppm	0 100 vol%
CH4	0 200 ppm	0 100 vol%
N2O	0 200 ppm	0 2000 ppm
O2	0 5 vol%	0 25 vol%



Principle	NO, SO ₂ , CO ₂ , CO, CH ₄ , N ₂ O: NDIR (double-beam) O ₂ : built-in paramagnetic sensor or external zirconia analyzer
Repeatability	$\pm 0.5\%$ FS ($\pm 1\%$ FS for the ranges below 50 ppm)
Linearity	±1% FS
Zero drift	$\pm1\%$ FS per week (±2% FS per week for 50–200 ppm range)
Span drift	$\pm 2\%$ FS per week ($\pm 2\%$ FS per day for the ranges below 50 ppm)
Response time (for 90%)	≤ 60 s
Output signal	4–20 mA DC or 0–1 V DC, up to 12 points
Contact input	Volt-free contact: remote range-switching, auto-calibration remote start, remote hold, average reset, pump on/off
Contact output	SPST-NO and SPDT contact: analyzer error, calibration error, range identification, during auto-calibration, pump on/off, CO peak alarm, H/L limit alarm, power interruption
Communication (option)	RS-232C (Modbus)
Display	LED-backlit LCD, instantaneous value, O ₂ corrected instantaneous value, O ₂ corrected average value, O ₂ average
Power supply voltage	100–240 V AC, 50/60 Hz
Power consump- tion	250 VA
Dimensions and weight	483 (W) \times 177 (H) \times 600 (D) mm, approx. 22kg

NDIR Gas Analyzer for Heat Treatment Furnace

For optimal quality management



Features

- High-accuracy with a repeatability of 0.5% FS
- Single-beam system: long-term stability and low maintenance
- Monitors concentration of CO₂, CO, CH₄ that correlate Carbon Potential (CP)
- CP calculation available (option)
- Simultaneous and continuous monitoring of CO₂ + CO, CH₄ + CO, CO₂ + CH₄
 Compact and lightweight
- About one-third volume and half weight of previous models ZAR and ZFU Panel mounting with cutout size of 206 (W) × 173 (H) mm

Specifications

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Components	CO ₂ , CO, CH ₄
Principle	Single-beam NDIR
	CO2: 0 0.5 100%
Measurement range	CO: 0 0.5 100%
	CH4: 0 1 10%
No. of components	≤ 2
No. of ranges	≤ 2 for each component
Repeatability	±0.5% FS
Zero and span drift	±2% FS per week

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Response time (for 90%)	≤ 10 s	
Output signal	4–20 mA DC, 0–1 V DC, 0–100 mV DC, or 0–10 mV DC	
Contact output	Analyzer error, range identification	
Contact input (option)	Remote range-switching, remote hold	
Standard functions	Output hold, automatic light-off, analyzer error	
Optional functions	CP calculation, etc.	
Display	Backlit LCD	
Power supply voltage	100–240 V AC, 50/60 Hz	
Dimensions and weight	218 (W) × 211 (H) × 257 (D) mm, approx. 5 kg	

NDIR CO₂ Controller



Features

- Wall mount type with built-in pump and filter
- Applications: protected horticulture, ventilation systems for buildings, controlled atmosphere storage facilities



Biomass Gas Analyzer



Components and ranges

	1st range	2nd range	Principle	
CH4	020 vol %	0100 vol %		
CO ₂	020 vol %	0100 vol %	Single-beam NDIR	
H ₂ S	0500 ppm	02000/5000 ppm	Constant-potential electrolytic	
O2	010 vol %	025 vol %	Galvanic fuel cell	

Specifications

Repeatability	±0.5% FS (H2S: ±2.0% FS)
Linearity	±1.0% FS (H2S: ±2.0% FS)
Zero drift	±2% FS per week
Span drift	$\pm 2\%$ FS per week (H2S: $\pm 2.5\%$ FS per week or $\pm 5\%$ FS per day)
Response time (for 90%)	10-30s (H2S: 180s)
Output	4-20mA DC or 0-1V DC
Contact input	12-24V DC, ≤ 9 points
Contact output	SPDT, ≤ 15 points
Communication (option)	RS-485 (Modbus)
Display	Backlit LCD
Power supply voltage	100-240 V AC, 50/60 Hz
Dimensions and weight	483 (W) × 133 (H) × 382 (D) mm, approx. 9 kg

Target	CO2 in air
Principle	Single-beam NDIR
Measurement range	0 0.2 20%
Repeatability	±1% FS
Zero drift	±10% per 6 months
Response time (for 90%)	≤ 10 s
Gas sampling	Suction pump and filter
Power supply voltage	100 V, 115 V, 200 V, or 220 V AC, 50/60 Hz
Dimensions and weight	220 (W) × 257 (H) × 85 (D) mm, approx. 3 kg

Compact NDIR Gas Analyzer

With gas sampling devices accommodated

Simultaneously and continuously monitors up to 5 components among NOx, SO₂, CO₂, CO, CH₄, and O₂

ZSVF		Analysis Unit + Sampling Unit				
NOx	SO ₂	CO ₂	CO	CH ₄	O2	

Features

- Analysis unit and sampling unit can be separated for ease of move and installation
- Suited to monitoring of flue gas, combustion gas, biogas, etc.







Sampling unit

Analysis unit

- No installation work
- Interactive interface





Menu screen

Range switching screen Zero/span calibration

CP calculation available

The IR analyzer can ensure higher CP traceability than the zirconia O₂ analyzer because the IR analyzer simultaneously measures CO and CO₂ to calculate CP.

 Easy to maintenance Automatic water-discharge



Specifications

Measurable components	NOX, SO2, CO2, CO, CH4, O2	
Principle	Single-beam NDIR + galvanic or paramagnetic O2 sensor	
	NOx: 0 500 5000 ppm	
	SO2: 0 500 ppm 1%	
Moasuromont rango	CO2: 0 200 ppm 100%	
Measurement range	CO: 0 200 ppm 100%	
	CO4: 0 1000 ppm 100%	
	O2: 0 5/10/25%	
Repeatability	±0.5% FS	
Output signal	4–20 mA DC or 0–1 V DC Instantaneous value, O2 converted instantaneous	
	value, O2 converted average value, CP calculation	
Communication	RS-232C (Modbus)	
Power supply voltage	100–115 V AC or 200–240 V AC, 50/60 Hz	
Dimensions	Analysis unit: 365 (W) × 211 (H) × 514 (D) mm Sampling unit: 365 (W) × 377 (H) × 514 (D) mm	
Weight	Analysis unit: approx. 12 kg Sampling unit: approx. 18 kg	
Gas extractor (option)	Fixed type with flange, or unfixed type	

Simultaneously and continuously measures up to 4 components among CO₂, CO, CH₄, and O₂

ZSVS Analysis unit

Features

- Portable type with built-in pump, filter, and flowmeter
- CP calculation, O2 correction, O2 corrected average
- Easy-to-see LCD
- Single-beam system: long-term stability and low maintenance

Components	ents CO ₂ , CO, CH ₄ , O ₂	
Principle	Single-beam NDIR + Galvanic O2 sensor	
	CO2: 0 200 ppm 100%	
Magguramont range	CO: 0 200 ppm 100%	
Measurement range	CO4: 0 1000 ppm 100%	
	O2: 0 5/10/25%	
Repeatability	±0.5% FS	
Zero drift	±1% FS per day	
Span drift	±1% FS per day	
Response time (for 90%)	≤ 50 s	
Output signal	4–20 mA DC or 0–1 V DC	
Communication	RS-232C (Modbus)	
Standard functions	CP calculation, O ₂ correction, O ₂ corrected average, automatic light-off	
Display	Backlit LCD	
Power supply voltage	100–115 V AC or 200–240 V AC	
Dimensions	365 (W) × 211 (H) × 527 (D) mm	

Laser Gas Analyzer

Insertion type offers high-speed measurement Long-term stability and low maintenance

CH₄



Measurable components

ZSS

Features

accuracy





Zero point stability: ±2.0% FS per 6 months

Purge system reduces the risk of zero drift due to contamination

Energy saving and low maintenance

Energy consumption ≤ 80 VA

Maintenance work ≤ twice a year

With no need for sampling devices and preconditioning, consumable parts and maintenance work are greatly reduced.

No	sampling	involved

No filter

No preconditioning

No catalyst

Fast response within 2 seconds

Compared to the ion electrode (sampling) method, the direct measurement provides remarkably faster response.

Stack

Comparison with sampling system



CO + O2 analyzer available

Simultaneous measurement of CO and O2 enables precise control of air-fuel ratio while reducing the cost of installation and maintenance.



Instrument air purge available

O2 analyzer for combustion control accepts instrument air purge.

Specifications

General

Principle	Non-dispersive infrared (NDIR)
Method	Cross-stack
Measurable compo- nents and ranges	See the table below
Light source	Near-infrared semiconductor laser
Laser class	CLASS 1 (O2 analyzers of high-temperature version and instru- ment air purge version fall under CLASS 3B)
Power supply voltage	100–240 V AC, 50/60 Hz
Power consumption	80 VA
Calibration interval	every 6 months (depending on the operating environ- ment)
Display	Backlit LCD
Display contents	Component, concentration (instantaneous value, aver- age, O2 corrected instantaneous value, O2 corrected average value), alarm
Weight	Receiver unit and transmitter unit: approx. 10 kg each, control unit: approx. 8 kg
D' '	Receiver unit (400 × 180 × 155 mm)
Dimensions $(D \times W \times H)$	Receiver unit (400 × 240 × 160 mm)
	Control unit (137 × 255 × 440 mm)
IP rating	IP65

Performance

Response	\leq 4 s (\leq 2 s in high-speed version)
Repeatability	$\pm 1.0\%$ FS (depending on components and ranges) CO + O2 measurement: $\pm 2\%$ FS
Linearity	$\pm 1.0\%$ FS (depending on components and ranges) CO + O ₂ measurement: $\pm 3\%$ FS
Zero drift	±2.0% FS per 6 months (depending on component and range) CO + O ₂ measurement: ±4% FS per 6 months
Interference effect	±2.0% FS
Detection limit	1% of minimum range

Input/output signal

Analog output	4–20 mA DC or 1–5 V DC, 2 or 4 points Measured value and O ₂ corrected value. Switchable between instantaneous value and average value
Analog input	4–20 mA DC, 2 points Sample gas pressure, temperature, velocity, O2 concentration, water concentration, air purge pressure *Inputs are used for compensating concentration, O2 correction, and alarm output.
Digital output	Relay contact output, 6 points Low light transmission, H/L limit alarm, analyzer error, during calibration / during hold, power interruption, environmental error
Digital input (option)	Voltage input received by photocoupler, 3 points Average value reset, switchover between instantaneous value and moving average value, remote hold

Installation environment

Ambient temperature	 -20 to +55°C (Receiver unit, transmitter unit) -5 to +45°C (Control unit)
Ambient humidity	≤ 90% RH
Optical path length	0.5 to 10 m (0.5 to 5 m in CO + O2 measurement)
Standard flange	JIS10K, 50A or 100A
Purge gas	See the table below. Purge gas pressure: ≥ 0.3 MPa
Purge gas flow rate	≥ 20 L/min
Gas conditions	See the table below Moisture: ≤ 50 vol% (no condensation) Pressure: ±10 kPa (Consult us for pressure above the limit.) Dust: Standard version: ≤ 5 g/m ³ (N) Dust resistant version: ≤ 20 g/m ³ (N)

Measurable components and ranges

	Measurable compon	ents	Min. range*	Max. range*	Gas temperature	Purge gas	4th code
	HCI		10 ppm	5000 ppm	≤ 400°C	- Instrument air	С
	NH3		15 ppm	5000 ppm	≤ 450°C		W
	CO (high range)		2.0 vol%	100 vol%	≤ 300°C		А
Single beam	CO (low range)		200 ppm	1 vol%	≤ 400°C		Μ
1-component	CO ₂		2.0 vol%	100 vol%	≤ 300°C		G
analyzer	CH4		100 ppm	100 vol%	≤ 300°C		R
	O2		10 vol%	100 vol%	≤ 300°C	- N2 -	Р
	O2 (high temperature)		4 vol%	100 vol%	≤ 1200°C		Q
	O2 (instrument air purge)		25 vol%	100 vol%	400°C 1200°C	Instrument air	Т
Single beam 2-component analyzer	CO + CO ₂		2.5 vol%	100 vol%	≤ 300°C	Instrument air	К
	ppm CO + O2 (instrument air purge)	CO	200 ppm	2 vol%	– 400°C 1200°C Instrum	Inotrumont oir	air V
Double beam 2-component analyzer		O2	25 vol%	100 vol%		instrument an	
	ppm CO + O2 (high temperature)	CO	200 ppm	2 vol%	. 100000		
		O2	5 vol%	50 vol%	_ ≤ 1200 C	Nia	
	vol% CO + O ₂ CO O ₂		2 vol%	50 vol%	— ≤ 300°C	1N2	ŝ
			10 vol%	100 vol%			3

*The measurement ranges described above are for the optical path of 1 m.

Zirconia Oxygen Analyzers

Fast response with no need for gas sampling devices Ideal for combustion control in boilers and incinerators

Principle

The analyzer makes use of the property of zirconium oxide that conducts oxygen ion when heated. The analyzer can obtain O_2 concentration by sensing the electromotive force arises from the difference of O_2 concentration between air and the sample gas.



Easily replaceable zirconia element *Excluding ZSB



Fast response (4–7 seconds) HART communication available

O2



Features

- Easily replaceable zirconia element
- Fast response (4–7 seconds)
- IP66 or IP67 enclosure
- RS-485 or HART communication

Target	O2 in incombustible gas
Principle	Insertion type zirconia sensor
Range	0 2 50 vol% O2 (user configurable)
Repeatability	±0.5% FS
Linearity	±2% FS
Response time (for 90%)	4 s 7 s
Output signal	4–20 mA DC or 0–1 V DC
Contact output	6 points, SPST-NO contact: H/L limit alarm, during mainte- nance, during blowdown, during calibration, analyzer error
Contact input	3 volt-free contacts: selection from 7 items
Display	Backlit LCD
Communication	RS-485 (Modbus) or HART
Optional functions	Combustion efficiency display, blowdown, auto calibration, cock (selector valve), flowmeter
Converter installation	Panel mount or pipe mount
Cable length between converter and detector	≤ 100m
Power supply voltage	100–120 V AC or 200–240 V AC, 50/60 Hz

Flameproof type for hazardous applications



Features

- Easily replaceable zirconia element
- Fast response (4–7 seconds)
- TIIS and NEPSI certified

Specifications

Target	O2 in incombustible gas
Principle	Insertion type zirconia sensor
Range	0 2 50 vol% O2 (user configurable)
Repeatability	±0.5% FS
Linearity	±2% FS
Response time (for 90%)	4 s 7 s
Output signal	4–20 mA DC or 0–1 V DC
Contact output	6 points, SPST-NO contact: H/L limit alarm, during mainte- nance, during blowdown, during calibration, analyzer error
Contact input	3 volt-free contacts: selection from 7 items
Display	Backlit LCD
Communication	RS-485 (Modbus)
Optional functions	Combustion efficiency display, blowdown, auto calibration, cock (selector valve), flowmeter
Converter installation	Panel mount
Cable length between converter and detector	≤ 100 m
Power supply voltage	100–120 V AC or 200–240 V AC, 50/60 Hz

Integrated system





Features

Detector ZFKE

- Auto calibration and manual/auto blowdown Solenoid valve and other necessary equipment are included
- User configurable range within 2 ... 50%
- Incomplete combustion indicator appears when O₂ is deficient

Target	O2 in incombustible gas
Principle	Insertion type zirconia sensor
Range	0 2 50 vol% O2 (user configurable)
Repeatability	±0.5% FS
Linearity	±2% FS
Response time (for 90%)	4 s 7 s
Output signal	4–20 mA DC or 0–1 V DC
Contact output	6 points, SPST-NO contact: H/L limit alarm, during mainte- nance, during blowdown, during calibration, analyzer error
Contact input	3 volt-free contacts: selection from 7 items
Display	Backlit LCD
Communication	RS-485 (Modbus)
Installation	Self-standing or wall-mounting
Cable length between converter and detector	≤ 20 m
Power supply voltage	100–120 V AC, 50/60 Hz

Paramagnetic Oxygen Analyzers

Fast response unaffected by combustible gas Ideal for combustion control in industrial furnaces and incinerators

Fast response within 2 seconds Tolerant to interference



Principle



When the sample gas is placed in a magnetic field, oxygen molecules will be attracted. This gives rise to a pressure, which is detected by a mass flow sensor.

+0.30

Background gas (100%) Zero drift (%) He H2 HCl

$\pi = (1000/)$	2010 4111 (70)	114	10.24
yas (100%)		HCI	-0.30
NO	+43	NH3	-0.26
CO	+0.01	SO ₂	-0.22
CO ₂	-0.27	N2O	-0.02
CH4	-0.20	H ₂ O	-0.02

Features

- Fast response within 2 seconds
- Tolerant to interference from other gas (H₂, CO₂, etc.)
- Suppressed ranges available (e.g. 21–100%O₂)
- No moving parts—low maintenance
- Automatic calibration, communication (option)

Specifications

Principle	Paramagnetic (pressure detection)		
	When reference gas is N2: 0 0.5 100% O2 (configurable)		
Measurement range	When reference gas is air: 21 23 100% O2		
	When reference gas is 100% O2: 100 98 0% O2 (configurable)		
No. of ranges	2		
Repeatability	±1% FS		
Linearity	±1% FS		
Response time (for 90%)	≤ 2 s		
Output signal	4–20 mA DC		
Contact output (option)	6 SPST-NO contacts: during calibration, etc. 4 SPDT contacts: H/L alarm, etc.		
Contact input (op- tion)	Remote range-switching, remote hold		
Display	Backlit LCD		
Communication (option)	RS-485 (Modbus)		
Installation	19" rack or panel mounting, or benchtop		
Power supply	85–264 V AC, 50/60 Hz		

Dumbbell type requires no reference gas Tolerant to interference





Oxygen molecules in sample gas are attracted by magnetic fields, and this gives rise to force works on the dumbbell. As the force is proportional to oxygen concentration, the analyzer converts it into an electric signal.

Interference effects (ZKG)

Background gas	Concentration	Zero drift (%)
NO	2000 ppm	+0.15
CO	100%	+0.1
CO ₂	100%	-0.35
CH4	100%	-0.25

Features

- Fast response within 15 seconds
- Hardly affected by interference from other gases (e.g. H₂, CO₂)
- No need for reference gas

Principle	Paramagnetic (dumbbell type)
Range	0 10, 21, 25, 50, 100% O ₂
No. of measure- ment ranges	1 or 2
Repeatability	±0.5% FS
Linearity	±1.0% FS
Response time (for 90%)	≤ 15 s
Output signal	4–20 mA DC, 0–1 V DC, or 0–10 mV DC
Display	LED (red)
Installation	Panel mounting
Power supply volt- age	100–240 V AC, 50/60 Hz
Dimensions	190 (W) × 240 (H) × 234 (D) mm

Thermal Conductivity Gas Analyzer

Reliable and continuous measurement of H₂, He, Ar, etc. Easy-to-see LCD



Features Easy-to-see LCD

Principle

range Repeatability

Linearity

(for 90%) Output signal

(option)

Components

Measurement

Response time

Contact output

- Interference compensation (option)
- RS-232C Modbus (option)
- Concentration alarm
- Auto calibration (option)

 Concentration alarm output (option) Two switchable ranges (option) 	on)	
	Contact input (option)	3 volt-free contacts; output hold, range switching, auto-calibration start
ents and ranges	Display	Backlit LCD
	Communication (option)	RS-232C
	Mounting	Panel mounting
0 s (fast response version)	Power supply voltage	100–240 V AC, 50/60 Hz
0C, or 0–10 mV DC	Dimensions	192 (W) × 240 (H) × 213 (D) mm

Approx. 5 kg

Comparison chambe

b

1000

Г 000 Measurement chambe DC constant current

Because the thermal conductivity is different among gas components, when there is a change in the concentration of the component under measurement, the thermal conductivity of the sample gas will change to affect the temperature of the platinum wire. The analyzer uses the temperature change to determine the gas concentration.

Fixed resistor

Amplifier

Principle

Sample

gas

Specifications

±1% FS

±2% FS

Thermal conductivity

He, Ar, H₂, CH₄, CO₂

Depends on components and ranges

 \leq 60 s (standard), \leq 10 s (fast response version)

5 SPST-NO contacts: during calibration, H/L alarm, etc.

4-20 mA DC, 0-1 V DC, or 0-10 mV DC

Sample gas	Reference gas*1	Measurement range	Maximum range ratio
H2	N2, (CO2, Ar, He)	0 3, 5, 10, 20, 50, 80, 100% 100 90%, 100 80%	1 : 10
He	N2, (CO2, Ar), O2, Air	0 5, 10, 20, 30, 40, 50, 80, 100% 100 90%, 100 80%	1 : 10
Ar	N2, O2, Air, (He)	0 10, 20, 50, 80, 100% 100 90%, 100 80%	1:5
CH4	N2, (CO2, Ar, He)	0 20, 40, 50, 60, 80, 100% 100 80%	1:5
CO ₂	N2, O2, Air, (He)	0 10, 20, 50, 100% 100 90%	1:5

Weight

*1: Those in parenthesis need consultation. Measurement of H₂ included in O₂ is not available

NDIR Gas Analyzers for Replacement

New models with equal size and functionality to predecessors



Gas Sampling Devices



ZBA

Samples target gas from stack Up to 1300°C



Gas Filter

ZBB

Removes dust and/or mist







Removes moisture and heat from sample gas



Flowmeter and Pressure Regulator

ZBD

Flowmeters is used to check the flow rate of sample gas. Pressure regulator controls the pressure of standard gas.



Valves



Controls sample gas flow



Gas Aspirator



Durable and corrosionresistant pump that draws the sample gas into the analyzer



Draining





Gas Converter ZDL C € Converts NOx contained in sample gas into NO



Applications



Refuse Incineration Plants

Gas analyzers are necessary for continuous emission monitoring required by laws and regulations; furthermore, they enable optimal combustion control.





Large Industrial Boilers

Gas analysis enables optimal combustion control of boilers, which leads to reduction of both the fuel cost and pollutant.





Heat Treatment Furnaces

Gas analyzers monitor the components relate to CP (carbon potential), such as CO₂, CO, CH₄, NH₃, H₂, and O₂, through which reliable quality control is achieved.



Satisfactory products for customers will be delivered under strict quality control.



Japanese Measurement Law: Designated Manufacturing Business Operator (No. 391901)



■ ISO 14001 Certificate No. EC97J1059 Tokyo Factory ■ ISO 9001 Certificate No. JMI-0122 Tokyo Factory

Find out more about our gas analyzers.

Gas Analyzers - Fuji Electric



www.fujielectric.com/products/instruments/products/anlz_gas/top.html

Information in this catalog is subject to change without notice. Read the instruction manuals thoroughly before using the products.

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