

# **NDIR Gas Analyzer**

ZPA, ZPB, ZPG

## Outstanding Sensitivity and Stability

- ▼ 0–5 ppm low-range measurement (ZPG)
- ✓ Continuous and simultaneous measurement of up to 5 components (ZPA, ZPB)
- ▼ Excellent zero-point stability: ±0.5% FS per week (ZPB, ZPG)
- **▼** Easy-to-see LCD



# Long-term stability for a wide range of

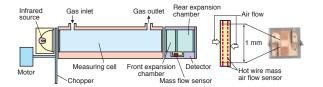


### Single-Beam NDIR Sensor

Repeatability: ±0.5% FS or better Simple structure for ease of maintenance

### Principle

The mass flow sensor measures the amount of infrared absorbed in the measurement cell.

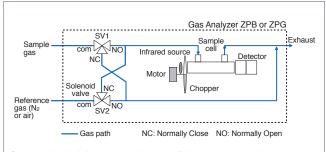


### Mass flow sensor

Converts the amount of infrared absorption into electrical signals. Excellent noise resistance thanks to the low impedance sensor. The absence of moving parts makes the device resistant to vibration and semi-permanently usable.

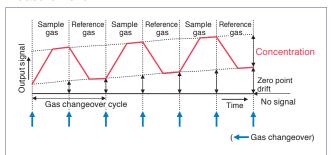
### Sample-Switching Method

- Low-level CO<sub>2</sub> and CO: 0-5 ppm
- Long-term superior stability: zero drift ±0.5% FS per week



Because the single-beam system is susceptible to temperature change and contamination in the measuring cell, the measurement range in this method is usually 0–100 ppm at the best. By using the sample-switching method, ZPB and ZPG can deliver stable measurement for the range as low as 0–5 ppm.

The analyzer has a motor-operated valve that switches between the sample gas and the reference gas (zero gas) at a certain cycle. This allows the analyzer to keep the zero point accurate and to deliver stable measurement.



In the sample-switching method, the zero point drift is ignored and the measured values exactly correspond to the concentration difference between the sample gas and the reference gas. Thus, the analyzer can deliver accurate and stable measurement even in the range close to the zero point.

## concentrations

### **Applications**

- Refuse incineration plants
- Boiler equipment
- Incinerators, industrial furnaces
- Air separation plants (ZPG)



### Tolerant to Interference

Interference from moisture and other gases is reduced by the compensation function and the sampleswitching method (ZPB and ZPG).

Interference gas	CO <sub>2</sub> ana- lyzer	CO ana- lyzer	CH4 ana- lyzer	SO <sub>2</sub> ana- lyzer	NO ana- lyzer
CO 1000 ppm	≤ ±1% FS	_	≤ ±1% FS	≤ ±1% FS	≤ ±1% FS
CO2 15%	-	≤ ±1% FS*1	≤ ±1% FS	≤ ±1% FS	≤ ±1% FS*2
H <sub>2</sub> O saturation at 20°C	≤ ±1% FS	≤ ±1% FS*3	≤ ±1% FS	=	-
H <sub>2</sub> O saturation at 2°C	-	≤ ±2%FS	-	≤ ±2%FS	≤ ±2%FS
CH4 1000 ppm	≤ ±1%FS	≤ ±1%FS	-	≤ 20 ppm	-

- \*1: 0–200 ppm range: ≤ 2% FS
- \*2: 0–500 ppm range: ≤ 2% FS
- \*3: 0-500 ppm range: ≤ 2% FS

Interference for 0–200 ppm range may be greater than 2.0% FS depending on conditions.

### Easy-to-See LCD

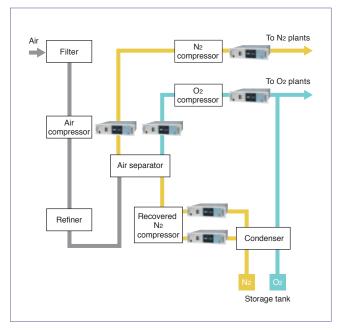


### Atmospheric Pressure Compensation (option)

The adverse effect by fluctuations in atmospheric pressure is greatly eliminated.

### **ZPG Application Example**

Measurement of low-level CO<sub>2</sub> and CO in air separating plants



5 components max.

NO

SO<sub>2</sub>

CO<sub>2</sub>

СО

CH<sub>4</sub>

**O**<sub>2</sub>

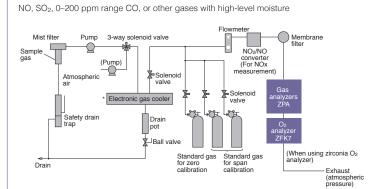
### Standard type **ZPA**



	Min.	Max.				
NO	0 200 ppm	0 5000 ppm				
SO <sub>2</sub>	0 200 ppm	0 10 vol%				
CO <sub>2</sub>	0 100 ppm	0 100 vol%				
CO	0 200 ppm	0 100 vol%				
CH <sub>4</sub>	0 500 ppm	0 100 vol%				
O <sub>2</sub>	0 5 vol%	0 100 vol%				

The  $O_2$  ranges above are for the built-in magnetic analyzer.

### System configuration example



\* For NO, SO<sub>2</sub>, or 0–200 ppm range CO measurement, be sure to use an electronic cooler to keep the moisture content below the level saturation occurs at 2°C.

Single beam

Sample switching

### Drift-less type **ZPB**



	Min.	Max.				
NO	0 50 ppm	0 5000 ppm				
SO <sub>2</sub>	0 50 ppm	0 5000 ppm				
CO <sub>2</sub>	0 50 ppm	0 25 vol%				
CO	0 50 ppm	0 5000 ppm				
O <sub>2</sub>	0 5 vol%	0 100 vol%				

The  $\ensuremath{\text{O}}_2$  ranges above are for the built-in magnetic analyzer.

5 components max.

NO

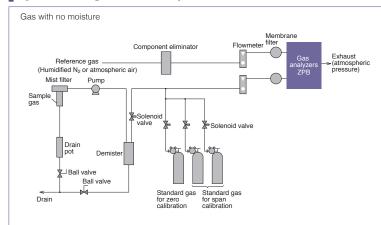
SO<sub>2</sub>

CO<sub>2</sub>

CO

O<sub>2</sub>

### System configuration example



Single beam

Sample switching

## Low-concentration measurement



	Min.	Max.
NO	0 10 ppm	0 100 ppm
SO <sub>2</sub>	0 10 ppm	0 100 ppm
CO <sub>2</sub>	0 5 ppm	0 50 ppm
CO	0 5 ppm	0 50 ppm
O <sub>2</sub>	0 5 vol%	0 100 vol%

The  $O_2$  ranges above are for the built-in magnetic analyzer.

2 components max.

NO

SO<sub>2</sub>

CO<sub>2</sub>

CO

**O**2

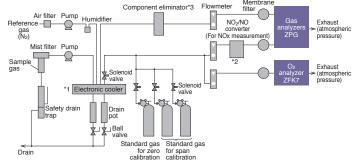
### System configuration example

Gas with high-level moisture (higher than the level that saturation occurs at 2°C)

Component eliminator'3 Flowmeter Membrane filter

No<sub>2</sub>/NO

Gas

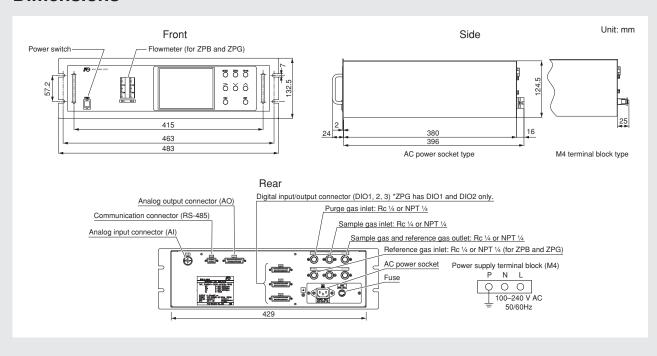


- Notes:1. Use an electronic cooler to keep the moisture content below the level saturation occurs at 2°C. Make sure that the moisture concentration of the reference gas and that of the sample gas are equal.
  - 2. The NO<sub>2</sub>/NO converter is required for NOx measurement.
  - The component eliminator is used for eliminating the target component from the sample gas so that it can be used as a reference gas. Use the CO/CO<sub>2</sub> converter (ZDL) in CO measurement, and the component eliminator (ZBBB) in NO, SO<sub>2</sub>, and CO<sub>2</sub> measurement.

### **Specifications**

	Standard versio	n	Drift-less type		Low-concentrati	ion measurement type
Model	ZPA		ZPB		ZPG	
Principle	NDIR (single bea	m) O <sub>2</sub> : magnetic,	galvanic, or externa	al zirconia analyzer	'	
No. of components	≤ 5 (including O <sub>2</sub>	)			≤ 2 (including O	2)
Components and ranges	Min	Max	Min	Max	Min	Max
NO	0 200 ppm	0 5000 ppm	0 50 ppm	0 5000 ppm	0 10 ppm	0 100 ppm
SO <sub>2</sub>	0 200 ppm	0 10 vol%	0 50 ppm	0 5000 ppm	0 10 ppm	0 100 ppm
CO <sub>2</sub>	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
CH <sub>4</sub>	0 500 ppm	0 100 vol%	-	_	-	
O <sub>2</sub> (built-in galvanic analyzer)	0 10 vol%	0 25 vol%	0 10 vol%	0 25 vol%	0 10 vol%	0 25 vol%
O <sub>2</sub> (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%	_	_	_	_
O <sub>2</sub> (external zirconia analyzer)	0 5 vol%	0 25 vol%	0 5 vol%	0 25 vol%	0 5 vol%	0 25 vol%
No. of ranges	Up to 2 ranges p	er component				
Repeatability	±0.5% FS					
Linearity	±1% FS					
Zero drift	±2% FS per weel	<	±0.5% FS per we	eek		
Span drift	±2% FS per weel	<	±2% FS per wee	k		
Response time (for 90%)	` ' '	easurement range)			ording to the setting	for the sample switching.
Output signal		–1 V DC (ZPA and Z				
Display				antaneous value, O2	corrected average	value, O <sub>2</sub> average
Range switching		automatic, or remot	, · · · ·			
Contact input (option)	Voltage input: rer	note range-switching	g, auto-calibration r	emote start, remote h	nold, average reset	:
Contact output (option)				ng auto-calibration, s	solenoid valve oper	ation for
Atmospheric pressure correction (option)	Built-in option ava	ailable				
Standard functions	Output hold, auto	/manual range switc	hing			
Optional functions	Auto calibration, alarm, O <sub>2</sub> correct	auto calibration remo ion, O <sub>2</sub> -corrected av	ote start, remote ho erage values, avera	ld of output, range ic age resetting contac	lentification contact t input, CO peak al	t output, H/L limit arm contact output
Communication (option)	RS-485 (Modbus	)				
Sample gas flow checker	None		Provided			
Gas inlet/outlet	Rc1/4 or NPT1/4 int	ernal thread				
Purge gas flow rate	1 L/min (as need	ed)				
Reference gas	Not required		Required (dry N <sub>2</sub>	or dry air)		
Operating environment	-20°C +60°C,	RH 90% or lower (no	condensation)			
Mounting	19-inch rack mou	inting				
Power supply voltage	100-240 V AC, 5	0/60 Hz				
Power consumption	Approx. 100 VA		Approx. 120 VA		Approx. 100 VA	
Dimensions	483 (W) × 133 (H	) × 382 (D) mm	1		,	
Weight	Approx. 11 kg	, , ,	Approx. 13 kg		Approx. 11 kg	

### **Dimensions**



### **Ordering code**

### **ZPA**

Digit		Speci	fications		Note	Code
4	Design / F	ower Con	nector			
	Horizonta	ıl, with pov	wer termin	al block		Α
	Horizonta	I, with AC	power so	cket	Note 1	D
5	Installati	on				
	19-inch ra	ack mount	ing (EIA-c	ompliant)		В
6	Compon	ent (NDIR	)			
	1st	2nd	3rd	4th		
	-	-	-	-	Note 2	Υ
	NO	_	_	_		Р
	SO <sub>2</sub>	-	-	-		Α
	CO <sub>2</sub>	-	-	-		D
	co	_	_	-		В
	CH <sub>4</sub>	-	-	-		Е
	NO	SO <sub>2</sub>	_	_		F
	NO	co	_	-		G
	CO <sub>2</sub>	co	-	-		J
	CH <sub>4</sub>	СО	-	-		K
	CO <sub>2</sub>	CH <sub>4</sub>	_	_		L
	NO	SO <sub>2</sub>	CO	-		N
	CO <sub>2</sub>	co	CH <sub>4</sub>	-		Т
	NO	SO <sub>2</sub>	CO <sub>2</sub>	СО		V
	Others				1	Z
7	O <sub>2</sub> Senso	or			Note 3	
	None					Υ
	External (	O <sub>2</sub> analyze	er			1
	Zirconia (	D <sub>2</sub> analyze	er (ZFK7)			2
	Galvanic	fuel cell s	ensor			3
	Paramag	netic sens	or			4
8	Revision	Code				2
9	(NDIR) 1:	st compo	nent 1st r	ange	Note 4	
10	(NDIR) 1s	st compo	nent 2nd	ange	Note 4	

	4	5	6	7	8		9	10	11	12	13		14	15	16	17	18	19	20		21	22	23	24	25
ZPA		В			2	_						_								_					

Digit	Specifications	Note	Code	Digit		Specifi	cations		Note	Code
11	(NDIR) 2nd component 1st range	Note 4		21	O <sub>2</sub> -Correction				Note 6	
12	(NDIR) 2nd component 2nd range	Note 4			None					Y
	(NDIR) 3rd component 1st range	Note 4				ted conce	ntration			A
	(NDIR) 3rd component 2nd range	Note 4				ted conce		ration		B
	(NDIR) 4th component 1st range	Note 4			_	ted averaç ted conce		ration		
	(NDIR) 4th component 2nd range	Note 4				ted conce		ration		С
17	O <sub>2</sub> Range	Note 4		22	Option (D		je concent	ΙαιιΟΠ	Note 7	
	None		Υ		Option (E			Range ID.	1,4010 /	
	0 5 / 0 10 vol%		Α		FAULT	Auto calibration	H/L alarm	Remote		
	0 5 / 0 25 vol%		В			Calibration		range		
	0 10 / 0 25 vol%		С		None					Y
	0 5 vol%		L		0					A
	0 10 vol%		М		0	0				В
	0 25 vol%		V		0		0			С
	0 50 vol%		Р		0			0		D
	0 100 vol%		R		0	0	0			E
	100 95 vol%		S		0		0	0		F
	Others		Z		0	0		0		G
18	Gas Inlet/Outlet				0	0	0	0		Н
	Rc1/4		1	23	Atmosph	eric Press	ure Corre	ction		
	NPT1/4		2		None					Y
19	Output				Provided					1
	0–1 V DC		Α	24	Unit					
	4–20 mA DC		В		ppm, vol9	6				Α
	0–1 V DC + Communication		C		mg/m³, g/	m³			Note 8	В
	4–20 mA DC + Communication		D	25	Adjustme				Note 9	
20	Language / Power Cable	Note 5			Standard					Α
	Japanese/Power cable rated 125 V (PSE)		J		For heat to	reatment fu	ırnaces		Note 10	С
	English/Power cable rated 125 V (IUL)		F		For conve	rters				D
	English/Power cable rated 250V (CEE)		U		Others					z
	Chinese/Power cable rated 250V (CCC)		C	_	2310					_
	Crimese/Fower cable rated 250V (CCC)		U							

#### NDIR range codes (for ZPA)

Measurement range	9th-16th codes
None	Y
0 100 ppm	В
0 200 ppm	С
0 250 ppm	D
0 300 ppm	S
0 500 ppm	E
0 1000 ppm	F
0 2000 ppm	G
0 2500 ppm	U
0 3000 ppm	T
0 5000 ppm	Н
0 1 vol%	J
0 2 vol%	K
0 3 vol%	Q
0 5 vol%	L
0 10 vol%	M
0 20 vol%	N
0 25 vol%	V
0 40 vol%	W
0 50 vol%	Р
0 70 vol%	X
0 100 vol%	R
Others	Z

#### O<sub>2</sub> range codes (for ZPA, ZPB, ZPG)

Measurement range	17th code	Galvanic fuel cell	Paramagnetic sensor	Zirconia O <sub>2</sub> analyzer (ZFK7)
0 5 / 0 10 vol%	А		O Note 11	0
0 5 / 0 25 vol%	В		O Note 11	0
0 10 / 0 25 vol%	С	0	0	0
0 5 vol%	L		O Note 11	0
0 10 vol%	М	0	0	0
0 25 vol%	V	0	0	0
0 50 vol%	Р		0	
0 100 vol%	R		0	
100 95 vol%	S (for ZPA only)		0	

### ppm-mg/m<sup>3</sup> conversion table

9th-16th codes	Range in ppm	Range in mg/m <sup>3</sup>	Range in mg/m <sup>3</sup>						
9th-16th codes	hange in ppin	NO	SO <sub>2</sub>	CO					
С	0 200 ppm	0 260 mg/m <sup>3</sup>	0 570 mg/m <sup>3</sup>	0 250 mg/m <sup>3</sup>					
D	0 250 ppm	0 325 mg/m <sup>3</sup>	0 700 mg/m <sup>3</sup>	0 300 mg/m <sup>3</sup>					
S	0 300 ppm	0 400 mg/m <sup>3</sup>	0 850 mg/m <sup>3</sup>	0 375 mg/m <sup>3</sup>					
Е	0 500 ppm	0 650 mg/m <sup>3</sup>	0 1400 mg/m <sup>3</sup>	0 600 mg/m <sup>3</sup>					
F	0 1000 ppm	0 1300 mg/m <sup>3</sup>	0 2800 mg/m <sup>3</sup>	0 1250 mg/m <sup>3</sup>					
G	0 2000 ppm	0 2600 mg/m <sup>3</sup>	0 5600 mg/m <sup>3</sup>	0 2500 mg/m <sup>3</sup>					
U	0 2500 ppm	0 3300 mg/m <sup>3</sup>	0 7100 mg/m <sup>3</sup>	0 3000 mg/m <sup>3</sup>					
T	0 3000 ppm	0 4000 mg/m <sup>3</sup>	0 8500 mg/m <sup>3</sup>	0 3750 mg/m <sup>3</sup>					
Н	0 5000 ppm	0 6600 mg/m <sup>3</sup>	0 14.00 g/m <sup>3</sup>	0 6250 mg/m <sup>3</sup>					

Conversion formula NO (mg/m³) =  $1.34 \times$  NO (ppm) SO<sub>2</sub> (mg/m³) =  $2.86 \times$  SO<sub>2</sub> (ppm) CO (mg/m³) =  $1.25 \times$  CO (ppm)

- 1. If you select the 4th code "D", select the voltage rating for the power cable in the 20th code.
  2. If you select the 4th code "D", select the voltage rating for the power cable in the 20th code.
  3. If you use an external O<sub>2</sub> analyzer (7th code "1"), set 0–1 V DC linear signals from the external O<sub>2</sub> analyzer so that they corresponds to the full scale setting of the analyzer. Note that the external O<sub>2</sub> analyzer (7th code "1") and the external o<sub>2</sub> coronia O<sub>2</sub> sensor ZFK7 (7th code "2") need to be ordered separately.
  4. See the "availability check table" in Data Sheets for the possible combination of measuring components and ranges.

  When ordering, use the codes shown in the "NDIR range codes" and the "O<sub>2</sub> range codes," range codes," and the "O<sub>2</sub> range codes," and the "O<sub>2</sub> range codes," and the "O<sub>2</sub> range codes," in the 4th code, "D", If you released "A" in the 4th code, "page obeing of the display language only.

- when ordering, use the codes shown the Nobra large codes and the O2 range codes.

  5. Power cable selection in the 20th code is only for the AC power socket type (4th code "D"). If you selected "A" in the 4th code, make choice of the display language only.

  6. O2 correction is provided only for NO, SO2, and CO measurement.

  7. The code "H" is unavailable for 5 component analyzer. If you select the 4 component analyzer and the 22th code "H", the number of H/L alarm outputs is three at maximum.

  8. Even if you select "B" in the 24th code, select the range in ppm that is shown in the "NDIR range codes" table. We will set the analyzer after converting the ppm ranges into mg/m³
  - For the converted ranges, see the "ppm-mg/m3 conversion table".

- For the converted ranges, see the "ppm-mg/m³ conversion table".

  9. The adjustment is performed with the following gas.

  A: Standard adjustment: balance gas N₂

  C: For heat treatment furnace: CO₂ analyzer: 25% CO + 30% H₂ + balance N₂

  CO analyzer: 5% CO₂ + 30% H₂ + balance N₂

  CH₄ analyzer: 25% CO + 30% H₂ + balance N₂

  D: For converter: balance gas CO and CO₂

  To order non-standard adjustment, select "Z" and provide us the gas composition data.

  10. The 25th code "C" is incompatible with the NDIR range codes "X" and "R".

  11. Incompatible with the NDIR range codes "V", "W", "P", "X", and "R".

### **ZPB**

Digit		Specifi	cations		Note	Code
4	Design /	Power Co	nnector			
	Horizonta	I, with pow	er termina	l block		Α
	Horizonta	I, with AC	power soc	ket	Note 1	D
5	Installation	on				
	19-inch ra	ack mounti	ng (EIA-co	mpliant)		В
6	Compone	ent (NDIR)				
	1st	2nd	3rd	4th	i	
	NO	-	-	-	1	Р
	SO <sub>2</sub>	_	-	-		Α
	CO <sub>2</sub>	_	_	_		D
	со	_	_	_		В
	NO	SO <sub>2</sub>	_	_		F
	NO	СО	-	-		G
	CO <sub>2</sub>	СО	_	_		J
	NO	SO <sub>2</sub>	СО	_		Ν
	NO	SO <sub>2</sub>	CO <sub>2</sub>	СО		V
	Others				1	Z
7	O <sub>2</sub> Senso	r			Note 2	
	None					Υ
	External 0	D <sub>2</sub> analyze	r			1
	Zirconia C	0 <sub>2</sub> analyze	r (ZFK7)			2
	Galvanic	fuel cell se	nsor			3
	Paramagr	netic senso	or			4
8	Revision	Code				2
9	(NDIR) 1s	t compon	ent 1st ra	nge	Note 3	
10		t compon			Note 3	
11		nd compo			Note 3	
12	(NDIR) 2r	nd compo	nent 2nd r	ange	Note 3	

	4	5	6	7	8		9	10	11	12	13		14	15	16	17	18	19	20		21	22	23	24	25
ZPB		В			2	_						_								_					

Digit	Specifications	Note	Code
13	(NDIR) 3rd component 1st range	Note 3	
	(NDIR) 3rd component 2nd range	Note 3	
	(NDIR) 4th component 1st range	Note 3	
	(NDIR) 4th component 2nd range	Note 3	
17	O <sub>2</sub> Range	Note 3	
	None		Υ
	0 5 / 0 10 vol%		Α
	0 5 / 0 25 vol%		В
	0 10 / 0 25 vol%		С
	0 5 vol%		L
	0 10 vol%		M
	0 25 vol%		V
	0 50 vol%		Р
	0 100 vol%		R
	Others		Z
18	Gas Inlet/Outlet		
	Rc1/4		1
	NPT1/4		2
19	Output		
	0-1 V DC		Α
	4-20 mA DC		В
	0-1 V DC + Communication		С
	4-20 mA DC + Communication		D
20	Language / Power Cable	Note 4	
	Japanese/Power cable rated 125 V (PSE)		J
	English/Power cable rated 125 V (UL)		Е
	English/Power cable rated 250V (CEE)		U
	Chinese/Power cable rated 250V (CCC)		С

Digit		Specifi	cations		Note	Code
21	O <sub>2</sub> -Corre	ction			Note 5	
	None					Υ
	O <sub>2</sub> -correc	ted conce	ntration			Α
		ted averag		ration		В
		ted concer				С
22		ted averag	je concent	ration	Note 6	
22	Option (D			Range ID,	Note 6	
	Fault	Auto calibration	H/L alarm	Remote		
	None					Υ
	0					Α
	0	0				В
	0		0			С
	0 0 0			0		D
	0	0	0			E
	0		0	0		F
	0	0		0		G
	0	0	0	0		Н
23		eric Press	ure Corre	ction		
	None					Υ
	Provided	,				1
24	Unit					
	ppm, vol9			Α		
	mg/m³, g/		Note 7	В		
25	Adjustme	ent			Note 8	
	Standard					Α
	Others					Z

14 15 16 17 18 19 20

### **ZPG**

Digit	Specifications	Note	Code
4	Design / Power Connector		
	Horizontal, with power terminal block		Α
	Horizontal, with AC power socket	Note 1	D
5	Installation		
	19-inch rack mounting (EIA-compliant)		В
6	Target (NDIR)		
	NO		Р
	SO <sub>2</sub>		Α
	CO <sub>2</sub>		D
	co		В
	Others		Z
7	O <sub>2</sub> sensor	Note 2	
	None		Υ
	External O <sub>2</sub> analyzer		1
	Zirconia O <sub>2</sub> analyzer (ZFK7)		2
	Galvanic fuel cell sensor		3
	Paramagnetic sensor		4
8	Revision Code		2
9	(NDIR) 1st component 1st range	Note 3	
10	(NDIR) 1st component 2nd range	Note 3	
11	_		Υ
12	_		Υ
13	_		Υ
14	_		Υ
15	_		Υ

#### 9 10 11 12 13 ZPG В 2

Digit	Specifications	Note	Code
16	-		Υ
17	O <sub>2</sub> Range	Note 3	
	None		Υ
	0 5 / 0 10 vol%		Α
	0 5 / 0 25 vol%		В
	0 10 / 0 25 vol%		С
	0 5 vol%		L
	0 10 vol%		M
	0 25 vol%		V
	0 50 vol%		Р
	0 100 vol%		R
	Others		Z
18	Gas Inlet/Outlet		
	Rc1/4		1
	NPT1/4		2
19	Output		
	0-1 V DC		Α
	4-20 mA DC		В
	0-1 V DC + Communication		С
	4-20 mA DC + Communication		D
20	Language / Power Cable	Note 4	
	Japanese/Power cable rated 125 V (PSE)		J
	English/Power cable rated 125 V (UL)		Е
	English/Power cable rated 250V (CEE)		U
	Chinese/Power cable rated 250V (CCC)		С

Digit		Specifi	cations		Note	Code
21	O <sub>2</sub> -Corre	ction			Note 5	
	None					Υ
	O <sub>2</sub> -correc	ted concer			Α	
	O <sub>2</sub> -correc	ted averag	e concent	ration		В
	O <sub>2</sub> -correc	ted concei	ntration +			С
		ted averag	je concent	ration		
22	Option (E	010)				
	Fault	Auto calibration	H/L alarm	Range ID, Remote range		
	None					Υ
	0					Α
	0	0				В
	0		0			С
	0			0		D
	0 0 0 0 0	0	0			Е
	0		0	0		F
	0	0		0		G
	0	0	0			Н
23		eric Press	ure Corre	ction		
	None					Υ
	Provided					1
24	Unit					
	ppm, vol9			Α		
	mg/m³, g/				Note 7	В
25	Adjustme	ent			Note 8	
	Standard					Α
	Othoro				1	7

### NDIR range codes (for ZPB and ZPG) ppm-mg/m³ conversion table

Tibili lange coacs				ioi zi b aii	u	ω,
Range	Co	de		Range	Code	
None	Υ	*1		0 2000 ppm	G -	1
0 5 ppm	5 -	1		0 2500 ppm	U	
0 10 ppm	6			0 3000 ppm	Т	
0 20 ppm	7	*2		0 5000 ppm	Н	
0 25 ppm	8			0 1 vol%	J	
0 30 ppm	9 -	]		0 2 vol%	K	
0 50 ppm	Α-	1 -1		0 3 vol%	Q	*3
0 100 ppm	В-	1 .		0 5 vol%	L	
0 200 ppm	C -	1		0 10 vol%	M	
0 250 ppm	D			0 20 vol%	Ν	
0 300 ppm	S	*3		0 25 vol%	V	
0 500 ppm	Е			Others	Ζ -	
0 1000 ppm	F-					

- \*3: Only for ZPB

11:	For ZPB and ZF
*2:	Only for ZPG

0-4-	D:	Range in mg/m <sup>3</sup>		
Code	Range in ppm	NO	SO <sub>2</sub>	CO
5	0 5 ppm	-	-	0 6.00 mg/m <sup>3</sup>
6	0 10 ppm	0 13.0 mg/m <sup>3</sup>	0 28.0 mg/m <sup>3</sup>	0 12.5 mg/m <sup>3</sup>
7	0 20 ppm	0 26.0 mg/m <sup>3</sup>	0 57.0 mg/m <sup>3</sup>	0 25.0 mg/m <sup>3</sup>
8	0 25 ppm	0 32.5 mg/m <sup>3</sup>	0 70.0 mg/m <sup>3</sup>	0 30.0 mg/m <sup>3</sup>
9	0 30 ppm	0 40.0 mg/m <sup>3</sup>	0 85.0 mg/m <sup>3</sup>	0 37.5 mg/m <sup>3</sup>
Α	0 50 ppm	0 65.0 mg/m <sup>3</sup>	0 140 mg/m <sup>3</sup>	0 60.0 mg/m <sup>3</sup>
В	0 100 ppm	0 130 mg/m <sup>3</sup>	0 280 mg/m <sup>3</sup>	0 125 mg/m <sup>3</sup>
С	0 200 ppm	0 260 mg/m <sup>3</sup>	0 570 mg/m <sup>3</sup>	0 250 mg/m <sup>3</sup>
D	0 250 ppm	0 325 mg/m <sup>3</sup>	0 700 mg/m <sup>3</sup>	0 300 mg/m <sup>3</sup>
S	0 300 ppm	0 400 mg/m <sup>3</sup>	0 850 mg/m <sup>3</sup>	0 375 mg/m <sup>3</sup>
Е	0 500 ppm	0 650 mg/m <sup>3</sup>	0 1400 mg/m <sup>3</sup>	0 600 mg/m <sup>3</sup>
F	0 1000 ppm	0 1300 mg/m <sup>3</sup>	0 2800 mg/m <sup>3</sup>	0 1250 mg/m <sup>3</sup>
G	0 2000 ppm	0 2600 mg/m <sup>3</sup>	0 5600 mg/m <sup>3</sup>	0 2500 mg/m <sup>3</sup>
U	0 2500 ppm	0 3300 mg/m <sup>3</sup>	0 7100 mg/m <sup>3</sup>	0 3000 mg/m <sup>3</sup>
Т	0 3000 ppm	0 4000 mg/m <sup>3</sup>	0 8500 mg/m <sup>3</sup>	0 3750 mg/m <sup>3</sup>

Conversion formula NO (mg/m $^3$ ) = 1.34 × NO (ppm)  $SO_2 (mg/m^3) = 2.86 \times SO_2 (ppm)$  CO  $(mg/m^3) = 1.25 \times CO (ppm)$ 

H 0 ... 5000 ppm 0 ... 6600 mg/m³ 0 ... 14.00 g/m³ 0 ... 6250 mg/m³

- Notes:

  1. If you select the 4th code "D", select the voltage rating for the power cable in the 20th code.

  2. If you use an external O₂ analyzer (7th code "1"), set 0-1 V DC linear signals from the external O₂ analyzer so that they corresponds to the full scale setting of the analyzer.

  Note that the external O₂ analyzer (7th code "1") and the external Io₂ analyzer (7th code "1") and the external zirconia O₂ sensor ZFK7 (7th code "2") need to be ordered separately.

  3. See the "availability check table" in Data Sheets for the possible combination of measuring components and ranges. When ordering, use the codes shown in the "NDIR range codes" and the "O₂ range codes."

  4. Power cable selection in the 20th code is only for the AC power socket type (4th code "D"). If you selected "A" in the 4th code, make choice of the display language only.

  5. O₂ correction is provided only for NO, SO₂, and CO measurement.

  6. The code "H" is unavailable for 5 component analyzer. If you select the 4 component analyzer and the 22th code "H", the number of H/L alarm outputs is three at maximum.

  7. Even if you select "B" in the 24th code, select the range in ppm that is shown in the "NDIR range codes" table. We will set the analyzer after converting the ppm ranges into mg/m² ranges. For the converted ranges, see the "pym-mg/m³ conversion table".

  8. The standard adjustment (the 25th code and provide us the gas composition data.

### High-performance model **ZKJ**

5 components max.

NO

SO<sub>2</sub>

CO<sub>2</sub>

CO

CH<sub>4</sub>

N<sub>2</sub>O

O<sub>2</sub>

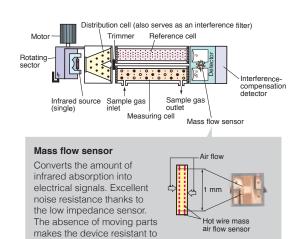
- Zero point drift: ±1.0% FS per week
- Maximum range ratio of 1:25
- N<sub>2</sub>O measurement available
- Hardly affected by interference from other gases
- Calibration, alarm, calculation
- Easy-to-see LCD

	Min.	Max
NO	0 50 ppm	0 5000 ppm
SO <sub>2</sub>	0 50 ppm	0 10 vol%
CO <sub>2</sub>	0 20 ppm	0 100 vol%
CO	0 50 ppm	0 100 vol%
CH <sub>4</sub>	0 200 ppm	0 100 vol%
N <sub>2</sub> O	0 200 ppm	0 2000 ppm
O <sub>2</sub>	0 5 vol%	0 25 vol%

### **Double-Beam NDIR Sensor**

Principle The mass flow sensor measures the amount of infrared absorbed in the measurement

Double beam method achieves the range ratio of 1:25





### **Specifications**

•	
Principle	NO, SO <sub>2</sub> , CO <sub>2</sub> , CO, CH <sub>4</sub> , N <sub>2</sub> O: double-beam NDIR O <sub>2</sub> : built-in paramagnetic sensor or external zirconia analyzer
Repeatability	±0.5% FS (±1% FS for the ranges below 50 ppm)
Linearity	±1% FS
Zero drift	±1% FS per week (±2% FS per week for 50–200 ppm range)
Span drift	±2% FS per week (±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
External contact input	Dry contact Remote range-switching, auto-calibration remote start, remote hold, average value reset, pump ON/OFF
Contact output	SPST-NO and SPDT relay contacts Analyzer error, calibration error, range identification, under auto-calibration, pump ON/OFF, limit alarm CO peak alarm, H/L limit alarm, power interruption
Communication (separate order item)	RS-232C (Modbus)
Display	LED backlit LCD Instantaneous value, O <sub>2</sub> -corrected instantaneous value, O <sub>2</sub> corrected average value, O <sub>2</sub> average
Power supply voltage	100-240 V AC, 50/60 Hz
Power consumption	250 VA
Dimensions	483 (W) × 177 (H) × 600 (D) mm
Weight	Approx. 22 kg

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

vibration and semi-permanently usable.



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