

## **PRODUCTS GUIDE**

**PORTABLE GAS MONITORS**

**MULTI-GAS MONITORS**

**FLUE GAS TESTERS**



**FIXED TYPE GAS ALARM SYSTEM**

**VAVLE SHUTTING DEVICE**

**ODOR MONITORS**

**Our continuous efforts in manufacturing and development products to prevent industrial accidents and support safe and healthy work environment strive for the people to live safely in comfortable living environment.**

## **KITAGAWA VISION**

Through continuous development and commercialization of the FAST, EASY and ACCURATE detection of chemical substances, KITAGAWA shall contribute to protect the environment and prevent disasters. Putting the future in the field of vision precisely, KITAGAWA endeavors to establish its original technologies and strengthens management bases.

## **KITAGAWA MISSION**

KITAGAWA provides the world's marketplaces with trusted products at reasonable prices. KITAGAWA's goal is to maximize the benefits to the public, the customer, the employee and the shareholder.

## **QUALITY POLICY**

KITAGAWA strives to make the product deserve a global standard for quality and achieves customer satisfaction throughout the world.

## **ENVIRONMENTAL POLICY**

KITAGAWA designs and develops advanced products for the protection of human life and the environment.

- ① Vigilantly assesses the environmental impact of its activities and strive for the prevention of environmental pollution.
- ② Fully respect the regulations and organizational standards on environmental conservation.
- ③ Make every effort to control and reduce the waste.
- ④ Employs advanced measures to save energy and resources.
- ⑤ Embraces the development of eco-friendly products.

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## Combustible Gas Monitors

### Wearable/Diffusion Type

**Downward sensor impervious to waterdrop and dust particles**  
**Compact light size to fit to a belt or pocket for hands-free work**



<FPA-5000E>

For explosion prevention

**FPA-5000E** % LEL  
 Calibrated as iso-Butane  
 (FPA-5000EM, Methane calibrated is available)



For leak detection

**FPA-5200E** ppm  
 Calibrated as iso-Butane  
 High sensitivity



### Portable/Suction Type

**Delivers loud sound alarm**  
**Fast response time**

For explosion prevention

**FM-620E** Calibrated as iso-Butane



For explosion prevention

**FM-621E** Calibrated as Methane



<FM-620E>

For explosion prevention

**FM-619E** For Hydrogen

Capable to detect Hydrogen in inert gas



**Sensor for Hydrogen detection receives less interferences from other combustible gases**



Leather case for FM, OM-600 series  
 Gas sampling tubes and hoses are different depending on the models.

Carrying case for FM, OMA, OM-600 series

Model	FPA-5000E	FPA-5200E	FM-620E	FM-621E	FM-619E
Measuring gas	Combustible gas in the air		Combustible gas in the air		Hydrogen
Detection principle	Catalytic combustion		Catalytic combustion		Chronoamperometry
Sensor model used	FC-8P		FC-8P		KTS-526
Sampling method	Diffusion type		Suction type (approx. 0.6L/min with a gas sampling tube with 2.4m sampling probe)		
Measuring range	0 ~ 100%LEL(※)		0 ~ 100%LEL(※)		
Resolution	1%LEL		1%LEL		
Indication accuracy*1	±10%LEL		±10%LEL		
Alarm accuracy	±25% of the alarm setting value or ±10%LEL, whichever is greater		Alarm setting value at 500ppm; ±50ppm (Recommend to set alarm setting value over 500ppm)		±10%LEL
Alarm setting value	AL1:20%LEL, AL2:0%LEL (configurable)		AL1:50 × 10ppm, AL2:0 × 10ppm (configurable)		ALM1:20%LEL, ALM2:0%LEL (configurable)
Response time	Within 25 seconds at 90% response		Within 25 seconds with gas concentration 1.6xalarm setting value		
Alarm method	LCD, LED lamp and buzzer		LCD, LED lamp and buzzer		
Explosion-proof	Exiad II CT4X No.TC17118		Exiad II CT4X No.TC19587		Exia II CT4X No.TC19531
Temperature-humidity	-10 ~ 40°C 30 ~ 85%RH (non-condensing)		-10 ~ 40°C below 95%RH (non-condensing)		-10 ~ 40°C 30 ~ 85%RH (non-condensing)
Pressure range	—		80 ~ 110kPa		
Power supply	3 x AAA size alkaline battery (LR03)		3 x AA size alkaline battery (LR6)		
Run time*2	Approx. 16 hours		Approx. 8 hours		Approx. 20 hours
Size-weight	105 (W) × 56 (H) × 29 (D) mm approx.170g (including batteries)		78(W) × 200(H) × 50(D)mm approx.550g (including batteries)		
Standard accessory	Softcase with a clip		Gas sampling tube with sampling probe (2.4m), leather case, carrying case		
Option	—		Gas sampling hose with float type gas collector (5m-10m-20m-30m, polyurethane)		

※ %LEL = Concentration of Combustible gases (vol%) ÷ Lower Explosive Limit(vol%) × 100

\* 1 Same condition at the time of calibration performed.

\* 2 No alarm activation using new batteries. May differ depending on battery manufactures, ambient conditions.

## Oxygen Monitors

### Wearable/Diffusion Type

**Downward sensor impervious to waterdrop and dust particles**  
**Compact light size to fit to a belt or pocket for hands-free work**

For oxygen deficiency prevention

### OPA-5000E



Capable of remote detection with an optional adaptor and a sensor cord

### Portable/Diffusion Type

**Delivers loud sound alarm**  
**Bright LED lamp**

For oxygen deficiency prevention

### OMA-600E



Marks in white on every 1 metre on the sensor cord are indication for distance at remote measurement.

### Portable/Suction Type

**Delivers loud sound alarm**  
**Fast response time**

For oxygen deficiency prevention

### OM-600E



Model	OPA-5000E	OMA-600E	OM-600E
Detection principle	Galvanic cell		
Sensor model used	OC-6B		
Sampling method	Diffusion type		Suction type (approx. 0.6L/min with 5m gas sampling hose)
Measuring range(resolution)	0.0 ~ 50.0vol% (0.1vol%)		
Indication accuracy*1	0~25.0vol%:±0.5vol% 25.1~50.0vol%:±3.0vol%		
Alarm accuracy	±0.5vol% against alarm setting value 18.0vol%		
Alarm setting value	Factory default setting AL1:18.0vol%	Factory default setting	ALM1:18.0vol%
Response time	Within 15 seconds at 90% response (at 20°C )		from sampling gas inlet
Alarm method	LCD, LED lamp and buzzer		
Explosion-proof	Exia II CT4X No.TC16908	Exia II CT4X No.TC20164	Exia II CT4X No.TC19531
Temperature-humidity	-10 ~ 40°C 30 ~ 85%RH (non-condensing)		
Pressure range	80 ~ 110kPa		
Power supply	3 × AAA size alkaline battery (LR03)	3 × AA size alkaline battery (LR6)	
Run time*2	Approx. 1000 hours	Approx. 2500 hours	Approx. 16 hours
Size-weight	105(W) × 56(H) × 29(D)mm approx.150g (including batteries)	160(W) × 178(H) × 65(D)mm approx.740g (including batteries and sensor cord)	78(W) × 200(H) × 50(D)mm approx.550g (including batteries)
Standard accessory	Softcase with a clip	5m sensor cord, carrying case	Gas sampling hose with float type gas collector (5m, polyurethane), leather case, carrying case
Option	Sensor extension code (5m-10m-20m-30m), adaptor for extension hose	Sensor cord (10m-20m-30m)	Gas sampling hose with float type gas collector (10m-20m-30m, polyurethane)

\* 1 Same condition at the time of calibration performed.

\* 2 No alarm activation using new batteries. May differ depending on battery manufactures, ambient conditions.

## Carbon Monoxide Monitors

### Attachable to helmet/Diffusion Type

Alerts danger to workers around

#### For toxic prevention TPA-8000



### Wearable/Diffusion Type

Downward sensor impervious to waterdrop and dust particles  
Compact light size to fit to a belt or pocket for hands-free work

#### For toxic prevention TPA-5000P



TPA-5000 series monitors are capable of remote detection with an optional sensor cord



Model	TPA-8000	TPA-5000P
Measuring gas	Carbon monoxide	Carbon monoxide
Detection principle	Chronoamperometry	Chronoamperometry
Sensor model used	KCS-7S	KCS-5P
Sampling method	Diffusion type	Diffusion type
Measuring range	0 ~ 999ppm◎	0 ~ 500ppm
Resolution	1ppm◎	1ppm
Indication accuracy*1	—	0~100ppm: ±10ppm, above 101ppm: ±10% of indicated value
Alarm accuracy	±15 ppm or ±15% of the alarm setting, whichever is greater	±15 ppm or ±30% of the alarm setting, whichever is greater
Alarm setting value	Alarm1:50ppm Alarm2:80ppm Alarm3:120ppm Alarm4:150ppm Total alarms : 150ppm (configurable)	AL1:50ppm AL2:100ppm (configurable)
Response time	Within 30 seconds at 90% response	Within 25 seconds at 90% response
Alarm method	Alarms 1 to 3: flashing red LED and sounding buzzer Alarm 4: flashing red LED, sounding buzzer, and vibrations Total alarm: flashing yellow LED and sounding buzzer	LED lamp · LCD · buzzer · vibration
Temperature-humidity	-10 ~ 50°C 15 ~ 90%RH (non-condensing)	-10 ~ 40°C 30 ~ 85%RH (non-condensing)
Power supply	Lithium-ion polymer rechargeable battery	2 x AAA size alkaline battery
Run time*2	Approx. 3000 hours	Approx. 600 hours
Size-weight	122 (W) × 13 (H) × 40 (D) mm approx. 50g	100 (W) × 54 (H) × 23 (D) mm approx.100g (including batteries)
Standard accessory	AC adapter for recharge	Softcase with a clip
Option	GR-8000 display	Sensor cord with adaptor (5m·10m·20m·30m)

Calculated concentration levels, e.g., used to obtain cumulative levels. When the optional GR-8000 display is connected, the readings of cumulative levels will be displayed as a range of values up to 999 ppm.

\* 1 Same condition at the time of calibration performed.

\* 2 No alarm activation using new batteries. May differ depending on battery manufactures, ambient conditions.

Detects hydrogen sulphide from sapropel or decay of organic matter produced at sewer, human-waste treatment plant, pulp mill or waste disposal centres, or hydrogen sulphide produced at volcanos and spas, sends alarms and notifies danger.

## Hydrogen Sulphide Monitor

Detects sulphur dioxide generated from fumigant, pesticide, bleach for timber, mineral oil refinery, burnt of sulphur including fuel, sends alarms and notifies danger.

## Sulphur Dioxide Monitor

### Hydrogen Sulphide Monitor

### Sulphur Dioxide Monitor

#### Wearable/Diffusion Type

**Downward sensor impervious to waterdrop and dust particles**  
**Compact light size to fit to a belt or pocket for hands-free work**

#### For toxic prevention TPA-5200P



#### For toxic prevention TPA-5300P



Model	TPA-5200P	TPA-5300P
Measuring gas	Hydrogen sulphide	Sulphur dioxide
Detection principle	Chronoamperometry	Chronoamperometry
Sensor model used	KHS-5P	KTS-512P
Sampling method	Diffusion type	Diffusion type
Measuring range	0.0 ~ 50.0ppm	0.0 ~ 50.0ppm
Resolution	0.1ppm	0.1ppm
Indication accuracy*1	0~30ppm : ±1.5ppm Above 30.1ppm : ±3ppm	0~5.0ppm : ±0.5ppm ±1dgt Above 5.1ppm : ±10% of indicated value ±1dgt
Alarm accuracy	Same as indication accuracy	±30% of the alarm setting value (alarm setting value should be over 2.0ppm)
Alarm setting value	AL1:10ppm, AL2:30ppm (configurable)	AL1:2.0ppm AL2:15.0ppm (configurable)
Response time	Within 25 seconds at 90% response	Within 30 seconds at 62.5% response
Alarm method	LCD, LED lamp, buzzer and vibration	LCD, LED lamp, buzzer and vibration
Temperature-humidity	-10 ~ 40°C 30 ~ 85%RH (non-condensing)	-10 ~ 45°C 35 ~ 85%RH (non-condensing)
Power supply	2 x AAA size alkaline battery	2 x AAA size alkaline battery
Run time*2	Approx. 600 hours	Approx. 600 hours
Size-weight	100 (W) × 54 (H) × 23 (D) mm approx.100g (including batteries)	100 (W) × 54 (H) × 23 (D) mm approx.100g (including batteries)
Standard accessory	Softcase with a clip	Softcase with a clip
Option	Sensor cord with adaptor (5m-10m-20m-30m)	Sensor cord with adaptor (5m-10m-20m-30m)

\* 1 Same condition at the time of calibration performed.

\* 2 No alarm activation using new batteries. May differ depending on battery manufactures, ambient conditions.

## Oxygen-Combustible Gas Monitor

### Portable/Suction Type

**Delivers loud sound alarm**  
**Fast response time**

**For oxygen deficiency-explosion prevention**

**MD-620E** (Combustible gas · Calibrated as iso-Butane)

(MD-621E, Methane calibrated is available)



## Oxygen-Hydrogen Monitor

### Portable/Suction Type

**Sensor for Hydrogen detection receives less interferences from other combustible gases**

**For residual oxygen-explosion prevention**

**MD-619E**

Ideal for detecting residual oxygen concentration and hydrogen in inert gas



Leather case for MD-600 series

Gas sampling tubes and hoses are different depending on the models.



Carrying case for MD-600 series



Model	MD-620E		MD-619E	
Measuring gas	Combustible gas in the air	Oxygen	Hydrogen	Oxygen
Detection principle	Catalytic combustion	Galvanic cell	Chronoamperometry	Galvanic cell
Sensor model used	FC-8P	OC-6B	KTS-526	OC-6B
Sampling method	Suction type (approx. 0.6L/min with 5m gas sampling hose)		Suction type (approx. 0.6L/min with a gas sampling tube with 2.4m sampling probe)	
Measuring range	0 ~ 100%LEL(※)	0.0 ~ 50.0vol%	0 ~ 100%LEL(※)	0.0 ~ 50.0vol%
Resolution	1%LEL	0.1vol%	1%LEL	0.1vol%
Indication accuracy*1	±10%LEL	0~25.0vol%: ±0.5vol% 25.1~50.0vol%: ±3.0vol%	±10%LEL	0~25.0vol%: ±0.5vol% 25.1~50.0vol%: ±3.0vol%
Alarm accuracy	±10%LEL	±0.5vol% against alarm setting value 18.0vol%	±10%LEL	±0.5vol% against alarm setting value 18.0vol%
Alarm setting value	ALM1:20%LEL, ALM2:0%LEL (configurable)	Factory default setting ALM1:18.0vol%	ALM1:20%LEL, ALM2:0%LEL (configurable)	Factory default setting ALM1:0.1vol%
Response time	Within 25 seconds at 90% response from sampling gas inlet at 20°C	Within 15 seconds at 90% response	Within 25 seconds at 90% response from sampling gas inlet at 20°C	Within 15 seconds at 90% response
Alarm method	LCD, LED lamp and buzzer		LCD, LED lamp and buzzer	
Explosion-proof	Exiad II CT4X No.TC19587		Exia II CT4X No.TC19531	
Temperature-humidity	-10 ~ 40°C below 95%RH (non-condensing)		-10 ~ 40°C 30 ~ 85%RH (non-condensing)	
Pressure range	80 ~ 110kPa		80 ~ 110kPa	
Power supply	3 × AA size alkaline battery (LR6)		3 × AA size alkaline battery (LR6)	
Run time*2	Approx. 8 hours		Approx. 20 hours	
Size-weight	78(W) × 200(H) × 50(D)mm	approx.550g (including batteries)	78(W) × 200(H) × 50(D)mm	approx.550g (including batteries)
Standard accessory	Gas sampling hose with float type gas collector (5m, polyurethane) leather case, carrying case		Gas sampling tube with sampling probe (2.4m), leather case, carrying case	
Option	Gas sampling hose with float type gas collector (10m:20m:30m, polyurethane)		Gas sampling hose with float type gas collector (10m:20m:30m, polyurethane)	

※ %LEL = Concentration of Combustible gases (vol%) ÷ Lower Explosive Limit(vol%) × 100

\* 1 Same condition at the time of calibration performed.

\* 2 No alarm activation using new batteries. May differ depending on battery manufactures, ambient conditions.

Multi-Gas Monitors

Portable/Suction Type

- Auto span calibration of O<sub>2</sub> sensor, auto zero adjustment of combustible gas and H<sub>2</sub>S sensor and battery capacity check when power is switched on.
- 2 power supplies (dry batteries/AC 100V).
- A data logger function for trend analysis.
- A built-in water sensor for fast suction stop (MD-801/811).

MD-801

Oxygen/Combustible gas/Hydrogen sulphide



MD-811

Oxygen/Combustible gas/Carbon monoxide



MD-940

Oxygen/Combustible gas/Hydrogen sulphide/Carbon monoxide

Model	MD-940			
		MD-801	MD-811	
Measuring gas	Hydrogen sulphide	Oxygen	Combustible gas in the air	Carbon monoxide
Detection principle	Chronoamperometry	Galvanic cell	Catalytic combustion	Chronoamperometry
Sensor model used	KHS-5TA	OC-6B	FC-8	KCS-5TA
Sampling method	Suction type			
Measuring range	0.0~50.0ppm	0.0~50.0vol%	0~100%LEL(※)	0~300ppm
Resolution	0.1ppm	0.1vol%	1%LEL	1ppm
Indication accuracy*1	0~30ppm: ±1.5ppm Above 30.1ppm: ±10% of indicated value	0~25.0vol% : ±0.5vol% 25.1~50.0vol% : ±3.0vol%	±10%LEL	0~100ppm: ±10ppm Above 101ppm: ±10% of indicated value
Alarm accuracy	±1.5 ppm or ±30% of the alarm setting value, whichever is greater	±0.5vol% against alarm setting value 18.0vol%	±10%LEL or ±25% of the alarm setting value, whichever is greater	±15 ppm or ±30% of the alarm setting value, whichever is greater
Alarm setting value	10.0ppm	Below 18.0vol%	20%LEL	50ppm
Response time	Within 25 seconds at 90% response without gas sampling tube			
Alarm method	LCD, LED lamp and buzzer			
Temperature-humidity	-10 ~ 40°C 30 ~ 85%RH (non-condensing)			
Power supply	4 × D size alkaline battery AC100V (used with adaptor)			
Run time*2	Approx. 35 hours with alkaline dry batteries			
Size-weight	230(W) × 165(H) × 130(D)mm approx. 2.8kg			
Standard accessory	Gas sampling tube with float type gas collector (with 8m reel), carrying case			

※ %LEL = Concentration of Combustible gases (vol%) ÷ Lower Explosive Limit(vol%) × 100

\* 1 Same condition at the time of calibration performed.

\* 2 No alarm activation using new batteries. May differ depending on battery manufactures, ambient conditions.

## Oxygen·Carbon Monoxide Monitors

### Wearable/Diffusion Type

**Downward sensor impervious to waterdrop and dust particles**  
**Compact light size to fit to a belt or pocket for hands-free work**

**For oxygen deficiency·toxic prevention**

#### MMP-10



Capable of remote detection with an optional sensor cord

### Portable/Suction Type

**Delivers loud sound alarm**  
**Fast response time**

**For oxygen deficiency·toxic prevention**

#### MD-611E



Leather case for MD-600 series

Gas sampling tubes and hoses are different depending on the models.



Carrying case for MD-600 series



Model	MMP-10		MD-611E	
Measuring gas	Carbon monoxide	Oxygen	Carbon monoxide	Oxygen
Detection principle	Chronoamperometry	Galvanic cell	Chronoamperometry	Galvanic cell
Sensor model used	KCS-5P	OC-6B	KCS-5P	OC-6B
Sampling method	Diffusion type		Suction type (approx. 0.6L/min with 5m gas sampling hose)	
Measuring range	0 ~ 500ppm	0.0 ~ 50.0vol%	0 ~ 500ppm	0.0 ~ 50.0vol%
Resolution	1ppm	0.1vol%	1ppm	0.1vol%
Indication accuracy*1	0~100ppm: ±10ppm Above 101ppm: ±10% of indicated value	0~25.0vol%: ±0.5vol% 25.1~50.0vol%: ±3.0vol%	0~100ppm: ±10ppm Above 101ppm: ±10% of indicated value	0~25.0vol%: ±0.5vol% 25.1~50.0vol%: ±3.0vol%
Alarm accuracy	±15 ppm or ±30% of the alarm setting value, whichever is greater	±0.5vol% against alarm setting value 18.0vol%	0~100ppm: ±10ppm Above 101ppm: ±10% of indicated value	±0.5vol% against alarm setting value 18.0vol%
Alarm setting value	ALM1:50ppm, ALM2:150ppm (configurable)	Factory default setting AL1:18.0vol%	ALM1:50ppm, ALM2:100ppm (configurable)	Factory default setting ALM1:18.0vol%
Response time	Within 25 seconds at 90% response at 20°C	Within 15 seconds at 90% response at 20°C	Within 25 seconds at 90% response from sampling gas inlet at 20°C	Within 15 seconds at 90% response from sampling gas inlet at 20°C
Alarm method	LCD, LED lamp and buzzer		LCD, LED lamp and buzzer	
Explosion-proof	—		Exia II CT4X No.TC19531	
Temperature-humidity	-10 ~ 40°C 30 ~ 85%RH (non-condensing)		-10 ~ 40°C 30 ~ 85%RH (non-condensing)	
Pressure range	80 ~ 110kPa		80 ~ 110kPa	
Power supply	3 × AAA size alkaline battery (LR03)		3 × AA size alkaline battery (LR6)	
Run time*2	Approx. 800 hours		Approx. 16 hours	
Size-weight	106(W) × 56(H) × 29(D)mm	approx.180g (including batteries)	78(W) × 200(H) × 50(D)mm	approx.550g (including batteries)
Standard accessory	Softcase with a clip		Gas sampling hose with float type gas collector (5m, polyurethane), leather case, carrying case	
Option	Sensor extension code (5m·10m·20m·30m) with adaptor		Gas sampling hose with float type gas collector (10m·20m·30m, polyurethane)	

\* 1 Same condition at the time of calibration performed.

\* 2 No alarm activation using new batteries. May differ depending on battery manufactures, ambient conditions.

**Oxygen-Hydrogen Sulphide Monitors**

**Wearable/Diffusion Type**

**Downward sensor impervious to waterdrop and dust particles**  
**Compact light size to fit to a belt or pocket for hands-free work**

**For oxygen deficiency-toxic prevention**

**MMP-12**



Capable of remote detection with an optional sensor cord

**Portable/Suction Type**

**Delivers loud sound alarm**  
**Fast response time**

**For oxygen deficiency-toxic prevention**

**MD-612E**



Model	MMP-12		MD-612E	
Measuring gas	Hydrogen sulphide	Oxygen	Hydrogen sulphide	Oxygen
Detection principle	Chronoamperometry	Galvanic cell	Chronoamperometry	Galvanic cell
Sensor model used	KHS-5P	OC-6B	KHS-5P	OC-6B
Sampling method	Diffusion type		Suction type (approx. 0.6L/min with 5m gas sampling hose)	
Measuring range	0.0 ~ 50.0ppm	0.0 ~ 50.0vol%	0.0 ~ 50.0ppm	0.0 ~ 50.0vol%
Resolution	0.1ppm		0.1ppm	
Indication accuracy*1	0~30.0ppm: ±1.5ppm Above 30.1ppm: ±3.0ppm	0~25.0vol%: ±0.5vol% 25.1~50.0vol%: ±3.0vol%	0~30.0ppm: ±1.5ppm Above 30.1ppm: ±3.0ppm	0~25.0vol%: ±0.5vol% 25.1~50.0vol%: ±3.0vol%
Alarm accuracy	0~30.0ppm: ±1.5ppm Above 30.1ppm: ±3ppm	±0.5vol% against alarm setting value 18.0vol%	0~30.0ppm: ±1.5ppm Above 30.1ppm: ±3.0ppm	±0.5vol% against alarm setting value 18.0vol%
Alarm setting value	AL1:10.0ppm, AL2:30.0ppm (configurable)	Factory default setting AL1:18.0vol%	ALM1:10.0ppm, ALM2:20.0ppm (configurable)	Factory default setting ALM1:18.0vol%
Response time	Within 25 seconds at 90% response at 20°C	Within 15 seconds at 90% response at 20°C	Within 25 seconds at 90% response from sampling gas inlet at 20°C	Within 15 seconds at 90% response from sampling gas inlet at 20°C
Alarm method	LCD, LED lamp and buzzer		LCD, LED lamp and buzzer	
Explosion-proof	Exia II CT4X No.TC19102		Exia II CT4X No.TC19531	
Temperature-humidity	-10 ~ 40°C 30 ~ 85%RH (non-condensing)		-10 ~ 40°C 30 ~ 85%RH (non-condensing)	
Pressure range	80 ~ 110kPa		80 ~ 110kPa	
Power supply	3 × AAA size alkaline battery (LR03)		3 × AA size alkaline battery (LR6)	
Run time*2	Approx. 800 hours		Approx. 16 hours	
Size-weight	106(W) × 56(H) × 29(D)mm	approx.180g (including batteries)	78(W) × 200(H) × 50(D)mm	approx.550g (including batteries)
Standard accessory	Case with hung-down belt		Gas sampling hose with float type gas collector (5m, polyurethane), leather case, carrying case	
Option	Sensor code with adaptor (5m-10m-20m-30m)		Gas sampling hose with float type gas collector (10m-20m-30m, flexible fluorine (ETFE) resin)	

\* 1 Same condition at the time of calibration performed.

\* 2 No alarm activation using new batteries. May differ depending on battery manufactures, ambient conditions.

An integral part of the energy savings in boiler, incinerating furnace, gas engine is to measure oxygen in flue gas. Combustion control by measuring oxygen in flue gas is essential to prevent air pollution.

Oxygen sensor OC-6B is capable of measuring oxygen concentration in inert gas such as nitrogen, **carbon dioxide**

## Carbon Monoxide Monitor

For measuring carbon monoxide in flue gas

## Oxygen Monitor

For measuring oxygen in flue gas

### Portable/Suction Type

**Fast response time**



**TX-611H**



**OX-600**

Model	TX-611H	OX-600
Measuring gas	Carbon monoxide	Oxygen
Detection principle	Chronoamperometry	Galvanic cell
Sensor model used	KCS-5T (YZ)	OC-6B
Sampling method	Suction type approx. 0.6L/min (with gas sampling probe with NOx filter)	
Measuring range	0 ~ 5000ppm	0.0 ~ 25.0vol%
Resolution	1ppm	0.1vol%
Indication accuracy*1	0~200ppm : ±20ppm Above 201ppm : ±10% of indicated value	±0.5vol%
Alarm accuracy	Same as indication accuracy	
Alarm setting value	Instantaneous values ALM1:801ppm, ALM2:0ppm (alarm release) Mean value ALM3:801ppm (configurable)	Instantaneous values ALM1:0.0% (alarm release), ALM2:0.0% (alarm release) Mean value ALM3:0.0% (alarm release) (configurable)
Response time	Within 15 seconds at 90% response from sampling gas inlet at 20°C	
Alarm method	LCD, LED lamp and buzzer	
Temperature · humidity	-10 ~ 40°C 30 ~ 85%RH (non-condensing)	
Power supply	3 × AA size alkaline battery (LR6)	
Run time*2	Approx. 20 hours	
Size·weight	78(W) × 200(H) × 50(D)mm approx.550g (including batteries)	
Standard accessory	Carrying case with probe storage and shoulder strap, dust filter	
	Gas sampling probe with NOx filter, nozzle with hood, key-shaped nozzle	Gas sampling probe
Flue gas temp.(option)	Temperature probe (in case type K is connected)	measuring range:0 ~ 750°C indication accuracy: ±5°C

\* 1 Same condition at the time of calibration performed.

\* 2 No alarm activation using new batteries. May differ depending on battery manufactures, ambient conditions.

## Oxygen·Carbon Monoxide Monitor

For measuring oxygen · carbon monoxide in flue gas

### Portable/Suction Type

Fast response time



Leather case for OX, TX, MX-600 series

**MX-611H**

Model	MX-611H		
Measuring gas	Carbon monoxide	Oxygen	
Detection principle	Chronoamperometry	Galvanic cell	
Sensor model used	KCS-5T(YZ)	OC-6B	
Sampling method	Suction type approx. 0.6L/min (with gas sampling probe with NOx filter)		
Measuring range	0 ~ 5000ppm	0.0 ~ 25.0vol%	
Resolution	1ppm	0.1vol%	
Indication accuracy*1	0~200ppm: indicated value ±20ppm Above 201ppm: ±10% of indicated value	±0.5vol%	
Alarm accuracy	Same as indication accuracy		
Alarm setting value	Instantaneous values ALM1:0ppm (alarm release), ALM2:0ppm (alarm release) Mean value ALM3:0ppm (alarm release) (configurable)	Instantaneous values ALM1:0.0% (alarm release), ALM2:0.0% (alarm release) Mean value ALM3:0.0% (alarm release) (configurable)	
Response time	Within 15 seconds at 90% response from sampling gas inlet at 20°C		
Alarm method	LCD, LED lamp and buzzer		
Temperature-humidity	-10 ~ 40°C 30 ~ 85%RH (non-condensing)		
Power supply	3 × AA size alkaline battery (LR6)		
Run time*2	Approx. 20 hours		
Size-weight	78(W) × 200(H) × 50(D)mm approx.550g (including batteries)		
Standard accessory	Carrying case with probe storage and shoulder strap, dust filter, gas sampling probe with NOx filter, nozzle		
Flue gas temp. (option)	Temperature probe (in case type K is connected)	Measuring range	0 ~ 750°C
		Indication accuracy	±5°C

\* 1 Same condition at the time of calibration performed.

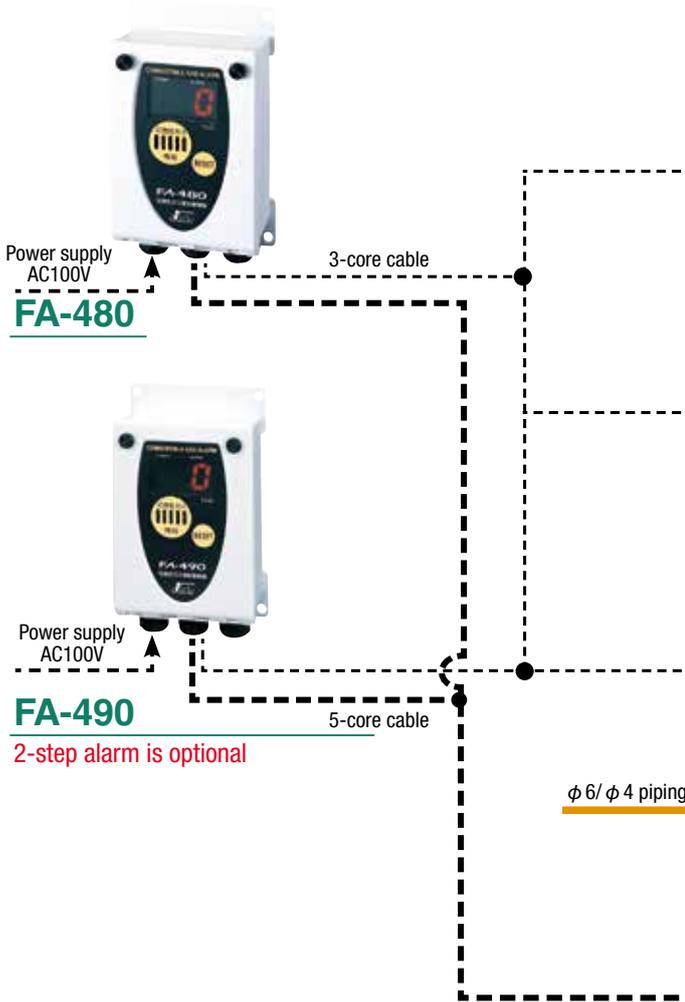
\* 2 No alarm activation using new batteries. May differ depending on battery manufactures, ambient conditions.

## Alarm Meters (monitoring)

Used in combination with 1 gas detector for 1 sampling point

### Wall-mount type/1 sampling point

(Built-in panel type is optional)



## Combustible Gas Detectors (on-site)

Used in combination with alarm meters

Catalytic combustion

Heat wire semiconductor



### RDE-T/Diffusion type

Sensor model used: C-10S

ExExplosion-proof



### RDE-TS/Diffusion type

Sensor model used: SC-401S, SC-403S, SC-404S

ExExplosion-proof



### RD-4 Hydrogen/Diffusion type

Sensor model used: C-10H, SC-202H

Flame-proof



### RH-S/Suction type

Sensor model used: C-10S, SC-401S, SC-403S, SC-404S

Flame-proof

※Gas detectors are not drip-proof type and require a drip-proof cover for preventing entry of water drops (page 20).

Model	FA-480(1 sampling point)	FA-490(1 sampling point)
Measuring gas	Combustible gas in the air	
Detection principle	Catalytic combustion or heat wire semiconductor	
Measuring range	Depends on the measuring gases (0 ~ 100%LEL(※), 0 ~ 500ppm, 0 ~ 2000ppm, 0 ~ 5000ppm)	
Display method	LED digital	
Indication accuracy*1	Catalytic combustion: Within ± 5% of full-scale Heat wire semiconductor: Within ± 20% of full-scale	
Alarm accuracy*1	Within ± 25% of alarm setting value	
Alarm setting value	User-configurable (25%LEL, 500ppm, 1000ppm)	User-configurable 2-step alarm (25%LEL, 500ppm, 1000ppm, no alarm)
Alarm-Trouble method	Flashing red LED light and intermittent buzzer sound	
Alarm contact output	Gas alarm AL1 → non-voltage 1a or 1b contact	2 gas alarms and 1 trouble alarm → non-voltage 1a or 1b contact
Contact capacity	AC125V, 0.6A or DC110V, 0.6A or DC30V, 2A (resistance load)	
Analogue output	DC4 ~ 20mA ± 0.1mA	
Temperature-humidity	-10 ~ 40°C below 95%RH (non-condensing)	
Power supply	AC100V ± 15% 50/60Hz 1 φ	
Power consumption	Diffusion type; approx. 5VA Suction type; approx. 20VA	
Size	120(W) × 205(H) × 69(D)mm (with fittings)	
Weight	Approx. 0.9kg	
Option	Diffusion type input power supply: AC200/220V, DC24V	

Model	RDE-T	RDE-TS	RD-4	RH-S
Measuring gas	Combustible gas in the air		Hydrogen	Combustible gas in the air
Detection principle	Catalytic combustion	Heat wire semiconductor	Catalytic combustion (F)-heat wire semiconductor (S)	
Sampling method	Diffusion			Suction
Explosion-proof	Exd II BT4		d3aG4	d2G4
	No.TC17154	No.TC17155	No.T46344	No.T23332 (F) No.T56886 (S)
Size (W) × (H) × (D)	100 × 173 × 81 mm		140 × 175 × 110 mm	355 × 325 × 108 mm
Weight	Approx. 1.0kg		Approx. 4.2kg	Approx. 6.3kg

Contact us for target gases, measuring ranges and alarm setting values customized for particular usages.

\* 1 Same condition at the time of calibration performed.

## Alarm Meter (monitoring)

Used in combination with 1 gas detector for 1 sampling point

### Wall-mount type/1 sampling point

(Built-in panel type is optional)



Power supply AC100V  
2-core shielded cable

**UA-480**

## Combustible Gas Detectors (on-site)

Used in combination with alarm meters

Can be used as a stand-alone without alarm meters

**NDIR**

### URA-800/Suction type

ExExplosion-proof



φ 6/ φ 4 piping

### URA-700/Suction type

ExExplosion-proof



φ 6/ φ 4 piping

Power supply AC100V

Power supply AC100V

### FMA-7UR/Suction type



Power supply AC100V

φ 6/ φ 4 piping

※ Gas detectors are not drip-proof type.

Model	UA-480(1 sampling point)	Model	FMA-7UR	URA-700	URA-800
Measuring gas	Hydrocarbon in the air or inert gas	Measuring gas	Hydrocarbon in the air or inert gas		
Detection principle	Non-dispersive infrared ray (NDIR)	Detection principle	Non-dispersive infrared ray (NDIR) fluid modulation		
Measuring range	0 ~ 100%LEL(※)	Sampling method	Suction type with a built-in sampling pump		
Display method	LED digital	Sampling volume			
Alarm accuracy*1	±25% of alarm setting value	Indication accuracy	Approx. 0.7L/min	Approx. 0.5L/min	Approx. 2L/min
Alarm setting value	User-configurable (25%LEL)	Measuring range	0 ~ 100%LEL(※)	Depending on the measuring gases (Methane:0 ~ 5000ppm, 0 ~ 50000ppm)	
Alarm-Trouble method	Flashing red LED light and intermittent buzzer sound	Display method	LCD digital		
Alarm contact output	Non-voltage 1a or 1b contact	Indication accuracy*1	Within ±5% of full-scale		
Contact capacity	AC125V,0.6A or DC110V,0.6A or DC30V,2A (resistance load)	Alarm setting value	User-configurable 2-step alarm (standard 1-step alarm)	—	User-configurable 2-step alarm
Analogue output	DC4 ~ 20mA±0.1mA	Alarm method	Shows AL1 or AL2 Flashing alarm lamp and intermittent buzzer sound	—	Shows AL1 or AL2
Temperature-humidity	-10 ~ 40°C below 95%RH (non-condensing)	Trouble method	Displays FAIL or FLOW	Displays FAIL and trouble cause	Displays FAIL or FLOW
Power supply	AC100V±15% 50/60Hz 1 φ	Alarm contact output	AL1:1ab Trouble:1ab	—	AL1:1ab Trouble:1ab (consult for option)
Power consumption	Approx. 3.5VA (excluding gas detector)	Contact capacity	AC125V,0.5A or DC30V,2A	—	AC125V,0.5A or DC30V,0.5A
Size (W)×(W)×(D)	120×205×69mm (with fittings)	Response time	In case of 62.5% indication: within 30 seconds (the piping must be within 5m, φ 6/ φ 4)		
Weight	Approx. 0.9kg	Analogue output	Gas concentration signal:DC4~20mA/full-scale, liner output, trouble signal:1mA, power loss:0mA		
Option	input power supply:AC200/220V,DC24V failure contact output, 2-step alarm	Explosionproof	—	Exd II BT4X No.TC13417	Exd II BT4X No.TC17630
		Temperature-humidity	-10 ~ 40°C below 95%RH (non-condensing)		
		Power supply	AC100V-15 ~ +10% 50/60Hz 1 φ		
		Power consumption	Approx. 25VA		
		Size(W)×(W)×(D)	256×350×155mm	280×480×160mm	300×480×200mm
		Weight	Approx. 10kg	Approx. 20kg	Approx. 30kg

Contact us for target gases, measuring ranges and alarm setting values customized for particular usages.

※ %LEL = Concentration of Combustible gases (vol%) ÷ Lower Explosive Limit(vol%) × 100

\*1 Same condition at the time of calibration performed.  
Periodical inspection is recommended for long time full performance of the system.

# Fixed Type Oxygen Alarm System

For oxygen deficiency prevention

## Alarm Meter (monitoring)

Used in combination with 1 gas detector for 1 sampling point

### Wall-mount type/1 sampling point

(Built-in panel type is optional)



## Oxygen Detectors (on-site)

Used in combination with alarm meters

### Galvanic cell



#### OH-D4A/Diffusion type

Sensor model used:OC-6B



#### OH-D4E/Diffusion type

Used in combination with zener barrier  
Sensor model used:OC-6B

Intrinsic safe



#### TRD-1G/Diffusion type

Sensor model used:OC-6E

Flame-proof



#### OH-S4/Suction type

Sensor model used:OC-6B

OH-S4 has a built-in flow meter,  
a sampling pump and a sensor.

φ 6/φ 4 piping

※ Gas detectors are not drip-proof type and require a drip-proof cover for preventing entry of water drops (page 20).

Model	OA-480(1 sampling point)	Model	OH-D4A	OH-D4E	TRD-1G	OH-S4
Measuring gas	Oxygen in the air	Measuring gas	Oxygen in the air			
Detection principle	Galvanic cell	Detection principle	Galvanic cell			
Measuring range	0.0 ~ 25.0vol%	Sampling method	Diffusion type			Suction type
Display method	LED digital	Explosionproof	—	Exia II CT4X No.TC14354	d3aG4 No.T41486	—
Indication-Alarm accuracy*1	Within ±0.7vol%	Size(W)×(H)×(D)	92×160×70mm		220×116×122mm	219×350×160mm
Alarm setting value	User-configurable (standard:18.0vol%)	Weight	Approx. 0.7kg		Approx. 4kg	Approx. 2.4kg
Alarm Trouble method	Flashing red LED light and intermittent buzzer sound					
Alarm contact output	Non-voltage 1a or 1b contact					
Contact capacity	AC125V,0.6A or DC110V,0.6A or DC30V,2A (resistance load)					
Analogue output	DC4 ~ 20mA±0.1mA					
Temperature-humidity	-10 ~ 40°C Below 95%RH (non-condensing)					
Power supply	AC100V±15% 50/60Hz 1 φ					
Power consumption	Diffusion type approx. 5VA Suction type approx. 20VA					
Size	120(W)×205(H)×69(D)mm(with fittings)					
Weight	Approx. 0.9kg					
Option	Input power supply:AC200/220V,DC24V Alarm contact output, 2-step alarm					

Contact us for other measuring ranges and alarm setting values customized for particular usages.

\* 1 Same condition at the time of calibration performed.

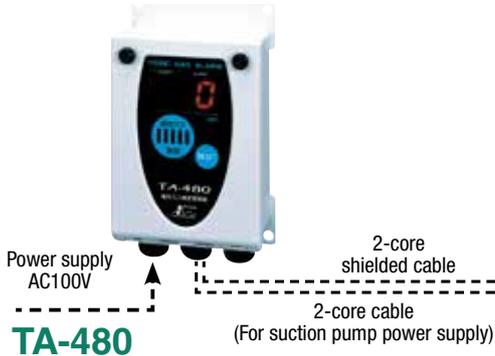
\* 2 No alarm activation using new batteries. May differ depending on battery manufactures, ambient conditions.

## Alarm Meter (monitoring)

Used in combination with 1 gas detector for 1 sampling point

### Wall-mount type/1 sampling point

(Built-in panel type is optional)



**TA-480**

Measuring gas	Sensor model used	
	TH	TRD
Carbon monoxide	KCS-5P/5T	KCS-5E
Hydrogen sulphide	KHS-5P/5TA	KHS-5E
Ammonia	KTS-517	—

## Toxic Gas Detectors (on-site)

Used in combination with alarm meters

### Chronoamperometry



**TH-D4A**/Diffusion type



**TH-D4E**/Diffusion type

Used in combination with zener barrier

Intrinsic safe



**TRD-1T**/Diffusion type

Flame-proof



**TH-S4**(Carbon monoxide)/Suction type

**TH-S5**(Other than Carbon monoxide)/Suction type

TH-S4/5 has a built-in flow meter, a sampling pump and a sensor.

φ 6/ φ 4 piping

※ Gas detectors are not drip-proof type and require a drip-proof cover for preventing entry of water drops (page 20).

Model	TA-480(1 sampling point)		
Measuring gas	Carbon monoxide	Hydrogen sulphide	Ammonia
Detection principle	Chronoamperometry		
Measuring range	0 ~ 300ppm	0.0 ~ 50.0ppm	0 ~ 100ppm
Display method	LED digital		
Indication accuracy*1	0 ~ 150ppm : ±15ppm 150 ~ 300ppm : Within ±10% of indicated value	0.0 ~ 30.0ppm : ±1.5ppm 30.0 ~ 50.0ppm : ±3.0ppm	0 ~ 75ppm : ±7.5ppm 75 ~ 100ppm : Within ±10% of indicated value
Alarm accuracy*1	±30% of alarm setting value		
Alarm setting value	User-configurable (50ppm)	User-configurable (10.0ppm)	User-configurable (25ppm)
Alarm-Trouble method	Flashing red LED light and intermittent buzzer sound		
Alarm contact output	Non-voltage 1a or 1b contact		
Contact capacity	AC125V,0.6A, DC110V,0.6A or DC30V,2A (resistance load)		
Analogue output	DC4 ~ 20mA±0.1mA		
Temperature-humidity	-10 ~ 40°C below 95%RH (non-condensing)		
Power supply	AC100V±15% 50/60Hz 1 φ		
Power consumption	Diffusion type; approx. 5VA Suction type; approx. 20VA		
Size-Weight	120(W)×205(H)×69(D)mm (including fittings) approx. 0.9kg		
Option	Input power supply:AC200/220V,DC24V alarm contact output, 2-step alarm		

Model	TH-D4A	TH-D4E	TRD-1T	TH-S4	TH-S5
Measuring gas	Carbon monoxide, Hydrogen sulphide, Ammonia		Carbon monoxide, Hydrogen sulphide	Carbon monoxide	Other than Carbon monoxide
Detection method	Chronoamperometry				
Sampling method	Diffusion type			Suction type	
Explosionproof	—	Exia II CT4 No.TC15708	d3aG4 No.T41486	—	
Size(W)×(H)×(D)	92×160×70mm		220×116×122mm	219×350×160mm	
Weight	Approx. 0.7kg		Approx. 4kg	Approx. 2.4kg	

Contact us for other measuring gases such as Sulphur dioxide, Nitrogen oxide, etc, their ranges and alarm setting values customized for particular usages.

\* 1 Same condition at the time of calibration performed.  
Periodical inspection is recommended for long time full performance of the system.

# Fixed Type Gas Alarm System-Multiple Sampling Points

Used in combination with gas detectors on page 13 to 17.

## Alarm Meters (monitoring)

Used in combination with 1 gas detector for 1 sampling point

### Wall-mount or built-in panel type/Multiple sampling points

- ◆ Display gas concentration in LCD bar meter and digital meter
- ◆ Simple zero adjustment(span adjustment for oxygen) · peak-hold function · zero suppression function



<KA-708R>

[Wall-mount type, multiple sampling points]

**KA-704R** Maximum 4 sampling points

**KA-708R** Maximum 8 sampling points



[Built-in panel type]

**KU-7R**



Self-contained gas alarm system multiple KU-7R installed on to a panel can be designed. Contact us for details.

Model	KA-704R(4 sampling points)	KA-708R(1 ~ 8 sampling points)
Measuring gas	Combination of combustible gases · oxygen · toxic gases	
Detection principle	Refer to below detection principle of KU-7R Series	
Measuring range	Refer to below detection principle of KU-7R Series	
Display method	LCD bar with 51 segments and 4 figures LCD digital meter	
Alarm accuracy*1	Refer to below alarm accuracy of KU-7R Series	
Alarm setting value	2-step alarm, user-configurable, upper or lower limit available	
Alarm method	Flashing red LED light, LCD flashing, intermittent buzzer sound	
Trouble method	Power lamp changes to intermittent red light from green, intermittent buzzer sound	
Alarm contact output	Delegate non-voltage 1ab, individual 1a or 1b	
Analogue output	DC4 ~ 20mA	
Operating temperature	-10 ~ 40°C	
Power supply	AC100V±10% 50/60Hz 1φ	
Power consumption	Max. 150VA	Max. 300VA
	depends on applied gas detectors	
Size-weight	300(W)×370(H)×100(D)mm approx.5.5kg	500(W)×370(H)×100(D)mm approx.10kg

### Type of KU-7R series

Model	KU-7R/G	KU-7R/F	KU-7R/S	KU-7R/U	KU-7R/T3C	KU-7R/T5B	KU-7R/T1C
Measuring gas	Oxygen	Combustible gas			Carbon monoxide	Hydrogen sulphide	Ammonia
Detection principle	Galvanic cell	Catalytic combustion	Heat wire semiconductor	NDIR	Chronoamperometry		
Measuring range	0.0 ~ 25.0vol% 0.0 ~ 50.0vol%	0 ~ 100%LEL (※)	0 ~ 2000ppm 0 ~ 5000ppm	0 ~ 100%LEL(※) 0 ~ 2000ppm,0 ~ 5000ppm	depends on measuring gas(0.0 ~ 30.0ppm, 0.0 ~ 50.0ppm,0 ~ 100ppm,0 ~ 300ppm)		
Display method	LCD bar with 51 segments and 4 figures LCD digital meter						
Alarm accuracy*1	±0.7vol%	±25% of alarm setting value					
Alarm setting value	2-step alarm, user-configurable, upper or lower limit available						
Alarm-Trouble display	Alarm:Flashing red LED light(AL1, AL2) Trouble:Power lamp lights after flashing red light from green						
Contact output	Alarm(AL1, AL2):Non-voltage 1a or 1b Trouble:Non-voltage 1a or 1b						
Analogue output	DC4 ~ 20mA						
Operating temperature	-10 ~ 40°C						
Power supply	DC24V±10%						
Power consumption	Approx. 7.5VA	Approx. 10VA	Approx. 12VA	Approx. 7.5VA			
Size-weight	36(W)×144(H)×176(D)mm (with a single case) approx. 0.8kg						

※%LEL= Concentration of Combustible gases (vol%) ÷ Lower Explosive Limit(vol%) × 100  
\*1 Same condition at the time of calibration performed.

Periodical inspection is recommended for long time full performance of the system.

## Alarm Meters (monitoring)

Used in combination with 1 gas detector for 1 sampling point

### Wall-mount type/1 ~ 6 sampling points

#### FA-20F

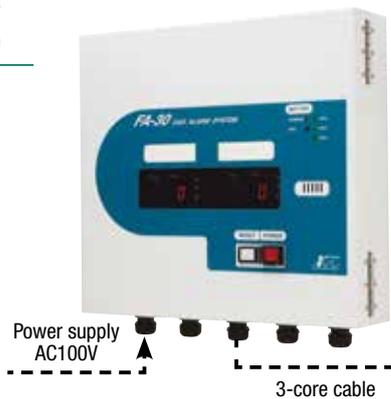


Power supply AC100V  
5-core cable  
3-core cable

### Wall-mount type/1 ~ 2 sampling points

**Built-in emergency power backup system enables continuous monitoring in the event of black out**

#### FA-30



Power supply AC100V  
3-core cable

## Combustible Gas Detectors (on-site)

Used in combination with alarm meters

Refer to page 14

Catalytic combustion

Heat wire semiconductor

#### RDE-T/Diffusion type

Sensor model used:C-10S

ExExplosion-proof

#### RDE-TS/Diffusion type

Sensor model used:  
SC-401S, SC-403S,  
SC-404S

ExExplosion-proof

#### RD-4 Hydrogen/Diffusion type

Sensor model used:  
C-10H, SC-202H

Flame-proof

#### RH-S/Suction type

Sensor model used:  
C-10S, SC-401S,  
SC-403S, SC-404S

Flame-proof

φ 6/ φ 4 piping

※ Gas detectors are not drip-proof type and require a drip-proof cover for preventing entry of water drops (page 20).

Model	FA-20F(1 ~ 6 sampling points)	FA-30(1 ~ 2 sampling points)
Measuring gas	Combustible gas in the air	
Detection principle	Catalytic combustion or heat wire semiconductor	Catalytic combustion
Measuring range	Depends on measuring gas (0 ~ 100%LEL(※), 0 ~ 500ppm, 0 ~ 2000ppm, 0 ~ 5000ppm)	0 ~ 100%LEL(※)
Display method	LED digital	
Alarm accuracy*1	Within ±25% of alarm setting value	
Alarm setting value	User-configurable (25%LEL, 50ppm, 500ppm, 1000ppm)	User-configurable 2-step-alarm (AL1:10%LEL, AL2:25%LEL)
Alarm method	Flashing red LED light and intermittent buzzer sound	
Trouble method	Flashing yellow LED light and intermittent buzzer sound	Flashing red LED light and intermittent buzzer sound
Alarm contact output	Delegate non-voltage 1a or 1b	Gas concentration alarm AL1 → non-voltage 1a or 1b AL2 → “
Contact capacity	AC125V,0.6A or DC110V,0.6A or DC30V,2A (resistance load)	
Response time	—	Within 30 seconds till alarm generates after detecting test gas of 1.6 times of alarm concentration
Analogue output	Optional:DC4 ~ 20mA	DC4 ~ 20mA±0.1mA
Temperature-humidity	-10 ~ 40°C below 95%RH (non-condensing)	
Power supply	AC100V±10% 50/60Hz 1 φ	
Power consumption	Diffusion type; approx. 3.5VA/point, Suction type; approx. 19VA/point	approx. 25VA
Size	300(W)×510(H)×70(D)mm (without fittings)	360(W)×330(H)×80(D)mm (without fittings)
Weight	Approx. 7.6kg (6 points)	Approx. 8.5kg
Emergency power backup	—	Built-in battery Back-up time:approx. 2 hours (at 20°C, no alarm activation)

Contact us for target gases, measuring ranges and alarm setting values customized for particular usages.

\* 1 Same condition at the time of calibration performed.

# Optional Parts For Fixed Type Gas Detectors

## For Diffusion Type Detectors

Gas detectors are not drip-proof and require protective drip-proof covers in case they are exposed to waterdrop.

### Drip-proof covers



**HC-B** (upright)



**HC-B2** (horizontal)

For underfloor installation



**HC-E**

For Hydrogen detector



**HC-G** (horizontal)

Model	HC-B	HC-B2	HC-E	HC-G
Used with	OH-D4A/D4E, RDE-T/TS, TH-D4A/D4E	RDE-T/TS	RD-4	TRD-1G/1T
Size	170(W) × 150(H) × 100(D)mm	220(W) × 120(H) × 155(D)mm	180(W) × 170(H) × 140(D)mm	320(W) × 220(H) × 160(D)mm

## For Suction Type Detectors

### Detector boxes for Model RH-S Combustible Gas Detector

with drip-proof cover, air filter, flow meter measurement valve, calibration valve

For indoor installation/upright

For indoor · outdoor installation/horizontal



**BOX-18**



**BOX-3B**

**BOX-3BDL** (with diluter) detects in inert gas

Model	BOX-18	BOX-3B/3BDL
Size	340(W) × 420(H) × 150(D)mm	500(W) × 400(H) × 140(D)mm

### Air filters

### Drain traps

### Gas collector



**Small**  
**KG-T**

Attached to a gas collector to prevent from dust particle suction.



**Medium**  
**MGF-5.4**



**Large**  
**ML-701**  
**ML-701-AUD2**

Automatic drain type



**GD**

Installed at a sampling point to prevent from dust particle suction.

Installed in front of gas detectors to prevent from waterdrop in case gas includes moisture or condensation expected in the piping due to high-temperature gas.

Model	Filter made of	Model	Feature	Filter made of
KG-T	Paper	GD-3	For general use, high durable metallic	Sintered metal
MGF-5.4	Sintered metal, paper filter	GD-PE	Low price, easy to replace	Paper
ML-701/-AUD2	Sintered metal	GD-4	Stainless made is useful for special occasion	Sintered metal, SUS



Model	OC-6B	FC-8P	SC-311P
Measuring gas	Oxygen	Combustible gas in the air	Combustible gas in the air
Detection principle	Galvanic cell	Catalytic combustion	Heat wire semiconductor
Used in gas monitors	OPA-5000E,OMA-600E,OM-600E, MMP-10/12,MD-611E/612E/619E/620E/621E, MD-801/811/940,OX-600,MX-611H,OA-220	FPA-5000E/5000EM, FM-620E/621E,MD-620E/621E	FPA-5200E
Used in gas detectors	OH-D4A/D4E,OH-S4	—	—
Size-weight	φ 20.0 × L20.8L20.8mm Approx. 10g	φ 20.0 × L20.0mm Approx. 35g	

Model	C-10S	SC-403S	KTS-526
Measuring gas	Combustible gas in the air	Methane in the air	Hydrogen
Detection principle	Catalytic combustion	Heat wire semiconductor	Chronoamperometry
Used in gas monitors	—	—	FM-619E,MD-619E
Used in gas detectors	RDE-T,RH-S	RDE-TS,RH-S	TH-D4E,TRD-1T
Size-weight	φ 28.0 × L28.0mm Approx. 105g	φ 28.0 × L28.0mm Approx. 105g	φ 20.7 × L21.5mm Approx. 9g

Model	KCS-5P	KHS-5P	KTS-512P	KTS-517
Measuring gas	Carbon monoxide	Hydrogen sulphide	Sulphur dioxide	Ammonia
Detection principle	Chronoamperometry	Chronoamperometry	Chronoamperometry	Chronoamperometry
Used in gas monitors	TPA-5000E,MMP-10,MD-611E	TPA-5200P,MMP-12,MD-612E	TPA-5300P	—
Used in gas detectors	TH-D4A/D4E,TH-S4	TH-D4A/D4E,TH-S5		
Size-weight	φ 20.5 × L19.7mm Approx. 9g			φ 20.7 × L21.5mm Approx. 9g

**CAUTION** Check the expiration date of sensors before measurement.

Expired sensors can give false results. Contact us to replace to new sensors.

## Indoor Environment Monitor CO/CO<sub>2</sub> /Temperature/Humidity

For indoor air quality measurement in buildings

### UM-400



- ◆ Compact · light · silent
- ◆ Wide measuring ranges
- ◆ Measures CO<sub>2</sub>/CO /temperature/humidity at one time
- ◆ Clearly visible organic EL display at dark places
- ◆ Capable of trend analysis by data logger function
- ◆ 3 power supplies

### CO/CO<sub>2</sub> Monitor

For high concentration measurement



### UR-23AU3

For process control of gas generators for heat-treated metal parts where high concentration of carbon monoxide and carbon dioxide should be monitored. Highly reliable precision NDIR method. Displays the concentration of the 2 components digitally and outputs analog.

### Residual Oxygen Meter

For measurement of residual oxygen in inert gas



### OA-220

Compact design with a built-in suction pump. (Contact us in case of using as an oxygen deficiency control.)

Model	UM-400			
Measuring gas	Carbon monoxide(CO)	Carbon dioxide(CO <sub>2</sub> )	Temperature	Humidity
Detection principle(sensor model)	Chronoamperometry(KCS-5TA-U)	NDIR	Thermistor type	(Capacitance type)
Measuring range(resolution)	0.0 ~ 100.0ppm (0.1ppm)	0 ~ 10000ppm (10ppm)	-10.0 ~ 60.0°C (0.1°C)	5.0 ~ 95.0%RH (0.1%RH)
Indication accuracy*1	±1.0ppm at 0.0 - 10.0ppm ±2.5ppm at 10.1 - 50.0ppm ±5.0ppm at 50.1 - 100.0ppm	±50ppm at 0 - 2000ppm ±100ppm at 2010 - 5000ppm ±500ppm at 5010 - 10000ppm	±0.5°C at 5.0 - 50.0°C ±1.0°C at other ranges	±2.0%RH at 20.0 - 90.0%RH ±4.0%RH at other ranges (temperature at 10-40°C)
Response time	Within 30 seconds at 90% response	Within 20 seconds at 90% response	—	—
Data update	Every second	Every 4 seconds	Every second	Every second
Display method	Organic EL digital display			
Recorder output	DC 0-1V linear			
Temperature	-10 - 40 degrees C (non-condensing)			
Power supply	4 x size AA alkaline (LR6) or nickel-metal-hydride rechargeable battery, dedicated AC adaptor 100V(optional)			
Continuous run-time*2	About 6 hours with alkaline dry batteries at 20 degrees C			
Size-weight	155(W) × 100(H) × 83(D)mm(excluding protrusion) approx. 800g(including batteries)			
Standard accessory	Carrying case, alkaline batteries, 10cm calibration tube			

Model	UR-23AU3	
Measuring gas	Carbon monoxide(CO)	Carbon dioxide(CO <sub>2</sub> )
Detection principle	NDIR	
Measuring range	0.0 ~ 5.0vol%	0.0 ~ 20.0vol%
Resolution	0.1vol%	0.1vol%
Indication accuracy*1	±5% of full-scale	
Display method	LCD digital display	
Analogue output	DC 4-20mA (linear)	
Temperature · humidity	-10 ~ 50°C below 90% R.H.(non-condensing)	
Power supply	AC100V-15 ~ +10% 50/60Hz 1φ	
Continuous run-time*2	Continuous operation possible	
Size-weight	370(W) × 157(H) × 315(D)mm approx.7.5kg	

Model	OA-220
Measuring gas	Oxygen in inert gas
Detection principle (sensor model)	Galvanic cell(OC-6B)
Measuring range (resolution)	0.0 ~ 25.0vol%(0.1vol%)
Indication accuracy*1	±0.7vol%O <sub>2</sub> concentration
Alarm accuracy*1	±1.0vol%O <sub>2</sub> concentration against alarm setting value
Alarm setting value	Over 1.0vol%
Alarm method	LED light and buzzer
Alarm contact output	Non-voltage 1b (standard) or 1a contact
Recorder output	DC 4-20mA ±0.1mA
Temperature-humidity	-10 ~ 40°C 90%RH (non-condensing)
Power supply	AC100V ±10% 50/60Hz 1φ (power consumption: approx. 20VA)
Size-weight	180(W) × 143(H) × 248(D)mm approx.3kg
Standard accessory	5m uni-tube(φ6/φ4), 2m power supply cable

\*1 Same condition at the time of calibration performed.

\*2 No alarm activation using new batteries. May differ depending on battery manufactures, ambient conditions.

Valve shutters

Emergency Shut-Off System For High-pressure Gas Cylinder Valve

VS-200

VS-200H2 (high torque type)



- ◆ Runs with a combination of air pressure and mechanical energy only
- ◆ Good durability due to a metallic gear mechanism at internal structure
- ◆ No harm on the main valve due to a spiral spring
- ◆ Simple up-and-down operation of set lever to lock and release

Model	VS-200	VS-200H2 (high torque type)
Valve shutting torque	5.0 ~ 7.0N·m (at mounting position)	8.0 ~ 9.0N·m (at mounting position)
Operating system	Main Valve opening: Manual set Main Valve closing: Spiral spring drive	
Operation air pressure range	0.25 ~ 0.9MPa	
Recommended operation air pressure	0.35MPa	
Operation air inlet	φ 6/4mm resin tube (one-touch connection)	
Operation check	Colour indicator	
Installing method	Clamp handle system	
Size-weight	約118(W)×296(H)×173(D)mm approx. 3.0kg	

Usable valve size

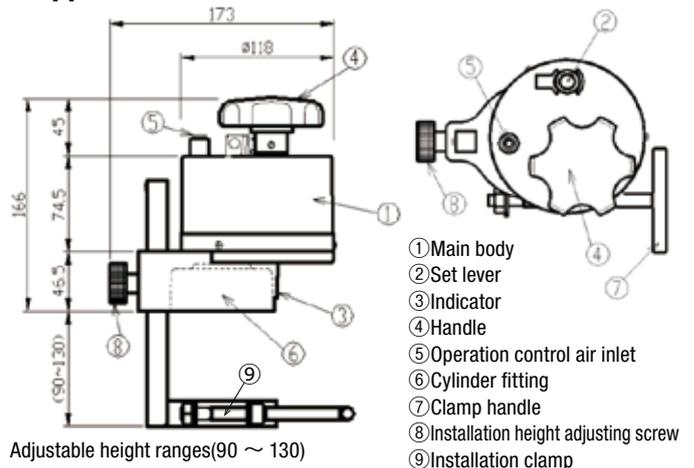
凹 part below φ54mm



Contact us for other valve sizes

凸 part φ64 ~ 72mm

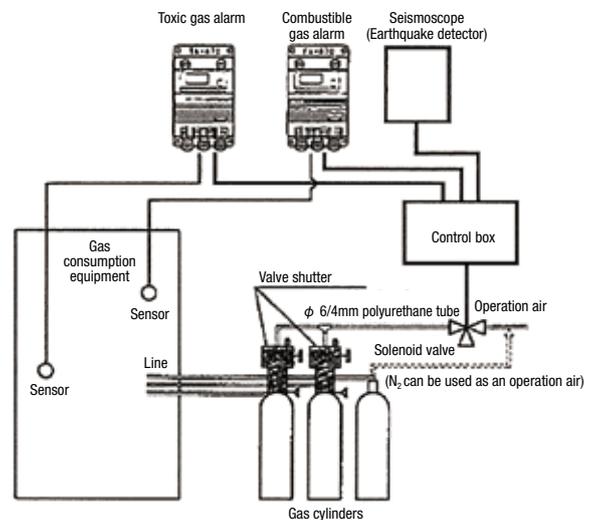
Appearance and function



Example - usage

Operates by interlocking with gas detectors and/or seismoscopes  
Prevents explosion and/or poisoning accidents by gas leakage  
Prevents secondary disasters by gas leakage during earthquakes

Example - system diagram



The seismoscope operates when the earthquake measured a lower 5 or higher on the seven-point Japanese scale (100 ~ 170 gal) and shuts off the main valve of the high-pressure gas cylinder.

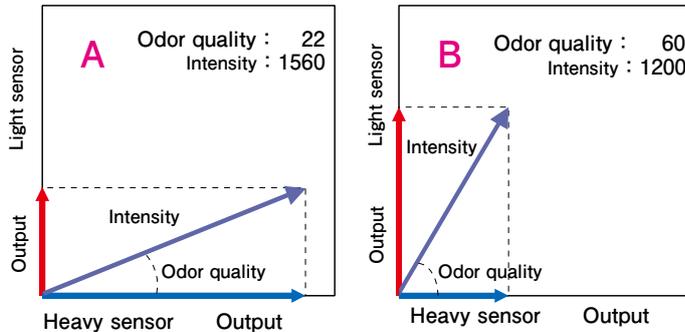
Portable Odor Monitors

Collect and analyze odor information in every space



Unique patented technology analyzes odor information

[Schematic chart for odor vector]



Represents odor with vector from sensor output

[Odor quality] is represented by the vector angle and odor components are judged from the angle size.  
 [Intensity] is represented by the vector length and odor intensity is judged from the length.

Odor **A** has more heavy components such as aromatics comparing to odor **B** and possibly has stronger odor.

Odor **B** possibly has more light components such as alcohols comparing to odor **A**.



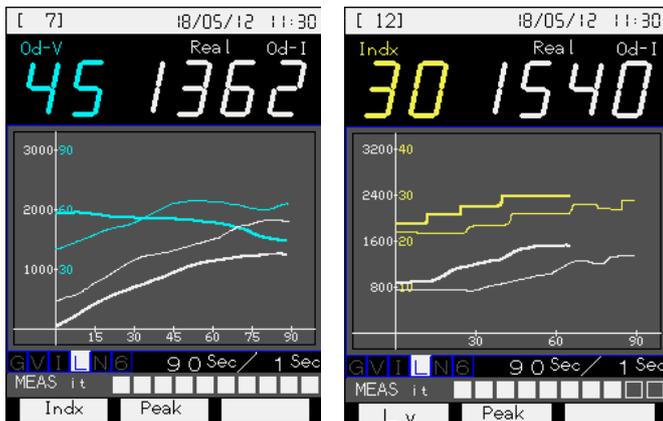
<mobileIII>

mobile III

Monitors odor with 2 sensors

Heavy + Light

Monitors while comparing with recorded data



(Example1)

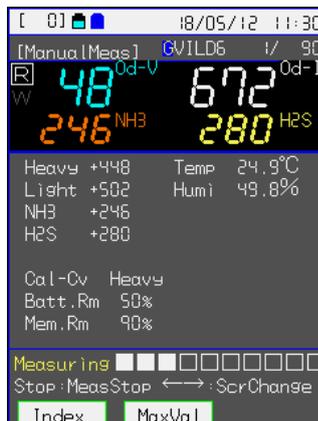
(Example 2)

integral III

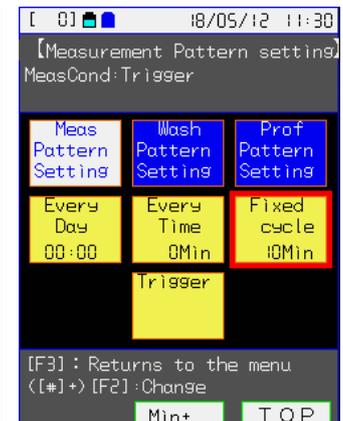
Analyzes odor with 4 sensors

Heavy + Light + Sulphur + Ammonia

Simultaneously monitors



Automatically monitors



Common Function

Cleans sensors with activated carbon filters

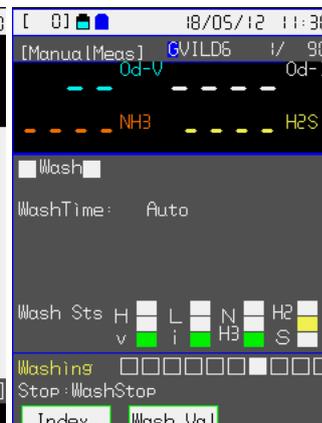
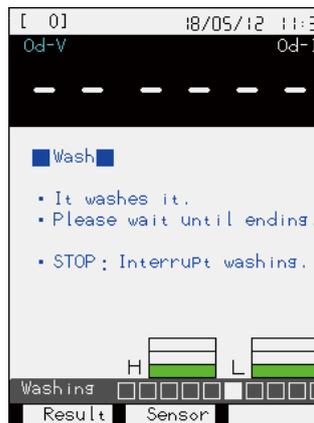
Confirms cleaning status of sensors



Automatic switchable vent valve

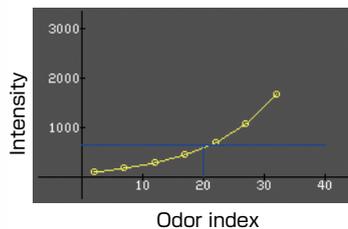


Activated carbon filters (option)

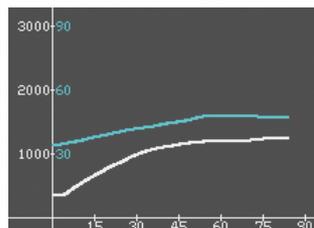


Capable of odor index display by calibration curves

3 calibration curves (standard) + calibration curve by user (integral III only)



Displays for logger and data list installed as standard



No.	Date	Time	F	S
Now	07/25	14:49:59	762	
005	07/25	14:47:41	517	
004	07/25	14:47:24	840	
003	07/25	14:45:41	517	
002	07/25	14:43:68	1044	
001	07/25	14:30:48	1296	

<integral III>

Logger display

Data list display

		Item	Function	mobile III	integral III
Spec.	Sensor (semiconductor)	Odor (target:reducing odor)	Heavy-light	○	○
		Ammonia	Ammonia	—	○
		Sulphur	Sulphur	—	○
		Temperature-humidity	Temperature · humidity sensor	—	○
	Sampling	Suction micro pump	For sample/clean air suction (850mL/min)	○	○
		Monitor/clean switch	Automatic switchable micro valve	○	○
	Temperature-humidity	Temperature range		5 ~ 40°C	
		Humidity range		20 ~ 80%RH	
	Size-weight	Size		128(W)×243(H)×60(D)mm	
		Weight		760g	
Memory	Data memory	7200 measurement data (when memorized every second)	2 hours		
Communication	USB (miniB)	Connects to PC with USB	○	○	
Power supply	Battery (built-in)	Charging type (Lithium-ion)	○	○	
	AC adaptor	AC (IN:100 ~ 240V) -DC (OUT:9V) approx. 6W	○	○	
Function	Numeral display	Odor quality (reducing odor)	Displays odor quality value (0 ~ 90)	○	○
		Intensity (reducing odor)	Displays intensity value (0 ~ 5500)	○	○
		Heavy	Displays intensity of heavy sensor	○	○
		Light	Displays intensity of light sensor	○	○
		Ammonia	Displays intensity of ammonia sensor	—	○
		Sulphur	Displays intensity of sulphur sensor	—	○
		Temperature-humidity	Displays temperature and humidity	—	○
		List	Displays measurement data list	○	○
	Calibration curve	Peak hold	Displays while keeping peak value of each measurement	○	○
		Preset	Pre-installed data (Heavy,Middle,Light)	3 types	3 types
	Measurement	User	Transfer data created by user	—	1 type
		Measurement time	Sets measurement time	Select	Option
		Recording medium	Sets recording medium	Select	Option
		Zero calibration	Calibrates zero-point	Manual	Manual/auto
Measurement method		Starts measurement automatically	—	○	
Repeatability		Odor quality · intensity value (under same conditions)	±15%	±10%	
Calibration	Remote control	Measures via USB communication	—	○	
	Option	Updates standard point at arbitrary timing	○	○	
	Each measurement	Updates standard point before each measurement	—	○	

# Detection Principle

## Principles and Features

### Basic Circuit

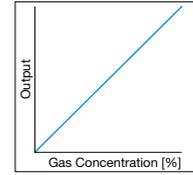
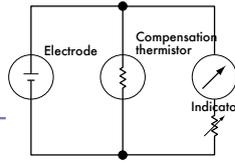
### Character of Output Signal

### Gas To Be Measured

#### Galvanic Cell Type

Consists of a positive electrode (noble metal) and its cover diaphragm, a negative electrode (base metal), electrolyte and a container. Transmitted oxygen through the diaphragm reduced at the positive electrode surface to flow the current proportional to the oxygen concentration to measure the oxygen concentration.

- POINT**
- Measures oxygen concentration in inert gas such as  $N_2$ ,  $CO_2$
  - Not affected from acid gas such as  $H_2S$ ,  $SO_2$
  - Fast response at rising and falling
  - No power source required for detection

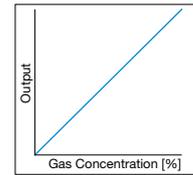
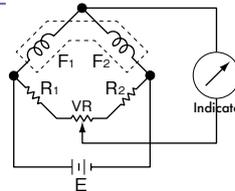


● Oxygen

#### Catalytic Combustion Type

Consists of a detecting element made of a coiled platinum wire covered with catalyst and a comparison element sintered inactive substances. When the detecting element is heated to an appropriate temperature and comes into contact with combustible gas, the combustible gas molecule produces more heat of combustion by the oxidation in air and electric resistance of the coiled platinum wire is increased. The increase of electric resistance is proportional to gas concentration and an electric voltage signal is taken out by means of the wheatstone bridge.

- POINT**
- Mainly reacts with combustible gases
  - High precision and superior repeatability
  - Low influence from ambient temperature/humidity

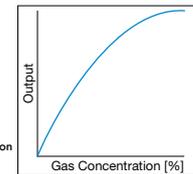
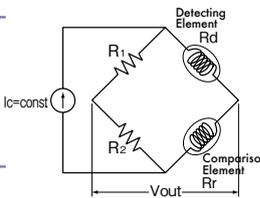


● Isobutane  
● Propane  
● Methane  
● Hydrogen  
● Alcohols  
● Organic solvents  
● Other combustible gases

#### Heat Wire Semiconductor Type

The detection element is covered by metal oxide semiconductor on the coiled wire and heated at appropriate temperature. When combustible gas is adsorbed on the semiconductor surface, a reaction occurs between the adsorbed gas molecular and the semiconductor, and the electric conductivity of the semiconductor is changed. The change amount of conductivity can be taken out as an electric resistance change of the detection element and it is proportional to the gas concentration.

- POINT**
- Capable of fast leak detection due to high sensitivity to combustible gases
  - Small zero-drift and good stability against temperature and moisture (Japan patent No.3385248)

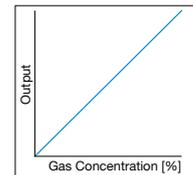
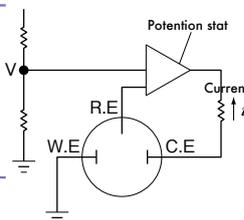


● Isobutane  
● Propane  
● Methane  
● Hydrogen  
● Alcohols  
● Organic solvents  
● Other combustible gases

#### Chronoamperometry Type

Consists of three electrodes; working electrode (W.E.), counter electrode (C.E.) and reference electrode (R.E.), is immersed in acid electrolyte solution and kept at an electrolyte cell. Each electrode is connected with the potentiostat circuit. When a gas passed through W.E. that constant electric potential against R.E., W.E. gets an electrochemical reaction at an electrode surface and an electrolytic current  $i$  flows. The electrolytic current  $i$  is proportional to a gas concentration, so the gas concentration can be achieved.

- POINT**
- Detects toxic gases in the air and/or inert gas such as  $N_2$
  - No poisoning from silicon and/or sulphur compound
  - High sensitivity enables to measure minute amounts of concentration
  - High selectivity is suitable for detecting toxic gases
  - Low influence from ambient temperature

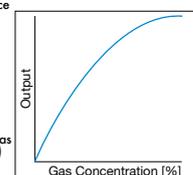
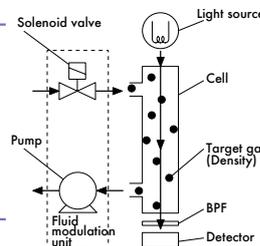


● Carbon monoxide  
● Nitric oxide  
● Hydrogen sulphide  
● Ammonia  
● Sulphur dioxide  
● Other specialty gases · toxic gases

#### Non-Dispersive Infrared Type

An infrared ray radiated from a light source passes through target gas inside the cell, then only the target gas is selected to wave length by BPF and supplied to the detector. The density of the target gas inside the cell changes periodically with the fluid modulation unit, so the absorption volume of infrared ray also changes. The detector output amplifies the periodic change of the absorption volume only, so the output rely on the gas concentration could be get. In case of zero gas, the absorption of infrared ray is none and the absorption volume does not change, so there is no output.

- POINT**
- High accuracy and selectivity
  - Disclosed detectors give less sensitivity loss factor from poisoning
  - No zero drift in principle

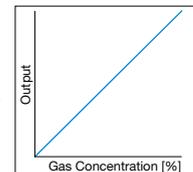
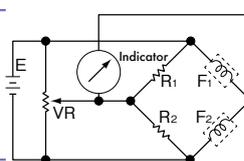


● Carbon monoxide  
● Carbon dioxide  
● Methane  
● Propane  
● Alcohol  
● Other hydrocarbons

#### Thermal Conductivity Type

A detecting element is located in a sample gas, and a comparison element is located in air or nitrogen in order to compare with the detecting element. Both elements are heated appropriately and respond to thermal conductivity of the sample gas and air respectively. As each gas has a different thermal conductivity, the electric resistance of the detecting element is changed if the sample gas contains an objective gas.

- POINT**
- Capable of measuring up to 100vol%
  - Capable of detection without oxygen



● Carbon dioxide  
● Hydrogen  
● Propane  
● Methane  
● Other hydrocarbons

# Explosion-proof Apparatus

(All KITAGAWA products are based on 2 types of explosion-proof standards listed below.)

## International Standard

<International Electrotechnical Commission (IEC) Standards>

**International Practices for Explosion-proof (including former technical standards)**

**Example of explosion-proof protection symbols**

**Ex ia d II B+H<sub>2</sub> T3 X**

**Explosion-proof protection**  
(based on IEC standards)

**Types of protection**  
(Intrinsically-safe apparatus intended to use in hazardous area)

**Types of equipment protection by flameproof**  
(Catalytic combustion type sensor component)

**Group of equipment for explosive atmospheres**  
(Equipment intended for use in places with an explosive gas atmosphere other than mines, and Hydrogen added to class II B gas or vapour)

**Temperature classes of equipment for explosive atmospheres**  
(Maximum surface temperature is 200°C)

**Condition of usage**  
(Oxygen monitors should not be used in a mixture of air and combustible gases or vapour, and should be used for oxygen measurement only)

**Identification of symbols**

Item	Symbol	Identification of symbol
Explosion-proof protection	Ex	Specific symbol for explosion-proof
Types of protection	d	Flameproof enclosures
	o	Oil immersion
	p	Pressurized enclosures
	ia	Intrinsic safety (intended for use in zone 0)
	ib	Intrinsic safety (intended for use in zone 1)
	m	Encapsulation
	n	Non-incendive
Grouping for electrical apparatus for explosive atmospheres	II	Equipment intended for use in surface industries
	II A	Applied for gases and vapours of group A
	II B	Applied for gases and vapours of group B
	II C	Applied for gases and vapours of group C
Temperature class for electrical apparatus for explosive atmospheres	T1	Maximum surface temperatures; 450°C
	T2	300°C
	T3	200°C
	T4	135°C
	T5	100°C
	T6	85°C

**Classification of typical gases into explosion groups**

Temp. class	T1	T2	T3	T4	T5	T6
Group II A	Acetic acid Acetone Ammonia Benzene Ethane Ethyl acetate Methane Toluene	Acetic anhydride n-Butane 1-Butanol Isopentyl acetate LP gas Methanol Propane	Gasoline Hexane Kerosine Naphtha White spilt	Acetaldehyde		
Group II B	Carbon monoxide	Ethanol Ethylene Ethylene oxide		Ethyl ether Ethyl methyl ether		
Group II C	Hydrogen Water-gas	Acetylene				Carbon disulphide

## Japanese Standard

<Electrical Apparatus for Explosion Protection Standards>

**Japanese Ministry of Health, Labour and Welfare  
Announcement No.16/Explosion-proof Guideline (2006)**

**Example of symbols**

**i d 2 G4**

**Types of protection**  
(Intrinsically-safe apparatus)

**Types of protection (Intrinsic safety)**  
(Catalytic combustion type sensor component)

**Explosion class of explosive gas**  
(Explosion class 2)

**Ignition degree of explosive gas**  
(Ignition temperature is above 135°C and below 200°C)

**Identification of symbols**

Item	Symbol	Identification of symbol
Type of explosion protected apparatus	d	Flameproof type
	o	Oil immersion type
	f	Pressurized type
	e	Increased safety type
	i	Intrinsically-safe type
	s	Special explosion-proof type
Explosion classes of explosive gas	1	Gases or vapour of explosion class 1
	2	Gases or vapour of explosion class 2
	3a	Water gases and hydrogen
	3b	Carbon disulphide
	3c	Acetylene
	3n	All explosion class 3 gases
Ignition degree of explosive gas	G1	Ignition temperature is; above 450°C
	G2	above 300°C and below 450°C
	G3	above 200°C and below 300°C
	G4	above 135°C and below 200°C
	G5	above 100°C and below 135°C

**Classification of typical explosive gases for the standard in Japan**

Temp Class	G1	G2	G3	G4	G5
1	Acetic acid Acetone Ammonia Benzene Carbon monoxide Ethane Ethyl acetate Methane Methanol Propane Toluene	Acetic anhydride n-Butane 1-Butanol Ethanol Isopentyl acetate	Gasoline Hexane	Acetaldehyde Ethyl ether	
2	Coal gas	Ethylene Ethylene oxide			
3	Hydrogen Water-gas	Acetylene			Carbon disulphide

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● Specifications are subject to change without any prior notice.

