

PRODUCTS GUIDE



PORTABLE GAS MONITORS

FIXED TYPE GAS ALARM SYSTEM

MULTI-GAS MONITORS

TOXIC GAS MONITORS

PORTABLE GAS MONITORS

По вопросам продаж и поддержки обращайтесь:

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Астана (7172)727-132
Астрахань (8512)99-46-04
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Брянск (4832)59-03-52
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Хабаровск (4212)92-98-04
Челябинск (351)202-03-61
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We are dedicated to the development of innovative that support a safe and healthy environment, and prevent injury in the workplace.

KITAGAWA VISION

Through continuous development and commercialization of improved technologies for the FAST, EASY and ACCURATE detection of chemical substances, KITAGAWA shall continue to supply products that protect the environment and prevent disaster. KITAGAWA endeavors to establish its own original technologies and advance its management skills through a long term vision.

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.



products

KITAGAWA MISSION

To provide 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 achieve customer satisfaction throughout the world.



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For hazardous work of oxygen deficiency
For prevention of carbon monoxide and hydrogen sulphide poisoning
For prevention of explosion and gas leak detection

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For hazardous work of oxygen deficiency
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For prevention of explosion and gas leak detection

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For prevention of explosion and gas leak detection, For prevention of carbon monoxide, hydrogen sulphide and ammonia poisoning
For hazardous work in oxygen deficiency

Oprional parts P20

Drip-proof cover, Detector box, Gas collector, Air filter, Drain trap

Special Instrutmens

For Particular Application P21

Carbon monoxide and Carbon dioxide Monitor (for building management, process control), Residual Oxygen meter, Valve shut off system for high-pressure gas cylinder

Reference material

Detection Principle/Explosion-proof Apparatus P22

COMBUSTIBLE GAS MONITORS

Portable Gas Monitors: Easy to carry-buzzer and lamp alert to danger

Combustible gas in the air (for explosion prevention)

FPA-5000E (for personal use/diffusion type)

Methane calibrated Model FPA-5000EM is also available.



FPA-5000E

Combustible gas in the air (for gas leak detection)

FPA-5200E (for personal use/diffusion type)

Point

- Buzzer and lamp alert when reached dangerous concentration.
- Compact size to fit to a belt or pocket for hands-free work.
- Power saving function for long time operation.
- Structure to prevent water and dust go in the sensor.
- Approval of intrinsically safe apparatus.



FPA-5200E

Poortable Gas Monitors: Detects leaked combustibile gas for explosion prevention

Combustible gas in the air (for explosion prevention, iso-Butane calibration)

FM-620E (portable/suction type)

· Certified to Nippon Kaiji Kyokai (NK) type test



FM-620E

Combustible gas in the air (for explosion prevention, Methane calibration)

FM-621E (portable/suction type)

Point

- Delivers gas alarm and/or trouble with loud sound (above 90dB/10 cm).
- Delivers alarm with bright LED flickers, in operation (GREEN), alarm (RED), trouble (ORANGE).
- Large LCD display for easy reading.
- Powerful suction pump, fast response time.



FM-621E

Specification

Model	FPA-5000E	FPA-5200E	FM-620E	FM-621E
Measuring gas	Combustible gas in the air		Combustible gas in the air (calibrated as iso-Butane) (calibrated as Methane)	
Detection method	Catalytic combustion	Heat wire semiconductor	Catalytic combustion	
Sampling method	Suction type		Suction type (Approx. 0.6L/min with gas sampling tube with sampling probe (2.4m))	
Measuring range	0~100%LEL (※)	0~2,000ppm	0~100%LEL (※)	
Resolution	1%LEL	10ppm	1%LEL	
Detectable accuracy	±10%LEL	—	±10%LEL	
Alarm accuracy	±10%LEL	500ppm±50ppm	±10%LEL	
Alarm concentration	20%LEL	500ppm	20%LEL	
Alarm method	LCD, LED lamp and buzzer		LCD, LED lamp and buzzer alarm	
Response time	Within 25 seconds at 90% response	Within 25 seconds with test gas of 1.6 x alarm concentration	Within 25 seconds at 90% response from sampling gas inlet at 20°C	
Power supply	3xAA size alkaline battery		3x"AA" size alkaline battery (LR6)	
Continuous operation time	Approx. 16 hours		Approx. 8 hrs (no alarm)	
Explosion-proof	Exiad II CT4X (No.TC17118)		Exiad II CT4X (No.TC19587)	
Operating temperature	10~40°C; 30~85%RH (non-condensing)		-10~40°C; below 95%RH (non-condensing)	
Pressure range	—		80~110kPa	
Dimensions	105 (W)×56 (H)×29 (D)mm		78 (W)×200 (H)×50 (D)mm	
Weight	Approx. 170g (including batteries)		Approx. 550g (including batteries)	
Standard accessory	Softcase		Gas sampling tube with sampling probe (2.4m), leather case, carrying case	

※ %LEL=Combustible gas concentration (%)÷LEL (%)×100

LEL (Lower Explosive Limit) of major Combustible gases

Combustible gas vol%	Hydrogen	4.0	Acetone	2.1	iso-Octane	1.1	iso-Butane	1.8	Ethanol	3.3	Ethylene	2.7	Xylene	1.1	Ethyl acetate	2.0	Buthyl acetate	1.7	Cyclohexane	1.3
	Toluene	1.2	n-Butane	1.6	Propane	2.1	Propylene	2.0	Hexane	1.1	Benzene	1.3	Methanol	6.0	Methane	5.0	Methyl ethyl ketone	1.8		

※ Listed in the guideline for explosion-proof from National Institute of Occupational Safety and Health, Japan. The LEL for iso-Butane is listed in "Explosive risk of combustible gases and vapour" from The High Pressure Gas Safety Institute of Japan.

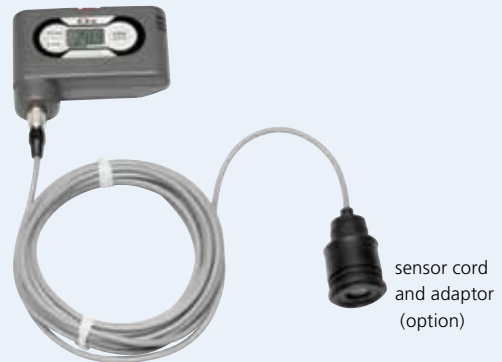
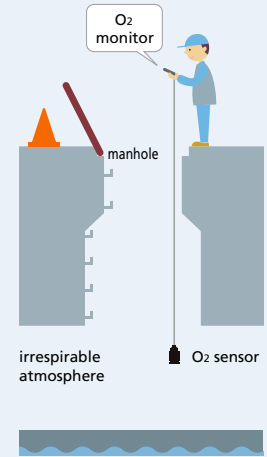
OXYGEN MONITORS

Portable Gas Monitor: Easy to carry-buzzer and lamp alert when reached dangerous concentration

Oxygen (for oxygen deficiency prevention)

OPA-5000E (for personal use/diffusion type)

The OPA-5000E O₂ monitor detects Oxygen concentration at work place for each workers on-time for their safety.



- Point**
- Buzzer and lamp alert when reached dangerous concentration.
 - Compact size to fit to a belt or pocket for hands-free work.
 - Power saving function for long time operation.

- Structure to prevent water and dust go in the sensor.
- Approval of intrinsically safe apparatus.
- Remote detection with an optional adaptor and 5 metre length sensor cord.

Specification

Model	OPA-5000E
Measuring gas	Oxygen
Detection method	Galvanic cell
Sampling method	Suction type
Measuring range	0~50.0vol%
Resolution	0.1vol%
Detectable accuracy	0~25.0vol%:±0.5vol% 25.1~50.0vol%:±3vol%
Alarm concentration	Below 18.0vol%
Alarm method	LCD, LED lamp and buzzer
Response time	Within 15 seconds at 90% response
Power supply	3xAA size alkaline battery
Continuous operation time	Over 1000 hours
Explosion-proof	Exia II CT4X (No.TC16908)
Operating temperature	-10~40°C; 30~85%RH (non-condensing)
Dimensions	105 (W)×56 (H)×29 (D)mm
Weight	Approx. 150g
Standard accessory	Softcase

The dangers of deficiency of Oxygen

Oxygen is an odorless, colourless gas. Decrease in the level of oxygen leads to oxygen deficiency and shall be died of suffocation in. The effects of oxygen concentration on the human body are as below.

O ₂ conc.	Symptom
15~14vol%	Deep breath, fast pulse, difficult to work
11~10vol%	Breathing trouble, drowsiness, languorous
7~6vol%	Lose color, desensitized sense, lose consciousness
Below 4vol%	Lose consciousness within 40 seconds and fall unconscious

OXYGEN MONITOR

Portable Gas Monitors

Oxygen (for oxygen deficiency prevention)

OMA-600E (portable/diffusion type)

The OMA-600E monitors Oxygen and alerts workers of Oxygen concentration before entering to irrespirable atmospheres or oxygen-deficient confined space such as tunnel, manhole or public utility conduit to protect from injury by oxygen deficiency.

Marks in white on every 1 metre on the sensor cord is your indication for distance at remote measurement such as at the bottom of manhole.

· Certified to Nippon Kaiji Kyokai (NK) type test



Oxygen (for oxygen deficiency prevention)

OM-600E (portable/diffusion type)

The OMA-600E monitors Oxygen and alerts workers of Oxygen concentration before entering to irrespirable atmospheres or oxygen-deficient confined space such as tunnel, manhole or public utility conduit to protect from injury by oxygen deficiency.

Point

- Delivers gas alarm and/or trouble with loud sound (above 90dB/10 cm).
- Delivers alarm with bright LED flickers, in operation (GREEN), alarm (RED), trouble (ORANGE).
- Large LCD display for easy reading.
- Powerful suction pump, fast response time.
- Approval of intrinsically safe apparatus.

· Certified to Nippon Kaiji Kyokai (NK) type test



Specification

Model	OMA-600E	OM-600E
Measuring gas	Oxygen	
Detection method	Galvanic cell	
Sampling method	Diffusion type	Suction type (Approx. 0.6L/min (at room temperature with 5m gas sampling hose))
Measuring range	0.0~50.0vol%	
Resolution	0.1vol%	
Detectable accuracy	0.0~25.0vol%:±0.5vol% Above 25.1vol%:±3.0vol%	
Alarm accuracy	±0.5vol% against alarm setting value 18.0vol%	
Alarm concentration	18.0vol%	
Alarm method	LED lamp, LCD, buzzer alarm	
Response time	Within 15 seconds at 90% response at 20°C	Within 15 seconds at 90% response from sampling gas inlet at 20°C
Power supply	3×AA size alkaline dry battery (LR6)	
Continuous operation time	Approx. 2500 hrs (no alarm)	Approx. 16 hrs (no alarm)
Explosion-proof	Exia II CT4X (No.TC20164)	Exia II CT4X (No.TC19531)
Operating temperature	-10~40°C; 30~85%RH (non-condensing)	
Pressure range	80~110kPa	
Dimensions	160 (W)×93 (H)×65 (D)mm	78 (W)×200 (H)×50 (D)mm
Weight	Approx. 740g (including batteries and sensor cord)	Approx. 550g (including batteries)
Standard accessory	5m sensor cord, carrying case	Gas sampling hose with float type gas collector (5m, polyurethane), leather case, carrying case

TOXIC GAS MONITOR

CO, H₂S, SO₂

Personal CO Monitor: Small, lightweight, body-worn monitor · buzzer, lamp and vibration alert when reached dangerous concentration

Carbon monoxide (for toxic prevention)

TPA-9000 (for personal use/diffusion type)

The TPA-9000 CO monitor detects Carbon monoxide produced by the incomplete combustion in steel mills, refineries, utilities and generators installed in culvert and alerts workers to dangerous levels of Carbon monoxide to prevent from CO poisoning.

Point

- Delivers alarm with loud sound, vibration and super luminosity LED.
- A safety-pin and body-worn clip.
- Inverted display for easy reading.
- Displays peak and accumulated value (ALT) through one-touch operation.



Portable Gas Monitors: Easy to carry · buzzer and lamp alert when reached dangerous concentration

Carbon monoxide (for toxic prevention)

TPA-5000E (for personal use/diffusion type)

The TPA-5000E CO monitor detects Carbon monoxide produced by the incomplete combustion in steel mills, refineries, utilities and generators installed in culvert and alerts workers to dangerous levels of Carbon monoxide to prevent from carbon monoxide poisoning.

Hydrogen sulphide (for toxic prevention)

TPA-5200E (for personal use/diffusion type)

The TPA-5200E H₂S monitor 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, and alerts of danger to protect workers from hydrogen sulphide poisoning.

Sulphur dioxide/Non EX (for toxic prevention)

TPA-5300P (for personal use/diffusion type)

The TPA-5300P detects Sulphur dioxide generated from fumigant, pesticide, bleach for timber, mineral oil refinery, burnt of sulphur including fuel and alerts workers to dangerous levels of Sulphur dioxide to prevent from sulphur dioxide poisoning.

Point

- Buzzer and lamp alert when reached dangerous concentration.
- Compact size to fit to a belt or pocket for hands-free work.
- Power saving function for long time operation.
- Structure to prevent water and dust go in the sensor.
- Intrinsic safety for safe operation in explosive atmospheres.
- Remote detection with an optional adaptor and 5 metre length sensor cord.
- Approval of intrinsically safe apparatus (TPA-5000E/TPA-5200E).



Specification

Model	TPA-9000	TPA-5000E	TPA-5200E	TPA-5300P
Measuring gas	Carbon monoxide		Hydrogen sulphide	Sulphur dioxide
Detection method	Chronoamperometry			
Sampling method	Diffusion type			
Measuring range	0~500ppm		0~50.0ppm	
Resolution	1ppm		0.1ppm	
Detectable accuracy	0~100ppm:±15ppm 100~500ppm:±15% of indicated value	0~100ppm:±10ppm Above 101ppm:±10% of indicated value	0~30ppm:±1.5ppm Above 30.1ppm:±3ppm	0~5ppm:±0.5ppm Above 5.1ppm:±10% of indicated value
Alarm concentration	AL1:50ppm / AL2:150ppm / ALT:999ppm	LOW:50ppm / HIGH:100ppm	LOW:10ppm / HIGH:30ppm	LOW:2ppm / HIGH:15ppm
Alarm method	LCD · LED lamp · buzzer			
Response time	Within 30 seconds at 90% response		Within 25 seconds at 90% response	
Power supply	Lithium polymer battery		3×AAA size alkaline dry battery	
Continuous operation time	Approx. 300 hrs		Approx. 1000 hours	
Explosion-proof	-		ExiallCT4X (No.TC17022)	
Operating temperature	-10~50°C; 15~90%RH (non-condensing)		-10~40°C; 30~85%RH (non-condensing)	
Dimensions	60 (W)×56 (H)×20 (D) mm		100 (W)×54 (H)×23 (D) mm	
Weight	Approx. 70g (including Silicon cover)		Approx. 100g	
Standard accessory	Silicon cover		Softcase	

MULTI-GAS MONITORS

O₂, CO, H₂S

Portable Gas Monitors

Oxygen/Carbon monoxide (for oxygen deficiency, toxic prevention)

MMP-10 (for personal use/diffusion type)

The MMP-10 O₂/CO monitor detects Carbon monoxide produced by the incomplete combustion in steel mills, refineries, utilities and generators installed in culvert and alerts workers to dangerous levels of Carbon monoxide to prevent from CO poisoning. It also detects Oxygen concentration to alert of danger to prevent from oxygen deficiency.

- Point**
- Buzzer and lamp alert when reached dangerous concentration.
 - Compact size to fit to a belt or pocket for hands-free work.
 - Power saving function for long time operation.
 - Structure to prevent water and dust go in the sensor.
 - Remote detection with an optional adaptor and 5 metre length sensor cord.



Sensor cord assembly (adaptor included, optional)

Oxygen/Hydrogen sulphide (for oxygen deficiency, toxic prevention)

MMP-12 (for personal use/diffusion type)

The MMP-12 O₂/H₂S monitor 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, and alerts workers to dangerous levels of Hydrogen sulphide to prevent from hydrogen sulphide poisoning. It also detects Oxygen concentration to alert of danger to prevent from oxygen deficiency.

- Point**
- Buzzer and lamp alert when reached dangerous concentration.
 - Compact size to fit to a belt or pocket for hands-free work.
 - Power saving function for long time operation.
 - Structure to prevent water and dust go in the sensor.
 - Remote detection with an optional adaptor and 5 metre length sensor cord.
 - Approval of intrinsically safe apparatus



Sensor cord assembly (adaptor included, optional)

Specification

Model	MMP-10		MMP-12	
Measuring gas	Oxygen	Carbon monoxide	Oxygen	Hydrogen sulphide
Detection method	Galvanic cell	Chronoamperometry	Galvanic cell	Chronoamperometry
Sampling method	Diffusion type			
Measuring range	0.0~50.0vol%	0~500ppm	0.0~50.0vol%	0~50ppm
Resolution	0.1vol%	1ppm	0.1vol%	0.1ppm
Detectable accuracy	0~25.0vol%:±0.5vol% Above 25.1vol%:±3.0vol%	0~100ppm:±10ppm Above 101ppm:±10% of indicated value	0~25.0vol%:±0.5vol% Above 25.1vol%:±3.0vol%	0~30ppm:±1.5ppm Above 30.1ppm:±3ppm
Alarm concentration	Below 18.0vol%	LOW: 50ppm HIGH:150ppm	Below 18.0vol%	LOW: 10ppm HIGH:30ppm
Alarm method	LCD display · LED lamp · buzzer			
Response time	Within 15 seconds at 90% response	Within 25 seconds at 90% response	Within 15 seconds at 90% response	Within 25 seconds at 90% response
Power supply	3×AAA size alkaline dry battery			
Continuous operating time	Approx. 800 hours			
Explosion-proof	-		Exia II CT4 (No.TC19102)	
Operating temperature	-10~40°C; 30~85%RH (non-condensing)			
Dimensions	106 (W)×56 (H)×29 (D)mm			
Weight	Approx. 180g			
Standard accessory	Softcase			

MULTI-GAS MONITORS

O₂, CO, H₂S, COMBUSTIBLE GAS

Portable Gas Monitors

Oxygen/Carbon monoxide (for oxygen deficiency, toxic prevention)

MD-611E (suction type)

The MD-611E O₂/CO monitor detects Carbon monoxide produced by the incomplete combustion in steel mills, refineries, utilities and generators installed in culvert and alerts workers to dangerous levels of Carbon monoxide to prevent from CO poisoning. It also detects Oxygen concentration to alert of danger to prevent from oxygen deficiency.

Oxygen/Hydrogen sulphide (for oxygen deficiency, toxic prevention)

MD-612E (suction type)

The MD-612E O₂/H₂S monitor detects Hydrogen sulphide from sapropel or decay of organic matter produced at sewer, human-waster treatment plant, pulp mill or waste disposal centers, or Hydrogen sulphide produced at volcanos and spas, and alerts of danger to protect workers from hydrogen sulphide poisoning.

It also detects Oxygen concentration to alert of danger to prevent from oxygen deficiency.

· Certified to Nippon Kaiji Kyokai (NK) type test

Oxygen/Combustible gas (for oxygen deficiency, explosion prevention)

MD-620E (suction type)

The MD-620E O₂/Combustible gas monitor detects Oxygen and Combustible gases before entering to places where irrespirable atmospheres or Combustible gas could be blew out or produced, and alerts of danger to prevent from oxygen deficiency and carbon monoxide poisoning.

Point

- Delivers gas alarm and/or trouble with loud sound (above 90dB/10 cm).
- Delivers alarm with bright LED flickers, in operation (GREEN), alarm (RED), trouble (ORANGE).
- Large LCD display for easy reading.
- Powerful suction pump, fast response time.
- Approval of intrinsically safe apparatus.

· Certified to Nippon Kaiji Kyokai (NK) type test



Specification

Model	MD-611E		MD-612E		MD-620E	
Measuring gas	Oxygen	Carbon monoxide	Oxygen	Hydrogen sulphide	Oxygen	Combustible gas in the air
Detection method	Galvanic cell	Chronoamperometry	Galvanic cell	Chronoamperometry	Galvanic cell	Catalytic combustion
Sampling method	Suction type (approx. 0.6L/min with 5m gas sampling hose)					
Measuring range	0.0~50.0vol%	0~500ppm	0.0~50.0vol%	0.0~50.0ppm	0.0~50.0%	0.0~100%LEL (※)
Resolution	0.1vol%	1ppm	0.1vol%	0.1ppm	0.1vol%	1%LEL
Detectable accuracy	0.0~25.0vol%:±0.5vol% Above 25.1vol%:±3.0vol%	Below 100ppm:±10ppm Above 100ppm:±10% of indicated value	0.0~25.0vol%:±0.5vol% Above 25.1vol%:±3.0vol%	Below 30.0ppm:±1.5ppm Above 30.1ppm:±3.0ppm	0.0~25.0vol%:±0.5vol% Above 25.1vol%:±3.0vol%	±10%LEL
Alarm accuracy	±0.5vol% against alarm setting value 18.0vol%	Below 100ppm:±10ppm Above 100ppm:±10% of indicated value	±0.5vol% against alarm setting value 18.0vol%	Below 30.0ppm:±1.5ppm Above 30.1ppm:±3.0ppm	±0.5vol% against alarm setting value 18.0vol%	±10%LEL
Alarm setting value	18.0vol%	ALM1 50ppm ALM2 100ppm	18.0vol%	ALM1 10.0ppm ALM2 20.0ppm	18.0vol%	20%LEL
Alarm method	LED lamp, LCD, buzzer alarm					
Response time	Within 15 seconds at 90% response	Within 25 seconds at 90% response	Within 15 seconds at 90% response	Within 25 seconds at 90% response	Within 15 seconds at 90% response	Within 25 seconds at 90% response
Power supply	from sampling gas inlet at 20°C 3xsize AA Alkaline dry battery (LR6)					
Continuous operation time	Approx. 16 hours (no alarm)				Approx. 8 hours (no alarm)	
Explosion-proof	Exia II CT4X (No.TC19531)				Exiad II CT4X (No.TC19587)	
Operating temperature	-10~40°C; 30~85%RH (non-condensing)				-10~40°C; below 95%RH (non-condensing)	
Pressure range	80~110kPa					
Dimensions	78 (W)×200 (H)×50 (D)mm					
Weight	Approx. 550g (including batteries)					
Standard accessories	Gas sampling hose with float type gas collector (5m), leather case, carrying case					

※%LEL=Concentration of Combustible gases (%)+ Lower Explosive Limit%)×100 refer to page 4

MULTI-GAS MONITORS

O₂, COMBUSTIBLE GAS, H₂S, CO

Portable Gas Monitors

Oxygen/Combustible gas/Hydrogen sulphide

MD-801 (suction type)

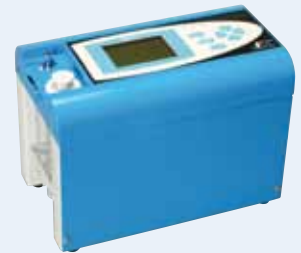
- Point**
- Simultaneous measurement of O₂, Combustible gas and H₂S.
 - Auto span calibration of O₂ sensor, auto zero adjustment of combustible gas and H₂S sensors and battery capacity check when power is switched on.
 - 2 power supply (alkaline dry batteries/AC 100V).
 - A data logger function for trend analysis.
 - Built-in water sensor for fast suction stop.



Oxygen/Combustible gas/Carbon monoxide

MD-811 (suction type)

- Point**
- Simultaneous measurement of O₂, Combustible gas and CO.
 - Auto span calibration of O₂ sensor, auto zero adjustment of combustible gas and CO sensors and battery capacity check when power is switched on.
 - 2 power supply (alkaline dry batteries/AC 100V).
 - A data logger function for trend analysis.
 - Built-in water sensor for fast suction stop.



Oxygen/Combustible gas/Hydrogen sulphide/Carbon monoxide

MD-940 (suction type)

- Point**
- Simultaneous measurement of O₂, Combustible gas, H₂S and CO.
 - Auto span calibration of O₂ sensor, auto zero adjustment of combustible gas, H₂S and CO sensors and battery capacity check when power is switched on.
 - Displays concentration, battery capacity, sensor trouble messages.
 - 2 power supply (alkaline dry batteries/AC 100V).
 - A data logger function for trend analysis.
 - Calculate the average concentration.



Specification

Model	MD-801			MD-811		
Measuring gas	Oxygen	Combustible gas	Hydrogen sulphide	Oxygen	Combustible gas	Carbon monoxide
Detection method	Galvanic cell	Catalytic combustion	Chronoamperometry	Galvanic cell	Catalytic combustion	Chronoamperometry
Sampling method	Suction type					
Measuring range	0.0~50.0vol%	0~100%LEL (※)	0.0~50.0ppm	0.0~50.0vol%	0~100%LEL (※)	0~300ppm
Resolution	0.1vol%	1%LEL	0.1ppm	0.1vol%	1%LEL	1ppm
Detectable accuracy	Below 25.0vol%:±0.5vol% Above 25.1vol%:±3.0vol%	±10%LEL	Below 30ppm:±1.5ppm Above 30.1ppm:±10% of indicated value	Below 25.0vol%:±0.5vol% Above 25.1vol%:±3.0vol%	±10%LEL	Below 100ppm:±10ppm Above 101ppm:±10% of indicated value
Alarm concentration	Below 18.0vol%	20%LEL	10.0ppm	Below 18.0vol%	20%LEL	50ppm
Alarm method	Alarm operation:LCD-LED lamp-buzzer					
Response time	Within 25 seconds at 90% response (without gas sampling tube)					
Power supply	4xD size alkaline dry battery / AC100V (used with adaptor)					
Continuous operation time	Approx. 35 hours with alkaline dry batteries					
Operating temperature	-10~40°C; 30~85%RH (non-condensing)					
Dimensions	230 (W)×165 (H)×130 (D)mm					
Weight	Approx. 2.8kg (including batteries and sensors)					
Standard accessory	Gas sampling tube with float type gas collector (8m), carrying case					

Model	MD-940			
Measuring gas	Oxygen	Combustible gas	Hydrogen sulphide	Carbon monoxide
Detection method	Galvanic cell	Catalytic combustion	Chronoamperometry	Chronoamperometry
Sampling method	Suction type			
Measuring range	0.0~50.0vol%	0~100%LEL (※)	0.0~50.0ppm	0~300ppm
Resolution	0.1vol%	1%LEL	0.1ppm	1ppm
Detectable accuracy	Below 25.0vol%:±0.5vol% Above 25.1vol%:±3.0vol%	±10%LEL	Below 30ppm:±1.5ppm Above 30.1ppm:±10% of indicated value	Below 100ppm:±10ppm Above 101ppm:±10% of indicated value
Alarm concentration	Below 18.0vol%	20%LEL	10ppm	50ppm
Alarm method	Alarm operation:LCD-LED lamp-buzzer			
Response time	Within 25 seconds at 90% response (without gas sampling tube)			
Power supply	4xD size alkaline dry battery / AC100V (used with adaptor)			
Continuous operation time	Approx. 35 hours with alkaline dry batteries			
Operating temperature	-10~40°C; 30~85%RH (non-condensing)			
Dimensions	230 (W)×165 (H)×130 (D)mm			
Weight	Approx. 2.8kg (including batteries and sensors)			
Standard accessory	Gas sampling tube with float type gas collector (8m), carrying case			

※ %LEL=Concentration of combustible gas (%)÷ Lower explosive limit (%)×100, refer to P4

Portable Gas Monitors

Oxygen

OM-350 (suction type)

- Point**
- Analogue meter with 2 ranges switch.
 - To measure the concentration of Oxygen in flue gas from combustion appliances.

Oxygen

OX-600 (suction type)

Carbon monoxide

TX-611H (suction type)

Oxygen/Carbon monoxide

MX-611H (suction type)

- Point**
- To measure Oxygen and Carbon monoxide in flue gas from combustion appliances.
 - Large LCD for easy reading of gas concentration.
 - Flow volume trouble function.
 - Displays battery life.
 - Easy to carry with a probe case.



OM-350

OX-600



TX-611H

MX-611H

Oxygen/Carbon monoxide/Nitrogen monoxide/Carbon dioxide

SEM-103 (suction type)

- Point**
- Simultaneous measurement of O₂, CO, NO and CO₂.
 - Auto span calibration of O₂ sensor, auto zero adjustment of CO and NO sensors, and battery capacity check when power is switched on.
 - Displays battery replacement or sensor trouble messages.
 - Displays combustion efficiency by measuring exhaust temperature with temperature sensor.
 - 2 power supply (alkaline dry batteries/AC 100V).
 - Auto measurement by setting measuring time and intervals.



SEM-103

Specification

Model	OM-350	OX-600	TX-611H	MX-611H	OX, TX, MX
Measuring gas	Oxygen		Carbon monoxide	Oxygen	Flue gas temp. (optional)
Measuring principle	Galvanic cell		Chronoamperometry	Galvanic cell	Thermocouple (type K)
Sampling method	Suction type (approx. 0.7L/min, non-load)		Suction type (approx. 0.6L/min with gas sampling probe)		
Measuring range	0.0~25.0vol%		0~5,000ppm	0.0~25.0vol%	0~750°C
Resolution	0.5vol%	0.1vol%	1ppm	0.1vol%	1°C
Detectable accuracy	±0.7vol%	±0.5vol%	0~200ppm:indicated value±20ppm 201~5,000ppm:±10% of indicated value	±0.5vol%	0~200ppm:indicated value±20ppm 201~5,000ppm:±10% of indicated value
Display	Analogue (range switch)		Digital liquid crystal		
Response time	Within 20 seconds at 90% response (from sampling gas inlet at 20°C)		Within 15 seconds at 90% response (from sampling gas inlet at 20°C)		
Power supply	3xsize AA Alkaline dry battery (LR6)				
Continuous operation time	Approx. 10 hours		Approx. 20 hours (no alarm)		
Operating temperature	0~40°C		-10~40°C; 30~85%RH (non-condensing)		
Dimensions	80 (W)×215 (H)×80 (D)mm		78 (W)×200 (H)×50 (D)mm		
Weight	Approx. 730g (including batteries)		Approx. 550g (including batteries)		
Standard accessories	Water stopper, probe, gas sampling tube (1.5m), carrying case	Gas sampling probe, dust filter, carrying case	Gas sampling probe with NOx filter, nozzle with hood, key-shaped nozzle, dust filter, carrying case	Gas sampling probe with NOx filter, dust filter, carrying case	

Model	SEM-103				
Measuring gas	Oxygen	Carbon monoxide	Nitrogen monoxide	Carbon dioxide	Flue gas temp.
Measuring principle	Galvanic cell	Chronoamperometry		Calculation	Thermocouple (type K)
Sampling method	Suction type				
Measuring range	0.0~22.0vol%	0~2,000ppm		0.0~21.0vol%	0~750°C
Resolution	0.1vol%	1ppm		0.1vol%	1°C
Detection accuracy	±0.7vol%	0~300ppm:±15% of indicated value 301~2,000ppm:±10% of indicated value		-	±5°C
Display	Digital liquid crystal				
Response time	Within 15 seconds at 90% response (from sampling gas inlet)	Within 20 seconds at 90% response (from sampling gas inlet)			-
Power supply	4xsize D alkaline dry batteries (LR6) or AC100V±10V 50/60HZ				
Continuous operation time	Approx. 15 hours with alkaline dry batteries				
Operating temperature	-10~40°C; below 90%RH (non-condensing)				
Dimensions	300 (W)×203 (H)×195 (D)mm (without drain trap)				
Weight	Approx. 4Kg				
Standard accessories	NOx removal filter, water stopper, dust filter, connecting hose, tedlar bag and unit tube for calibration, temperature sensor adaptor, temperature sensor, carrying case, AC adaptor				

GAS SENSORS



FC-8P



SC-311P



C-10S



SC-403S



OC-6B



KCS-5P



KHS-5P



KTS-517A



KTS-512P

Specification

Model	FC-8P	SC-311P	C-10S
Measuring gas	Combustible gas in the air		
Sampling method	Catalytic combustion	Heat wire semiconductor	Catalytic combustion
Main usage	FPA-5000E	FPA-5200E	RDE-T, RH-S
Dimensions	φ20×L20mm		φ28×L28mm
Weight	Approx. 35g		Approx. 105g

Model	SC-403S	OC-6B	KCS-5P
Measuring gas	Methane in the air	Oxygen	Carbon monoxide
Sampling method	Heat wire semiconductor	Galvanic cell	Chronoamperometry
Main usage	RDE-TS, RH-S	OPA-5000E, OH-D4A / D4E / S4	TPA-5000E, UM-300
Dimensions	φ28×L28mm	φ20×L20mm	φ21×L20mm
Weight	Approx. 105g	Approx. 10g	Approx. 9g

Model	KHS-5P	KTS-517A	KTS-512P
Measuring gas	Hydrogen sulphide	Ammonia	Sulphur dioxide
Sampling method	Chronoamperometry		
Main usage	TPA-5200E	TH-D4A / D4E / S-5	TPA-5300P
Dimensions	φ21×L20mm	φ21×L20mm	φ21×L20mm
Weight	Approx. 9g		

Fixed type 24-hour gas monitoring system for the danger of leak and/or evaporation of combustible gas and liquid at manufacturing site, filling site, storage, consumption facility of Combustible gas or possible hazardous area of combustible gas, high-pressure gas handling site to prevent from disaster by explosion.

COMBUSTIBLE GAS DETECTOR/ ALARM SYSTEM

Single point

Alarm Meters (for combustible gas)

Indoors





Combustible gas

FA-480

FA-490



Point ■ Used in combination with below gas detectors.

Standard configuration	Diffusion type	Indoors Alarm meter FA-480 FA-490			Site Gas detectors RDE-T RDE-TS RD-4
	3-core cable				
Suction type	Indoors Alarm meter FA-480 FA-490			Site Gas detector RH-S	
		5-core cable		φ6/4 piping	

Gas Detectors (for combustible gas)

Site

ExExplosion-proof

RDE-T

 (diffusion)

ExExplosion-proof

RDE-TS

 (diffusion)

Hydrogen/Flame proof

RD-4

 (diffusion)

Flame proof

RH-S

 (suction)


Point ■ Gas detectors, RD-4 and RH-S are for catalytic combustion type sensor or heat wire semiconductor type sensor.

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

Alarm meters specification

Model	FA-480	FA-490
Measuring gas	Combustible gas in the air	
Detection method	Catalytic combustion	Heat wire semiconductor
Measuring range	0~100%LEL (※) 0~2,000ppm	
Alarm setting value	Adjustable (20%LEL)	Adjustable-2 points (25%LEL, no pre-setting)
Alarm accuracy	Within 25% of setting value	
Alarm display	Intermittent red LED illumination and intermittent buzzer sound	
Alarm contact output	Gas alarm AL1→ non-voltage 1a or 1b contact	Gas alarm AL1→ non-voltage 1a or 1b contact Gas alarm AL2→ non-voltage 1a or 1b contact
Contact capacity	AC125V · 0.6A or DC110V · 0.6A (resistance load)	
Trouble display	Red LED lighting and intermittent buzzer sound	
Analogue output	DC4~20mA	
Power source	AC100V±10% 50/60Hz (AC220V optional)	
Power consumption	Diffusion type; approx. 5VA	Suction type; approx. 20VA
Operating temperature	-10~40°C; below 95%RH (non-condensing)	
Dimensions	120 (W)×197 (H)×65 (D) mm	
Weight	Approx. 0.9kg	

Gas detectors specification

Model	RDE-T	RDE-TS	RD-4	RH-S
Measuring gas	Combustible gas		Hydrogen	Combustible gas
Detection method	Catalytic combustion	Heat wire semiconductor	Catalytic combustion Heat wire semiconductor	
Sampling method	Diffusion			Suction
Explosion-proof	ExdIIBT4	ExdIIBT4	d3aG4	d2G4
Combination	FA-480/490, KA-704R/F/S, KA-708R/F/S, KU-7R/F/S, FA-20F, FA-30 (RDE-T only)			
Dimensions (mm)	100 (W) 173 (H) 81 (D)	100 (W) 173 (H) 81 (D)	140 (W) 175 (H) 108 (D)	355 (W) 325 (H) 108 (D)
Weight	1.0Kg	1.0Kg	4.2Kg	6.3Kg

※%LEL=Concentration of Combustible gases (%)+ Lower Explosive Limit%)×100 refer to page 4

COMBUSTIBLE GAS DETECTOR/ALARM SYSTEM

Alarm Meter

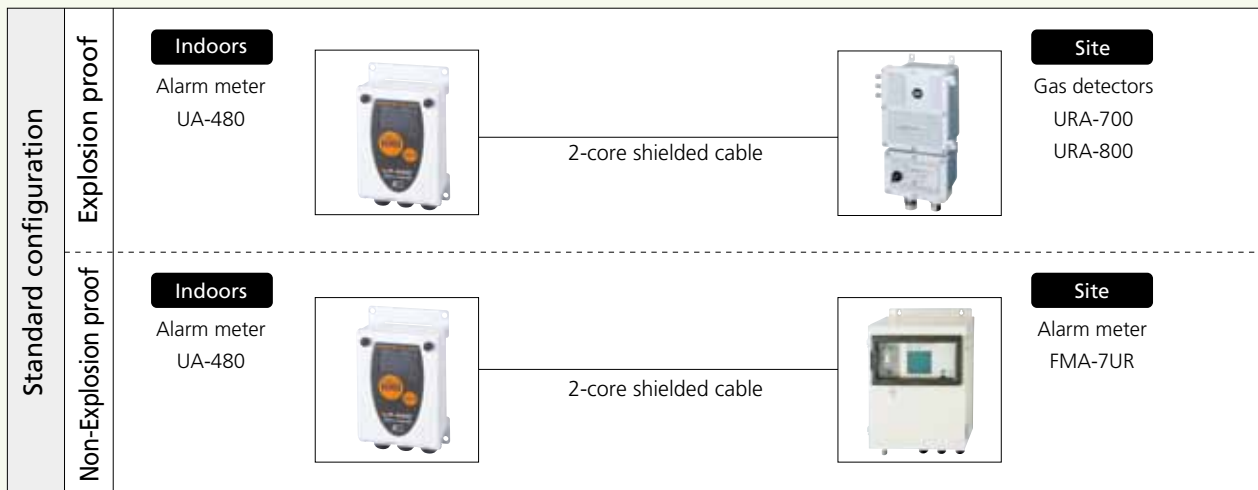
Indoors

Combustible gas

UA-480

Point

- Wall mount type, one point sampling.
- Large display.
- Constant monitoring with a combination of gas detectors at site and observation point.
- Used in combination with below gas detectors.



Specification

Model	UA-480
Measuring gas	Hydrocarbon in the air or inert gas
Detection method	Non-dispersive infrared ray
Measuring range	0~100%LEL (※)
Display method	LED digital
Alarm setting value	Upper limit, adjustable (standard 20%LEL)
Alarm accuracy	±25% of alarm setting value
Alarm display	Flashing red LED, intermittent buzzer sound
Alarm contact output	Non-voltage 1a or 1b contact
Contact capacity (alarm, failure)	AC125V · 0.6A (resistance load) or DC110V · 0.6A (resistance load) or DC30V · 2A (resistance load)
Failure display	Flashing red LED and intermittent buzzer sound
Failure contact output	-
Analogue output	DC4~20mA
Power source	AC100V±10% 50/60HZ 1φ
Power consumption	Approx. 3.5VA (excluding gas detector)
Operating temperature	-10~40°C
Installation	Wall-mount type (flush-mount type is optional)
Sampling point	Single point
Dimensions	120 (W)×205 (H)×69 (D) mm
Weight	Approx. 0.9Kg
Option	Power supply: AC200/220V DC24V failure contact output 2 step alarm

※ %LEL=Concentration of Combustible gases (%)÷ Lower Explosive Limit%×100 refer to page 4

COMBUSTIBLE GAS DETECTOR/ALARM SYSTEM

Gas Detector (non explosion-proof)

Site

Combustible gas

FMA-7UR

Point

- A stable zero point requires no zero adjustment for a long time.
- Easy switch operation for gas calibration and alarm setting.
- Suction type with a built-in sampling pump (approx. 0.7L/min)
- Detects combustible gases in inert gas.



Gas Detectors (flame proof type)

Site

Combustible gas

URA-700



Point

- A stable zero point requires no zero adjustment for long time.
- Easy switch operation for gas calibration.
- Good selectivity of the target gas by NDIR detection.
- Suction type with a built-in sampling pump (approx. 0.5L/min)
- Detects combustible gases in inert gas.

URA-800



Point

- A stable zero point requires no zero adjustment for a long time.
- Easy magnet switch operation for gas calibration.
- Good selectivity of the target gas by NDIR detection.
- Suction type with a built-in sampling pump (approx. 2L/min)
- Detects combustible gases in inert gas.

Specification

Model	FMA-7UR	URA-700	URA-800
Measuring gas	Hydrocarbons in the air or inert gas		
Detection method	Non-Dispersive Infrared Ray (fluid modulation)		
Sampling method	Suction type with a built-in sampling pump		
Measuring range	0~100%LEL (※)	0~50,000ppm or 0~5,000ppm (as Methane)	
Indication accuracy	Within ±5% of full-scale		
Display method	LCD		
Alarm setting value	Upper limit, 2-step alarm (standard 1-step alarm)	—	—
Alarm display	Display AL1 or AL2, alarm lamp blinking, intermittent buzzer sound	—	—
Alarm contact output	AL1:non-voltage 1a or 1b AL2:none	—	—
Contact capacity (alarm, failure)	AC125V, 0.5A or DC30V, 2A	—	—
Failure display	FLOW or FAIL	—	—
Failure contact output	Non-voltage 1a or 1b	—	—
Sampling amount	0.7L/min	0.5L/min	2L/min
Response time	In case of 62.5% indication:witin 30 seconds (the piping must be within φ6/φ4 5m)		In case of 62.5% indication:witin 30 seconds (the piping must be within φ6/φ4 15m)
Analogue output	Gas concentration signal:DC4~20mA/full-scale liner output trouble signal:1mA power loss:0mA		
Power source	AC100V~15~+10% 50/60HZ 1φ		
Power consumption	25VA	—	40VA
Operating temperature	-10~40°C		
Explosion-proof	—	ExdIIBT4X (No. TC13417)	ExdIIBT4X (No. TC17630)
Combination	UA-480, KA-704R/U, KA-708R/U, KU-7R/U		
Dimensions	256 (W)×350 (H)×155 (D) mm	280 (W)×480 (H)×160 (D) mm	300 (W)×480 (H)×200 (D) mm
Weight	Approx. 10Kg	Approx. 20Kg	Approx. 30Kg

※%LEL=Concentration of Combustible gases (%)+ Lower Explosive Limit%)×100 refer to page 4

OXYGEN GAS DETECTOR/ALARM SYSTEM

Single point

Alarm Meter (for Oxygen)

Indoors

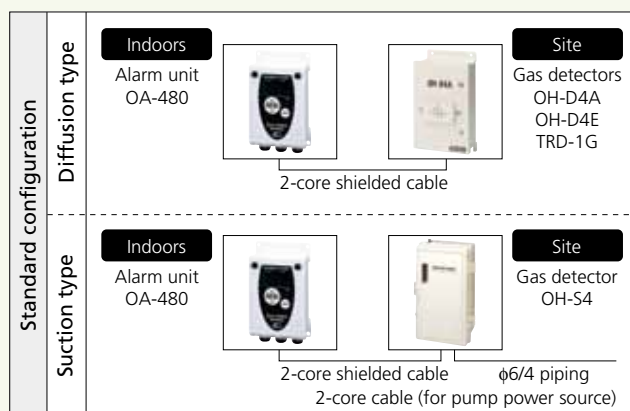
Oxygen

OA-480



Point

■ The OA-480 used in combination with below gas detectors.



Gas Detectors (for Oxygen)

Site

Oxygen

OH-D4A

(non Ex · diffusion type)

OH-D4E

(intrinsic safe · diffusion type)

TRD-1G

(flame proof type · diffusion type)

OH-S4

(non Ex · suction type)



*Requires a zener barrier to be used as an intrinsically safe type

■ Built-in flow meter and pump sensor.

■ Non drip-proof type

Specification

Model	OA-480
Measuring gas	Oxygen
Detection method	Galvanic cell
Measuring range	0.0~25.0vol%
Alarm setting value	Adjustable (standard:18.0vol%)
Detectable accuracy	±0.7vol%
Alarm accuracy	±0.7vol%
Alarm display	Intermittent red LED light and intermittent buzzer sound
Alarm contact output	Non-voltage 1a or 1b contact (option)
Contact capacity	AC125V · 0.6A or DC110V · 0.6A, DC30V·2A (resistance load)
Trouble display	Red LED light and intermittent buzzer sound
Analogue output	DC4~20mA
Power source	AC100V±10% 50/60Hz 1φ
Power consumption	Diffusion type; approx. 5VA, Suction type; approx. 20VA
Operating temperature	-10~40°C; below 95%RH (non-condensing)
Dimensions	120 (W)×197 (H)×65 (D) mm
Weight	Approx. 0.9kg

Specification

Model	OH-D4A	OH-D4E	TRD-1G	OH-S4
Sensor model	OC-6B			
Detection method	Galvanic cell			
Sampling method	Diffusion			Suction
Explosion-proof	—	ExiadtIICT4	d3aG4	—
Combination	OA-480, KA-704R/G, KA-708R/G, KU-7R/G			
Dimensions (mm)	92 (W) 160 (H) 70 (D)	92 (W) 160 (H) 70 (D)	220 (W) 116 (H) 122 (D)	225 (W) 350 (H) 160 (D)
Weight	0.7Kg	0.7Kg	4Kg	2.4Kg

TOXIC GAS DETECTOR/ALARM SYSTEM

CO, H₂S, NH₃, NO, SO₂

Single point

Alarm Meter (for toxic gas)

Indoors

Carbon monoxide/Hydrogen sulphide/Ammonia

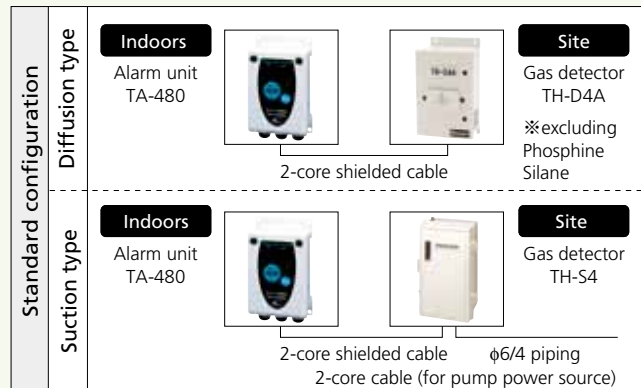
TA-480

Measuring gases and ranges

Carbon monoxide	0~300ppm
Hydrogen sulphide	0~50.0ppm
Ammonia	0~100ppm
Phosphine	0~1.00ppm
Silane	0~20.0ppm
Nitric oxide	0~500ppm



Point ■ The TA-480 used in combination with below gas detectors.



Gas Detectors (for toxic gas)

Site

Carbon monoxide/Hydrogen sulphide/Ammonia/Nitrogen dioxide/Sulphur dioxide

TH-D4A

(non Ex · diffusion)



TH-D4E

(intrinsic safe · diffusion)



※Requires a zenner barrier to be used as an intrinsically safe type

TRD-1T

(flame proof · diffusion)



TH-S4/S5

(non Ex · suction)



■ Built-in flow meter and pump sensor
■ Non drip-proof type

Specification

Model	TA-480		
Measuring gas	Carbon monoxide	Hydrogen sulphide	Ammonia
Detection method	Chronoamperometry		
Measuring range	0~300ppm	0~50.0ppm	0~100ppm
Alarm setting value	50ppm	10.0ppm	25ppm
Detectable accuracy	0~150ppm:±15ppm 150~300ppm:±10% of indicated value	0~30ppm:±1.5ppm 30~50ppm:±3.0ppm	0~75ppm:±7.5ppm 75~100ppm:±10% of indicated value
Alarm accuracy	±30% of alarm setting value		
Alarm display	Intermittent red LED light and intermittent buzzer sound		
Alarm contact output	Non-voltage 1a (standard) or 1b (option)		
Contact capacity	AC125V · 0.6A or DC110V · 0.6A, DC30V·2A (resistance load)		
Trouble display	Intermittent red LED and buzzer sound		
Analogue output	DC4~20mA		
Power source	AC100V±10% 50/60Hz 1φ		
Power consumption	Diffusion type; approx. 5VA, Suction type; approx. 20VA		
Operating temperature	-10~40°C; below 95%RH (non-condensing)		
Dimensions	120 (W)×205 (H)×69 (D) mm		
Weight	Approx. 0.9kg		

Specification

Model	TH-D4A	TH-D4E	TRD-1T	TH-S4	TH-S5
Measuring gas	Carbon monoxide, Hydrogen sulphide, Ammonia			Carbon monoxide Hydrogen sulphide, Ammonia	
Detection method	Chronoamperometry				
Sampling method	Diffusion type			Suction type	
Explosion-proof	—	ExiadIICT4 (No.TC15708)	d3aG4 (No.T41486)	—	
Main usage	TA-480, KA-704R/T, KA-708R/T, KU-7R/T				
Dimensions	93 (W)×160 (H)×70 (D) mm	93 (W)×160 (H)×70 (D) mm	220 (W)×116 (H)×122 (D) mm	225 (W)×350 (H)×160 (D) mm	
Weight	Approx. 0.7Kg		Approx. 4Kg	Approx. 2.4Kg	

FIXED TYPE GAS DETECTOR/ALARM SYSTEM

COMBUSTIBLE GAS, H₂S, NH₃, CO, O₂

Multi-point/single point

Indicator Alarm Unit (multi wall mount type)

<Multi-point>

Combination of Combustible gas · Oxygen · Toxic gas

KA-700R Series

Point

- Used in combination with gas detectors on page 13 to 17.
- Displays gas concentration in both LCD bar meter and digital meter.
- Displays error codes in trouble.
- Simple zero adjustment function.
- Peak-hold function.
- Zero suppression function.
- Easy alarm setting with a digital switch.



Indicator Alarm Unit (panel built-in type)

<Multi-, single point>

Combustible gas · Oxygen · Toxic gas

KU-7R Series

Point

- Variety of combination.
- Displays gas concentration in LCD bar meter and digital meter.
- Displays error codes in trouble.
- Simple zero adjustment function (span adjustment for Oxygen).
- Peak-hold function.
- Zero suppression function.
- Flexible for customization, from a few to over 100 points KU-7R Series in a panel.



Specification

Model	KA-704R	KA-708R
Measuring gas	Combination of Combustible gas · Oxygen · Toxic gases	
Detection method	Refer to detection method of KU-7R Series	
Measuring range	Refer to detection method of KU-7R Series	
Concentration display	LCD bar with 51 segments and 4 figures LCD digital meter	
Alarm setting value	2-step alarm, adjustable (15 steps), upper or lower limit available	
Alarm accuracy	Refer to KU-7R Series	
Alarm display	Red LED flashing, LCD flashing, intermittent buzzer sound	
Alarm contact output	Delegate non-voltage 1a, 1b or individual 1a	
Trouble display	Power lamp changes to intermittent red light from green, continuous buzzer sound	
Operating temperature	-10~40°C	
Analogue output	DC4~20mA	
Power source	AC 100V±10% 50/60Hz 1φ	
Power consumption	Max. 150VA	Max. 300VA
	depends on applied gas detectors	
Installation method	Wall mount or panel mount	
Sampling point	Maximum 4 points	Maximum 8 points
Dimensions	300 (W)×370 (H)×100 (D) mm	500 (W)×370 (H)×100 (D) mm
Weight	Approx. 5.5Kg	Approx. 10Kg

Type of KU-7R Series

Model	Measuring gas	Detection range	Detection method
KU-7R/F	Combustible gas	0~100%LEL (※)	Catalytic combustion
KU-7R/S		0~2,000ppm	Heat wire semiconductor
KU-7R/U		0~100%LEL (※)	NDIR
KU-7R/T1A	Phosphine	0~1ppm	Chronoamperometry
KU-7R/T2B	Silane, Disilane	0~20ppm	
KU-7R/T5B	Hydrogen sulphide	0~50ppm	
KU-7R/T1C	Ammonia	0~100ppm	
KU-7R/T3C	Carbon monoxide	0~300ppm	Galvanic cell
KU-7R/G2	Oxygen	0~25vol%	
KU-7R/G5		0~50vol%	

Model	KU-7R/F	KU-7R/S	KU-7R/U	KU-7R/T	KU-7R/G
Measuring gas	Combustible gas	Combustible gas	Combustible gas	Toxic gas	Oxygen
Detection method	Catalytic combustion	Heat wire semiconductor	NDIR	Chronoamperometry	Galvanic cell
Measuring range	0~100%LEL (※)	0~2,000ppm	0~100%LEL (※)	Refer to above	0~25vol%, 0~50vol%
Concentration display	LCD bar with 51 segments and 4 figures LCD digital meter				
Alarm setting value	2-step alarm, adjustable (15 steps), upper or lower limit available				
Alarm accuracy	±25% of the alarm setting value				±0.7vol%
Alarm display	Intermittent red LED light				
Alarm contact output	Non-voltage 1a				
Trouble display	Power lamp changes to intermittent red light from green				
Operating temperature	-10~40°C				
Analogue output	DC4~20mA				
Power source	DC24V±10%				
Power consumption	Approx. 10VA	Approx. 12VA	Approx. 7.5VA		
Dimensions	36 (W)×144 (H)×176 (D) mm (with a single case)				
Weight	Approx. 0.8Kg				

※%LEL=Concentration of Combustible gases (%)- Lower Explosive Limit%×100 refer to page 4

FIXED TYPE GAS DETECTOR/ALARM SYSTEM

Multi-point/double points

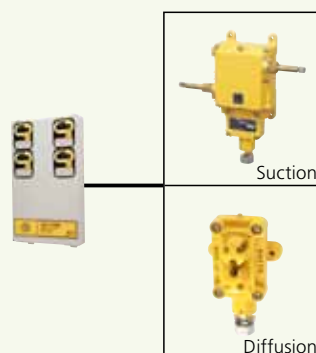
Multi-Point Alarm Meter (wall mount type)

<Multi-point>

Combustible gas

FA-20F

The FA-20F is a combustible gas alarm meter connecting to maximum 6 combustible gas detectors.



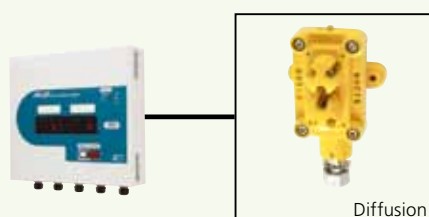
Double Points Gas Detector (wall mount type)

<Double points>

Combustible gas (built-in emergency power backup)

FA-30

Built-in gas detector and emergency power backup system for safe continuous monitoring prevent shut down of gas detector in emergency situations.



Specification

Model	FA-20F	FA-30
Measuring gas	Combustible gas in the air	
Detection method	Catalytic combustion or Heat wire semiconductor	Catalytic combustion
Measuring range	0~100%LEL (*), 0~500ppm, 0~2,000ppm, 0~5,000ppm	0~100%LEL (*)
Concentration display	LED	
Alarm setting value	25%LEL, 50ppm, 500ppm, 1,000ppm	25%LEL
Alarm accuracy	±25% of setting value	
Alarm display	Intermittent red LED light and buzzer sound	
Trouble display	Intermittent yellow LED light and buzzer sound	Intermittent red LED light and buzzer sound
Alarm contact output	Delegate non-voltage 1a or 1b	Individual 2 contacts, non-voltage 1b
Contact capacity	AC125V, 0.6A (resistance load) or DC110V, 0.6A (resistance load) or DC30V, 2A (resistance load)	
Operating temperature	-10~40°C; below 95%RH (non-condensing)	
Power source	AC100V±10% 50/60Hz 1φ	
Power consumption	Diffusion type; approx. 3.5VA/single point, Suction type; approx. 19VA/single point	Approx. 25VA
Dimensions	300 (W)×510 (H)×70 (D) mm	360 (W)×330 (H)×80 (D) mm
Weight	Approx. 7.6Kg (6 points) including fittings	Approx. 8.5Kg

*%LEL=Concentration of Combustible gases (%)+ Lower Explosive Limit%×100 refer to page 4

OPTIONAL PARTS

<FOR FIXED TYPE GAS DETECTOR/ALARM SYSTEM>

Drip-proof covers (for diffusion type detectors)

For combustible gas detectors

HC-B



HC-B2



※ For underfloor installation

For hydrogen detectors

HC-E



Gas detectors are not drip-proof type and require these drip-proof covers to prevent entry of water drops.

Detector boxes (for suction type detectors)

For indoor installation

BOX-18



For outdoor installation

BOX-3B



Model RH-S gas detector requires gas detector box with a filter and flow meter in drop-proof cover.

Option for suction type

Gas collector

GD



For suction type gas detectors, install a gas collector with a filter to prevent entry of dust.

Air filter

KG-T



Filters prevent entry of dust into gas collectors.

Air filter

MGF-5.4



Drain trap

ML-701



When gas includes moisture or moisture condensation expected in the piping due to high-temperature gas, install a drain trap in front of gas detectors to prevent entry of moisture into gas detectors.

Drip-proof cover/detector box

	Model	Adaptable detector	Application	Dimension
Drip-proof cover	HC-B	RDE-T/RDE-TS	For Combustible gas detector	170 (W)×150 (H)×100 (D) mm
	HC-B2		For underfloor installation	220 (W)×120 (H)×150 (D) mm
	HC-E	RD-4	For Hydrogen detector	180 (W)×165 (H)×140 (D) mm
Detector box	BOX-18	RH-S	For indoor installation	340 (W)×420 (H)×150 (D) mm
	BOX-3B		For outdoor installation	500 (W)×400 (H)×140 (D) mm
	BOX-3BDL		With diluter	

Gas collector

Model	Feature	Material
GD-3	For general, high durable metallic	Sintered metal
GD-PE	Low price filter, easy to replace	Paper filter
GD-4	Stainless made is useful for special occasion	Sintered metal, paper filter
GK-PED2	High performance with multi layered filter. Good prevention for entry of rain drops for low installation	

Air filter/drain trap

Model	Application	Material
KG-T	Small size	Sintered metal, paper filter
MGF-5.4	Medium size	
ML-701	Large-size	Sintered metal
ML-701AUD2 (automatic drain type)		

SPECIAL INSTRUMENTS FOR PARTICULAR APPLICATION

CO/CO₂ Monitor (for building management)

UM-300

For indoor air quality measurement in buildings and classrooms. Auto sensitivity calibration by suctioning standard gas after setting the value. High stability for continuous measurement.



CO/CO₂ Monitor (for high concentration measurement)

UR-23AU3

The UR-23AU3 CO/CO₂ monitor measures high concentration of Carbon monoxide and Carbon dioxide for process control of gas generators for heat-treated metal parts and displays the concentration of the 2 components digitally and analogue outputs. The detection method is highly-reliable accurate NDIR.



Residual Oxygen Meter

OA-220

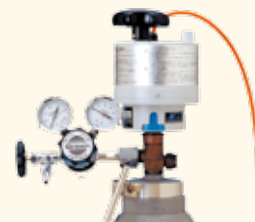
For measurement of residual Oxygen in inert gas. Compact design with a built-in suction pump. ※Suitable for control on oxygen deficiency as well.



Emergency main valve shut off system for high-pressure gas cylinder

VS-200

The Model VS-200 valve shutter is designed to prevent secondary disasters caused by leakage of gas or earthquakes. The lock function of the main valve opening adopts direct operated small cylinder and the internal structure adopts metallic gear mechanism for good in durability.



Specification

Model	UM-300		UR-23AU3	
Measuring gas	Carbon monoxide	Carbon dioxide	Carbon monoxide	Carbon dioxide
Detection method	Chronoamperometry		NDIR	
Measuring range	0~100.0ppm	0~10,000ppm	0.0~5.0vol%	0.0~20.0vol%
Resolution	0.1ppm	10ppm	0.1vol%	0.1vol%
Detectable accuracy	0~10ppm:±2.5ppm 11~100ppm:±5ppm	0~2,000ppm:±50ppm 2,010~5,000ppm:±100ppm 5,010~10,000ppm:±500ppm	±5% of full scale	
Display method	Segment LCD		LCD	
Operating temperature	0~40°C; 0~90%RH (non-condensing)		-10~50°C; below 90%RH (non-condensing)	
Analogue output	DC 0-1V/1000 segment (linear)		DC4~20mA (linear)	
Power supply	4 x AA size alkaline dry battery (AC adaptor is optional)		AC100V-15~+10% 50/60Hz 1φ	
Continuous operation time	Approx. 6 hours with alkaline dry batteries		Continuous operation possible	
Dimensions	230 (W)×90 (H)×137 (D) mm		370 (W)×157 (H)×315 (D) mm	
Weight	Approx. 1Kg (excluding batteries)		Approx. 7.5Kg	

Model	OA-220
Measuring gas	Oxygen in inert gas
Detection method	Galvanic cell
Measuring range	0.0~25.0vol%
Resolution	0.1vol%
Detectable accuracy	±0.7vol%O ₂
Alarm setting value	1.0vol%
Alarm display	Intermittent red LED light and buzzer sound
Alarm contact output	Non-voltage 1b contact
Power supply	AC100V±10% 50/60Hz
Power consumption	Approx. 5VA
Operating temperature	-10~40°C; below 90%RH (non-condensing)
Dimensions	200 (W)×110 (H)×200 (D) mm
Weight	Approx. 4Kg

	VS-200
Operation method	Main valve opening: Manual Main valve closing: Spiral spring drive
Recommended operation air pressure	0.35MPa
Operation air inlet	φ6/4mm plastic tubing
Wind-up torque for main valve	4N-m (when valve shut off)
Operation confirmation	Colour indicator
Installation to high-pressure gas cylinder	Clamp handle
Dimensions	118 (W)×296 (H)×173 (D) mm
Weight	Approx. 3Kg

Detection Principle

Principle and Features

Catalytic Combustion Type

Catalytic combustion sensor consists of a detection element which is made of a coiled platinum wire covered by carriers with catalyst and a reference element which is inactive for combustible gas and of same thermal characteristic. When the detection 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**
- No response to non combustible gases
 - Superior long-term stability
 - Low influence from ambient temperature

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**
- High sensitivity to combustible gases
 - Good stability against temperature and moisture by our patent

Thermal Conductivity Type

A detection element is located in a sample gas, and a reference element is located in air or Nitrogen in order to compare with the detection 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 detection element is changed if the sample gas contains an objective gas.

- Point**
- Capable to measure up to 100vol%
 - Capable of detection without Oxygen

Galvanic Cell Type

A positive electrode (noble metal) and its cover, diaphragm, a negative electrode (base metal) electrolyte and a container make the cell. Transmitted oxygen through the diaphragm reduced at the positive electrode surface. The current flows at this time

- Point**
- No power source is required for detection
 - Good linearity
 - Not affected from Carbon dioxide

Chronoamperometry Type

The sensor is composed of a gas permeation membrane, electrolyte and three electrodes such as Working Electrode (W.E.), Counter Electrode (C.E.) and Reference Electrode (R.E.), and each electrode is made of noble metal. The electrode is connected with the potentiostat circuit and a constant electric potential is supplied to the electrodes. 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.

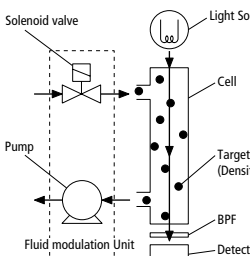
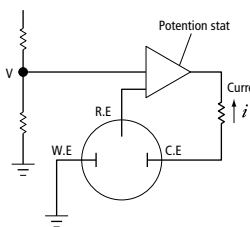
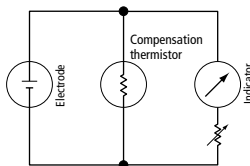
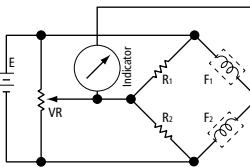
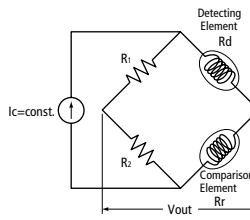
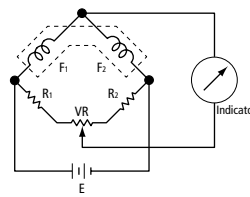
- Point**
- High sensitivity enables to measure minute amounts of concentration
 - High selectivity is suitable for detecting toxic gases

Non-Dispersive Infrared Type

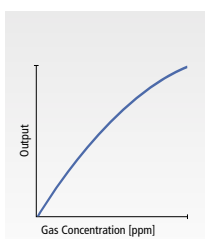
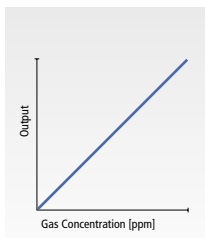
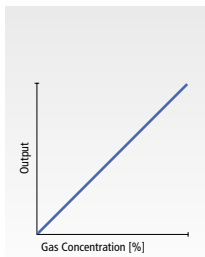
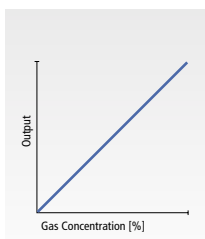
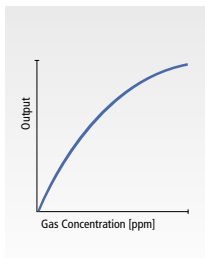
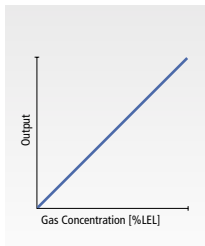
An infrared ray radiated from a light source passes through target gas inside the cell, then only the target gas is selected to wave length by BPF and supplied to the detector. The density of the target gas inside the cell changes periodically with the fluid modulation unit, so the absorption volume of infrared ray also changes. The detector output amplifies the periodic change of the absorption volume only, so output rely on the gas concentration could be get. In case of zero gas, the absorption of infrared ray is less and the absorption volume does not change, so no output.

- Point**
- High accuracy and selectivity
 - High stability against temperature and moisture
 - No zero drift

Basic Circuit



Character of Output Signal



Gas to be measured

- Isobutane
- Propane
- Methane
- Hydrogen
- Alcohols
- Organic solvent
- Other combustible gases

- Isobutane
- Propane
- Methane
- Hydrogen
- Alcohols
- Organic solvent
- Other combustible gases

- Carbon dioxide
- Hydrogen
- Propane
- Methane
- Other hydrocarbons

- Oxygen

- Carbon monoxide
- Nitric oxide
- Hydrogen sulphide
- Ammonia
- Sulphur dioxide
- Phosphine
- Other particular material gases, toxic gases

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

Explosion-proof apparatus

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

Standard in Japan

<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)

Explanation of symbols

Display item	Symbol	Meaning of symbol
Type of explosion protected apparatus	d	Flame proof 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
	G6	above 85°C and below 100°C

Classification of typical explosive gases for the standard in Japan

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

International standard

<by International Electrotechnical Commission(IEC)>

International Practices for Explosion-Proof (including former technical standards)

Example of explosion-proof protection symbols

Ex ia d IIB+H2 T3 X

Explosion-proof protection

(according to IEC standard)

Types of protection

(Intrinsic safety intended to use in zone 0)

Types of protection (Intrinsic safety)

(Catalytic combustion type sensor component)

Equipment groups

(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

(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 protectoin	Ex	Specific symbol for explosion-proof
Types of protection	d	Flameproof enclosure
	o	Oil immersion
	p	Pressurisation
	ia	Intrinsic safety (intended for use in zone 0)
	ib	Intrinsic safety (intended for use in zone 1)
	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 Grouping	T1	T2	T3	T4	T5	T6
IIA	Acetone	Ethanol	Acetaldehyde			
	Ammonia	Isopentyl acetate	Gasoline			
	Ethane	acetate	Hexane			
	Acetic acid	1-Butanol				
	Toluene	n-Butane				
	Propane	Acetic anhydride				
	Benzene					
	Methanol					
	Methane					
	Carbon monoxide	Ethylene		Ethyl ether		
IIB	Coke-oven gas	Ethylene oxide		Ethyl methyl ether		
IIC	Hydrogen	Acetylene				Ethyl nitrate Carbon disulphide

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