cosa+xentaur

Оптический анализатор дымовых газов COSA ZSS

Технические характеристики

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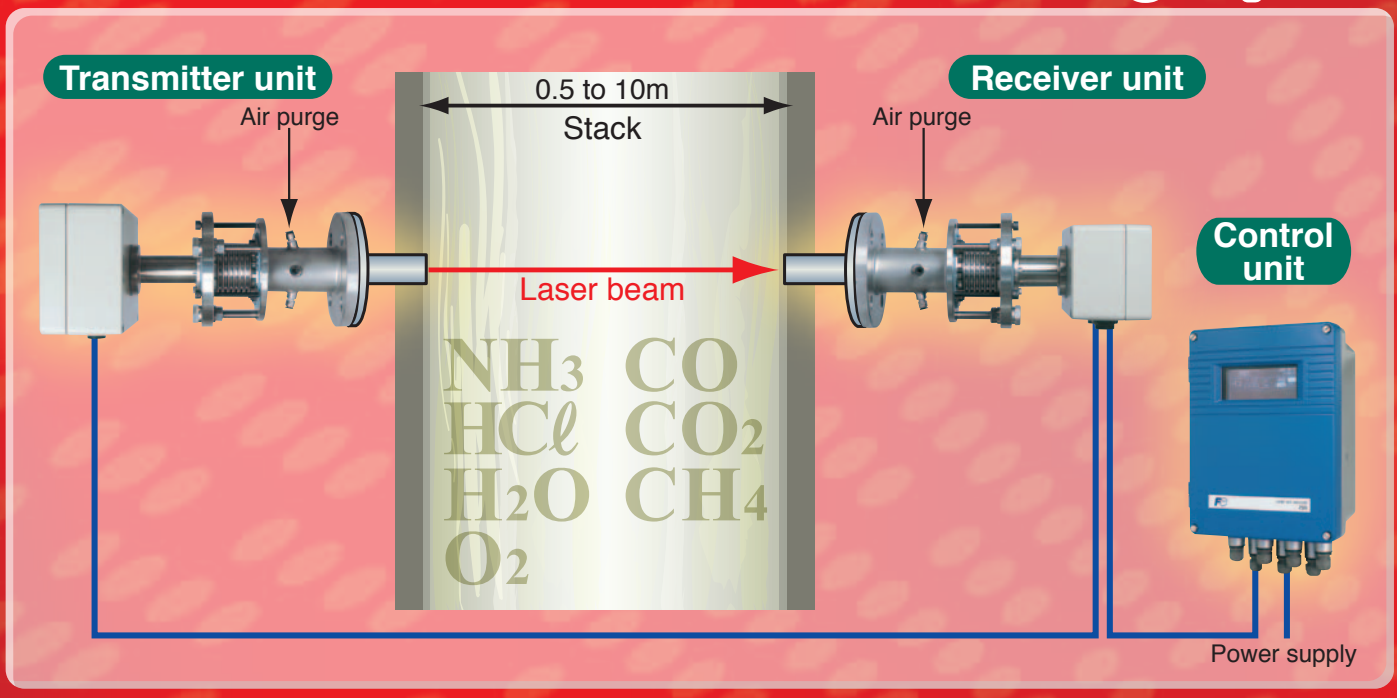
Innovating Energy Technology

In-situ measurement

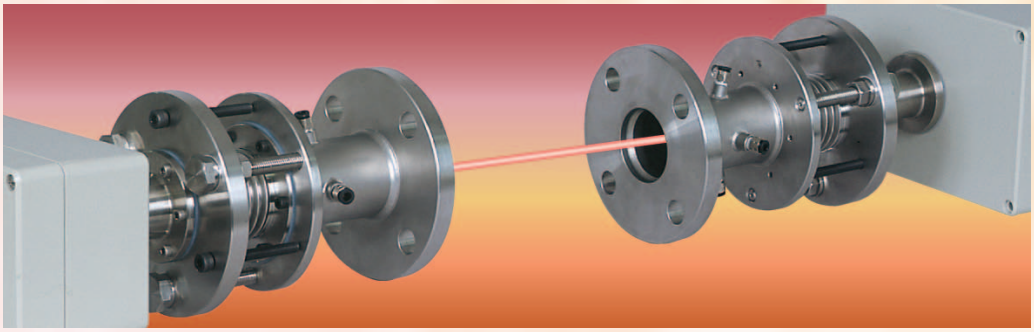
Direct insertion type ZSS

Measure NH_3, HCl, H_2O, O_2, CO, CO_2, and CH_4 gas concentrations in a stack at high speed.



- Excellent long-term stability: ±2.0%FS (zero drift)
- Ultra-high speed response: 1 to 5 seconds (High-speed response for 1 to 2 seconds is applicable.)
- Direct insertion system eliminates the need for maintenance.
- Air purge method is adopted for O_2 meter which is no need of nitrogen gas.
- Negligible interference by other gas components.
- A dual-component ($HCl+H_2O$, NH_3+H_2O) measurement function for reference dry gas conversion
- Measurement in a high-temperature/high particulate concentration environment
- Energy-saving 75 VA power consumption

Applicable to high-temperature/high-dust density environments!



Dust : 5 to 40g/m³(N)

Temperature	Measurable components
300˚C or less	CH_4, CO, CO_2, CO+CO_2, O_2 (Low output type)
	CO+O_2 (vol% CO+Low output type O_2)
400˚C or less	HCℓ
130 to 400˚C	HCℓ + H_2O
450˚C or less	NH_3
130 to 450˚C	NH_3 + H_2O

Temperature	Measurable components
1200˚C or less	O_2 (For use in high dust), CO (For use in high temperature), CO_2 (For use in high temperature)
	CO+CO_2 (For use in high temperature) , CO+O_2 (ppm CO+For use in high dustO_2)
400 to 1200˚C	O_2 (For combustion control) , CO+O_2 (vol% CO+For combustion control O_2)

Measures various gas components. 2-component analyzer available!

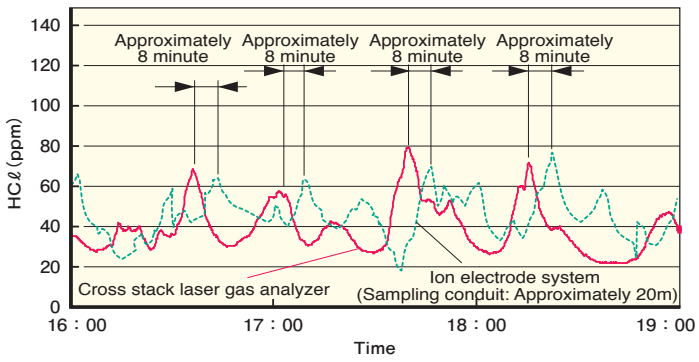
1-component analyzer	HCℓ
	NH_3
	CO
	CO (For use in high temperature)
	CO_2
	CO_2 (For use in high temperature)
	CH_4
	O_2 (Low output type)
	O_2 (For use in high dust)
	O_2 (For combustion control)

2-component analyzer	NH_3 + H_2O (*1)
	HCℓ + H_2O (*1)
	CO + CO_2
	CO + CO_2 (For use in high temperature)

*1) The H_2O range is fixed to 50 vol%.

2-laser/2-component analyzer	CO + O_2 (ppmCO + For combustion control O_2)
	CO + O_2 (ppmCO + For use in high dust O_2)
	CO + O_2 (vol%CO + Low output type O_2)

An ultra-high speed measurement (within 2 seconds): 8minutes faster than gas sampling method.



Energy efficient, low running cost

Low-power consumption (75VA maximum). Low maintenance (at most 2 times/year) reduces running cost.

Easy maintenance

No need of gas sampling, pretreatment, or parts replacement such as filters and catalysts.

Barely affected by the interference of other gas components.

Minimal interference from other gasses thanks to the use of an infrared semiconductor laser, which matches the absorption wavelength of the measuring components.

Excellent long-term stability:

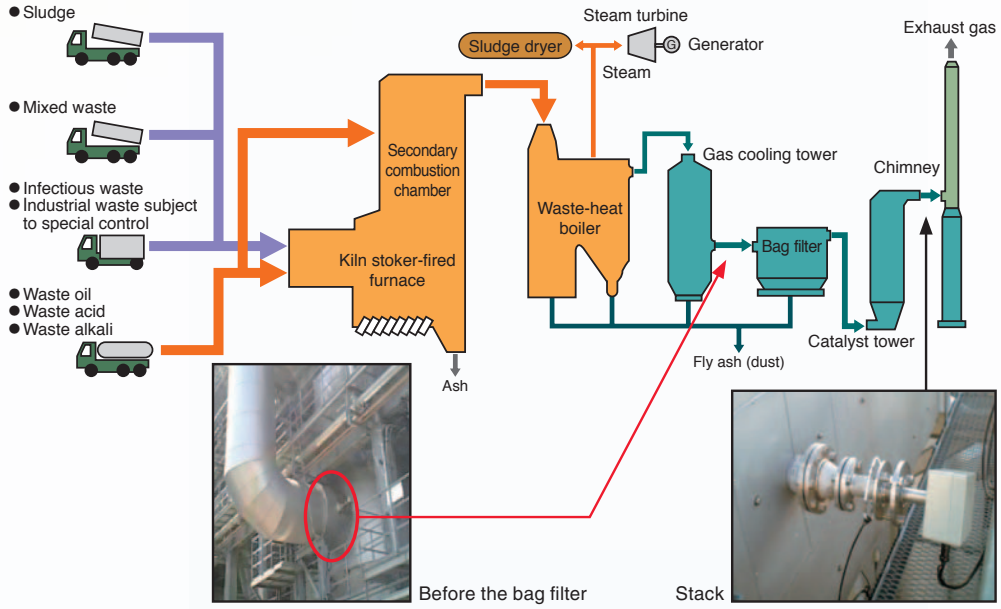
±2.0%FS (zero drift)

Ideal for HCℓ and NH_3, CO, CO_2, CH_4, O_2 gas concentration measurements

Application example 1 Industrial waste treatment plant

An ultra-high speed response (2 seconds or less) allows optimum control of the calcium hydroxide injection volume.

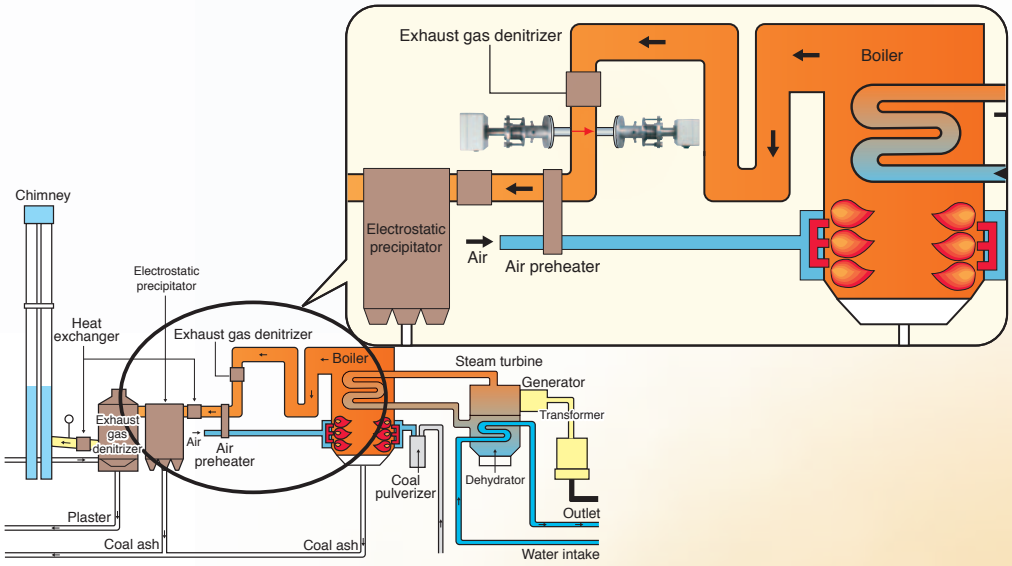
1. Measurement of the hydrogen chloride (HCℓ) gas concentration before the bag filter and in the stack
2. Continuous monitoring of the discharged hydrogen chloride (HCℓ) and oxygen (O_2) gas concentrations
3. The dual-component (HCℓ+H_2O) measurement function allows the reference dry gas conversion measurement to be performed.
4. Optimum combustion control by measuring CO+O_2 at the furnace outlet.



Application example 2 Large type boiler

High-speed response (2 seconds or less) allows optimum control of the ammonia (NH_3) injection volume.

1. Ammonia (NH_3) gas concentration measurement after denitration.
2. Dual-component measurement (NH_3+H_2O) allows the reference dry gas conversion measurement to be performed.
3. Optimum combustion control by measuring CO+O_2 at the furnace outlet.



Direct measurement of process gas component

HCℓ, NH_3, CO, CO_2, CH_4

Measurement of O_2 concentration in flammable gases

Safety monitoring of plant

Measurement of O_2 and CO in furnace

Combustion process control

NH_3 measurement in denitration equipment

Environmental monitoring by measuring NH_3 leak

Improved recovery of converter furnace gas

Increasing gas recovery by high-speed response of O_2 and CO

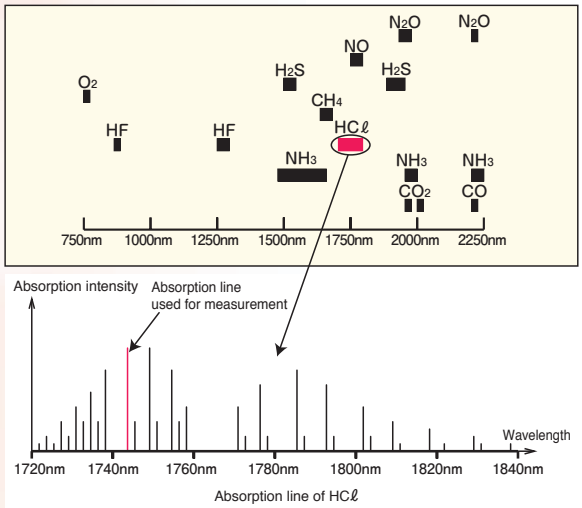
Safety management by CO measurement

Safety management of plant and silo

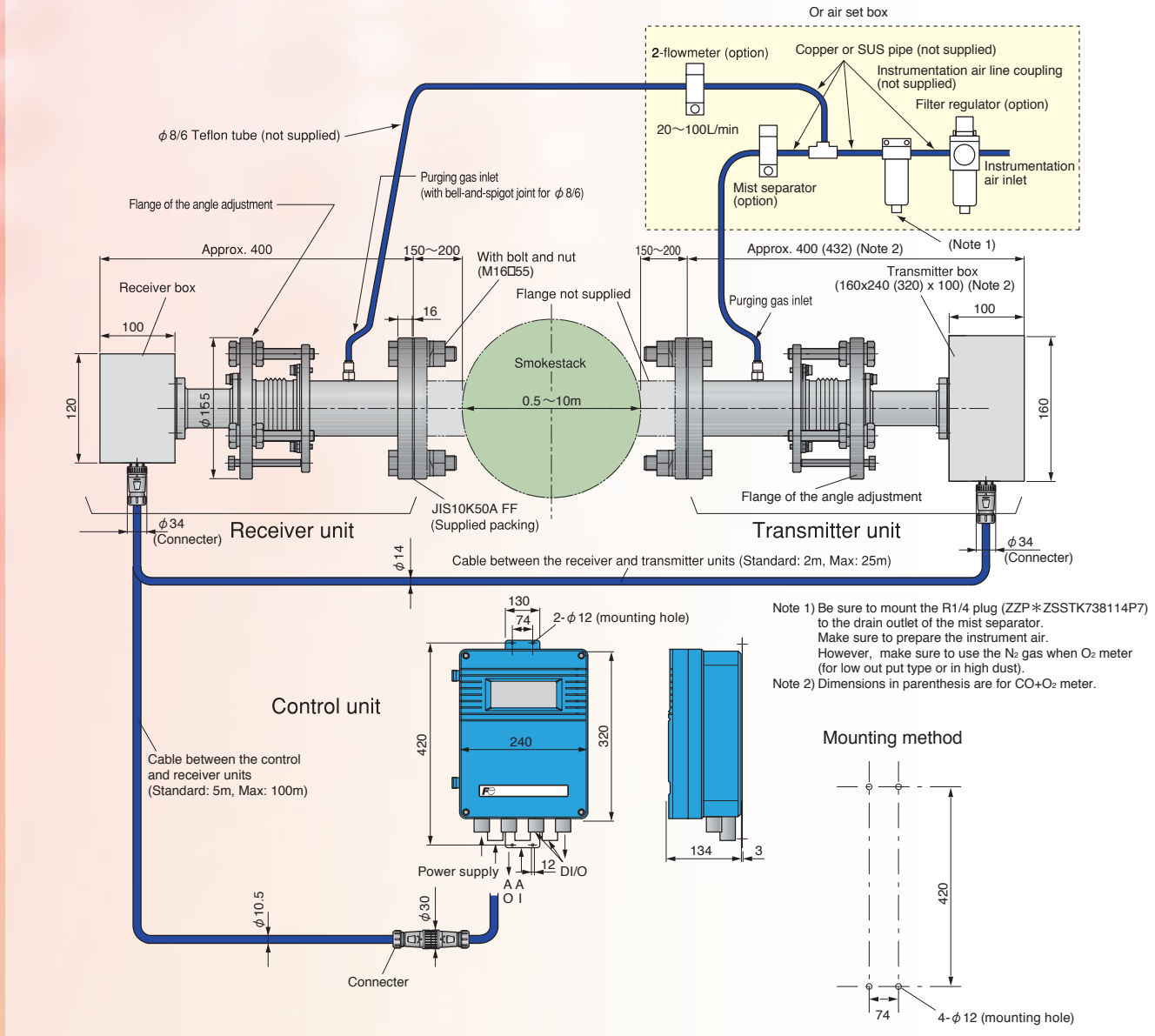
Measurement principle

This instrument uses an infrared semiconductor laser as its light source, and a photodiode for its receiver unit.
The gas components to be measured have a waveband for absorbing light unique to each of them (see the following diagram). This waveband represents the collection of a number of absorption lines; one of which is used for measurement.
Since measurement is performed within this extremely narrow waveband, it is unaffected by the interference of other gases in principle. Modulated signal amplitude, rather than a change of the optical volume, is used to detect the concentration.

● Gas absorption spectrum



Outline Diagram (Unit: mm)



Code Symbols

	4	5	6	7	8		9	10	11	12	13		14	15	16	17	18	19	20		21	22
ZSS					6	-						-				0				-	N	

Digit	Specification		Note	Code
4	Measurable components	CO	Note 1	A
		CO (For use high temperature)	Note 1, 2	B
		HCℓ	Note 1	C
		HCℓ +H_2O		F
		CO_2		G
		CO_2 (For use high temperature)	Note 2	H
		CO+CO_2	Note 3	K
		CO+CO_2 (For use high temperature)	Note 2, 3	L
		O_2 (Low output type)		P
		O_2 (For use in high dust)		Q
		O_2 (For combustion control)	Note 4	T
		CO+O_2 (ppmCO+For combustion control O_2)		V
		CO+O_2 (ppmCO+For use in high dust O_2)		U
		CO+O_2 (vol%CO+Low output type O_2)		S
		CH_4		R
		NH_3	Note 1	W
		NH_3+H_2O	Note 1,5	X
5	Unit	ppm		1
		mg/m^3		3
		vol%		5
		ppm (1st comp), vol% (2nd comp)		7
		vol% (1st comp), vol% (2nd comp)		9
6	Measuring range (1st components)	0 ~ 2	Note 6	K
		0 ~ 2.5	Note 7	Q
		0 ~ 4		S
		0 ~ 5		L
		0 ~ 10		V
		0 ~ 15		0
		0 ~ 20		1
		0 ~ 25		T
		0 ~ 50		A
		0 ~ 100		B
		0 ~ 200		C
		0 ~ 250		D
		0 ~ 400		J
		0 ~ 500		E
		0 ~ 1000		F
		0 ~ 2000		G
		0 ~ 5000		H
		0 ~ 6000		M
		Others		X
7	Measuring range (2nd components)	0 ~ 2	Note 6, 7	K
		0 ~ 2.5		Q
		0 ~ 4		S
		0 ~ 5		L
		0 ~ 10		V
		0 ~ 15		0
		0 ~ 20		1
		0 ~ 25		T
		0 ~ 50		A
		0 ~ 100		B
		0 ~ 200		C
		0 ~ 250		D
		0 ~ 400		J
		0 ~ 500		E
		0 ~ 1000		F
		0 ~ 2000		G
		0 ~ 5000		H
		0 ~ 6000		M
		Others		X
		None		Y
9	Flange rating	10K 50A (JIS B 2212)		A
		10K 100A		B
		DN50/PN10		C
		ANSI #150 2B		D
10	Number of analog output points	2 points		0
		4 points		1
11	Number of analog input points	2 points		A
		6 points	Note 8	B

Digit	Specification		Note	Code
12	Analog output	4 to 20mA DC		1
		0 to 20mA DC		2
		0 to 1V DC		3
		0 to 5V DC		4
		1 to 5V DC		5
13	Contact output/ input	5 output points, No input		0
		5 output points, 3 input points		1
14	Cable length between receiver and control unit	5m		A
		10m		B
		20m		C
		30m		D
		40m		E
		50m		F
		80m		G
		100m		H
		Others		X
15	Cable length between receiver and transmitter	2m		A
		5m		B
		10m		C
		15m		D
		20m		E
		25m		F
		Others		X
16	Display and operation manual	Japanese		J
		English		E
		Chinese		C
17	–	–		0
18	Measuring optical path length (unit: 1m)	0m		0
		1m		1
		2m		2
		3m		3
		4m		4
		5m		5
		6m		6
		7m		7
		8m		8
		9m		9
19	Measuring optical path length (unit: 0.1m)	0.0m		0
		0.1m		1
		0.2m		2
		0.3m		3
		0.4m		4
		0.5m		5
		0.6m		6
		0.7m		7
		0.8m		8
		0.9m		9
20	Measuring optical path length (unit: 0.01m)	0.00m		0
		0.05m		5
		(Used only when 10m is specified)		9
21	–	–		N
22	High-speed/ AGC	Standard		N
		High-speed/AGC		H

Note 1) When you order the HCℓ meter, CO meter and NH_3 meter, Specify the conversion basis of O_2 concentration (settable within 0 to 19vol% O_2 : Integer)

Note 2) When gas temperature is 500℃ or more, specify the the type for use in high temperature

Note 3) Specify the same range for CO and CO_2. If different range is desired for CO and CO_2, specify the "X" at 6 digit and give a description of each range.

Note 4) Only use where gas temperature is 400℃ or more

Note 5) Only use where gas temperature is 130℃ or more

Note 6) When you order the CO+O_2 meter, select a concentration of CO at 6th digit of measuriable range and O_2 at 7th digit.

Note 7) Specify the range within the max/min range calculated from path length. If the range exceeds that "the measuring range x the stack length" (optical path length), consult Fuji.

Note 8) Code B is unselectable for CO+O_2 meter.

Specifications

● General

Measurement principle	Non-dispersive infrared absorbance system (NDIR)
Measurement method	Cross-stack system
Measurable components Measurable range	See table below
Light source	Near-infrared semiconductor laser
Laser class	Class 1 (excluding $CO+O_2$ meter and some of O_2 meters.)
Power supply voltage	100 V to 240 V AC, 50/60 Hz
Power consumption	Approximately 75 VA
Calibration interval	Once every six months (Maintenance cycle may vary depending on the operating environment.)
Display	LCD with back light (control unit)
Display contents	Measurable component, measurement concentration (instantaneous value, O_2 correction instantaneous value, average value, and O_2 correction average value), alarm (fault status)
Weight	Receiver unit, transmitter unit: Approx. 10kg each Control unit: Approximately 8kg
External dimensions	See the dimension diagram.
Construction	Waterproof (IP65)
Applied standard	CE mark

Component	Min. measuring range		Max. measuring range
HCℓ	10 ppm		5000 ppm
HCℓ+H_2O (*1)	50 ppm (HCℓ)		1000 ppm (HCℓ)
NH_3	15 ppm		5000 ppm
NH_3+H_2O (*1)	50 ppm (NH_3)		1000 ppm (NH_3)
O_2 (low output type)	4 vol%		100 vol%
O_2 (For use in high dust)	4 vol%		50 vol%
O_2 (For combustion control)	25 vol%		125 vol%
CO	2.0 vol%		50 vol%
CO (For use in high temperature)	10 vol%		50 vol%
CO_2	2.0 vol%		50 vol%
CO_2 (For use in high temperature)	10 vol%		50 vol%
$CO+CO_2$	2.5 vol%		50 vol%
$CO+CO_2$ (For use in high temperature)	10 vol%		50 vol%
CH_4	100 ppm		50 vol%
$CO+O_2$ ($ppmCO+$For combustion control O_2)	CO	200 ppm	2 vol%
	O_2	25 vol%	100 vol%
$CO+O_2$ ($ppmCO+$For use high dust O_2)	CO	200 ppm	2 vol%
	O_2	5 vol%	50 vol%
$CO+O_2$ ($vol\%CO+$low output type O_2)	CO	4 vol%	50 vol%
	O_2	10 vol%	100 vol%

*1) The H_2O range is fixed to 50 vol%.

● Scope of Delivery

- Receiver box
- Transmitter box
- Control unit
- Angle adjustment mechanical section (required 2 units, one for receiver and the other for transmitter)
- Cable between receiver unit and transmitter unit (specified length)
- Cable between receiver unit and control unit (specified length)
- Hexagon socket head cap screw (Connecting bolt between angle adjustment mechanical section and receiver box)
- Standard accessory set, instruction manual

● Optional Items

- Spare parts for one year (ZBN1SS12)
- Calibration gas cell (*1) (*2)
- Cable between receiver unit and transmitter unit (For calibration) (*1)
- Cable between receiver unit and control unit (For calibration) (*1)
- Standard gas (ZBM), pressure regulator (ZBD)
- Recorder (when necessary, Fuji's product type PHL/PHF, etc.)
- Others

*1: One set of the cables and calibration gas cell are necessary for installation and annual maintenance.
*2: Standard length 1m (200mm or 500mm when the measuring range is low concentration)

● Performance

Response time	1 to 5 seconds or less (High-speed response type: 1 to 2 seconds)
Repeatability	±1.0% FS (depending on measuring component and measuring range)
Linearity	±1.0% FS (depending on measuring component and measuring range)
Zero drift	±2.0% FS (depending on measuring component and measuring range)
Interference from other gases	±2.0% FS
Minimum detectable limit	1% of the minimum range

● Input / Out put signal

Analog output	4 to 20 mA DC or 0 to 1 V DC, 2 or 4 points (0 to 5V, 1 to 5V or 0 to 10V DC is available.) (Measurement value, O_2 correction value, Average value and instantaneous value are switchable by settings.)
Analog input	4 to 20 mA DC, 2 or 6 points (Measured gas pressure, measured gas temperature, measured gas velocity, O_2 gas concentration, water concentration, air purge pressure) *Measurement concentration correction, O_2 conversion or alarm output is performed according to the input signal.
Contact output	Relay contact output 5 points Insufficient amount of light received, outside the range of the upper/lower limits, device failure, during calibration or on hold, power turned off
Contact input (option)	Photo coupler contact input: 3 points Average value reset signal, switching instantaneous value/moving average value and remote hold

● Installation environment

Ambient temperature	–20 to +55°C (Receiver unit, transmitter unit) –5 to +45°C (Control unit)
Ambient humidity	90% RH or less
Measurable optical path length	0.5 to 10m
Mounting flange dimension	JIS 10K, 50 A or 100 A, Others
Air purge	Instrument air, Pressure: 0.5 to 0.7 MPa or more
Air purge flow rate	20L/min or more
Measured gas condition	Temperature: 1200°C or lower Pressure: ±10kPa (O_2 for combustion control is –10kPa to 100kPa) Moisture: 50vol% or lower Dust: 5 to 40g/Nm^3

Conforms to JIS B7993 “Automatic exhaust gas component measurement system by analyzer adopting a non-absorption sampling method.

● Standard accessories

Name	Quantity	SPECIFICATIONS	
Bolt	8 (16)	M16×5 (70)	SUS (※)
Nut	8 (16)	M16	SUS (※)
Spring washer	8 (16)	M16	SUS (※)
Flat washer	8 (16)	M16	SUS (※)
Companion flange packing	2	See flange rating.	
Bolt for angle regulation	6	Hexagonal socket bolt	M8×70
Power fuse	2		
Connecting bolt between receiving unit and transmitter unit	12	Hex socket bolt M5×12	
Instruction manual	1		

(*When "B" or "C" is specified in the 9th digit in a code symbol, quantity is 16 pieces. 8 pieces are attached in other cases.)
(*When "B", "C" or "D" is specified in the 9th digit, Bolt length is 70mm. It is 55mm in other cases. Inch-sized bolts are not applicable.)

● Spare parts for one year (Type: ZBN1SS12)

Name	Quantity	SPECIFICATIONS
Silicon packing A	2 pieces	For bellows (∗ZSSTK7N3508P1)
O-ring	2 pieces	(ZZP∗ZSSTK7P2530P5)

⚠ Caution on Safety

* Before using products in this catalog, be sure to read their instruction manuals in advance.

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