Direct insertion type

**Zirconia Oxygen Gas Analyzers**

Detector type: ZFK8 / Converter type: ZKM

**Zirconia oxygen gas analyzer, ideal for combustion control**

- 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
- Explosion-proof case structure available in addition to IP66 and IP67
- You can operate ZKM1 and ZKME without opening the cover
- Direct insertion system eliminates the need for gas sampling devices

Fuji Electric Co., Ltd.
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 CO₂, SOₓ, and NOₓ emissions and helping prevent global warming and air pollution.

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

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.

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

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

Detector: Type ZFK8
Transmitter: Type ZKM1

Output signal
4 to 20mA DC

Input signal
3 points
(Automatic calibration start, Automatic blow-down)

Dedicated cable (signal, heater power)
(up to 100m)

Calibration gas inlet
Blow-down air pressure inlet

RS-232C or RS-485

Relay contact output 6 points
(Upper/lower limit alarms, during maintenance, during blow-down, device error)

SSC
Paperless recorder
PHF

Measured gas
System diagram

Code symbols

Detector

Converter

Ejector

Replacement Detector element

Power supply
Code symbols
AC100 to 120V
AC200 to 240V

ZFK8YY15-OYY-YYY
ZFK8YY35-OYY-YYY

Construction
IP66
IP67

Bench type

Communication function
RS-232
RS-485

Mounting bracket
None
Mounting on panel surface
Pipe mounting

Option
None
With valve
With valve + flowmeter

Display language
Japanese
English
Chinese

Measured gas temperature
For high temperatures (+1500°C max.)
General-use (+800°C max.)

Insertion length [mm]
500
1000
1500

Power supply
100V/115V AC 50/60Hz
200V/220V AC 50/60Hz
230VAC 50/60Hz

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

**TIIS Exd IIB T6, NEPSI/Eexd IIC T6 ExII2G**

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**Zirconia oxygen detector**

*Type: ZFKE*

**Converter**

*Type: ZKME*

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### Code symbols

#### Detector

<table>
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<tr>
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<tr>
<td>ZFK 8YY 15-0YY-0YY</td>
<td>Power supply: AC100 to 120V AC200 to 240V</td>
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#### Converter

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### Detector (Type: ZFKE)

- **Flame-proof type available for explosive atmospheres**
- **TIIS Exd IIB T6, NEPSI/Eexd IIC T6 ExII2G**

### Converter (Type: ZKME)

- **Flame-proof type available for explosive atmospheres**
- **TIIS Exd IIB T6, NEPSI/Eexd IIC T6 ExII2G**

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### Zirconia oxygen detector

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### Notes

1. When you select this display, K or R type thermocouple is required to measure temperature.
### General specifications

**Measuring object**: Oxygen in non-combustible gas

**Measuring method**: Direct insertion type zirconia method

**Measurable range**: Settable within a range from 0-2 to 50 vol%O₂

**Repeatability**: ±0.5% FS or less

**Linearity**: ±2% FS or less

**Zero/Span drift**: Within ±2% of full scale/month

**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**: -10 to +600°C (for the flow guide tube type)

**Measured gas pressure**: -3 to +3 kPa

**Filter**: Alumina, quartz paper, SUS316 for explosion-proof type

**Structure**: Equivalent to ordinary type IP55, or explosion-proof type (as specified)

**Weight**: Ordinary type: Approx. 1.6 kg (excluding the flow guide tube)

### Converter 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 (MODBUS)

**Function**: Thermocouple break detection, key lock sensor diagnostic function

**Output hold function**: Output is held during calibration and blow-down.

**Option**: Optional combustion efficiency display, blow-down, auto calibration, cock, sensor recovery function, flow meter

**Structure**: IP66, IP67, or flameproof (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)

For explosion-proof, various types are prepared as specified.

### Device Configuration

#### <General type>

The device to be combined differ according to the conditions of the gas to be measured. Select the devices to be combined with reference to the following table.

<table>
<thead>
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<th>Measured gas</th>
<th>Device configuration</th>
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<tbody>
<tr>
<td>Application</td>
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<tr>
<td>For corrosive gas (refuse incinerator)</td>
<td>800°C or less</td>
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<tr>
<td></td>
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</tbody>
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#### <Explosion-proof type>

The device to be combined differ according to the conditions of the gas to be measured. Select the devices to be combined with reference to the following table.

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Note: (1) Dust volume is approximate value.
(2) Instrument quality air or bottled air is available as reference air by selecting detector with reference air inlet.