



For accurate measurement of the concentration  
of a variety of types of gases

# Optical Interferometric Gas Monitor

## Model FI-8000

IECEX  
ATEX  
CE marking



### Up to 8 types of gases can be measured with 1 unit

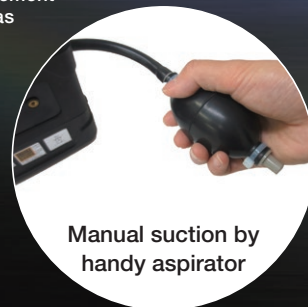
You can combine up to 8 types of your preferred gases.  
You can also add or change measurement target gases after purchase.

### Continuous measurement mode / intermittent measurement mode supported

In addition to the usual continuous measurement mode, an intermittent measurement mode is available in which you can set an interval, so that you can record the gas concentration value and the time at intervals. (The intermittent measurement mode is only available with the automatic suction specification.)

### Two measurement methods

The product has a lineup of an automatic suction type using the built-in pump and a manual suction type which enables faster suction using the handy aspirator.



Manual suction by  
handy aspirator

### Protection class IP67 compliant

IP67 compliance provides reassurance during outdoor work.

### Easy-to-view, large LCD screen

With the large numeral and character display, you can check the gas concentration and perform operations smoothly.

### Intrinsically safe explosion-proof structure

IECEX: Ex ia IIC T4 Ga  
ATEX: II 1 G Ex ia IIC T4 Ga

# The History of the Optical Interferometric Gas Monitor

Products certified as analytical instrument and scientific instrument heritage items



Riken type 3 gas detector  
(developed in 1930)



Riken type 18 gas detector  
(developed in 1952)



FI-21  
(developed in 2001)



FI-8000  
(developed in 2014)

In the early Showa era, accidental explosions on oil tankers occurred frequently. To prevent the accidents, a gas concentration detector was developed based on the principle of optical interference developed at Riken, and Riken Keiki was established for the purpose of productizing the detector. The productized detector came to be widely used in coal mines and for safety supervision.

The Riken type 3 gas detector was certified as an “analytical instrument and scientific instrument heritage” item by the Japan Analytical Instruments Manufacturers' Association (JAIMA) and the Japan Scientific Instruments Association (JSIA), as it was a valuable device that contributed to the lives of Japanese people.

Digital display	Reduced weight
Automatic analysis	Data logger function
IP67	Simple operation

## 3 Specifications in Total

### Anesthetic gas specification

(Chamber length: 24 mm)



(8 types of gases detectable as standard)

### Fumigation gas specification

(Chamber length: 48 mm)



(7 types of gases detectable as standard)

Select the measurement target gas from blank!

### Customized specification

(Chamber length: one of 5 / 24 / 48 mm)



Regarding the gases detectable as standard in the anesthetic / fumigation gas specification, refer to “Measurement Target Gas List.” For the customized specification, you can select up to 8 types of measurement target gases. Select from among identical chamber lengths (the “Measurement Target Gas List” column). In addition, for all the specifications, measurement target gases can be added or changed after purchase.

## FI-8000 Model

For the FI-8000 optical interferometric gas monitor, select the suction method and measurement target gas to match your intended use. The selected specification is reflected in the model name as follows.

FI-8000TYPE  -  -

#### Suction method

A: Manual suction by handy aspirator  
P: Automatic suction by built-in pump

#### Chamber length

05: 5 mm  
24: 24 mm  
48: 48 mm

#### Measurement target gas

00: Anesthetic gas  
02: Fumigation gas  
99: Customized

Regarding the details of the measurement target gases, refer to “Measurement Target Gas List.”

# Measurement Target Gas List

## Chamber length 5 mm

Measurement target gas	Base gas	Measurement range
Acetylene	Air	0 - 100 vol%
	Nitrogen	0 - 100 vol%
Isobutane	Air	0 - 100 vol%
Ethylene	Air	0 - 100 vol%
Vinyl chloride	Nitrogen	0 - 100 vol%
Chlorine	Air	0 - 100 vol%
Xenon	Air	0 - 100 vol%
Dimethyl ether	Air	0 - 100 vol%
	Nitrogen	0 - 100 vol%
Hydrogen	Carbon dioxide	0 - 100 vol%
Carbon dioxide	Air	0 - 100 vol%
Normal butane	Air	0 - 100 vol%
Propane	Air	0 - 100 vol%
Freon 410A	Nitrogen	0 - 100 vol%
Freon 22	Air	0 - 100 vol%
Methyl bromide	Air	0 - 100 vol%
Sulfur hexafluoride	Air	0 - 100 vol%
	Air	0 - 99.9%up
	Nitrogen	0 - 100 vol%
Butane-air	—	0 - 134.25 MJ/m <sup>3</sup> Gross 0°C
	—	0 - 123.75 MJ/m <sup>3</sup> Net 0°C
Propane-air	—	0 - 101.35 MJ/m <sup>3</sup> Gross 0°C
	—	0 - 93.15 MJ/m <sup>3</sup> Net 0°C

**Regarding gases not included in the list, please make a separate inquiry with us.**

## Chamber length 24 mm

Measurement target gas	Base gas	Measurement range
Isoflurane	Air	0 - 8 vol%
	Oxygen	0 - 8 vol%
Sevoflurane	Air	0 - 10 vol%
	Oxygen	0 - 10 vol%
Desflurane	Air	0 - 20 vol%
	Oxygen	0 - 20 vol%
Halothane	Air	0 - 6 vol%
	Oxygen	0 - 6 vol%
Nitrous oxide	Air	0 - 100 vol%
Acetylene	Nitrogen	0 - 50 vol%
Ethylene	Air	0 - 50 vol%
Enflurane	Air	0 - 10 vol%
	Oxygen	0 - 10 vol%
Ozone	Oxygen	0 - 100 vol%
Difluoromethane	Nitrogen	0 - 100 vol%
Heavy hydrogen	Air	0 - 100 vol%
	Nitrogen	0 - 100 vol%
Hydrogen	Air	0 - 100 vol%
	Nitrogen	0 - 100 vol%
	Argon	0 - 100 vol%
Carbon dioxide	Air	0 - 100 vol%
	Nitrogen	0 - 100 vol%
Carbon dioxide	Argon	0 - 100 vol%
	Argon	0 - 100 vol%
Neon	Air	0 - 100 vol%
Propane	Air	0 - 20 vol%
Helium	Air	0 - 100 vol%
	Nitrogen	0 - 100 vol%
	Argon	0 - 100 vol%
Methane	Air	0 - 100 vol%
	Nitrogen	0 - 100 vol%
Natural gas or natural gas + LPG	—	25 - 50 MJ/m <sup>3</sup> Gross 0°C
	—	22 - 45 MJ/m <sup>3</sup> Net 0°C

**Anesthetic gas specification (gases detectable as standard)**

## Chamber length 48 mm

Measurement target gas	Base gas	Measurement range
Sulfuryl fluoride	Air	0 - 200 g/m <sup>3</sup>
Propylene oxide	Air	0 - 10 vol%
Methyl bromide	Air	0 - 200 g/m <sup>3</sup>
	Air	0 - 5 vol%
Methyl iodide	Air	0 - 200 g/m <sup>3</sup>
Phosphine	Air	0 - 50 g/m <sup>3</sup>
Hydrogen cyanide	Air	0 - 200 g/m <sup>3</sup>
Acetone	Air	0 - 100 %LEL
Ammonia	Air	0 - 100 %LEL
	Air	0 - 100 vol%
	Nitrogen	0 - 100 vol%
Isobutane	Air	0 - 100 %LEL
	Nitrogen	0 - 100 %LEL
Isopropyl alcohol	Air	0 - 100 %LEL
Carbon monoxide	Air	0 - 100 vol%
Ethyl alcohol	Air	0 - 100 %LEL
Ethylbenzene	Nitrogen	0 - 100 %LEL
Ethylene	Air	0 - 100 %LEL
	Nitrogen	0 - 20 vol%
Ethylene chloride	Air	0 - 100 %LEL
Xylene	Air	0 - 100 %LEL
	Nitrogen	0 - 100 %LEL
Ethyl acetate	Air	0 - 100 %LEL
Butyl acetate	Air	0 - 100 %LEL
Oxygen	Nitrogen	0 - 100 vol%
	Argon	0 - 100 vol%
Dioxolane	Air	0 - 100 %LEL
Dichloroethane	Nitrogen	0 - 100 %LEL
Hydrogen	Air	0 - 100 %LEL
	Air	0 - 50 vol%
	Nitrogen	0 - 100 %LEL
	Argon	0 - 100 %LEL
Styrene	Air	0 - 50 vol%
	Nitrogen	0 - 100 %LEL
Nitrogen	Argon	0 - 100 vol%
Tetrahydrofuran	Air	0 - 100 %LEL
Tetrafluoropropene	Air	0 - 100 %LEL
Toluene	Air	0 - 100 %LEL
	Nitrogen	0 - 100 %LEL
Normal butane	Nitrogen	0 - 100 %LEL
Propane	Air	0 - 100 %LEL
	Air	0 - 10 vol%
	Nitrogen	0 - 100 %LEL
Methanol	Air	0 - 100 %LEL
Methane	Air	0 - 100 %LEL
	Air	0 - 50 vol%
	Nitrogen	0 - 100 %LEL
Methane	Argon	0 - 100 %LEL
	Argon	0 - 100 %LEL
Methyl isobutyl ketone	Air	0 - 100 %LEL
Methyl isopropyl ketone	Air	0 - 100 %LEL
Methyl ethyl ketone	Air	0 - 100 %LEL

**Fumigation gas specification (gases detectable as standard)**

## Selection Examples

### In oxygen



Chamber length: 24 mm

Halothane (vol%) Isoflurane (vol%) Enflurane (vol%)

We want to measure 3 types of gases via automatic suction using the built-in pump!

Automatic suction type Chamber length: 24 mm Customized specification

**FI-8000 TYPE P - 24 - 99**

### In air



Chamber length: 48 mm

Methyl bromide (g/m<sup>3</sup>) Methyl iodide (g/m<sup>3</sup>) Toluene (%LEL) Methyl ethyl ketone (%LEL) Ethyl acetate (%LEL)

We want to measure 5 types of gases via manual suction using the handy aspirator!

Manual suction type Chamber length: 48 mm Customized specification

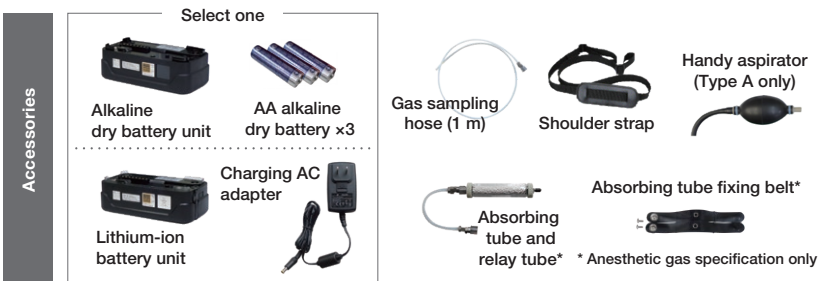
**FI-8000 TYPE A - 48 - 99**

## Specifications

Model	FI-8000	
Measuring principle	Optical interferometric type	
Measurement target gases	See annexed table	
Reading accuracy	Indicated value $\pm 3\%$ (under identical conditions)*	
Type	Type P-□□-□□	Type A-□□-□□
Sampling method	Automatic suction by built-in pump	Manual suction by handy aspirator
Self-diagnosis function	Low battery voltage, low UV intensity, low contrast, abnormal pressure, abnormal temperature	
Display	LCD digital display (7-segment numeric display + symbol + 20-segment character display x 2 lines)	
Displays	Measurement target gas name, measurement target gas concentration, measurement unit, battery level	
Power supply	Dry battery unit (AA alkaline dry battery x 3) or lithium-ion battery unit	
Continuous operating time	Dry battery unit: 12 hours or more (For a new dry battery, at 25°C, with no lighting) Lithium-ion battery unit: 18 hours or more (For a fully charged battery, at 25°C, with no lighting)	Dry battery unit: 16 hours or more (For a new dry battery, at 25°C, with no lighting) Lithium-ion battery unit: 24 hours or more (For a fully charged battery, at 25°C, with no lighting)
Explosion-proofing	Intrinsically safe explosion-proof construction IECEX (Ex ia IIC T4 Ga), ATEX (II 1 G Ex ia IIC T4 Ga), Japan Ex (Ex ia IIC T4)	
Protection class	Compliant with IP67	
Certification	CE marking	
External dimensions	Approx. 154(W) x 127(H) x 81(D)mm	
Mass	Approx. 1.1 kg (including the dry battery unit) / Approx. 1.2 kg (including the lithium-ion battery unit)	
Usage temperature / humidity range	-20°C to +50°C (no sudden changes), 95% RH or less (non-condensing)	
Data logger function	Maximum number of recorded items: 256    Communication method: IrDA	
Functions	Data logger, atmospheric pressure correction, temperature correction	

\* The reading accuracy varies depending on the measurement target gas.

## Accessories

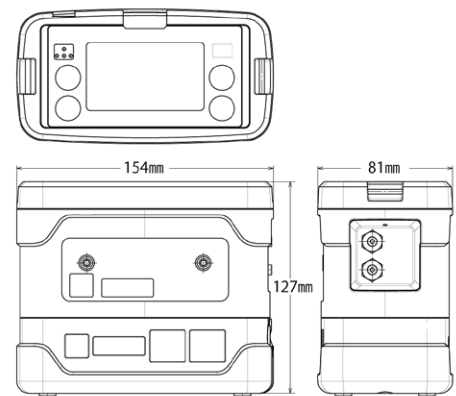


### Optional accessories



- Alkaline dry battery unit
- AA alkaline dry battery
- Lithium-ion battery unit
- Charging AC adapter

## Outer appearance



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\* The contents described in this catalog are subject to change without notice according to the performance improvement.