

MICROPROCESSOR BASED NDIR GAS ANALYZER

DATA SHEET

This NDIR gas analyzer features a high accuracy, multiple functions and easy operation through use of a microprocessor. It also utilizes a mass flow detector noted for its high sensitivity and reliability. Being housed in a 19 inch rack case suitable for mounting on a panel or a table top, this analyzer is applicable not only for measurement of environmental pollution but for use in various processes and/or experimental laboratories.

FEATURES

- (1) Use of a microprocessor provides high accuracy, multiple functions and easy operation.
 - The built-in automatic calibrating function allows calibration of up to three components (option).
 - The signal from a zirconia O₂ sensor (ZFK3) or other O₂ meter enables output of an O₂ correction value (option).
 - Includes an alarm function providing an upper/ lower limit contact output (option).
 - Range can be changed over by external signal (option).
 - Zero and span calibration is accurate and easy by means of operating keys.
 - A self-diagnosis function is included. RS232C port available (option).
- (2) This analyzer utilizes a mass flow detector featuring high sensitivity and reliability. It is equipped with two standard ranges for a range ratio of up to 1:20.
- (3) Addition of a zirconia O_2 sensor (ZFK3) to the one/ two-component analyzer allows measurement of up to three components simultaneously.
- (4) Besides the standard method of measurement, a sample switching system and differential flow system are also available.

SPECIFICATIONS

General items

Power supply: 100, 115 or 220V AC ±10%, 50/60Hz Power consumption:

125VA max. (220VA max. when $\rm CO/CO_2$ converter equipped)

Ambient temperature:

−5 to +45°C

Ambient humidity: 90%RH or less

Enclosure: Steel casing, for indoor application



Outer dimensions (H x W x D): Rack mounting type; 220 x 483 x 463mm Panel flush mounting type; 220 x 443 x 463mm Table top type; 232 x 443 x 463mm Mass {weight}: Approx. 20kg Finish color: Munsell 2.5Y8.4/1.2 Indication: 4 digit LED for concentration 4 digit LED for sub-indication Output hold: Output value before manual or automatic calibration is held. Whether or not to effect hold function can be selected. Sample gas condition: Temperature; 0 to 50°C (due point of water vapor; less than 2°C) Dust; less than 0.3µm Pressure; less than 9.8kPa Standard adjustment: Calibration gas; Dry N₂ Balance Interface compensation Dew point of 2°C water vapor in N₂ Warm up time: Approx. 4 hours Material of gas-contacting parts: Sample cell; SUS304, neoprene rubber Infrared-ray transmitting window: CaF, or sapphire Internal tubing; Teflon tube, silicone tube, Toaron tube Gas inlet/outlet, purge gas inlet size: Rc1/4 (PT1/4 internal thread) or NPT1/4 internal thread Purge gas flow rate: 1+0.5 l /min It is necessary to purge the instrument interior when ambient air contains the corrosive gas etc. or the measuring range of CO_2 is less than 0 to 50ppm. Scope of delivery: Analyzer, mounting bracket, test report, power fuse, cloth for cleaning

infrared-ray transmitting window

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Fuji Electric Systems Co., Ltd.

ZRF

Mounting method:

Mounted on 19 inch rack, or flush on panel, or on table top

Remark: 70% or more of the analyzer weight should be supported at the bottom of the case.

(In case of mounting on panel or 19 inch rack, provide a support at the rear of casing).

Installation conditions:

Install the analyzer at a place not exposed to direct sunlight or the radiation from a high temperature object. Avoid vibration, and select a clean place free of corrosive and/or combustible gases. If installing outdoor, provide a suitable casing or cover to protect the analyzer from wind, rain, etc.

Standard type

Measuring system:

Non-dispersion infrared-ray absorption method, single light source – double beam

Measurable components and measuring range: Standard single-component analyzer

Measurable com	ponent	Min. measuring range [ppm]	Measuring range
СО СО SO ₂ NO SO ₂ CH ₄ CC ℓ ₄ N ₂ O CF ₃ CHBrC ℓ C ₂ HF ₃ C ℓ -OCHF ₂ C ₂ HF ₃ C ℓ -OCHF ₂	Carbon monoxide Carbon dioxide Nitric oxide Sulfur dioxide Methane Carbon tetrachloride Nitrous oxide Halothane Ethlane Ethyl alcohol	0 to 100 0 to 50 0 to 100 0 to 500 0 to 500 0 to 200 0 to 200 0 to 50 0 to 50 0 to 250	Refer to table given in page 11 Consult to manufacturer

Standard two-component analyzer

	le component st comp. + 2nd comp.)	Min. measuring range [ppm]	Measuring range		
NO+SO ₂	Nitric oxide + sulfur dioxide	0 to 250/0 to 250	1		
CO+CO ₂	Carbon monoxide + carbon dioxide	0 to 200/0 to 200	Refer to table in		
NO+CO	Nitric oxide + Carbon monoxide	0 to 500/0 to 500	page 12		
CO ₂ +CH ₄	Carbon dioxide + Methane	0 to 100/0 to 1000	Consult to manufacturer		

Measuring range: Refer to table in page 11 and 12

Output signal:	0 to 1V or 4 to 20mA DC (allowable load
	resistance 550 Ω or less), linear
Repeatability:	Within \pm 0.5% of full scale
	(Within ± 1% of full scale)*
Linearity:	Within \pm 1% of full scale
Zero drift:	Within \pm 2% of full scale/week
	(Within ± 3% of full scale/week)*
Span drift:	Within \pm 2% of full scale/week
	(Within ± 3% of full scale/week)*
Response time:	25 seconds max. (for 90% response
)including gas substitution time; time
	differs with the length of sample cell
Measured gas fl	ow rate:

0.5 ± 0.25 ℓ /min. (Standard)

Note*: Shows the value in case of 0 to 50ppm range.

Sample switching type

This is an optimum analyzer for measurement of low concentrations or for eliminating the effects of interfering components.

Measuring system:

Non-dispersion infrared-ray absorption method, single light source – double beam, sample switching system with integrated zero air generator.

Measurable component:

CO (carbon monoxide)

Measuring rang	e:							
	1st range [ppm]	2nd range [ppm]						
	0 to 10	None, 0 to 20, 25, 50, 100						
	0 to 25	None, 0 to 50, 100						
	0 to 50	None, 0 to 100						
	0 to 100	None						
Output signal:		MA DC, linear, step-like anges every 50 seconds						
Repeatability:	Within ± 1% of	full scale						
	(Within ± 2% of	full scale)*						
Linearity:	Within ± 1% of	full scale						
Zero drift:	Within ± 0.5% c	of full scale/week						
	(Within ± 1% of	full scale/week)*						
Span drift:	Within ± 1.5% c	of full scale/week						
	(Within ± 2.5%	of full_scale/week)*						
Response time:	ne: Within 120 seconds (for 90% response							
Measured gas flow rate:								

2.0 ± 0.1 ℓ /min.

Note*: Shows the value in case of 0 to 10ppm range.

Differential flow type

This is an optimum gas analyzer for measurement in two modes, absolute concentration and concentration difference.

Measuring system:

Non-dispersion infrared-ray absorption method, single light source – double beam, flow differential system with integrated zero air generator for CO.

Measurable components and measuring range:

Remark: There are restrictions on the reference gas conditions.

	urable ponent	1st range [ppm]	2nd range [ppm]
CO ₂	Carbon dioxide	- 50 to + 50 - 100 to + 100	0 to 500 0 to 1000
со	Carbon monoxide	0 to 200	None, 0 to 200, 250, 500 None, 0 to 500 None, 0 to 500

Output signal:

Remark: Linear output

	1st range		2nd range			
CO ₂	- 1 to + 1V	DC	0 to 1V DC			
СО	0 to 1V or 4	to 20mA DC	0 to 1V or 4 to 20mA DC			
Repe	atability:	Within ± 0.59				

Within ± 1% of full scale
Within \pm 2% of full scale/week (wihtin
\pm 2% of full scale/day for 0 to 50ppm
range)
With in \pm 2% of full scale/week (within
\pm 2% of full scale/day for 0 to 50ppm
range)
25 seconds max. (for 90% response)
including gas substitution time

Measured gas flow rate:

 $0.5 \pm 0.25 \ell$ /min. (reference gas) $0.5 \pm 0.25 \ell$ /min. (sample gas)

Optional specifications

(These are added on request. Refer to the "Code symbols".) Filter, flow checker:

Membrane filter and flow checker are built in.

Remark: The built-in membrane filter is a glassfiber paper monitoring type. The prefilter should be prepared separately.

Pump: A small two-throw electromagnetic pump is built in, so sample gas and reference gas can be sampled separately at the same time.

CO/CO₂ converter (emission level calculation): This converter uses a special catalyst for converting efficiently into CO₂ the CO contained in sample gas which is used in the sample switching type etc. The converter is built in the analyzer.

O_2 correction output (emission levels calculation):

An exclusive O_2 sensor is used for correcting the measured gas concentration into the value at standard O_2 concentration.

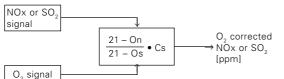
For obtaining the NOx and/or SO_2 exhaust standard value, ZRF can measure the NOx and/or SO_2 concentration and simultaneously the residual oxygen concentration in exhaust gas, and then correct according to the following equation. (Application of this equation is mandatory for the NOx or SO_2 exhaust standard.)

$$C = \frac{21 - On}{21 - Os} \bullet Cs$$

Where, C: concentration after O_2 correction

- $\mbox{Cs:NOx or SO}_{\rm 2}$ measured concentration
- $Os: O_2$ measured concentration $On: O_2$ standard concentration

Block diagram



The O_2 measured signal is according to the exclusive O_2 sensor (type ZFK) or external O_2 meter (0 to 1V DC/0 to 25% O_2).

O₂ output signal:

0 to 1V or 4 to 20mA DC

O₂ converted output signal: 0 to 1V or 4 to 20mA DC, linearity ± 2% of full scale; output can be provided for each of 1st and 2nd components Alarm output: Upper limit alarm; Contact output 1c contact Contact capacity 250V, 2A AC (resistive load) Lower limit alarm; Contact output 1c contact Contact output 1c contact Contact output 1c contact Contact capacity 250V, 2A AC (resistive load)

Remote range changeover:

Range is changeable via external signal. Range changeover input signal: 5V DC (minimum range selection at 5V input)

Range identification signal output:

Contact output 1a contact Contact capacity 250V, 2A AC (resistive load)

External output hold:

Output signal is held via external signal. Output hold input signal: 5V DC

Average value output:

Average or moving average value output is available.

Average value is output every one or four hours.

Moving average value is output every one minutes it is averaged for one or four hours. (When select four hours average output the analyzer has only one average value output.)

Output signal; 0 to 1V or 4 to 20mA DC, linear

Automatic calibration:

Zero and span are automatically calibrated at the preset cycle.

Both of calibration gas and electromagnetic valve are not included.

Calibration channel:

Up to 3 components can be calibrated simultaneously.

Zero calibration point:

Fixed at 0% (Zirconia O_2 meter allows setting zero points)

Span calibration point:

0 to 100% full scale

Calibration start:

Via built-in timer or remote start signal **Output hold at calibration:**

Possible

Calibration gas flow mode:

- (1) Zero gas
- (2) Zero gas span gas 1
- (3) Zero gas span gas 1 span gas 2
- (4) Zero gas span gas 1 span gas 3
- (O_2)
- (5) Zero gas span gas 1 span gas 2 span gas 3 (O₂)

Calibration gas flow time:

Settable from 100 to 599 seconds

Calibration cycle:

1 to 99 hours (1-hour step) or 1 to 7 days (1-day step)

Calibration failure alarm:

Provided when fault occurs during auto calibration.

Contact output:

During calibration; 1a contact, contact capacity 250V, 2A AC (resistive load)

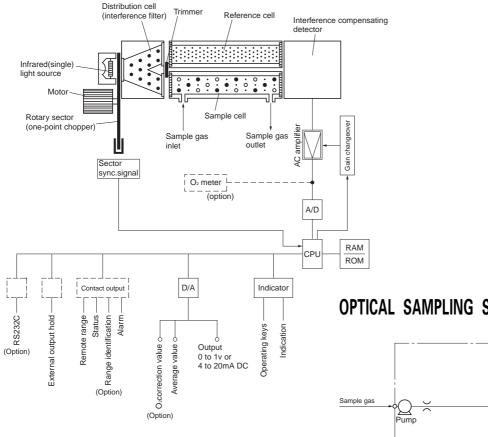
Calibration failure; 1a contact, contact

- capacity 250V, 2A AC (resistive load)
- Electromagnetic valve drive; 1a contact, contact capacity 250V, 2A AC (resis
 - tive load)

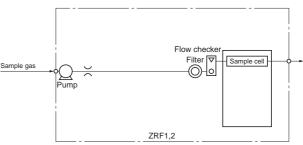
Remote start: Remote start input signal; 5V DC square signal longer than 100msec. in duration Communication interface:

RS232C

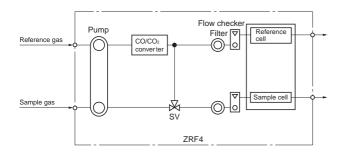
FUNDAMENTAL DIAGRAM



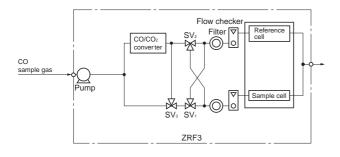
OPTICAL SAMPLING SPECIFICATION



DESCRIPTION OF DIFFERENTIAL FLOW **SYSTEM**



DESCRIPTION OF SAMPLE SWITCHING SYSTEM



In case of carbon monoxide measurement, a high performance converter is provided to convert carbon monoxide into carbon dioxide. Here, the carbon monoxide is eliminated and the gas is led into one cell of the high-sensitivity infrared analyzer. In the othe flow path, the gas is led directly into the other cell of the analyzer. The output of analyzer varies with the difference of the concentration of the carbon monoxide between two cells, eliminating the effects of interfering components.

Moreover, zero calibration can be held without zero standard gas, flowing the same reference gas into both reference and sample cell by activating changeover valve.

The measured gas is divided into two, and in one of the flow paths, a high-performance converter is provided to convert carbon monoxide into carbonic acid gas. Here, the carbon monoxide in the measured gas is eliminated and the gas is led into one cell of the high-sensitivity infrared analyzer. In the other flow path, the gas is led directly into the other cell of the analyzer.

These flow paths are changed over via changeover valves SV1 and SV2 every 50 seconds by means of the changeover valve drive signal transmitted from the analyzer. By carrying out this changeover cyclically, the output of the analyzer varies with the concentration of the carbon monoxide in the measured gas. Use of the obtained variation width as a measured value enables improving the S/N ratio and eliminating the effects of interfering components plus zero drift.

CODE SYMBOLS

<Standard single-component analyzer>

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0 - - - 1 - - - 2 - 0 0 2 - 0 0 2 - 0 0 2 - 0 0 2 - 0 0 2 - 0 0 1 Auto calibration Average value output Remote range, Alarm Range identification, External hold 0 - - - 0 - - - 0 - - - 0 - - 0 0 - - 0 0 0 - -			Pump	
2 O O Optional function (1) Auto calibration Average value output Remote range, Alarm Range identification, External hold Y - - - B - O - D - - - F O O - H O - O	0	_		
Optional function (1) Auto calibration Average value Remote range, Alarm Y - - Range identification, External hold Y - - - B - O - D - - O F O O - H O - O			-	
Auto calibration Average value output Remote range, Alarm Range identification, External hold Y - - - A O - - B - O - D - O - F O O - H O - O	2			
output Range identification, External hold Y -				
Y		Auto calibration		
B 0 D 0 F 0 H 0 - 0 0	Y			
D O F O O - H O - O	A	0	-	-
н 0 - 0	B	-	0	-
н	Ю F	-	-	-
	н	-	-	0
K 0 0	К	-		
M	M	0	0	0

<Standard single-component analyzer> (cont'd)

1 2 3 4 5 6 7 8 9 1011121									,,				
Z R F Y 2 -		Y		\perp		ŀ	·				Desci	ription	
									Optional function (2)				
									O2 indication/		O2 indic		Remote range, Alarm
									correction Note (2), (4)			ion Note (3), (4)	Range identification
			11						(external O2 analyzer conne	ection)	(ZFK co	nnection)	(for O ₂)
	X I				17	T.	1		-			-	-
1	в								0			-	_
	cl-i				11	ļ.			0			0	0
	D		4-4		. . .				-			0	0
									Note(2) Any linearized 0 to vol% O2 full scale is Note(3) Standard measuring Note(4) Emission levels cald indication is selected	s accepta g range o culated w ed.	able. f O2 is 0	to 10% and 0 to 2	5%, double range.
		γ							1st component, 2nd range Without 2nd range				
		В				1			0 to 100ppm		Note(5)		age 11 for measuring
		C	1.1		1-1-	4	4		0 to 200ppm			range 2nd range > 1st ra	999
		D	<u> </u>						0 to 250ppm			Range ratio : within	-
		E	<u>{</u> {		++	÷			0 to 500ppm				-
		F	<u>+</u>		+-+	-+-			0 to 1000ppm				
		G			11	-+-	1		0 to 2000ppm				
		H	11		11	1			0 to 5000pppm 0 to 1%				
		К	ļ						0 to 2%				
		L	÷						0 to 5%				
		M				-+-			0 to 10%				
		N			+-+	÷			0 to 20%				
		P			1	-+-			0 to 50% 0 to 100%				
		Z	12			4			Other non-standard range				
	l		Ηİ	-	+ +	+			Average value output time				
			0						Without	e			
			1						1-hour moving average valu	le output			
			4						4-hours moving average val				
			Z		- <u> </u>				Other non-standard items				
									Average value output				
									1st compo				
									Instantaneous value	O2 corr	ection		
				х л .					-		-		
				<u>_</u> .					0 -		-		
			l	4		-				(0		
									O2 standard value for emi				
				Y 4		Ì			None 4%		Note(6)		informed for designation
				5	1 1				4 % 5 %			of "Z".	
				6	1 1				6%				
				7	'-+				7%				
				A	↓ †				10%				
				E	3+				11%				
				F					12% 15%				
				7	11	j.			Other non-standard items (s	sneifv wi	thin 0 to	19%)	
				Ľ	+	t				- I 1 441	0 10		
					E				Kind of measuring gas Atmospheric gas		Nota (7)	Comple set	anonto must be informed
					F				Flue gas		Note(7)	Sample gas comp for designation of	oonents must be informed
					G١	r -			Converter exhaust gas			างา นธรายาเสียงที่ 0	۷.
					ZZ	<u>-</u>			Other non-standard items				
					-				Non-standard spec.				
							Z		Other non-standard items				
							А		Quick response Note(8) Qu	iick respo	nse type	e is available only 0	to 20% range or more.

<Standard dual-component analyzer>

1 2 3 4 5 6 7 8 9 10111213 14151617181920 21	
	Description Measuring method
2	Two component analyzer
	Measurable component
F	NO (NOx) + SO ₂
H	NO (NOx) + CO Other non-standard components
	1st component, 1st range
C	0 to 200ppm Note(9) Refer to table in page 12 for measuring range
	0 to 250ppm
	0 to 500ppm 0 to 1000ppm
G	0 to 2000ppm
H	0 to 5000ppm
К	0 to 1% 0 to 2%
	0 to 5%
M	0 to 10% 0 to 20%
P	0 to 50%
R	0 to 100%
Z	Other non-standard range
	2nd component, 1st range
	0 to 200ppm 0 to 250ppm
E	0 to 500ppm
	0 to 1000ppm Note(10) Refer to table in page 12 for measuring range
G	0 to 5000ppm
J	0 to 1%
κ	0 to 2%
M	0 to 5% 0 to 10%
N	0 to 20%
P	0 to 50%
R+-+-+-+-+-+-+	0 to 100% Other non-standard range
0	Power supply Piping connection 100VAC 50/60Hz RC1/4
2	115VAC 50/60Hz NPT1/4
3	220VAC 50/60Hz RC1/4 220VAC 50/60Hz NPT1/4
	Structure/output signal
A	Table-top type 0 to 1V DC
В	19 inch rack mounting type 0 to 1V DC
C	Panel mounting type 0 to 1V DC
	Table-top type4 to 20mA DC19 inch rack mounting type4 to 20mA DC
F	Panel mounting type 4 to 20mA DC
G	Table-top type 0 to 1V DC RS232C 10 ipph rook mounting type 0 to 1V DC RS232C
	19 inch rack mounting type 0 to 1V DC RS232C Panel mounting type 0 to 1V DC RS232C
K	Table-top type 4 to 20mA DC RS232C
	19 inch rack mounting type 4 to 20mA DC RS232C
	Panel mounting type 4 to 20mA DC RS232C
	Optional components Filter, Flowchecker Pump
0	
2	
	Optional function (1) Auto calibration Average value Remote range, Alarm
	Auto calibration Average value Remote range, Alarm output Range identification, External hold
Y	
E	0
G	0 0 -
]	
N	

<Standard dual-component analyzer> (cont'd)

6 7 8 9 10 11 12 13 2 - - - - - -	14 15 1				-[21				Description		
			1				C	ptional function (2)				
					ł			2 indication/		O2 indication/	Remote ran	ge, Alarm
					ł		с	orrection Note (11), (1	3)	correction Note (12), (13)	Range ident	
								external O2 analyzer co		(ZFK connection)	(for O ₂)	
Y			<u>-</u> +-		i		·- -	-		-	-	_
A							• •	0		-	-	-
B		- 1			†		• •	-		0	-	-
C				}				0		-		C
	1111	11.	111		1	1.	·					
								vol% O2 fulls		signal from external O2 and	iyzer calibrate	a 0 to 25
	: 1 1									of O2 is 0 to 10% and 0 to	25% double	range
										with O ₂ value output is available		
	: 1 1							indication is s			,	
	ПŤ	1			İ		1	st component, 2nd ra	ange	Note(14) 2nd range >	1st range	
	Y							Vithout 2nd range	0.		within 1 : 20	
	E		<u>+-</u> +-		-+-		- 0	to 500ppm				
	F						- 0	to 1000ppm				
	G		-+-					to 2000ppm				
	Hŀ···		1-1-		÷			to 5000ppm				
		1	[1]		1	1		to 1%				
	K]			to 2% to 5%				
	M		. . - .		4	Ļ.		to 10%				
	N		<u>⊦</u> .∔.		- 4.			to 20%				
	Р							to 50%				
	R		<u>+-</u> +-					to 100%				
	Z		<u></u> -				- C)ther non-standard ran	ge			
	$ \uparrow$							nd component, 2nd ı	ange	Note(15) 2nd range >	1st range	
	Y			}	 			Vithout 2nd range		Range rate	within 1 : 20	
	E				+			to 500ppm				
	F	1				1		to 1000ppm				
	G	1			1	1		to 2000ppm				
	H]]]		to 5000ppm to 1%				
	ĸ							to 2%				
	L							to 5%				
	M						O	to 10%				
	N	- 				-	0	to 20%				
	P			}			0	to 50%				
	R			}	 			to 100%				
	Z-						C)ther non-standard ran	ge			
								verage value output	time			
		0						Vithout				
		1	11-					-hour moving average				
		4 - 7 -	11-					-hours moving average Other non-standard iter		t		
	Ľ	4			-	-	-					
								verage value output		2nd ao	manant	
							1	1st compon nstantaneous value	O2 correcti		mponent	rrection
		Y					<u>+</u>	Without	Without			hout
		Å	<u> -</u> -				-	O	-	-		-
		В	<u> -</u> -					0	-	0		-
		С	1 8				-	Õ	-	-		0
		D	1 1	}			-	-	0	-		-
		E	╞╌┼╴	}		÷	-	-	0	0		-
		F	1-1-	}			-	-	0	-	(0
		G	1 2	}	÷	÷.	-	-	-	0		-
		Н				-					(0
							C	2 standard value for	emission lev	veles calculation		
			Y-		}			lone		Note(16) O2 value must be	informed for	desianati
			4-	•				%		of "Z".		· g. iuti
			5					%		-		
			6					%				
			7 - · A - ·			1		%				
			B-·			1		0% 1%				
			IC-]				2%				
			F					5%				
			z-)ther non-standard iter	ns (speify wi	thin 0 to 19%)		
			4	Ì			-	ind of measuring ga				
				EY				tmospheric gas		Noto(17) Comple	oporto	ho inf
						4				Note(17) Sample gas comp for designation o		ne illioitu
				FY				lue gas				
				GY -				lue gas Converter exhaust gas		for designation o	Ζ.	
			(C	-	ns		Σ.	
			(GΥ			C	converter exhaust gas				
			(GΥ		z	C	Converter exhaust gas Other non-standard iter		Note(18) Quick response t 0 to 20% range of	ype is availabl	e only

<Sample switching system>

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21	
Z R F Y 2 - Y 0 Y Y -	Description
	Measuring method
3	Sample switching system
	Measurable component
B	СО
	Other non-standard components
	1st range
	0 to 10ppm 0 to 25ppm
	0 to 50ppm
B	0 to 100ppm
Z	Other non-standard items
	Power supply Piping connection
0	100VAC 50/60Hz RC1/4
2	115VAC 50/60Hz NPT1/4
3 - + - + - + - + - + - + - + - + - + -	220VAC 50/60Hz RC1/4
	220VAC 50/60Hz NPT1/4
	Structure/output signal Table-top type 0 to 1V DC
B	19 inch rack mounting type 0 to 1V DC
C	Panel mounting type 0 to 1V DC
D-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+	Table-top type 4 to 20mA DC
E	19 inch rack mounting type 4 to 20mA DC
	Panel mounting type 4 to 20mA DC
G+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-	Table-top type0 to 1V DCRS232C19 inch rack mounting type0 to 1V DCRS232C
J	Panel mounting type 0 to 1V DC RS232C
К	Table-top type 4 to 20mA DC RS232C
	19 inch rack mounting type 4 to 20mA DC RS232C
M	Panel mounting type 4 to 20mA DC RS232C
	Optional component
	Pump CO/CO2 converter
3	
	Optional function (1) Auto calibration Remote range, Alarm
	Range identification, External hold
Y Y	
D Y	- O
H Y	0 0
	2nd range, 3rd range, 4th range
Y	2nd range 3rd range 4th range Without Without Without
1	20ppm Without Without
τ	25ppm Without Without
A	50ppm Without Without
₿	100ppm Without Without
8	25ppm 50ppm Without
M-++-+-+++++++++++++++++++++++++++++++	25ppm 100ppm Without 50ppm 100ppm Without
P	25ppm 50ppm 100ppm
z	Other non-standard range
	Kind of measuring gas
E Y	Atmospheric gas for designation of "7"
Z Z	Other non-standard items
	Non-standard spec.
[Z]	Other non-standard items

<Differential flow system>

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 Z R F Y 2 - Y 0 Y Y		Description				
	Maaauuina no tita d	Description				
	Measuring method Differential flow system					
		1.04				
	Measurable component CO ₂	1st range 350 ± 50ppm				
	(Carbon dioxide)	350 ± 100ppm				
		0 to 100ppm				
	(Carbon monoxide)	0 to 200ppm				
B D		0 to 250ppm				
	Power supply Pi	ping connection				
		C1/4				
		PT1/4				
		C1/4				
4	220VAC 50/60Hz N	PT1/4				
	Structure/output signal					
	Table-top type	0 to 1V DC				
	19 inch rack mounting type					
	Panel mounting type	0 to 1V DC				
	Table-top type	4 to 20mA DC				
	19 inch rack mounting type					
	Panel mounting type Table-top type	4 to 20mA DC 0 to 1V DC RS232	C			
	19 inch rack mounting type					
	Panel mounting type	0 to 1V DC RS232				
	Table-top type	4 to 20mA DC RS232				
	19 inch rack mounting type	4 to 20mA DC RS232	С			
Miiiiiiiiiiiii	Panel mounting type	4 to 20mA DC RS232	С			
	Note(20) When the 5th and 6th digit are "DQ" or "DS", the output is available only					
	voltage output.					
	(1st range:-1V to	1V, 2nd range:0 to 1V)				
	Optional components	1				
	Filter, Flowchecker Pum	p CO/CO2 converter	Note (21)			
0	0 -	_	Available only for			
2	0 0	_	5th digit "D"			
3	0 -	0	Available only for			
4	0 0	0	5th digit "B"			
		1	<u> </u>			
	Optional function (1)	noto rongo Alarra				
		note range, Alarm nge identification, External h	pold			
Y Y	-	-				
D Y	-	0				
A Y	0	-				
H Y	0	0				
	2nd range					
	Without					
	200ppm (Available only for	1st range CO 0 to 100ppm)			
		1st range CO 0 to 100ppm)			
E	500ppm (Not available for	•				
	1000ppm (Available only for	1st range CO ₂ ±100ppm)				
	Kind of measuring gas	Note(22) Samo	e das components must be informed			
	Atmospheric gas Note(22) Sample gas components must be inform for designation of "Z".					
Z Z	Other non-standard items		-			
	Non-standard spec.					
	Non-standard spec. Other non-standard items					

NDIR TYPE INFRARED GAS ANALYZER

(Standard single-component analyzer measuring ranges)

Measurable	2nd	1 st measuring range														
component	range	50ppm	100ppm	200ppm	250ppm	500ppm	0.1%	0.2%	0.5%	1%	2%	5%	10%	20%	50%	100%
	× 0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0
СО	x 2	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-
	x 2.5	-	0	0	0	0	0	0	0	0	0	0	0	0	-	-
	x 4	-	0	0	0	0	0	0	0	0	0	0	0	0	-	-
	x 5	-	0	0	0	0	0	0	0	0	0	0	0	-	-	
	x 8	-	0	0	0	0	0	0	0	0	0	0	-	-	-	
	x 10	-	0	0	0	0	0	0	0	0	0	0	-	-	-	
	x 20	-	0	0	0	0	0	0	0	0	0	0	-	-	-	-
	× 0	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0
CO ₂	x 2	-	0	0	0	0	0	0	0	0	0	0	0	0	0	-
	x 2.5	-	0	0	0	0	0	0	0	0	0	0	0	0	-	-
	x 4	-	0	0	0	0	0	0	0	0	0	0	0	0	-	-
	x 5	-	0	0	0	0	0	0	0	0	0	0	0	0	-	-
	x 8	-	0	0	0	0	0	0	0	0	0	0	0	-	-	-
	x 10	0	0	0	0	0	0	0	0	0	0	0	0	-	-	-
	x 20	0	0	0	0	0	0	0	0	0	0	0	-	-	-	-
	× 0	Δ	0	0	0	0	0	0	Δ	-	-	-	-	-	-	-
NO	x 2	Δ	0	0	0	0	0	0	Δ	-	-	-	-	-	-	-
	x 2.5	Δ	0	0	0	0	0	Δ	-	-	-	-	-	-	-	-
	x 4	Δ	0	0	0	0	Δ	-	-	-	-	-	-	-	-	-
	x 5	Δ	0	0	0	0	Δ	-	-	-	-	-	-	-	-	-
	x 8	Δ	0	0	0	Δ	-	-	-	-	-	-	-	-	-	-
	x 10	Δ	0	0	0	Δ	-	-	-	-	-	-	-	-	-	-
	x 20	Δ	0	0	Δ	-	-	-	-	-	-	-	-	-	-	-
	x 0	Δ	0	0	0	0	0	0	0	0	0	0	0	-	-	-
SO ₂	x 2	Δ	0	0	0	0	0	0	0	0	0	0	-	-	-	-
	x 2.5	Δ	0	0	0	0	0	0	0	0	0	0	-	-	-	-
	x 4	Δ	0	0	0	0	0	0	0	0	0	-	-	-	-	-
	x 5	Δ	0	0	0	0	0	0	0	0	0	-	-	-	-	-
	x 8	Δ	0	0	0	0	0	0	0	0	-	-	-	-	-	-
	x 10	Δ	0	0	0	0	0	0	0	0	-	-	-	-	-	-
	x 20	Δ	0	0	0	0	0	0	0	-	-	-	-	-	-	-
	x 0	-	-	Δ	Δ	0	0	0	0	0	0	0	0	0	0	0
CH4	x 2	-	-	Δ	Δ	0	0	0	0	0	0	0	0	0	0	-
	x 2.5	-	-	Δ	Δ	0	0	0	0	0	0	0	0	0	0	-
	x 4	-	-	Δ	Δ	0	0	0	0	0	0	0	0	0	-	-
	x 5	-	-	Δ	Δ	0	0	0	0	0	0	0	0	0	-	-
	x 8	-	-	Δ	Δ	0	0	0	0	0	0	0	0	-	-	-
	x 10	-	-		Δ	0	0	0	0	0	0	0	0	-	-	-
	x 20	-	-	Δ	Δ	0	0	0	0	0	0	0	-	-	-	-

Remarks: (1) O : standard measuring range (2) Δ : Consult with us regarding capability of manufacture, price and (2) _____ is contained in the regulating capacity delivery period.
 (3) _____ : outside of manufacturing range.

(Standard dual-component analyzer measuring ranges)

Compbination of 1st, 2nd measurable components, measuring ranges:

Manufacture is possible as non-standard specifications even for some items not given in the table, so please consult to us and our distributor.

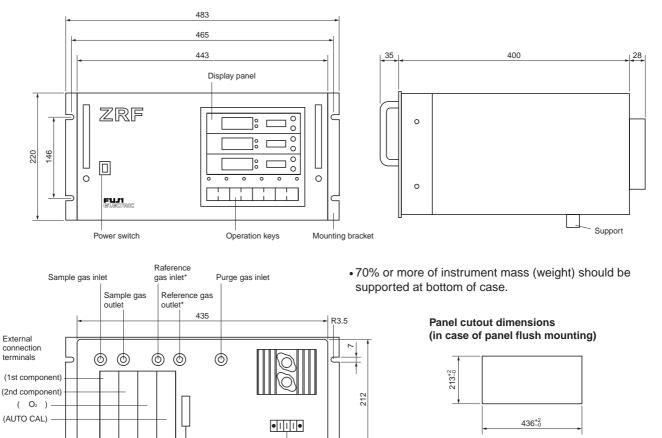
SO ₂ NC		250 pm	500 ppm		CO NO			00 om	1000 ppm		Remarks: (1)		(1)	O Up
250ppm	1	0	0	0		500ppm		0)				(M
500ppm	n	0	(0		1000ppm O			0					
CO	200	250	500	0.1	0.2	0.5	1	2	5	10	20	50	100	-
CO ₂	ppm	ppm	ppm	%	%	%	%	%	%	%	%	%	%	_
200ppm	0	0	0	0	\otimes	\otimes	-	-	-	-	-	-	-	
250ppm	0	0	0	0	\otimes	⊗	\otimes	-	-	-	-	-	-	-
500ppm	0	0	0	0	0	0	\otimes	⊗	- 1	-	-	-	-	-
0.1%	\otimes	⊗	⊗	0	0	0	\otimes	8	⊗	-	-	-	-	-
0.2%	\otimes	⊗	⊗	\otimes	0	0	0	⊗	⊗	⊗	-	-	-	-
0.5%	-	-	⊗	\otimes	⊗	8	0	0	⊗	\otimes	⊗	-	-	-
1%	-	-	-	\otimes	8	8	0	0	0	\otimes	8	⊗	\otimes	-
2%	-	-	-	-	\otimes	\otimes	\otimes	0	0	0	0	0	0	
5%	-	-	-	-	-	⊗	\otimes	\otimes	0	0	0	0	0	-
10%	-	-	-	-	-	-	\otimes	8	0	0	0	0	0	-
20%	-	-	-	-	-	-	-	\otimes	0	0	0	0	0	-
50%	-	-	-	-	-	-	-	-	0	0	0	0	0	-
100%	-	-	-	-	-	-	-	-	0	0	0	0	0	-
Remarks: (1) \bigcirc : available range for 1st measuring range.									_					

(2) ⊗ : available range for 2nd measuring range (max. range) for CO and CO₂.

: available range for 1st measuring range.
 Up to 1:20 possible for 2nd range.
 (Max. 2000ppm for NO analyzer)

Garbage application ($\begin{array}{c} \text{CO}_2: \text{ 0 to } 50\% \\ \text{CH}_4: \text{ 0 to } 80\% \end{array}$

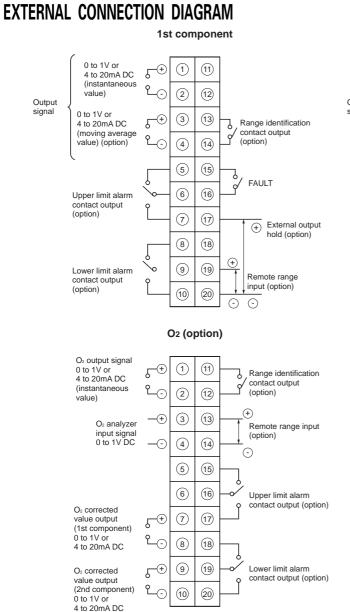
OUTLINE DIAGRAM (Unit:mm)

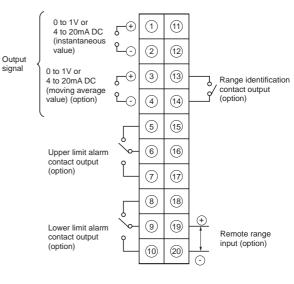


Power terminal

RS232C terminal

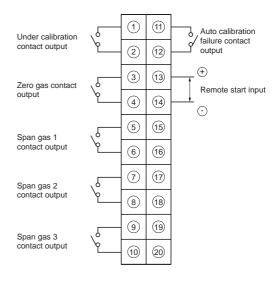
< Rear view >





2nd component





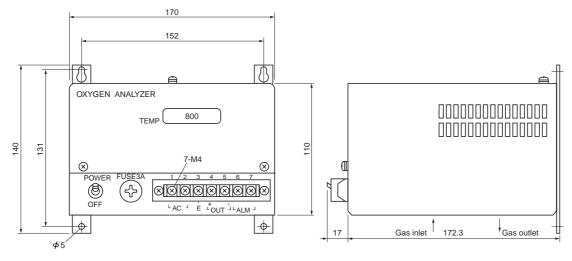
Exclusive Zirconia O2 Sensor (to be purchased separately)

For O_2 correction, the gas analyzer ZRF can accept linealized 0 to 1V DC signal coming from analyzer calibrated 0 to 25% O_2 full scale. If the analyzer is not available, Fuji can supply exclusive Zirconia O_2 sensor Model ZFK3. Measuring method:

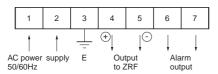
Zirconia system

N	leasurable	component	1st range	2nd range						
_	02	Oxygen	0 to 10vol%	0 to 25vol%						
Repeatability	: With	Within \pm 0.5% of full scale								
Linearity:	With	Within \pm 2% of full scale								
Zero drift:	With	Within ± 1% of full scale/week								
Span drift:	With	Within ± 2% of full scale/week								
Response tin	ne: App	e: Approx. 20 seconds (for 90% respons								
Measured ga	s flow r	ate:								
	0.5	± 0.25 ℓ /m	in							
	Rem	Remark: The Zirconia system, due to its print may produce a measuring error du relative concentration versus the bustible O ₂ gas concentration. Al corrosive gas (SO ₂ of 250 ppm or n etc.) may affect the life of the set								
Gas inlet/out	let size:	,								
	Rc1	/4								
Power suppl	,	90 to 126V AC or 200 to 240V AC, 50/60Hz								
Enclosure:	Stee	el casing, fo	or indoor app	lication						
Indication:	Tem	perature in	dication (LE	D)						
Temperature	alarm c	output:								
	Con	Contact output 1a contact, Contact capacity 220V, 1A AC (resistive load)								
Outer dimen	sions (H	$\times W \times D$:								
	140	140 x 170 x 190mm								
Mass {weigh	t}: App	: Approx. 3kg								
Finish color:	Mur	nsell 5Y 7/1								

OUTLINE DIAGRAM (Unit:mm)



EXTERNAL CONNECTION DIAGRAM



CODE SYMBOLS

123	45	6	7	8 9 10 11 12 13	
ΖFΚ	3 Y	Ύ		4 - 1 Y 0 Y Y	Description
					Measuring method
	3 Y	Y			Zirconia method
					Power supply
			1		90 to 126V AC 50/60Hz
			3		200 to 240V AC 50/60Hz

The product conforms to the requirements of the Electromagnetic compatibility Directive 89/336/EEC as detailed within the technical construction file number TZ734577. The applicable standards used to demonstrate compliance are :

EN 50081-1 : 1992Conducted and Radiated emissionsEN 50082-1 : 1992Radiated immunity, ESD and FBT

ZRF

\triangle Caution on Safety

*Before using this product, be sure to read its instruction manual in advance.

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