e-Front runners

Direct insertion type

Zirconia Oxygen Gas Analyzers

Detector type: ZFK8 / Transmitter type: ZKM

Zirconia oxygen gas analyzer, ideal for combustion control

ZKM2

ZKM1

ZFK8

- Modular detector design allows easy field replacement of zirconia element
- Enhanced safety design with integrated and remote power isolation functions
- High-speed response of 4 to 7 seconds
- Case structure available in two types: IP66 and IP67
- May be programmed without opening the case cover (ZKM1)
- Direct insertion system eliminates the need for gas sampling devices

Fuji Electric Systems Co., Ltd.

ECNO:341

Energy Saving and Environmentally Friendly

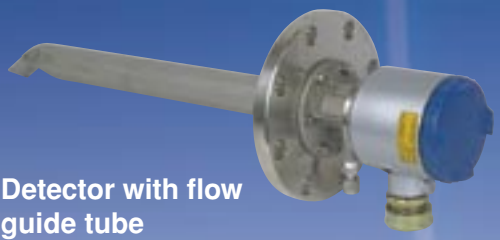
Fuji's zirconia oxygen gas analyzers are widely used; not only in industries of high energy consumption, such as steel, power, petroleum/petrochemicals, ceramics, paper/pulp, food, and textile industries, but also in various combustion facilities, such as garbage incinerators and medium-to-small sized boilers, as combustion controllers, achieving a significant energy-saving effect. The oxygen concentration control ensures complete combustion, thus reducing CO_2, SOx, and NOx emissions and helping prevent global warming and air pollution.

The transmitter is available in two case structures: IP66 and IP67.

Transmitter <IP67>
(Type: ZKM2)

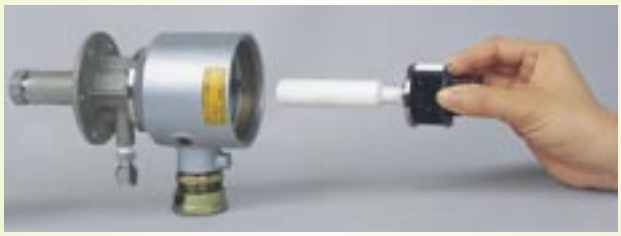
Transmitter <IP66>
(Type: ZKM1)

Zirconia oxygen detector
(Type: ZFK8)



Detector with flow guide tube

Easily replaceable zirconia element



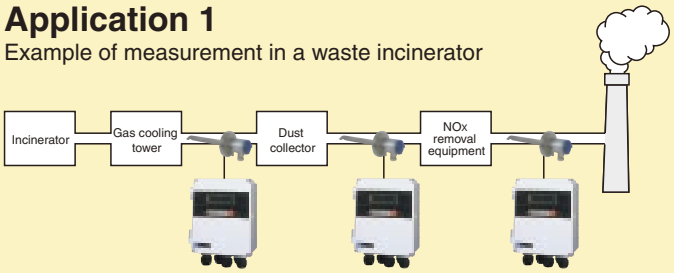
Settings may be made from the front panel without opening the cover

High safety level

(1) Detecting a break of the thermocouple for heater control in the sensor unit, the analyzer stops the power supply to the detector.
(2) The power supply to the detector may also be stopped by external contact input in an emergency.
(3) The key lock function prevents operational errors.

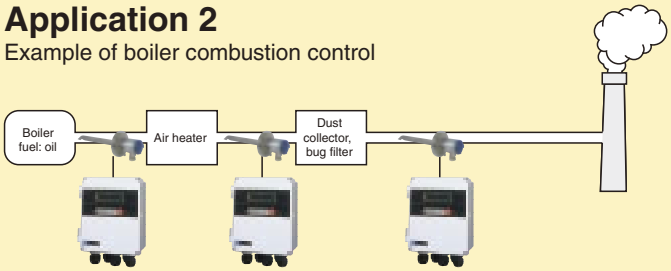
Application 1

Example of measurement in a waste incinerator

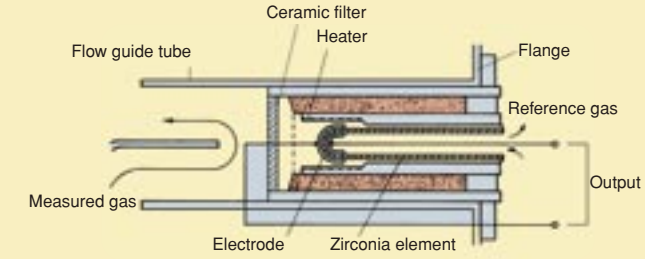


Application 2

Example of boiler combustion control



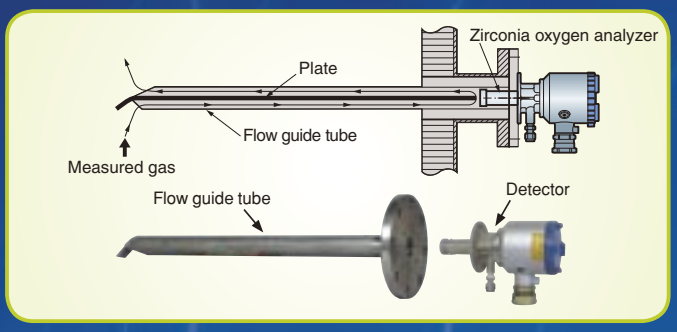
Principle of the detector



No need for gas sampling devices and a rapid response

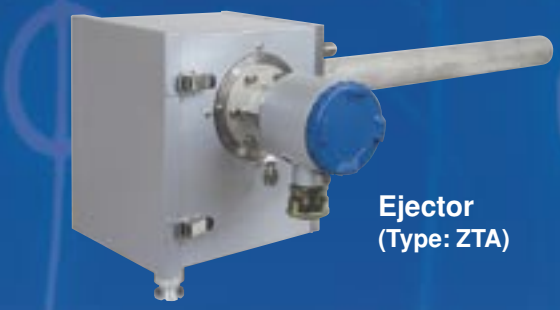
Response speed: 4 to 7 sec.

The flow guide tube design ensures a rapid response of 4 to 7 sec.



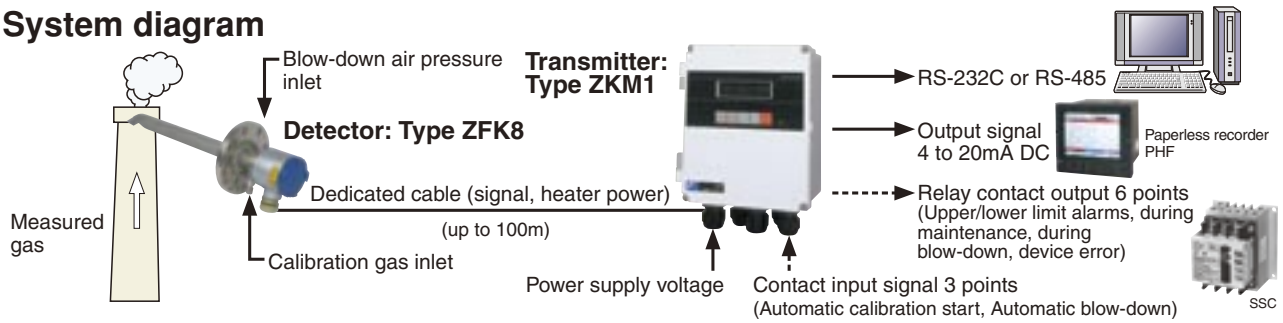
Various flow guide tubes, including one with a blow-down nozzle for high particulate levels, and models made of anti-corrosive materials, are available.

An ejector is available for high-temperature measurement (up to 1,500°C).



Ejector
(Type: ZTA)

System diagram



Code symbols

<Detector>

Z F K 8 R [ ] [ ] 5 - [ ] [ ] [ ] [ ] - 1 [ ] [ ]

Position	Code	Description
9		**Cal. gas inlet**
	1	Connection for φ6 mm tube (SUS)
	2	Connection for φ1/4 inch tube (SUS)
10		**Power supply**
	1	AC 100 to 120V 50/60Hz
	3	AC 200 to 240V 50/60Hz(CE marking)
11 12 13		**Flow guide tube** (Flange) (Model) (Length)
	0 Y 0	Flow guide tube None None
	5 A 3	SUS304 For general use 300mm
	5 A 5	SUS304 For general use 500mm
	5 A 7	SUS304 For general use 750mm
	5 A 1	SUS304 For general use 1000mm
	5 B 3	SUS316 For corrosive gas 300mm
	5 B 5	SUS316 For corrosive gas 500mm
	5 B 7	SUS316 For corrosive gas 750mm
	5 B 1	SUS316 For corrosive gas 1000mm
	5 C 3	SUS316 With blow-down nozzle 300mm
	5 C 5	SUS316 With blow-down nozzle 500mm
	5 C 7	SUS316 With blow-down nozzle 750mm
	5 C 1	SUS316 With blow-down nozzle 1000mm
	6 D 8	SUS316 For high particulate concentrations 800mm
	6 E 8	SUS316 With cover for high particulate concentrations 800mm
	Z Z Z	Others Others Others
14		**Thermal insulation cover**
	Y	None
	A	With
15		**Reference air inlet**
	Y	None
	A	Connection for φ6 mm tube (SUS)
	B	Connection for φ1/4 inch tube (SUS)
16		**Filter specifications**
	1	Standard
[ ]		**Language**
	J	Japanese
	E	English
	C	Chinese
[ ]		**Specification name plate**
	1	Standard (100 to 120 V AC, 50/60 Hz)
	2	Standard (200 to 240 V AC, 50/60 Hz)

<Transmitter>

Z K M [ ] [ ] [ ] [ ] 1 - [ ] [ ] [ ] 1

Position	Code	Description
9		**Case structure**
	1	Small size (IP66)
	2	Large size (IP67)
10		**Output signal**
	B	4 to 20mA DC
	E	0 to 1V DC
	Z	Others
11		**Communication functions**
	1	RS-232C
	2	RS-485
12		**Mounting fixture**
	1	Panel mount
	2	Pipe mount
[ ]		**Optional functions**
	Y	None
	1	Combustion efficiency display function Note 1
	2	Blow-down
	3	Auto calibration
	4	Combustion efficiency display + blow-down Note 1)
	5	Combustion efficiency display + Auto calibration Note 4)
	6	Blow-down + Auto calibration
	7	Combustion efficiency display + blow-down + Auto calibration Note 4)
[ ]		**Language**
	J	Japanese
	E	English
	C	Chinese
[ ]		**Cock-option**
	Y	None (specify "none" for auto calibration)
	1	With

Note 1: A thermocouple K or R is required for temperature measurement to enable the combustion efficiency display function.
Note 4: When you select this display, rich mode will be a simultaneous display.

<Ejector>

Z T A [ ] 1 [ ] [ ] 1

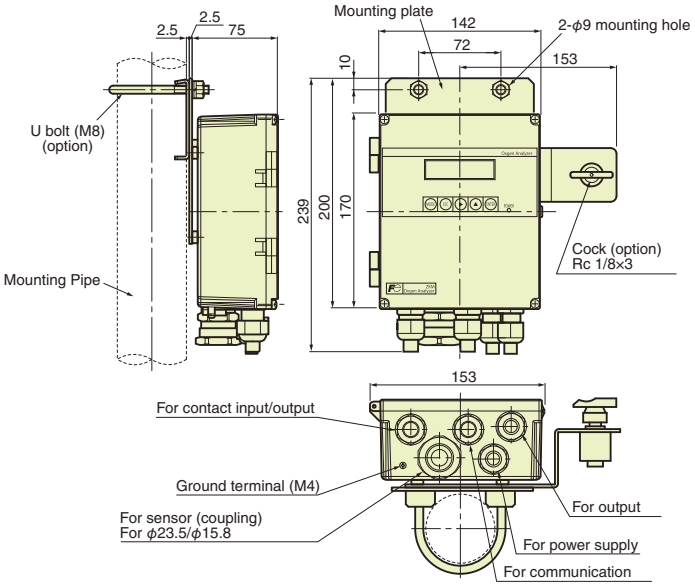
Position	Code	Description
4		**Measured gas temperature**
	1	For high temperatures (max. 1500°C)
	2	For general use (max. 800°C)
5		**Insertion length [mm]**
	B	500
	C	750
	D	1000
	E	1500
6		**Power supply**
	1	AC 100/115V 50/60Hz
	3	AC 200/220V 50/60Hz
	5	AC 230V 50/60Hz

<Replacement zirconia sensor>

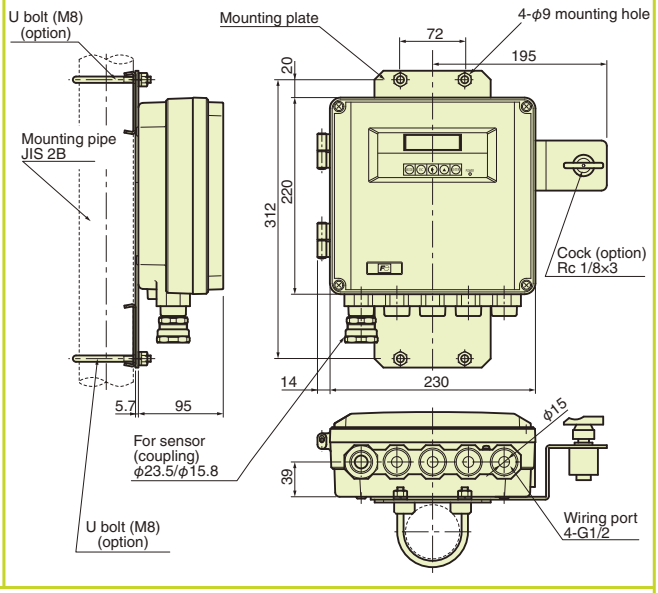
AC100 to 120V: ZFK8YY15-0Y0YY-0YY
AC200 to 240V: ZFK8YY35-0Y0YY-0YY

OUTLINE DIAGRAM (Unit: mm)

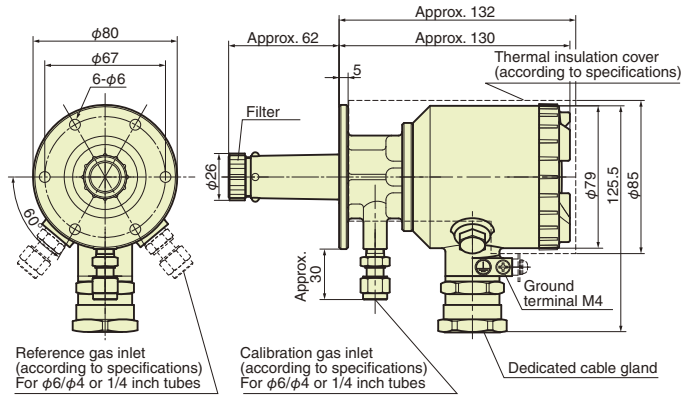
Transmitter (Type: ZKM1)



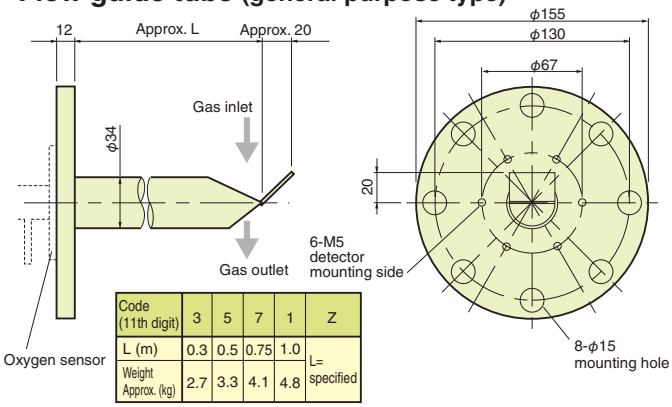
Transmitter (Type: ZKM2)



Detector (Type: ZFK8)



Flow guide tube (general purpose type)



Code (11th digit)	3	5	7	1	Z
L (m)	0.3	0.5	0.75	1.0	L= specified
Weight Approx. (kg)	2.7	3.3	4.1	4.8	

General specifications

Measuring object	Oxygen in non-combustible gas
Measurement method	Direct insertion type zirconia method
Measurable range	Settable within a range from 0-2 to 50 vol%O_2
Repeatability	±0.5% FS or less
Linearity	±2% FS or les
Zero/Span drift	Within ±1% of full scale/week
Response time	4 to 7 seconds (from the calibration gas inlet)
Analog output	4 to 20mA DC or 0 to 1V DC, insulation
Power supply voltage	100 to 120V AC or 200 to 240V AC

Detector specifications

Measured gas temperature	-20 to +600°C (for the flow guide tube type) -20 to +1500°C (for the ejector type)
Measured gas pressure	-3 to +3 kPa
Filter	Alumina, quartz paper
Structure	Equivalent to IP66
Weight	Approx. 1.6kg (Excluding flow guide tube)

Transmitter specifications

Measurement concentration display	Digital 4 digits with backlight
Contact output signal	Relay contact output 6 points
Contact input	No-voltage contact 3 points
Communication functions	RS-485 (MODBUS) or RS-232C
Function	Thermocouple break detection, key lock
Output hold function	Output is held during calibration and blow-down.
Option	Optional combustion efficiency display, blow-down, auto calibration, cock-option
Structure	IP66 or IP67 (as specified)

Flow guide tube specifications

Type	General-purpose, anti-corrosive, with blow-down nozzle, for high particulate concentrations
Length	300 mm to 1,000 mm (as specified)
Mounting flange	JIS5K 65A (80A for high particulate concentrations)

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