

NDIR GAS ANALYZER (LOW-CONCENTRATION MEASUREMENT TYPE)

DATA SHEET

ZPG

This gas analyzer (ZPG) is capable of measuring the concentration of NO, SO₂, CO₂, CO and O₂ components in sample gas. NO, SO₂, CO₂, CO are measured by non-dispersion infrared method (NDIR), while O₂ is measured by fuel cell or paramagnetic and zirconia method.

Through use of the sample switching system, ZPG is capable of canceling drift in the zero point of the measurable component by NDIR.

Optimum use as an analyzer unit of a measurement system for gas separation process and atmospheric environment measurement and combustion exhaust gas from refuse incinerators and boilers, or gas from various industrial furnaces.



1. High sensitivity

Equipped with the newest upgraded mass flow sensor. Capable of 0-5ppm measuring range with a newly designed measurement unit.

2. Excellent stability

Due to adoption of sample switching method (note1). It is capable of canceling drift in the zero point of measurable component.

3. Easy maintenance

Single beam design simplifies maintenance and minimizes maintenance costs compared with double beam or similarly equipper GFC based system.

4. Small and light

The size is small 133x483x382mm (HxWxD) and light (11kg). It is capable of measuring one of NO, SO₂, CO₂, CO components by NDIR and simultaneously measuring O₂ by O₂ analyzer.

5. Extensive functions

Various optional functions are available such as auto calibration control, atmospheric pressure correction, high and low concentration alarm, remote range switch, and range identification signal, etc.

note1) Excellent long term stability due to sample gas and reference gas flowed alternately to the measurement unit.

SPECIFICATIONS

Standard Specifications

Principle of measurement:

NO, SO₂, CO₂, CO;

Non-dispersion infrared-ray absorption method (NDIR method) Single light source and single beams (single beam system)



O₂ ;Fuel cell O₂ analyzer (built in) or paramagnetic O₂ analyzer (built-in) or zirconia O₂ analyzer (externally installed TYPE: ZFK7)

Measurable gas components and measuring range:

_		
	Minimum range	Maximum range
NO	0 - 10ppm	0 - 100ppm
SO ₂	0 - 10ppm	0 - 100ppm
CO ₂	0 - 5ppm	0 - 50ppm
СО	0 - 5ppm	0 - 50ppm
O ₂ (built in fuel cell)	0 - 10vol%	0 - 25vol%
O ₂ (built-in (Paramagnetic)	0 - 5vol%	0 - 100vol%
$\begin{pmatrix} O_2 \\ \text{External} \\ \text{Zirconia} \end{pmatrix}$	0 - 5vol%	0 - 25vol%

- Max. 2 components measurement including O₂.
- Measuring range ratio max. 1:10 (except
- Measuring ranges are changeable between the specified minimum and maximum range

Settable one range or two ranges

* In measurement range, low range is called first range, high range is called second range.

Measured value indication:

Digital indication in 4 digits (LCD panel with LED back light)

- Instantaneous value of each component
- Instantaneous value after O₂ correction (only in NO, SO₂, CO measurement with O₂)
- Average value after O₂ correction (only in NO, SO₂, CO measurement with O₂)
- O2 average value

Analog output signals:

4 to 20mA DC or 0 to 1V DC,

isolated internally from circuit and ground. Output lines are non-isolated each other.; 4 outputs max.

Allowable load 550Ω for 4 to 20mA DC Allowable load $100k\Omega$ for 0 to 1V DC

* Refer to Table1 for the channel No. of displayed values and analog output signals.

Analog input signal:

For signal input from externally installed O_2 analyzer.

Signal requirement;

(1) Signal from Fuji's Zirconia O₂ analyzer (TYPE: ZFK7)

(2) 0 to 1V DC from an O₂ analyzer Input section is not isolated. This feature is effective when an O₂ analyzer is not built in.

* Externally installed O₂ analyzer should be purchased separately.

Digital output: (Option)

1c contact (24V DC/1A, resistive load) max.10 outputs

Instrument error, calibration error, range identification, auto calibration status, solenoid valve drive for auto calibration, High/Low limit alarm contact output

* All relay contacts are isolated mutually and from the internal circuit.

Digital input: (Option)

Voltage contact (supply 12-24VDC (15mA Max.)) Max.6 inputs

Remote range change over, auto calibration remote start, remote hold, average value reset, Isolated from the internal circuit with photocoupler.

Power supply: Voltage rating ; 100V to 240V AC

Allowable range ; 85V to 264V AC Frequency ; 50Hz/60Hz Power consumption ; 100VA max.

Operation conditions:

Ambient temperature;

-5°C to 45°C

Ambient humidity ; 90% RH max.,

non-condensing

Storage conditions:

Ambient temperature; -20°C to 60°C Ambient humidity ; 100% RH max.,

non-condensing

Dimensions (H \times W \times D):

133 x 483 x 382mm

Mass: 11 kg max.

Finish color: Front panel; Cool gray (PANTON 1C-F)

Enclosure: Steel casing, for indoor use

Material of gas-contacting parts:

Gas inlet/outlet; SUS304

Sample cell; SUS304,chloroprene rubber Infrared-ray transmitting window; CaF2 Paramagnetic O₂ analyzer cell; SUS316 Fuel cell O₂ analyzer cell; ABS resin Internal piping; Toaron, Teflon, Polypropylene

Solenoid valve; fluoro-rubber

Gas inlet/outlet: Rc1/4 or NPT1/4 internal thread Purge gas flow rate: 1L/min (when required)

Life time of fuel cell O2 analyzer: 2 years

Standard Functions

Output signal holding:

Output signals are held unchanged during manual and auto calibrations by activation of holding (turning "ON" its setting). The values held are those just before start

The values held are those just before start calibration mode or setting value.

Usage is selectable.

Indication of instantaneous values will not be held.

Switch ranges:

The switch ranges function is available in manual, auto, and remote modes. Only preset switch method is effective.

Manual: Allows range to switch by key opera-

tion.

Auto: Automatically switched from first range to

second range when the measured value exceeds 90%FS of first range.

Automatically switched from second range to first range when the measured value drops to 80% or less first range.

Remote: Voltage contact input (for measurable (Option) components)

Allows range to switch via an external signal when remote range switch input is received.

When the contact input terminals for each component are input voltage, the first range is selected, and it is switched to the second range when the terminals are open.

* These switch range value are settable between the first range and second range values (low/high range values).

Optional Functions

Remote output holding:

Output signal is held at the last value or preset value by voltage input to the remote output holding input terminals.

Holding is maintained while voltage is input to the terminals. Indication of instantaneous values are not held.

Range identification signal:

The present measuring range is identified by a contact position.

The contact output terminals close for each component when the first range is selected, and open when the second range is selected.

Auto calibration:

Auto calibration is carried out periodically at the preset cycle.

When a standard gas cylinder for calibration and a solenoid valve for opening/closing the gas flow line are prepared externally by the customer, calibration will be carried out with the solenoid valve drive contacts for zero calibration and each span calibration turned on/off sequentially at the set auto calibration timing.

Auto calibration cycle setting:

Auto calibration cycle is set.

Setting is variable within 1 to 99 hours (in increments of 1 hour) or 1 to 40 days (in increments of 1 day).

Gas flow time setting:

The time for flowing each calibration gas in auto calibration is set.

Settable within 60 to 900 seconds (in increments of 1 second)

Auto calibration remote start:

Auto calibration starts by opening the auto calibration remote start input terminal after short circuiting for 1.5 sec or longer.

Auto calibration starts when contacts open.

Auto zero calibration:

Auto zero calibration is carried out periodically at the preset cycle.

This cycle is independent from "Auto calibration" cycle.

When zero calibration gas and solenoid valve for opening/closing the calibration gas flow line are prepared externally by the customer, zero calibration will be carried out at the set auto zero calibration timing.

Auto zero calibration cycle setting:

Auto zero calibration cycle is set.

Setting is variable within 1 to 99 hours (in increments of 1 hour) or 1 to 40 days (in increments of 1 day)

Gas flow time setting:

The timing for flowing zero gas in auto zero calibration is set.

Settable within 60 to 900 seconds (in increments of 1 second)

High/low limit alarm:

Alarm contact output turns on when measurement value reaches the preset high or low limit alarm value.

Contacts close when the instantaneous value of each channel exceeds the high alarm limit value or falls below the low alarm limit value.

Instrument error contact output:

Contacts turn on at occurrence of analyzer error No. 1, 2, 3 or 10.

Calibration error contact output:

Contacts turn on at occurrence of manual or auto calibration error (any of errors No. 4 to 9).

Auto calibration status contact outputs:

Contacts turn on during auto calibration.

O₂ correction: Correction of measured NO, SO₂ and CO gas concentrations into values at reference

O2 concentration.

Correction formula:

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

C : Sample gas concentration after O_2 correction

Cs: Measured concentration of sample gas

 O_S : Measured O_2 concentration (Limit setting: 1 to 20% $O_2)$

 O_n : Reference O_2 concentration (value changeable by setting 0 to 19% O_2)

Average value after O_2 correction and O_2 average value calculation:

The result of O_2 correction or instantaneous O_2 value can be output as an average value over the preset period of time.

Moving average method is used. Sampling interval is 30 seconds.

(Output is updated every 30 seconds. Update is the averaged value of the most recent elapsed averaging time period.) Averaging time period is settable within 1 to 59 minutes (in increments of 1 minute) or 1 to 4 hours (in increments of 1 hour).

Average value resetting:

The above-mentioned output of average value is started from the initial state by opening the average value resetting input terminals after short circuiting for 1.5 sec or longer.

Output is reset by input voltage and restarted by opening the terminal circuit.

Communication function:

RS-485 (9pins D-sub connector)

Half-duplex bit serial Start-stop synchronization Modbus RTU™ protocol

Contents: Read/Write parameters

Read measurement concentration and instrument status

Remark : When connecting via RS-

232C interface, an RS-232C ↔ RS-485 converter should

be used.

Atmospheric pressure correction:

Measure atmospheric pressure and calculate compensation (for use, be sure to relieve the exhaust gas from analyzer to the atmosphere)

After atmospheric pressure correction;

Zero point: No influenced

Span point: The change is 0.5% measured

value or less relating to the change of the atmospheric

pressure 1%.

Correction range: 700hPa-1050hPa

Performance

Repeatability: $\pm 0.5\%$ of full scale Linearity: $\pm 1\%$ of full scale

prior to atmospheric pressure correction

(option)

Zero drift: $\pm 0.5\%$ of full scale/week (measurable

component of NDIR)

±2.0% of full scale/week (O₂ analyzer)

Span drift: $\pm 2.0\%$ of full scale/week

Response time (T₉₀):

30 seconds or better

Response interval may be changed depending on timing of the switching gas by sample switching operation. (Td=5-20

seconds)

Interference from other gases:

Sample switching design effectively minimizes interference. But it may occur depending on component gas and its concentration

Preprocessing can further decrease influ-

ence in this case.

Contact manufacturer for application

specific advice.

Requirements for Sample Gas

Flow rate: 1.0 ± 0.2 L / min Temperature: $0 \text{ to } 50^{\circ}\text{C}$

Pressure: 10 kPa or less (Gas outlet side should be

open to the atmospheric air.)

Dust: $100 \mu g/Nm^3$ or less in particle size of 0.3

µm or smaller

Mist: Unallowable

 $\begin{tabular}{ll} \textbf{Moisture:} & For CO, NO, SO_2 \ measurement: less than \end{tabular}$

2°C saturation point.

For CO₂ measurement: less than -30°C saturation point (with comparable moistive levels in sample and reference gases).

Corrosive component:

1 ppm or less

Standard gas for calibration:

Zero gas ; Dry N2

Span gas ; Each sample gas having con-

centration 90 to 100% of its measuring range (recom-

mended).

In case a zirconia O_2 analyzer is installed externally and calibration is carried out on

the same calibration gas line:

Zero gas ; Dry air or atmospheric air (Do

not use with CO_2 measure-

ment)

Span gas $% \left(1\right) =\left(1\right) \left(1\right) +\left(1\right) \left(1\right) \left(1\right) +\left(1\right) \left(1\right)$

ment, each sample gas having concentration 90 to 100% of its measuring range For O_2 measurement, O_2 gas of 1 to 2 vol%/remains N_2 gas

Reference gas for sample switching:

NO, SO₂, CO measurement;

When sample gas contains moisture, N_2 which contains moisture equivalent of moisture of the samplegas, or Air. When sample gas does not contain mainture. Dry N. or Dry air.

moisture, Dry N₂ or Dry air.

CO₂ measurement;

 N_2 without CO_2 and moisture. (over

99.999999vol%)

(Do not contain the component to be measured more than 0.1%FS of the

minimum measuring range.

Please refer to the "component eliminator" described later and use the component eliminator to meet the above condition if necessary.)

Purge gas: When base gas is H₂, and any

When base gas is H_2 , and any of the measured component, Please make sure to purge the inside of the instrument with

N₂ gas or Air.

Installation Requirements

- Indoor use (Select a place where the equipment does not receive direct sunlight, draft/rain or radiation from hot substances. If such a place cannot be found, a roof or cover should be prepared for protection.)
- Avoid a place where unit receives heavy vibration
- Select a place where atmospheric air is clean

EU Directive Compliance (

LVD (2014/35/EU)

EN 61010-1 FN 62311

EMC (2014/30/EU)

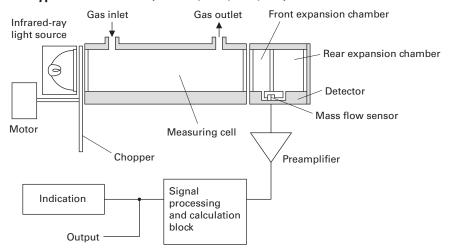
EN 61326-1 (Table 2) EN 55011 (Group 1 Class A) EN 61000-3-2 (Class A)

EN 61000-3-3 EN 61326-2-3 RoHS (2011/65/EU)

EN 50581

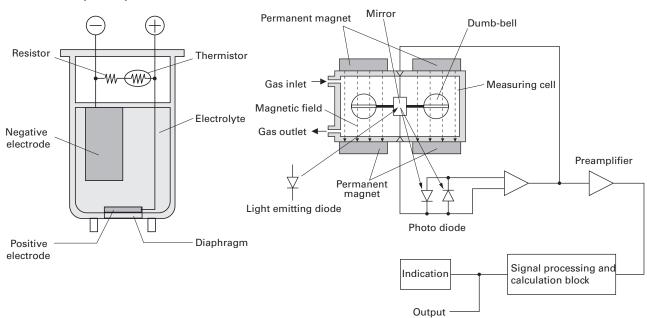
4

Principle diagram of NDIR type measurement (For NO, SO₂, CO₂, CO)

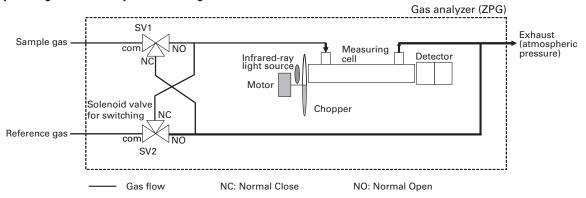


Principle diagram of fuel cell type measurment (For O₂)

Principle diagram of paramagnetic type measurment (For O₂)



Principle diagram of Sample switching method



Explanation of the sample switching method

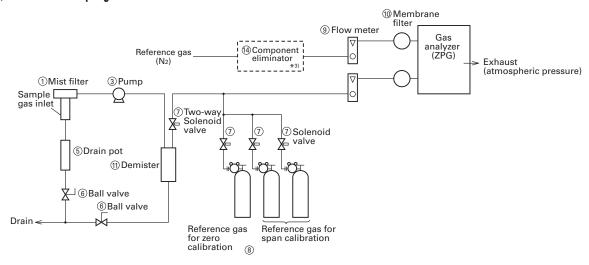
Sample gas and reference gas are introduced alternately and constantly to the sample cell of the analyzer by Solenoid valve for switching flow (SV1,SV2)

Solenoid valve SV1 and Solenoid valve SV2 are switched by the signal sent from the analyzer. Analyzer measures each sample gas and each reference gas on proper timing and calculates the change of sample gas and reference gas as the concentrate value (= gas concentration of the measurable component) and sends output signal.

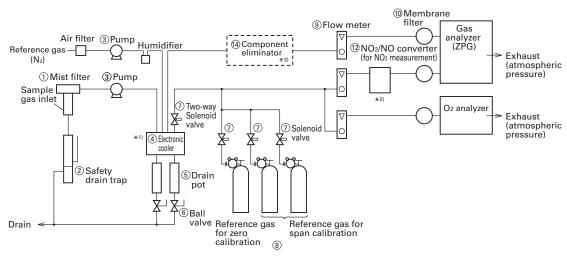
Due to monitoring the change of the sample gas and reference gas all the time, influence of the interference components and zero drift are eliminated.

Examples of sampling system configuration including gas analyzer

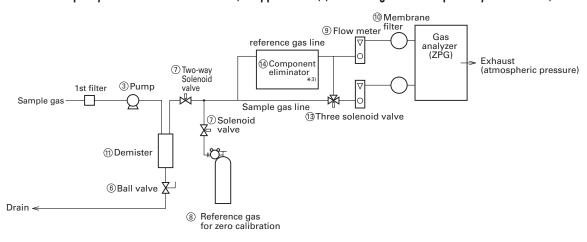
- *These are typical configurations. As configuration might be different depending on measuring objects. Please consult with us.
- 1) To measure sample gas without moisture.



2) To measure high moisture content sample gas, NO, SO₂, or CO (saturation 2°C or more)



- *1) Be sure to remove the moisture to be temperature 5°C or lower from measuring gas by electronic cooler and water concentration should be equalized in reference gas and sample gas.
- *2) Be sure to use NO2/NO converter in case of measuring NOx.
- 3) To measure impurity and minute concentration (0-20ppm or less) (Reference gas is not required by this method)



*3) Component eliminator can eliminate only measurable component in the sample gas and use the measurable component as a relative gas. To measure CO, Use the CO/CO₂ converter (Type: ZDL21). To measure NO, SO₂ ,CO₂, Use the component eliminator (Type: ZBBB).

List of sampling devices (example)

No.	Device name	Fuji's type	No.	Device name	Fuji's type	
1	Mist filter	ZBBK1V03-0		Flow meter	ZBD42203	
2	Safety drain trap	ZBH51603	10	Membrane filter	ZBBM2V03-0	
3	Pump	ZBG80	11)	Demister	ZBH35003	
4	Electoric cooler	ZBC9A004	12	NO ₂ /NO converter	ZDL04001	
(5)	Drain pot	ZBH13003 (Length 255mm)	13	Three-way solenoid valve		
6	Ball valve	ZBFB1	14)	Component eliminator	ZBBB6V03 or 7V03 *3	
7	Two-way solenoid valve			(for NOx and SO ₂)		
8	Standard gas for calibration	ZBM Y04-0		Component eliminator (for NOx and SO ₂)	ZBBB7V03 or 6V03 *3	
		(Codes in to be selected depending on application)		Component eliminator (for CO ₂)	ZBBB8V03	
				Component eliminator (for CO)	ZDL21001	

^{*3)} Refer to SANPLING DEVICE SERIES DATA SHEET(EDS3-1), chapter GAS FILTER(model:ZBB)

Table 1 Channel (Ch) No. and display/output contents comparison table

Code sym	ıbol		
6th digit	7th digit	21st digit	Display/output contents
Р	Υ	Υ	Ch1:NO
Α	Υ	Υ	Ch1:SO ₂
D	Υ	Υ	Ch1:CO ₂
В	Υ	Υ	Ch1:CO
Р	1 to 4	Υ	Ch1:NO, Ch2:O2
Α	1 to 4	Υ	Ch1:SO ₂ , Ch2:O ₂
D	1 to 4	Υ	Ch1:CO ₂ , Ch2:O ₂
В	1 to 4	Υ	Ch1:CO, Ch2:O2
Р	1 to 4	Α	Ch1:NOx, Ch2:O2, Ch3:corrected NOx
Α	1 to 4	Α	Ch1:SO ₂ , Ch2:O ₂ , Ch3:corrected SO ₂
В	1 to 4	Α	Ch1:CO, Ch2:O2, Ch3:corrected CO
Р	1 to 4	С	Ch1:NOx, Ch2:O2, Ch3:corrected NOx, Ch4:corrected NOx average
Α	1 to 4	С	Ch1:SO ₂ , Ch2:O ₂ , Ch3:corrected SO ₂ , Ch4:corrected SO ₂ average
В	1 to 4	С	Ch1:CO, Ch2:O2, Ch3:corrected CO, Ch4corrected CO average

^{*} When the 21st digit code is A or C, the component of the NO analyzer is displayed as NOx.

SCOPE OF DELIVERY

- Gas analyzer ... 1 unit
- Replacement fuse (250V, 2A AC, delay type) ... 2 pcs
- Instruction manual ... 1 copy
- Connector for I/O connection ... 1 set
- Power supply cord (standard inlet type 2m) ... 1 pc

ORDERING INFORMATION

- 1. Code symbols
- 2. Application and composition of sample gas

CODE SYMBOLS

			<u>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20</u> 21 22 23 24 25 ← Dig
Digit	Description	note	
4	<specification structure=""></specification>		
	Horizontal type(Terminal block for power supply) Horizontal type(Power inlet,with lock)	note1	
5	<pre></pre> <pre><</pre>	noter	
	19 inch rack mounting type EIA comformity(horizontal type)		B
6	<measurable (ndir)="" component=""></measurable>		
	NO SO ₂		
	CO ₂		β ::::::::::::::::::::::::::::::::::::
	CO		B
	Others		
7	<measurable (o<sub="" component="">2)></measurable>		[
	None External O₂ analyzer	note2	
	External zirconia O ₂ analyzer (ZFK7)		
	Built-in fuel cell O2 analyzer		3 : : : : : : : : : : : : : : : : : : :
0	Built-in paramagnetic O ₂ analyzer <revision code=""></revision>		[4]
<u>8</u> 9	<nevision code=""> <measuring (ndir)="" range="">1st component, 1st range</measuring></nevision>	note3	
10	<measuring (ndir)="" range="">1st component, 2nd range</measuring>	note3	
11	<unused digit=""></unused>		Y
12	<unused digit=""></unused>		
13 14	<unused digit=""> <unused digit=""></unused></unused>		
	Unused digit>		
	<unused digit=""></unused>		Y
17	<measuring (o<sub="" range="">2)></measuring>		
	None 0-5/10vol%		
	0-5/25vol%		B
	0-10/25vol%	ļ	<u> c -i-i-i-i-i-i-i-i-i-i-i-i-i-i-i-i-i-i-</u>
	0-5vol% 0-10vol%		
	0-25vol%		
	0-50vol%		P
	0-100vol%		<u> </u>
18	Others <gas connection=""></gas>		
10	Rc1/4		
	NPT1/4		2
19	<0utput>		
	DC0-1V DC4-20mA		
	DC0-1V + Communication function		
	DC4-20mA + Communication function		D
	<language cord="" power="" supply=""></language>	1	
	In Japanese, cord rated 125V (PSE) In English, cord rated 125V (UL)	note4 note4	
	In English, cord rated 250V (CEE)	note4	
	In Chinese, cord rated 250V (CCC)	note4	
21	<o2 and="" average="" correction="" o2="" output=""> None</o2>	note5	
	O ₂ correction		
	O ₂ correction average		[B]
	O ₂ correction and O ₂ correction average		
22	<pre><optional (dio)="" function=""> FAULT A. Cal. H/L Alarm RangeID/Remote range</optional></pre>		
	None R. Cai. A/L Alarm NangelD/Nemote range		
			B
	ŏ o <u>∀</u>	1	
			G : I H : I
23	Pressure compensation>		
-	None		Y
	Pressure compensation		1
24	<unit></unit>		
	ppm, vol% mg/m³, g/m³	note6	
25	<adjustment></adjustment>	note7	
	For standard(combustion exhaust)		A Z
	Others		Z

RANGE CODE

Range	Code
None	Υ
0~5ppm	5
0~10ppm	6
0~20ppm	7
0~25ppm	8
0~30ppm	9
0~50ppm	Α
0~100ppm	В

O₂ measurement range

Measurement range	Range code	Fuel cell O ₂ analyzer (built - in)	Paramagnetic O ₂ analyzer (built - in)	Zirconia O ₂ analyzer (external)
0~5/10 vol%	Α		0	0
0~5/25 vol%	В		0	0
0~10/25 vol%	С	0	0	0
0~5 vol%	L		0	0
0~10 vol%	M	0	0	0
0~25 vol%	V	0	0	0
0~50 vol%	Р		0	
0~100 vol%	R		0	

note1)When "D" is specified at 4th digit, Power supply cord is supplied in the scope of supply. Cord specification should be specified at the 20th digit.

note2)When "1"is specified at 7th digit, O₂ pt analyzer signal has to be set as 0-1V DC linear corresponding to full scale. External zirconia O₂ analyzer and external O₂ analyzer are not included in the scope of supply, and has to be separately ordered.

note3) Select the range code for each range from the range code table shown above. Range of fuel cell O_2 analyzer is 0-10vol% or more.

note4) Select the type of voltage rating, plug type and applicable standard of the power supply cord by 20th digit. Select a power supply cord for using at the location of end-user.

note5)O2 correction is calculated only for NO, SO2 and CO.

note6)When "B" is specified at 24th digit, measuring range should be specified by ppm range code. In this case NO,SO₂ and CO measuring range are corresponding range in mg/m³. Please refer to the table shown below for the corresponding range code based on "mg/m³".

note7)When "A"is specified at 25th digit ,the analyzer will be adjusted and delivered with the balance gas N₂. When other adjustment is required, please specify "Z". When "Z" is specified, please attach a list of gas composition contained in the measuring gas.

Corresponding mg/m³

		Corresponding range in mg/m ³			
Range code	Unit : ppm	NO	SO ₂	CO	
5	0-5ppm	0-6.5mg/m ³	0-14.0mg/m ³	0-6.00mg/m ³	
6	0-10ppm	0-13.0mg/m ³	0-28.0mg/m ³	0-12.5mg/m ³	
7	0-20ppm	0-26.0mg/m ³	0-57.0mg/m ³	0-25.0mg/m ³	
8	0-25ppm	0-32.5mg/m ³	0-70.0mg/m ³	0-30.0mg/m ³	
9	0-30ppm	0-40.0mg/m ³	0-85.0mg/m ³	0-37.5mg/m ³	
Α	0-50ppm	0-65.0mg/m ³	0-140mg/m ³	0-60.0mg/m ³	
В	0-100ppm	0-130.0mg/m ³	0-280.0mg/m ³	0-125.0mg/m ³	

The conversion formula "ppm" unit into "mg/m³" unit. NO (mg/m³) = $1.34 \times$ NO (ppm) SO₂ (mg/m³) = $2.86 \times$ SO₂ (ppm) CO (mg/m³) = $1.25 \times$ CO (ppm)

Component eliminator (Item to be prepared separately)

<Note before ordering>

Whether or not you need the eliminator, it is depend on using gas as relative gas as follows.

Regarding specification of component eliminator, please refer to Fuji's data sheet DS3-1 "sampling device series for gas analyzer"

1. When you use sample gas as relative gas

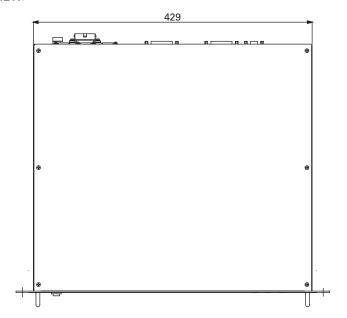
Please make sure to use component e liminator to eliminate measurement components from all of measurement components /measurement range of ZPG.

2. When you use Air or N2 as relative gas

Whether or not you need the eliminator, it is depend on concentration of the component to be measured in relative gas. If gas concentration to be measured in relative gas is <u>0.1%FS or less of the range</u>, component eliminator is not needed. When concentration of the relative gas can not be comprehended correctly, please make sure to use the component eliminator as a general rule.

OUTLINE DIAGRAMS (Unit: mm)

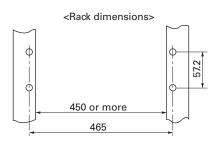
<TOP VIEW>

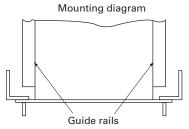


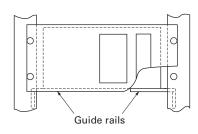
Mounting method

The analyzer weight should be supported at the bottom of the case.

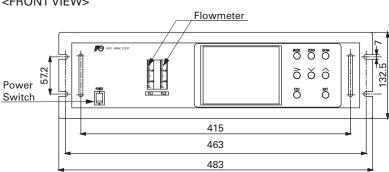
19-inch rack mounting type



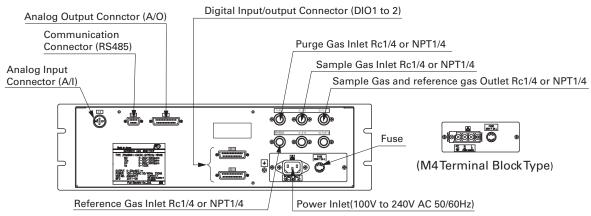




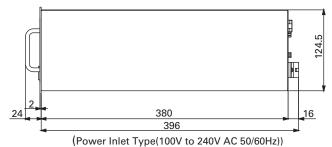
<FRONT VIEW>

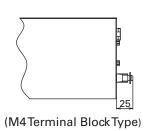


<REAR VIEW>



<SIDE VIEW>

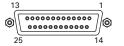




10

EXTERNAL CONNECTION

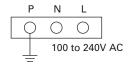
<Analog output> A/O connector



D-sub 25pins female

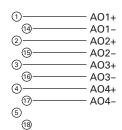
* In standard, displayed Channel No. and Analog Output No. are same.

<Terminal block>



<Power inlet>

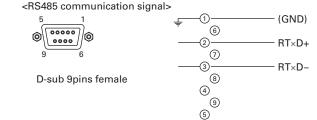




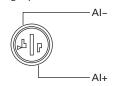
6

25 (13)

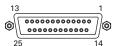
`@ ® @



<Analog input> A/I connector (O2 signal input)



<Digital I/O> DIO 1 to 3 connector (option)



D-sub 25pins female

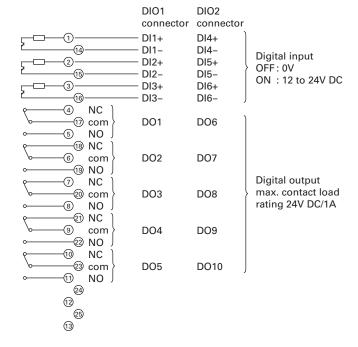
* DIO 1 to 3 are all as same connector.

Contents of digital input signal

DI1	Remote hold		
DI2	Average value reset		
DI3	A. cal. start		
DI4	A. zero. cal. start		
DI5	Remote range Ch1		
DI6	Remote range Ch2		

Allocation table of digital input signal

22th digit→	Α	В	С	D	Е	F	G	Н	Υ
DI1	0	0	0	0	0	0	0	0	
DI2	0	0	0	0	0	0	0	0	
DI3		0			0		0	0	
DI4		0			0		0	0	
DI5				0		0	0	0	
DI6				0*		0*	0*	0*	
			_						



- \bigcirc sign shows the function is valid.
- *: The function might be invalid depending on the number of measurable components. For example: DI5 corresponds to 1st component, DI6 corresponds to 2nd components.

Contents of digital output signal

	Independent on the number of component	1-component analyz	2-component analyzer	
22th digit →	A, C	B, E	D, F, G, H	B, D, E, F, G, H
DO1	Instrument error	Instrument error	Instrument error	Instrument error
DO2	Calibration error	Calibration error	Calibration error	Calibration error
DO3		A.cal.status	(A.cal.status)	(A.cal.status)
DO4		For zero gas	(For zero gas)	(For zero gas)
DO5		For span gas Ch1	(For span gas Ch1)	(For span gas Ch1)
DO6	(Alarm1)	(Alarm1)	Range identification Ch1	(For span gas Ch2)
DO7	(Alarm2)	(Alarm2)	(Alarm1)	(Range identification Ch1)
DO8				(Range identification Ch2)
DO9				(Alarm1)
DO10				(Alarm2)

The items in the parentheses may not be available depending on the selected type on 22th digit.

The normal open side (NO) of digital output is close when the function is active without range ID.

In case of range ID, normal open (NO) side is close with First range.

The normal close (NC) side is close with Second range.

Exclusive Zirconia O₂ analyzer (to be purchased separately)

For O_2 correction, the gas analyzer ZPG can accept linearized 0 to 1V DC signal from the O_2 analyzer calibrated 0 to 25vol% O_2 full scale. If the analyzer is not available, Fuji can supply exclusive Zirconia O_2 analyzer Model ZFK.

Measuring method:

Zirconia system

Measurable component and measuring range:

Measurable	component	Range
O ₂	Oxygen	0 to 25vol%

Repeatability: Within \pm 0.5% of full scale
Linearity: Within \pm 1% of full scale
Zero drift: Within \pm 1% of full scale/week
Span drift: Within \pm 2% of full scale/week

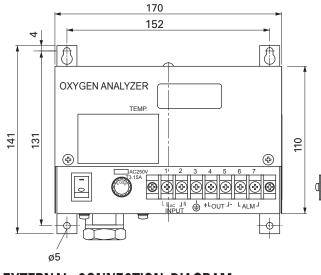
Response time: Approx. 20 seconds (for 90% response)

Measured gas flow rate:

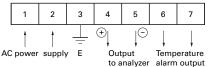
 $0.5 \pm 0.25 L / min$

Remark: The Zirconia system, due to its principle, may produce a measuring error due to relative concentration versus the combustible O2 gas concentration. Also, a corrosive gas (SO2 of 250 ppm or more, etc.) may affect the life of the analyzer.

OUTLINE DIAGRAM (Unit:mm)



EXTERNAL CONNECTION DIAGRAM



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

F Fuji Electric Co., Ltd.

www.fujielectric.com

Instrumentation & Sensors Planning Dept.

Gate City Ohsaki, East Tower, 11-2, Osaki 1-chome, Shinagawa-ku, Tokyo 141-0032, japan

Phone: +81-3-5435-7021 Fax: +81-3-5435-7475 www.fujielectric.com/products/instruments/

Gas inlet/outlet size:

Rc1/4 or NPT1/4

Power supply: Rated voltage ; 100 to 115V AC or

200 to 240V AC

Rated frequency ; 50Hz/60Hz

Max. rated power; 215VA (during power

ON)

65VA (during steadystate operation)

Enclosure: Steel casing, for indoor application Indication: Temperature indication (LED)

Temperature alarm output:

Contact output 1a contact,

Contact capacity 220V, 1A AC (resistive

load)

Outer dimensions (H x W x D):

141 x 170 x 190mm

Mass {weight}: Approx. 3kg
Finish color: Munsell 5Y 7/1

CODE SYMBOLS

1 2 3 4 5 6 7 8 9	10 11 12 13	
Z F K 7 Y Y 4 -	YOYY	Description
7YY		Measuring method Zirconia method
9 B C		Power supply 100 to 115V AC 50/60Hz(Standard) 200 to 240V AC 50/60Hz(Standard) 200 to 240V AC 50/60Hz(CE mark)
1 8		Gas inlet/outlet size Rc ¹ / ₄ NPT ¹ / ₄

