PC0E-1071

RIKEN KEIKI

MODEL:
GX-9000

MODEL:
GX-9000H

Portable Multi Gas Detector
MODEL:
GX-9000 SERIES

Detects up to 6 different gas types simultaneously.

A single unit suitable for all kinds of marine/onshore/underground work situations.
Innovative new gas detector

- Detects up to six different gas types simultaneously (HC/CH_4/H_2, O_2, CO, H_2S, CO_2, NH_3, VOCs, etc.
- Features a wide range of handy functions, including multilingual display and a combustible gas conversion function.
- Bluetooth® equipped! Easy data management via smartphone (option)
- Up to three-year sensor warranty
- Passes 1.5 m drop testing
- Protection rating equivalent to IP66/68

CE marking compliant
MED application scheduled

CE

RIKEN KEIKI Co.,Ltd.

Portable Multi Gas Detector
MODEL:
GX-9000 SERIES

General-purpose type for measuring up to six different gas types

Model: GX-9000

High concentration H_2S type for measuring up to four different gas types

Model: GX-9000H

Allows switching between high concentration H_2S and other sensors to avoid poisoning of other sensors by high concentration H_2S.

Low concentration H_2S/other gas measurement mode and **high concentration H_2S measurement mode**
Easily selected using buttons

LEDs on left and right light up to indicate selected mode at a glance. (High concentration H_2S measurement mode shown selected in example below)

Next-generation high-performance sensor

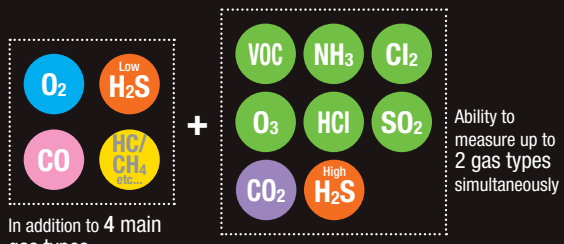
Features "R Sensors" and "F Sensors"

Next-generation high-performance sensor offering smaller size and significantly better performance and durability than previous sensors

Simultaneous target gases Max **6** types

Greater number of gases with a single unit

Allows simultaneous detection of multiple gases using a single-unit instead of requiring multiple gas detectors and detector tubes.



In addition to 4 main gas types

Ability to measure up to 2 gas types simultaneously

Sensor combinations **1000** or more

Optimum solutions to suit customers' needs

Single unit measures up to six different gas types and detects CO_2 and a broad range of toxic gases, including VOC and NH_3. Ideal gas detector for customer needs.

Sensor warranty Max **3** years

Longer warranty for peace of mind

Utilizes R/F Sensor for outstanding long-term stability. Up to three-year sensor warranty*. Allows use with peace of mind.

* NH_3 sensor: two years; O_3/VOC sensor: one year

[Handy features for ease of use]

Choice of 16 different language displays

English
Cantonese (Traditional Chinese)
Czech
French
German
Italian
Japanese
Korean
Mandarin (Simplified Chinese)
Polish
Portuguese
Russian
Slovak
Spanish
Turkish
Vietnamese

USB Type-C charging and data transfer

Uses USB Type-C cable for both charging and PC interface. Recorded measurement data can be uploaded to PC software (sold separately), reducing the time required.

AC adapter for charging

USB PC communication cable (sold separately)

Combustible gas conversion function (when new ceramic type sensor is installed)

Models that include combustible gas among their detection target gases can be used to directly read off up to 27 different types of combustible gas.
*Available only with i-C_4H_{10} and CH_4 models when using new ceramic type sensor, provided no thermal conductivity sensor is installed.

Gas name	Display name	Conversion from i-C_4H_{10} models	Conversion from CH_4 models
Methane	CH_4	×	–
Isobutane	i-C_4H_{10}	–	○
Hydrogen	H_2	○	○
Methanol	CH_3OH	○	○
Acetylene	C_2H_2	○	○
Ethylene	C_2H_4	○	○
Ethane	C_2H_6	×	○
Ethanol	C_2H_5OH	○	○
Propylene	C_3H_6	○	○

Gas name	Display name	Conversion from i-C_4H_{10} models	Conversion from CH_4 models
Acetone	C_3H_6O	○	○
Propane	C_3H_8	×	○
Butadiene	C_4H_6	○	○
Cyclopentane	C_5H_{10}	○	○
Benzene	C_6H_6	○	○
n-hexane	n-C_6H_{14}	○	○
Toluene	C_7H_8	○	○
Heptane	n-C_7H_{16}	○	○
Xylene	C_8H_{10}	○	○

Gas name	Display name	Conversion from i-C_4H_{10} models	Conversion from CH_4 models
n-nonane	n-C_9H_{20}	○	○
Ethyl acetate	EtAc	○	○
IPA	IPA	○	○
MEK	MEK	○	○
Methyl methacrylate	MMA	○	○
Dimethyl ether	DME	○	○
Methyl isobutyl ketone	MIBK	○	○
Tetrahydrofuran	THF	○	○
n-pentane	n-C_5H_{12}	○	○

Alarm setpoint setting function

Use the setup program to change/edit settings. Supports management and operation in accordance with the customer's own criteria.

Confirmation beep function

Indicates that the gas detector is functioning normally. The buzzer sounds at preset intervals while measurement is underway.

Calibration notification function

Indicates the number of days until recommended regular maintenance when the power is turned on. Reminds the user to perform maintenance to ensure safe use.

[Outstanding durability for greater peace of mind]

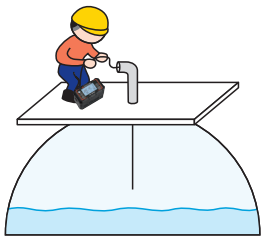
1.5 m
Drop testing passed

Protection level
IP66/68
equivalent

Operating temperature range
-40 – +60 °C
(temporary use environment)

[Suitable for use even with large tanks! Features high-power pump]

Includes a high-power pump allowing use even for large tanks. Capable of aspirating and assessing gases from up to 45 m away using the optional sampling tube.

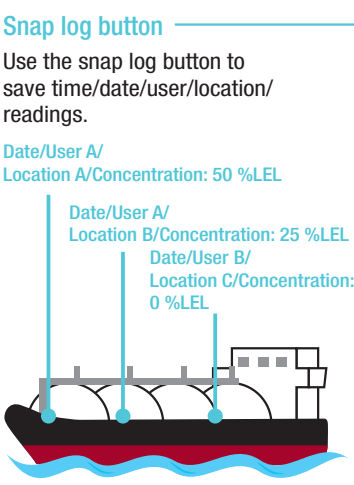


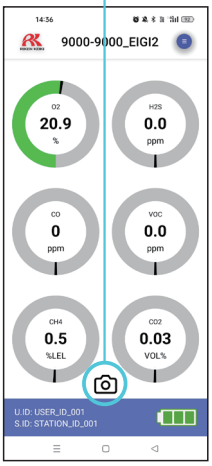
[Bluetooth® equipped!* Easy data management via smartphone]

Can communicate with smartphones and tablets via Bluetooth. The dedicated RK Link app can be used to store and email measurement results and easily manage data. A function also allows automated email generation to registered addresses when an alarm occurs to share details of emergencies remotely and in real time.
*Specify whether you require Bluetooth capability at the time of purchase.

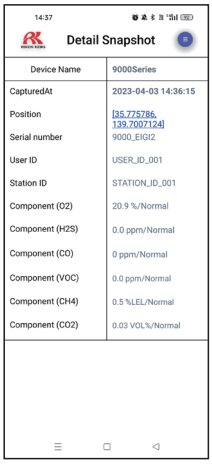
Snap log button

Use the snap log button to save time/date/user/location/readings.





Save



The 'RK Link' app can be downloaded from Google Play or Apple Store free of charge!

GET IT ON Google Play

Download on the App Store

iOS version shown here

[Accessories]

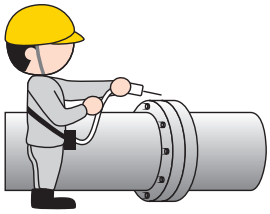
Tubes/belts

Gas sampling rod
Part No.: 0904 0275 00

Gas sampling tube
(Gas sampling tube length: approx. 75 cm)
Part No.: 0914 0135 30

Shoulder strap
Part No.: 4777 4592 10

Appearance with accessories attached



For measurements in specific locations within reach

Batteries and other accessories

AC adapter
Part No.: 2594 1342 30
*Included with rechargeable battery models (converter plug (Type C) bundled with ATEX/IECEx models)

AA alkaline battery ×6
Part No. (×1): 2753 3007 80
*Included with dry battery models

Fresh air adjustment filters

Filter cylinder retaining belt for shoulder strap
Allows fresh air adjustment filter to be attached to shoulder strap.
Part No.: 4777 4572 20

*The particular type and whether or not the fresh air adjustment filter and filter cylinder retaining belt are included vary depending on the individual model.

[Optional accessories]

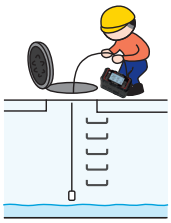
Tubes

Sampling tube with float
Gas can be separated from water and detected by a waterproof filter inside the float. Ideal for locations where water is present at the detection point

Tube length: **8 m**
Part No.: 4384 0430 60

Tube length: **30 m**
Part No.: 4775 9678 80

Tube length: **45 m**
Part No.: 4777 9567 60



Ensures safety before gas elimination and tank cleaning work

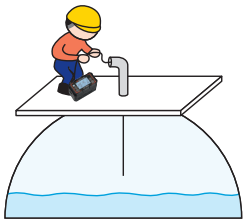
For measurements inside tanks

Sampling tube with weight
The tube end is weighted to make it easier to lower. Ideal for use in narrow pipes and other confined locations.

*Requires use with absorbent cotton filter and connecting tube (except for models with ESF/PIF sensor installed).

Tube length: **30 m**
Part No.: 4775 9679 50

Tube length: **45 m**
Part No.: 4777 9465 80



Measuring gas concentrations inside cargo tanks

For measurements inside tanks

Batteries

Dry battery unit/AA alkaline batteries
Inserting batteries allows instant use in emergencies.

Dry battery unit
Part No.: 4777 0270 80

AA alkaline batteries
Part No.: 2753 3007 80

Lithium ion battery unit/AC adapter
The battery unit can be recharged and used repeatedly.
The AC adapter uses a USB Type-C connection.

Lithium ion battery unit
Part No.: 4777 0260 90

AC adapter
Part No.: 2594 1342 30

Filter

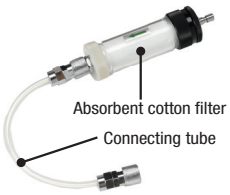
Water trap
Connects between the sampling tube and gas detector to keep water out.
Part No.: 0904 0186 20

Absorbent cotton filter/Connecting tube
Tube connected to waterproof filter and gas detector
*Do not use if an ESF/PIF sensor is installed.

Absorbent cotton filter
Part No.: 4383 0850 00

Connecting tube
Part No.: 4775 9617 60

Absorbent cotton (replacement)
Part No.: 1879 0011 10



Diluter
Dilutes gas aspirated with air at a 1:1 ratio to allow use of new ceramic sensors with inert gases, gases ceramic sensors typically cannot detect.
*Due to explosion hazards, avoid use with highly concentrated combustible gases.
Part No.: 4775 9934 30

Case/holder

Leather case

Protects the product against dirt. Used to attach shoulder strap, waist belt, and absorbent cotton filter

Part No.: 4777 4593 80

Waist belt and waist belt attachment

Allow a gas detector to be worn close to the body.

*We recommend using in conjunction with the shoulder strap to prevent the gas detector dropping.

Waist belt

Part No.: 4775 5653 40

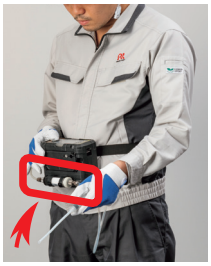
Waist belt attachment

Part No.: 4775 9853 10

Filter cylinder retaining belt

Attaches to the gas detector; allows absorbent cotton filter to be attached to the gas detector. Allows the filter to be secured to the gas detector to keep it out of the way during measurements.

Part No.: 4777 9444 20



Sampling rod holder

Attaches to the shoulder strap; allows the gas sampling rod tip to be stowed.

Part No.: 4775 5651 00

Marine spare parts box

Large case capable of housing the gas detector together with accessories, sampling tubes, and maintenance parts

Dimensions: Approx. 500 mm (W) × 305 mm (H) × 275 mm (D)*

Part No.: 4775 9885 20 (not RoHS II compliant)

*Excluding projections

Ideal for storing the gas detector together with sampling tubes and maintenance parts.

Management software and cable

USB cable (1 m)

Connects the gas detector to a PC. Used when using the software.

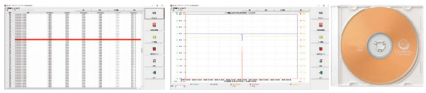
Part No.: 2440 2628 50

Simply install the software on a PC.

Data logger management program

Software used to view and manage measurement results and logs of events like alarms and calibrations

Part No.: (Japanese explosion-proof models) 9811 0980 90
(ATEX/IECEx models) 9811 0990 80



Example: Measurement results (table)

Example: Measurement results (graph)

Setup Program

Use the Setup Program for the GX-9000 Series to configure settings and edit a list of more than 600 different VOC sensor gases. This can be downloaded free of charge from the Riken Keiki website.

Easy management via PC

PID list

Maintenance parts and other items

Calibration gas

Used for bump test and gas adjustment

*Please contact Riken Keiki for more information.

Gas sampling bag

Used to draw the calibration gas into the gas detector. Available in a choice of three colors for easy differentiation when used with different gases

Part No.: 1L (green) 0904 0103 80
1L (orange) 0904 0104 50
2L (black) 0904 0288 10

Demand flow valve and connecting tube (10 cm)

Connect to a dedicated gas cylinder to supply the required amount of gas to the gas detector.

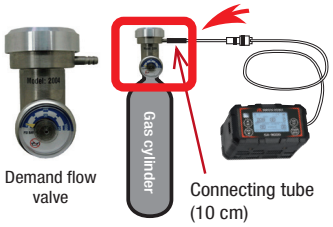
*Please contact Riken Keiki for details of the compatible gas cylinders.

Demand flow valve

Part No.: 1641 0190 20

Connecting tube (10 cm)

Part No.: 4775 5958 10



Demand flow valve

Connecting tube (10 cm)

Adapter plug

The Type A AC adapter can be converted to Type C, O, or BF.

Part No.: (Type C) 2594 1435 00
(Type O) 2594 1434 20
(Type BF) 2594 1436 70

Protective film

(for LCD, set of 5)

Part No.: 4777 9025 70

Filters (replacement)

Please contact Riken Keiki for more information.

[Sensors]

Sensor selection

The GX-9000 accepts up to six sensors. The GX-9000H accepts up to five. Each of the three R sensors (R1 - R3) can be selected or unselected. One sensor (or no sensors) can be selected from each box in the table below for F sensors (F1 - 3).

R sensor slots (same for GX-9000/GX-9000H)		
R1 (slot 1)	R2 (slot 2)	R3 (slot 3)
Oxygen	Hydrogen sulfide [low concentration]	Carbon monoxide
F sensor slots (upper: GX-9000 lower: GX-9000H)		
F1 (slot 4)	F2 (slot 5)	F3 (slot 6)
Toxic gas (electrochemical type) VOC (PID) Carbon dioxide	Combustible gas (thermal conductivity type) Combustible gas (non-dispersive infrared type)	Combustible gas (new ceramic type) Carbon dioxide
Hydrogen sulfide [high concentration]	–	Combustible gas (non-dispersive infrared type)

Combustible gas sensor selection

Three different types of combustible gas sensors can be installed: a new ceramic type, thermal conductivity type, and/or non-dispersive infrared type. Referring to the features below, select the sensors to suit the intended purpose.

Detection principle	New ceramic type	Thermal conductivity type	Non-dispersive infrared type
Detection range	%LEL	vol%	%LEL/vol%
Features	• Detects H^2 • Uses combustible gas conversion function	• Detects H^2	• Detects even in inert gas • Can be used even in environments where Si is present

Sensor selection examples

* Four main gas types = Combustible gas/O^2/H^2S [low concentration]/CO

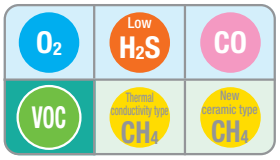
Example 1: **Four main gas types + 1**

$CH_4/O_2/H_2S/CO$] Four main gas types
+
VOC (10.6 eV/ppm)] **+1**

Combustible gas sensor:
New ceramic type + thermal conductivity type

GX-9000

Product code
First 8 characters: C1P2T1N1



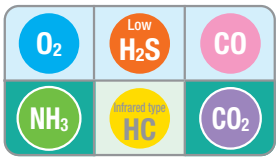
Example 2: **Four main gas types + 2**

$HC/O_2/H_2S/CO$] Four main gas types
+
NH_3/CO_2] **+2**

Combustible gas sensor:
Non-dispersive infrared type

GX-9000

Product code
First 8 characters: C1E1R2R5



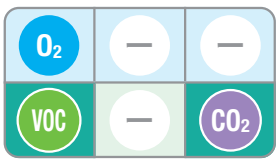
Example 3: **Main gas type + 2**

O_2] Main Gas
+
VOC (10.6 eV/ppb)/CO_2] **+2**

Combustible gas sensor:
N/A

GX-9000

Product code
First 8 characters: C4P100R5



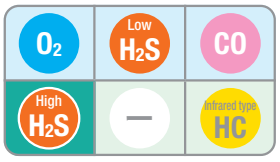
Example 4: **Four main gas types + 1**

$HC/O_2/H_2S/CO$] Four main gas types
+
H_2S [high concentration]] **+1**

Combustible gas sensor:
Non-dispersive infrared type

GX-9000H

Product code
First 8 characters: D1E800R2



Max. 10,000 ppm

All of these are examples. Examples 1 and 2 show sensors installed to full capacity. Note that fewer sensors can be installed. Different combinations of sensors can be installed. Refer to the 'Product code table' below to select sensors.

[Product code table]

Select a GX-9000 Series product based on the sensors needed, power supply type, Bluetooth functionality, and explosion-proof specifications. Refer to the product table below to select the desired specifications.

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪ ⑫

- ①: Product model — C: GX-9000, D: GX-9000H
- ②: R sensor combination
- ③④: F sensor (F1) combination
- ⑤ - ⑧: F sensor (F2, F3) combination
- ⑨: Battery type
- ⑩: Bluetooth compatibility
- ⑪⑫: Explosion-proof specifications

②: R sensor combination

Symbol	R1	R2	R3
	Sensor model	Sensor model	Sensor model
0	N/A		
1	ESR-X13P (O_2)	ESR-A13i (H_2S)	ESR-A13P (CO)
2	ESR-X13P (O_2)	ESR-A13i (H_2S)	N/A
3	ESR-X13P (O_2)	N/A	ESR-A13P (CO)
4	ESR-X13P (O_2)	N/A	
5	N/A	ESR-A13i (H_2S)	ESR-A13P (CO)
6	N/A	ESR-A13i (H_2S)	N/A
7	N/A	N/A	ESR-A13P (CO)

⑨: Battery type

Symbol	Details
L	Lithium ion battery unit BUL-9000
D	Dry battery unit BUD-9000

⑩: Bluetooth functionality

Symbol	Details
0	Not Bluetooth compatible
1	Bluetooth compatible

⑪⑫: Explosion-proof specifications

Symbol	Details
00	Japan Ex
50	ATEX/IECEx

③④: F sensor (F1) combination

GX-9000

Symbol	F1
	Sensor model
00	N/A
P1	PIF-001 (VOC) 10.6 eV, units: ppb
P2	PIF-002 (VOC) 10.6 eV, units: ppm
P3	PIF-003 (VOC) 10.0 eV, units: ppm
E1	ESF-B242 (NH_3)
E2	ESF-C92 (Cl_2)*1
E3	ESF-B249 (O_3)*1
E4	ESF-A24E2 (HCl)
E5	ESF-A24D4 (SO_2)
R5	IRF-4443 (CO_2)*2

*1 ②: ESR-A13i (H_2S) cannot be selected in R sensor combination.
*2 ⑤ - ⑧: Can be selected for F sensor (F2/F3) combination, only when NCF-6322P is installed for F3.

GX-9000H

Symbol	F1
	Sensor model
E8	ESF-A24R2 (high concentration H_2S)

⑤ - ⑧: F sensor (F2, F3) combination

GX-9000

Symbol	F2	F3
	Sensor model	Sensor model
00 00	N/A	
00 N1	N/A	NCF-6322P (CH_4)
T1 N1	TEF-7520P (CH_4)	NCF-6322P (CH_4)
00 N2	N/A	NCF-6322P (i-C_4H_{10})
T2 N2	TEF-7520P (i-C_4H_{10})	NCF-6322P (i-C_4H_{10})
00 N4	N/A	NCF-6322P (H_2)*3
T4 N4	TEF-7520P (H_2)*3	NCF-6322P (H_2)*3
00 N5	N/A	NCF-6322P (C_2H_2)*3, 4
R1 00	IRF-4341 (CH_4)	N/A
R1 R5	IRF-4341 (CH_4)	IRF-4443 (CO_2)
R2 00	IRF-4345 (i-C_4H_{10})	N/A
R2 R5	IRF-4345 (i-C_4H_{10})	IRF-4443 (CO_2)
00 R5	N/A	IRF-4443 (CO_2)

*3 ②: ESR-A13P (CO) cannot be selected for R sensor combination.
*4 ③④: E5 cannot be selected for F sensor combination.

GX-9000H

Symbol	F2	F3
	Sensor model	Sensor model
00 00	N/A	
00 R1	N/A	IRF-4341 (CH_4)
00 R2	N/A	IRF-4345 (i-C_4H_{10})

Reference: Same combination of first eight character product codes as previous GX-8000/RX-8500 models
GX-8000 TYPE A (HC): C100T2N2 / GX-8000 TYPE B (CH_4): C10000N1 / RX-8500: C300R1R5

[Sensor specifications]

R Sensor

Detection target gas		Oxygen (O_2)		Hydrogen sulfide (H_2S [low concentration])		Carbon monoxide (CO)
Sensor model		ESR-X13P		ESR-A13i		ESR-A13P
Detection principle		Electrochemical type				
Explosion-proof specifications		Japan Ex	ATEX/IECEx	Japan Ex	ATEX/IECEx	Japan Ex and ATEX/IECEx
Display range		0 - 40.0 %		0 - 200.0 ppm		0 - 2,000 ppm
Detection range		0 - 25.0 %		0 - 30.0 ppm	0 - 100.0 ppm	0 - 500 ppm
Resolution		0.1 %		0.1 ppm		1 ppm
Alarm setpoints	First alarm	18.0 %	19.5 %	1.0 ppm	5.0 ppm	25 ppm
	Second alarm	25.0 %	23.5 %	10.0 ppm	30.0 ppm	50 ppm
	TWA	–		1.0 ppm		25 ppm
	STEL	–		5.0 ppm		200 ppm
Operating temperature range	Continuous use environment	-20 °C - +50 °C				
	Temporary use environment (approx. 15 minutes)	-40 °C - +60 °C				
Operating humidity range	Continuous use environment	10 %RH - 90 %RH				
	Temporary use environment (approx. 15 minutes)	0 - 95 %RH				

F sensor

Detection target gas		Isobutane ($i\text{-}C_4H_{10}$)	Methane (CH_4)	Hydrogen (H_2)	Acetylene (C_2H_2)
Sensor model		NCF-6322P			
Detection principle		New ceramic type			
Display range/Detection range		0 - 100 %LEL			
Resolution		1 %LEL			
Alarm setpoints	First alarm	10 %LEL			
	Second alarm	50 %LEL			
Operating temperature range	Continuous use environment	-20 °C - +50 °C			
	Temporary use environment (approx. 15 minutes)	-40 °C - +60 °C			
Operating humidity range	Continuous use environment	10 %RH - 90 %RH			
	Temporary use environment (approx. 15 minutes)	0 - 95 %RH			

Detection target gas		Isobutane ($i\text{-}C_4H_{10}$)	Methane (CH_4)	Hydrogen (H_2)
Sensor model		TEF-7520P		
Detection principle		Thermal conductivity type		
Display range/Detection range		0 - 100.0 vol%		
Resolution		0.1 vol%		
Alarm setpoints	First alarm	25.0 vol%		
	Second alarm	50.0 vol%		
Operating temperature range	Continuous use environment	-20 °C - +50 °C		
	Temporary use environment (approx. 15 minutes)	-40 °C - +60 °C		
Operating humidity range	Continuous use environment	10 %RH - 90 %RH		
	Temporary use environment (approx. 15 minutes)	0 - 95 %RH		

Detection target gas		Isobutane ($i\text{-}C_4H_{10}$)	Methane (CH_4)
Sensor model		IRF-4345	IRF-4341
Detection principle		Non-dispersive infrared type	
Display range/Detection range		0 - 100 %LEL/100 %LEL - 100.0 vol%	
Resolution		0.5 %LEL/0.1 vol%	
Alarm setpoints	First alarm	10.0 %LEL	
	Second alarm	50.0 %LEL	
Operating temperature range	Continuous use environment	-20 °C - +50 °C	
	Temporary use environment (approx. 15 minutes)	-40 °C - +60 °C	
Operating humidity range	Continuous use environment	10 %RH - 90 %RH	
	Temporary use environment (approx. 15 minutes)	0 - 95 %RH	

Detection target gas		Carbon dioxide (CO_2)
Sensor model		IRF-4443
Detection principle		Non-dispersive infrared type
Display range/Detection range		0 - 20.00 vol%
Resolution		0.01 vol% (0 - 5 vol%)/0.1 vol% (5 - 20 vol%)
Alarm setpoints	First alarm	5.00 vol%
	Second alarm	10.00 vol%
Operating temperature range	Continuous use environment	-20 °C - +50 °C
	Temporary use environment (approx. 15 minutes)	-40 °C - +60 °C
Operating humidity range	Continuous use environment	10 %RH - 90 %RH
	Temporary use environment (approx. 15 minutes)	0 - 95 %RH

Detection target gas		Hydrogen sulfide (H_2S [high concentration])	Ammonia (NH_3)	Chlorine (Cl_2)	Ozone (O_3)	Hydrogen chloride (HCl)	Sulfur dioxide (SO_2)
Sensor model		ESF-A24R2	ESF-B242	ESF-C92	ESF-B249	ESF-A24E2	ESF-A24D4
Detection principle		Electrochemical type					
Explosion-proof specifications		Japan Ex and ATEX/IECEx					
Display range/Detection range		0 - 1,000 ppm	0 - 75.0 ppm	0 - 1.50 ppm	0 - 0.600 ppm	0 - 6.00 ppm	0.0 - 100.0 ppm
Resolution		1 ppm	0.5 ppm	0.01 ppm	0.005 ppm	0.05 ppm	0.1 ppm
Alarm setpoints	First alarm	–	25.0 ppm	0.50 ppm	0.100 ppm	2.00 ppm	2.0 ppm
	Second alarm	–	50.0 ppm	1.00 ppm	0.200 ppm	4.00 ppm	5.0 ppm
	TWA	–	25.0 ppm	0.50 ppm	0.100 ppm	–	2.0 ppm
	STEL	–	35.0 ppm	1.00 ppm	–	–	5.0 ppm
Operating temperature range	Continuous use environment	-20 °C - +50 °C	-20 °C - +50 °C	0 °C - 50 °C	10 °C - 40 °C	0 °C - 40 °C	-20 °C - +50 °C
	Temporary use environment (approx. 15 minutes)	-40 °C - +60 °C	-40 °C - +60 °C	-40 °C - +60 °C	10 °C - 40 °C	0 °C - 40 °C	-40 °C - +60 °C
Operating humidity range	Continuous use environment	20 %RH - 90 %RH	30 %RH - 80 %RH	30 %RH - 80 %RH	30 %RH - 80 %RH	20 %RH - 90 %RH	20 %RH - 90 %RH
	Temporary use environment (approx. 15 minutes)	0 - 95 %RH					

Detection target gas		Volatile organic compounds (VOCs)		
Sensor model		PIF-001	PIF-002	PIF-003
Detection principle		Photoionization detector (PID)		
Ionization energy		10.6 eV	10.6 eV	10.0 eV
Display range/Detection range		0 - 40,000 ppb	0 - 4,000 ppm	0 - 100.0 ppm
Resolution		1 ppb (0 - 4,000 ppb)/ 10 ppb (4,000 - 40,000 ppb)	0.1 ppm (0 - 400.0 ppm)/ 1 ppm (400.0 - 4,000 ppm)	0.01 ppm (0 - 10.00 ppm)/ 0.1 ppm (10.00 - 100.0 ppm)
Alarm setpoints	First alarm	5,000 ppb	400.0 ppm	5.00 ppm
	Second alarm	10,000 ppb	1,000 ppm	10.0 ppm
Operating temperature range	Continuous use environment	-20 °C - +50 °C		
	Temporary use environment (approx. 15 minutes)	-40 °C - +60 °C		
Operating humidity range	Continuous use environment	10 %RH - 90 %RH		
	Temporary use environment (approx. 15 minutes)	0 - 95 %RH		

* The alarm setpoint values above are the default settings. Settings can be changed by the user using the setup program.

[Product Specifications]

Model	GX-9000	GX-9000H
Concentration display	LCD digital (full dot)	
Detection target gas	**Combustible gas** (i-C_4H_{10}/CH_4/H_2/C_2H_2), **oxygen** (O_2), **toxic gas** (H_2S [low concentration]/CO/NH_3/Cl_2/O_3/HCl/SO_2/VOCs), **carbon dioxide** (CO_2)	**Combustible gas** (i-C_4H_{10}/CH_4), **oxygen** (O_2), **Hydrogen sulfide** (H_2S [low concentration] [high concentration]), **carbon monoxide** (CO)
Detection method	Pump suction type	
Suction flow rate	Minimum 0.75 L/min (open flow rate)	
Display items	Clock, battery level, operating status	
Display languages	English, Cantonese (Traditional Chinese), Czech, French, German, Italian, Japanese, Korean, Mandarin (Simplified Chinese), Polish, Portuguese, Russian, Slovak, Spanish, Turkish, Vietnamese	
Buzzer volume	Approx. 95 dB (mean value at 30 cm from sound source)	
Gas alarm indication	Lamp flashing, continuous modulating buzzer sounding, gas concentration readout blinking	
Gas alarm pattern	Self-latching, auto reset	
Fault alarm/self-diagnosis	Flow abnormality, system abnormality, sensor abnormality, low battery voltage, calibration failure, clock abnormality	
Fault alarm icon	Lamp flashing, intermittent buzzer sounding, detail display	
Fault alarm pattern	Self-latching	
Communication specifications	USB 2.0 Type-C (for data logger/setting), Bluetooth 4.2 (Bluetooth Low Energy)	
Power source	Dedicated lithium ion battery unit (BUL-9000) or dedicated dry battery unit (AA alkaline batteries × 6) (BUD-9000)	
Continuous operating time*1	Lithium ion battery unit: Approx. 25 hours Dry battery unit: Approx. 12 hours (at 25 °C, no alarm, no lighting)	Lithium ion battery unit: Approx. 35 hours Dry battery unit: Approx. 15 hours (at 25 °C, no alarm, no lighting)
Operating temperature range*2	Approx. 15-minute temporary use environment: -40 °C - +60 °C (no sudden changes) Continuous use environment: -20 °C - +50 °C (no sudden changes)	Approx. 15-minute temporary use environment: -40 °C - +60 °C (no sudden changes) Continuous use environment: -20 °C - +50 °C (no sudden changes)
Operating humidity range*2	Approx. 15-minute temporary use environment: 0 %RH - 95 %RH (no condensation) Continuous use environment: 10 %RH - 90 %RH (no condensation)	Approx. 15-minute temporary use environment: 0 %RH - 95 %RH (no condensation) Continuous use environment: 10 %RH - 90 %RH (no condensation)
Operating pressure range	80 kPa - 120 kPa (80 kPa - 110 kPa for explosion-proof range)	
Construction	Dustproof, waterproof construction equivalent to IP66/68*3, drop resistant to 1.5 m	
Explosion-proof construction	Intrinsically safe explosion-proof construction, flame-proof enclosures (with new ceramic type sensor) Intrinsically safe explosion-proof construction (without new ceramic type sensor)	
Explosion-proof class	IECEx Ex da ia IIC T4 Ga (with new ceramic type sensor) Ex ia IIC T4 Ga (without new ceramic type sensor)	ATEX II1G Ex da ia IIC T4 Ga (with new ceramic type sensor) II1G Ex ia IIC T4 Ga (without new ceramic type sensor)
		Japan EX Ex da ia IIC T4 Ga (with new ceramic type sensor) Ex ia IIC T4 Ga (without new ceramic type sensor)
Certifications	CE marking, JIS T 8201:2010 (Oxygen deficiency indicator), JIS T 8205:2018 (Hydrogen sulfide indicator/alarm)	
External dimensions	Approx. 158 mm (W) × 85 mm (H) × 132 mm (D) (excluding projections)	
Weight*4	Approx. 1.1 kg	Approx. 1.2 kg

*1 Continuous operating time: Varies depending on the sensor installed.
*2 Operating ambient temperature/humidity range: May vary depending on the sensor installed. Refer to 'Sensor Specifications' on P. 6.
*3 IPx8: No water penetration when submerged at depth of 2 m for 1 hour.
*4 Including battery and battery unit.

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