

SP-SGT-L

PORTABLE SINGLE GAS DETECTOR

USER MANUAL



SENKO

en.senko.co.kr

Safety Warning



WARNING

- Any replacement or modification of any components may compromise the intrinsic safety of the device and will void the warranty, even if the warranty has not expired. Therefore, any unauthorized alteration is not recommended.
- If there is any foreign matter on the sensor, LED, or buzzer opening surface, it's recommended to remove it before use.
- Regularly test the sensor response using a gas concentration that exceeds the alarm setpoint.
- Periodically check that the LED indicators, audible alarm, and vibration function are operating properly.
- The product must be used within the specified ranges of the temperature, pressure, and humidity in the product specifications. Operation of the device outside these ranges may result in malfunction or failure.
- Gas concentration measurements by the sensor can vary based on the environment (temperature, pressure, and humidity). Therefore, calibration of SP-SGT-L should be performed in the same(or similar) environment of the device's actual use.
- If a sudden temperature change occurs during use of the device(e.g., indoors vs. outdoors), the value of the measured gas concentration may temporarily fluctuate. Please use the SP-SGT-L after the gas concentration value has stabilized.
- Severe vibration or shock to the device may cause a sudden reading change. Excessive impact may also damage the sensor or the device itself.
- All alarm values are set based on the alarm standard that is required by international standards. Therefore, alarm values should be changed only under the responsibility and approval of the administration of the work site where the instrument is used.



CAUTION

- Before operating this device, please read the manual carefully.
- This device is not a measurement device, but a gas detector.
- If the calibration or self-test fails continuously, please do not use the device and contact the manufacturer.
- For the O₂ detector, perform calibration at least every 30 days in the fresh air environment.
- Clean detectors with a soft cloth and do not use chemical substances for cleaning.

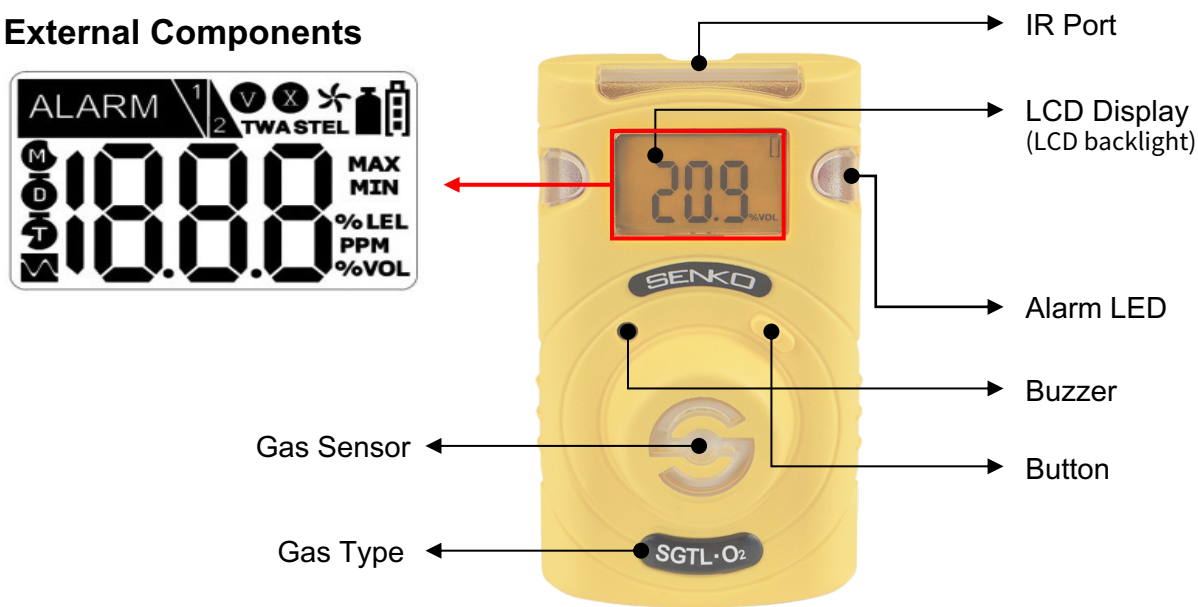
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1. Product Overview

SP-SGT-L is a portable single gas detector designed to detect the presence of oxygen, toxic and combustible gases in the ambient environment. SP-SGT-L is designed with a replaceable gas sensor and battery. When activated, SP-SGT-L continuously monitors ambient air for the presence of a specific gas and alerts the user to potentially unsafe exposure with LED, vibrating, and audible alarms in the event that gas concentration exceeds alarm setpoints. Alarm setpoints, calibration settings, and display configurations can also be changed via SENKO IR Link (Optional).

External Components

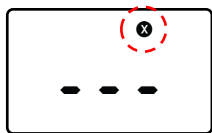
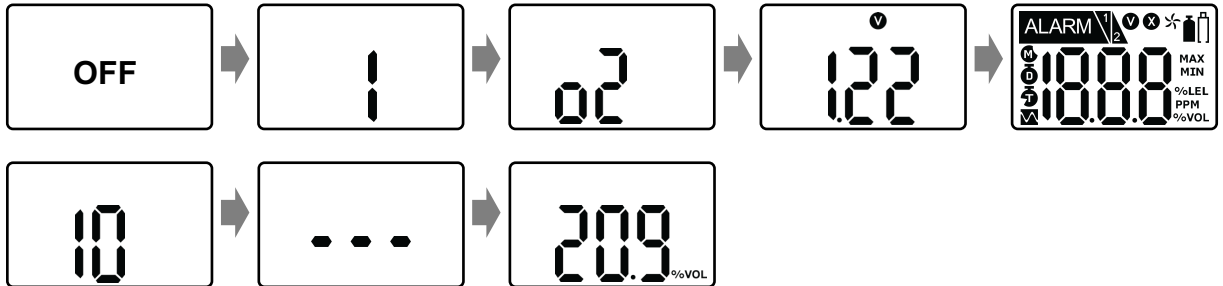


LCD Display Symbols

ALARM	Alarm Condition	M	Remaining Time (Month)
1	Low Alarm Display	D	Remaining Time (Day)
2	High Alarm Display	T	Remaining Time (Hour)
V	Stabilization Success	MAX	Max Peak Value
X	Stabilization Failure	MIN	Min Peak Value
	Fresh Air Calibration	%LEL PPM %VOL	Measurement Unit
	Standard Gas Calibration		Remaining Battery Life
TWA	Time-Weighted Average	STEL	Short-Term Exposure Limit

2. Activation & Deactivation

In a safe environment, press and hold the button for three (3) seconds. The gas type and firmware version (e.g., V1.x.x) will be displayed. For ten (10) seconds countdown, the device will be stabilized. After stabilization is completed, the device will enter Measuring Mode.



If the device fails to stabilize, “X” will be displayed on the screen, and the device will not enter Gas Measurement Mode.

In this case, the sensor may require calibration or replacement. Please contact SENKO or your place of purchase for assistance.

To deactivate the device, please press and hold the button for three (3) seconds.

CAUTION

- The device must be properly calibrated before use in the workplace.
- Before use, check that the device responds properly to the target gas and ensure that the gas detection part is not obstructed by any material that could interfere with gas detection.

3. Mode

3.1. Measuring Mode



When activated, in Measuring Mode, gas concentration will appear on the screen. Oxygen concentration is displayed in percent by volume (%Vol) and toxic concentration is displayed in part per million (PPM).

When the gas concentration changes, the measured concentration value is displayed in real time. If the concentration exceeds the 1st or 2nd alarm setpoint, the corresponding 1 or 2 alarm icon will flash periodically on the screen together with the measured value, while the audible alarm, LED, and vibration alarm are activated simultaneously.

When the gas concentration returns to the normal safe range, the displayed concentration value will gradually decrease, and the audible alarm will stop. However, the alarm icon that was activated will not disappear automatically. The icon will remain displayed until the button is pressed.

If the measured gas concentration exceeds the maximum measurement range of the device, OL (Over-Limit) will be displayed on the screen, and the LED, audible alarm, and vibration alarm corresponding to the 2nd alarm will be activated simultaneously.

3.2. Display Mode



In Measuring Mode, by briefly pressing the button, the following icons will appear in order.

Min (only for oxygen) → Max → Clr → 1st alarm setpoint → 2nd alarm setpoint → Firmware Version → Remaining Calibration Day → Calibration Gas Concentration → Measuring Mode.

If no button operation is performed for a certain period in any mode, the device automatically returns to Gas Measurement Mode.

When “Clr” is displayed, press and hold the button to reset the Min and Max values.

The following settings can be configured via SENKO IR Link:

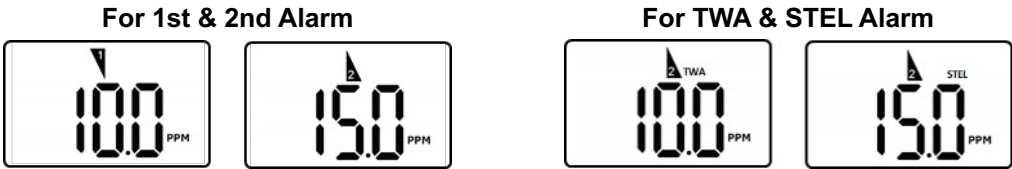
- Display settings for the remaining operating time or measured gas concentration in Measuring Mode.
- Alarm setpoints.
- Display and configuration of the bump test interval.
- Display and configuration of the calibration interval.

3. Mode

3.3. Alarm Activation (1st/2nd/TWA/STEL) & Setting Alarm Setpoints

When the gas concentration exceeds an alarm setpoint, 1 or 2 icons will be displayed, and the device will vibrate, flash (LED), and beep. To remove alarms, move to an area with clean air. As the gas concentration decreases, the alarm will stop.

If the concentration of the target gas exceeds the device's maximum measurement range, "OL" (Over-Limit) is displayed on the LCD, and the LED, buzzer, and vibration alarms corresponding to the 2nd alarm are activated.



CAUTION

All alarm values are set based on the alarm standard that is required by international standard. Therefore, alarm values should be changed only under the responsibility and approval of the administration of the work site where the instrument is used.

Follow the steps below to set the alarm setpoints.

1. Press the button until the alarm setpoint is displayed.
2. Press and hold the button for approximately three (3) seconds. The first digit of the alarm setpoint will begin to blink.
3. Briefly press the button to increase the value.
4. Press and hold the button to move to the next digit. The next digit will begin to blink.
5. When the last digit is blinking, press and hold the button to save the setting.
 - The 2nd alarm setpoint must be set higher than the 1st alarm setpoint.
6. Before changing alarm setpoints, please ensure that the settings comply with applicable local regulations and guidelines.

Alarm Set Point

Gas	O ₂	CO	H ₂ S	H ₂	SO ₂	NH ₃	NO ₂	Cl ₂	HCN	PH ₃	ClO ₂	HCl
1 st	19%	30ppm	10ppm	100ppm	2ppm	25ppm	3ppm	0.5ppm	2ppm	0.5ppm	0.1ppm	1ppm
2 nd	23%	60ppm	15ppm	500ppm	5ppm	35ppm	5ppm	1ppm	5ppm	1ppm	0.3ppm	2ppm
STEL	n/a	200ppm	15ppm	500ppm	5ppm	35ppm	5ppm	2ppm	1ppm	2ppm	0.3ppm	2ppm
TWA	n/a	30ppm	10ppm	100ppm	2ppm	25ppm	3ppm	2ppm	0.5ppm	2ppm	0.1ppm	2ppm

4. Calibration

CAUTION

Initial calibration is performed by SENKO before shipment. The calibrated values are stored in the device, and improper calibration may affect the accuracy of the product. In general, calibration should be performed once one year after purchase and then regularly every six months thereafter.



Fresh Air Calibration



Standard Gas Calibration

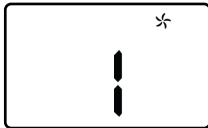
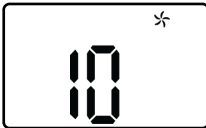
4.1. Fresh Air Calibration

CAUTION

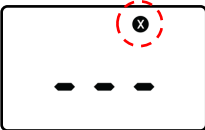
Fresh Air Calibration is performed based on the assumption that the oxygen concentration in fresh air is 20.9 %vol, the combustible gas concentration is 0 %LEL, and the toxic gas concentration is 0ppm. Therefore, Fresh Air Calibration must be performed in a clean, fresh-air environment that is free from interference by other gases. Do not perform Fresh Air Calibration in closed or poorly ventilated areas. Also, do not perform Fresh Air Calibration in work environments where gas may be inhaled by personnel.

When the gas calibration concentration value is displayed (), press and hold the button. The “CAL” indicator will be displayed along with the “” icon, indicating zero calibration. Press and hold the button again to enter Zero Calibration Mode.

Press and hold the button again to start Fresh Air Calibration. When calibration begins, a countdown (starting at 10) will appear on the screen.

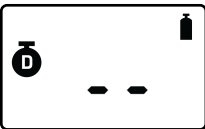


Once completed,  icon will appear on the LCD.



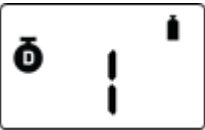
If calibration fails,  icon will appear on the display. If this continues, please contact the sales representative or SENKO service center.

4.2. Remaining Calibration Day



The default setting is “N/A”.

To activate the remaining calibration day, set an interval on the “Cal Interval (day)” via IR LINK.



If you set the calibration interval via IR LINK, the remaining day will be displayed. To check the remaining day, press the button until the above image is displayed.

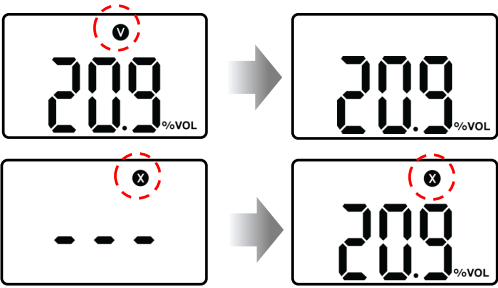
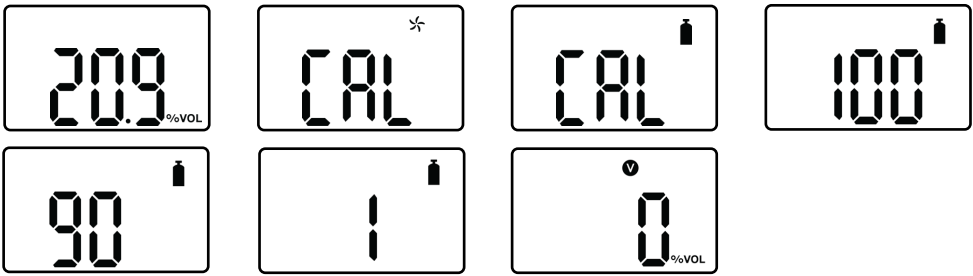
4. Calibration

4.3. Standard Gas Calibration

In Zero Calibration Mode (✱), press the button briefly once to display the  icon, indicating Span Calibration.

Press and hold the button to enter the calibration gas concentration setting screen. The first digit will blink. Press the button briefly to change the number, and press and hold the button to move to the next digit.

When the last digit is blinking, press and hold the button to start a countdown of approximately 60 seconds (depending on the gas type). Span calibration will be performed during the countdown.



Once completed,  icon will appear for several seconds on the display. Then the device will return to Measuring Mode.

If calibration fails,  icon will appear on the display. If this continues, please contact the sales representative or SENKO service center.

In Span Calibration Mode (), press the button briefly to display “ESC”.

While “ESC” is displayed, press and hold the button to exit Calibration Mode.

Press the button once more to return to Gas Measurement Mode.

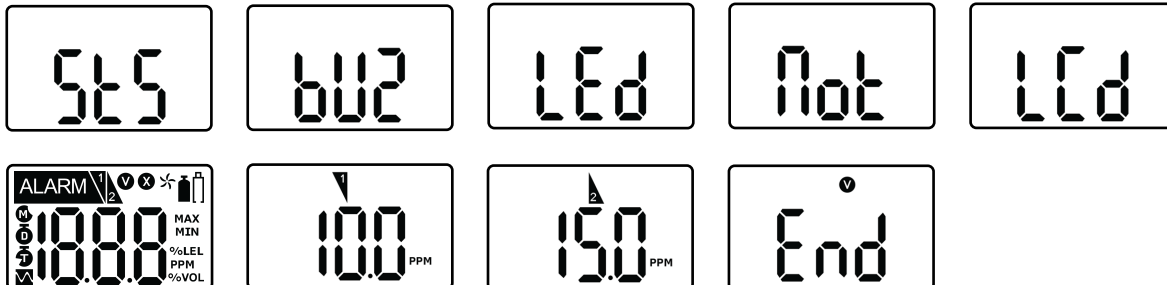


Calibration Concentration

O ₂	CO	H ₂ S	H ₂	SO ₂	NH ₃	NO ₂	Cl ₂	HCN	PH ₃	ClO ₂	HCl
18%Vol	100ppm	50ppm	500ppm	10ppm	100ppm	10ppm	10ppm	10ppm	2.5ppm	NO ₂ 2.5ppm	10ppm

5. Self Test & Bump Test

5.1. Self Test



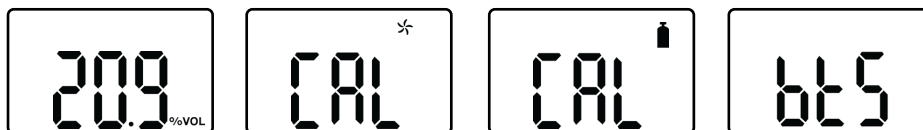
The default Self-Test setting is N/A, and the interval can be set from 8 to 20 hours, or to N/A. To initiate the Self-Test, set the Self-Test interval via IR LINK.

When the configured interval is reached, the STS message will begin to flash and will remain displayed until the user performs the Self-Test. Press the button to start the Self-Test.

The buzzer, LED, vibration, LCD, 1st alarm, and 2nd alarm will be tested sequentially.

When the Self-Test is complete, the END message will be displayed together with the icon. The user should visually and audibly verify that each test function operates correctly during the Self-Test.

5.2. Bump Test



In the Calibration Mode, press and hold the button for five (5) seconds. The and icons and the CAL message will appear. Press the button once again and the bts message will be displayed.



The Bump Test interval can be set from 1 to 365 days, and the default setting is N/A. To enable the Bump Test function, the Bump Test interval must first be configured. When the configured interval is reached, the bts message will begin to flash. Press and hold the button, and the tst message will be displayed on the screen for approximately 45 seconds. To cancel the Bump Test, briefly press the button.

Test gas must be applied within 45 seconds. If no test gas is applied, the bts message will begin to flash again. After the selected test gas is applied, if the Bump Test is successful, the SUC message will be displayed together with the icon after approximately 30 seconds. At this point, remove the calibration cap and gas tube.

When the test fails, the FA message will be displayed together with the icon. The bts message will continue to flash until the test is successfully completed.

6. Data Log & Backlight Setpoints

6.1. Data Log

Up to 30 events can be stored in the device. When more than 30 events are recorded, the oldest event is automatically deleted to make room for the new event. The stored event data can be transferred to a PC via IR Link for review.

The following data is stored for each event.

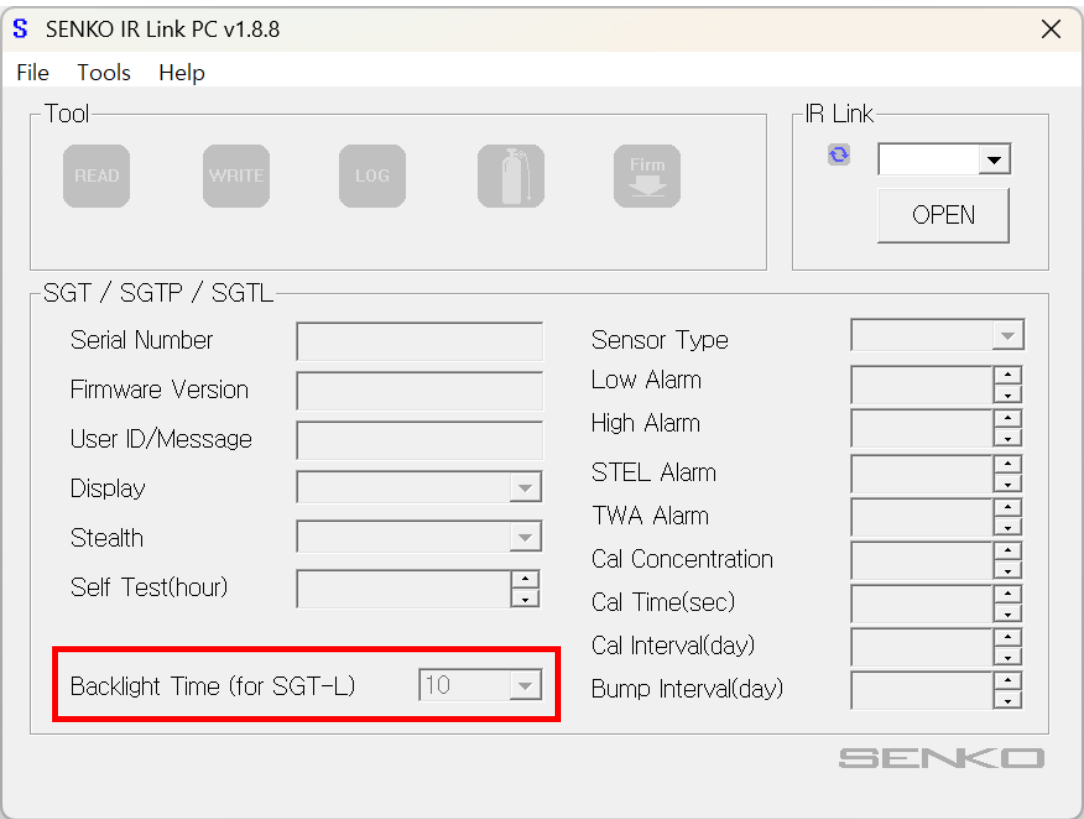
Event Date	Event Time	Bump Test	Duration(s)	Sensor Reading	Alarm
2020/05/12	15:50:02	No	00:00:05	17.2	LOW Alarm

6.2. Backlight Setpoints

The backlight turns on when a button is pressed or when a notification occurs.

The default Backlight Time for operation is 10 seconds.

The Backlight Time can be changed in the Backlight Time setting of IR LINK (V1.8.5 or later).



※ Changing the Backlight Time may affect the device operating time.

7. Sensor & Battery Replacement

CAUTION

1. Never replace the battery in an explosive or hazardous area. The battery must be replaced in a clean area free from hazardous gases.
2. Unauthorized replacement or modification of components may invalidate the ia certification.
3. The sensor and battery must be replaced only by authorized sellers, agents, distributors, or managers.
 - Only sensors supplied by SENKO CO., Ltd. shall be used for replacement.
 - Battery information: COROS+(CLE-03) / Brand: KED COROS
 - Disassemble the device only when replacing the sensor or battery. After replacing the sensor, calibration with standard gas must be performed.
4. Before disassembling the device, turn off the power and remove the bolts.

7.1. Sensor Replacement

1. Turn off the device.
2. Remove the six bolts from the back of the device.
3. Remove the two bolts from the PCB.
4. Disconnect the battery, and replace the sensor with a new one that matches the gas type. (e.g., SP-SGT-L CO model must use a CO sensor.)
5. Reassemble the device in the reverse order of disassembly.
6. Turn on the device after reassembly and allow approximately five minutes for stabilization.
7. After five minutes, perform Zero Calibration and Span Calibration.

7.2. Battery Replacement

1. Turn off the device.
2. Remove the six bolts from the back of the device.
3. Replace the battery.
4. Reassemble the device in the reverse order of disassembly.
5. Turn on the device after reassembly and allow approximately five minutes for stabilization.
6. After five minutes, perform Zero Calibration and Span Calibration.

8. Specification

Model	SP-SGT-L			
Sensor Type	Electrochemical			
Measurement	Diffusion Type			
Display	LCD Display, LCD Backlight (Color: Yellow)			
Audible	95 dB			
Warning Lamp	Red Flashing LEDs (Light-Emitting Diode)			
Vibration	Vibration Alarm			
Battery	Manufacturer: COROS+(CLE-03) / Brand: KED COROS / System: Lithium Primary Battery / Nominal Voltage: 3.6 V / Nominal Capacity: 1.2 Ah			
Temperature	-40°C to +60°C			
Humidity	5% ~ 95% RH (non-condensing)			
Enclosure Material	Rubber Enclosure			
Accessories	Calibration Cap, Manual, Test Report			
Option	External Sampling Pump (SP-Pump Ex), SENKO IR Link, Docking Station			
Size	49 (W) x 85 (H) x 32 (D) mm			
Weight	93 g (Toxic), 104 g (O2) *Battery and belt clip included			
Operation Life	24 months (depending on operating conditions)			
Event Log	Last 30 alarm events			
Sensor Specification	Gas	Range	Gas	Range
	O ₂	0 ~ 30 %Vol	NO ₂	0 ~ 20 ppm
	CO	0 ~ 500 / 1000 / 2000 ppm	HCl	0 ~ 20 ppm
	H ₂ S	0 ~ 100 / 200 ppm	Cl ₂	0 ~ 20 ppm
	SO ₂	0 ~ 50 ppm	HCN	0 ~ 50 ppm
	NH ₃	0 ~ 100 / 500 ppm	PH ₃	0 ~ 5 / 20 ppm
	H ₂	0 ~ 1000 ppm	ClO ₂	0 ~ 5 ppm

9. Certification

Intrinsic Safety:

The detector is in conformity of the following standards

IECEx	<u>Ex</u> ① <u>ia</u> ② <u>IIC</u> ③ <u>T4</u> ④ <u>Ga</u> ⑤ IECEx KSCP 26.0016X ➔ ① Explosion Protected ② Protection Concept ③ Gas Group ④ Temperature Classification ⑤ Equipment Protection Level
ATEX	⚡ II 1 G Ex ia IIC T4 Ga KRH 26 ATEX 1024X Directive 2014/34/EU
PESO	Ex ia IIC T4 Ga

Compliance: **Electromagnetic Compatibility Directive 2014/30/EU**

Standards:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

- EN IEC 60079-0: 2018
- EN IEC 60079-11:2024
- IEC 60079-0:2017 Ed 7
- IEC 60079-11:2023 Ed 7

Manufacturing Approval:

The detector manufacturer is certified compliant with ISO 9001:2015 provisions.

Warranty

SENKO warrants this product to be free from defects in materials and workmanship under normal use and service for two (2) years from the date of purchase from the manufacturer or an authorized reseller.

Warranty periods may vary depending on the sensor or component. For the applicable warranty period and detailed terms and conditions, please contact SENKO or refer to the latest SENKO Limited Product Warranty Policy.

The manufacturer shall not be liable under this warranty if its testing and examination disclose that the alleged defect does not exist or was caused by misuse, neglect, improper installation, testing, or calibration by the purchaser or any third party. Any unauthorized attempt to repair or modify the product, or any damage resulting from use outside its intended purpose, including damage caused by fire, lightning, water, or other external hazards, shall void this warranty.

If the product fails to perform in accordance with the manufacturer's specifications during the applicable warranty period, please contact an authorized reseller or the SENKO Service Center at +82-31-492-0445 for repair or return instructions.

SENKO

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