SP-SGTP

PORTABLE SINGLE GAS DETECTOR

USER MANUAL

SENKO

www.senkousa.com

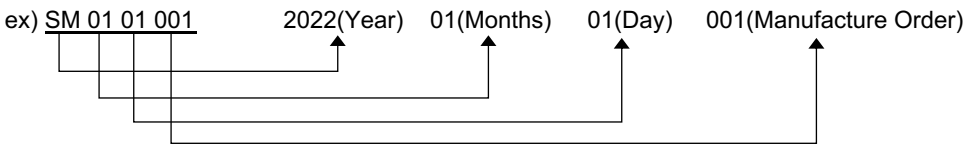
Safety Warning

WARNING

- ⚠ Any unauthorized attempt to repair or modify the product, or any other cause of damage beyond the range of the intended use, including damage by fire, lightening, or other hazard, voids liability of the manufacturer.
- ⚠ Activate this product only if sensor, visual, detection, and audible cover are clear from contaminants such as dirt and debris that could block the area where gas is to be detected.
- ⚠ Do not clean and rub the LCD screen of the products with a dry cloth or hands in hazardous environment to prevent the static electricity.
- ⚠ Perform cleaning and maintenance of the products in fresh air that is free of hazardous gases
- ⚠ Test the response of a sensor regularly by the gas concentration exceeding alarm set point.
- ⚠ Test LED, audio and vibration manually.
- ⚠ Gas concentration measurements by the sensor can vary based on the environment (temperature, pressure and humidity). Therefore, calibration of SP-SGTP should be performed in the same (or similar) environment of the device's actual use.
- ⚠ If the temperature changes sharply during use of the device (e.g., indoors vs outdoors), the value of the measured gas concentration can suddenly change. Please use the SP-SGTP after the gas concentration value has stabilized.
- ⚠ Severe vibration or shock to the device may cause a sudden reading change. Please use SP-SGTP after the value of gas concentration has stabilized. Excessive shock to SP-SGTP can cause the device and/or sensor to malfunction.
- ⚠ All alarm value is 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.
- ⚠ Use IR communications in the safety zone which is free of hazardous gases.
- ⚠ Replace the battery and sensor in clean environment, which is free of hazardous gas.

CAUTION

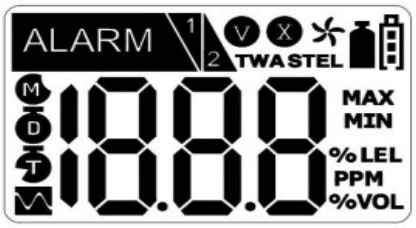
- ⚠ Before operating this device, please read the manual carefully.
- ⚠ This device is not a measurement device, but a gas detector.
- ⚠ If calibration and self-test fails continuously, please do not use the device.
- ⚠ For the O2 detector, perform calibration every 30 days in the fresh air environment.
- ⚠ Before use, please check the activation date, and if the activation date is past, please do not use the device.
- ⚠ Clean detectors with a soft cloth and do not use chemical substances for cleaning.
- ⚠ To maintain 24 months lifetime, avoid the below activities except the necessary cases to check events(Max/Min), lifetime/concentration, and alarm set points. Otherwise, the frequent use of the button will deplete the battery lifetime less than 24 months.
  1. Push the button frequently without valid reasons.
  2. Frequent alarm operation or alarms are remained for a long time. *Normal Alarm Use: 1 time and 2 minutes per day.
  3. Connect with the SP-SGTP IR Link frequently except the bump testing.
- ⚠ View a serial number on the label at the back side of the device. (ex, 20170101)
  1. The serial number indicates below.

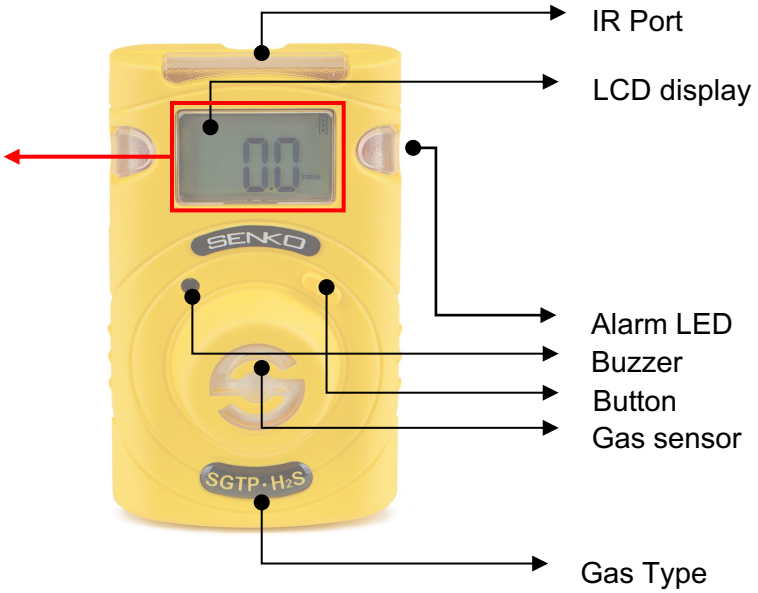


Contents

1. Product Overview

SP-SGTP is a portable single gas detector designed to detect the presence of oxygen, toxic and co mbustible gases in the ambient environment. SP-SGTP is the replaceable type of a gas sensor and battery. When activated, SP-SGTP 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 set points. And the alarm set point, calibration range, a nd display configuration can be changed via SENKO-IR Link (Optional).





LCD Display Symbols

ALARM	Alarm condition	M	Remaining Month(Month)
1	Low Alarm Display	D	Remaining Calibration 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 Weight Average	STEL	Short Term Explosive Limit

2. Activation & Deactivation

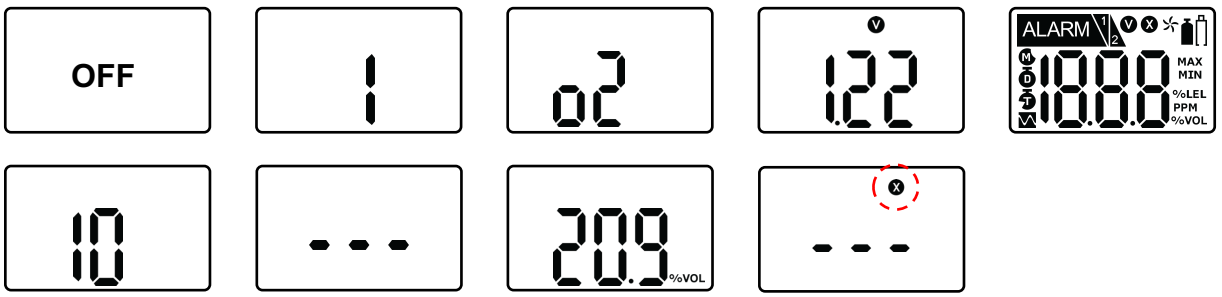
< CAUTION >

Before use, check the manufacturing date on the box. Please do not open if it is over the shelf life below.

Shelf Life

SP-SGTP-Oxygen: 3 months from the manufacturing date
SP-SGTP-Toxic: 6 months from the manufacturing date

In a safe environment, when pressing and holding the button for 3 seconds, gas type and firmware version (ex. v2.2) will be displayed. For 10 seconds countdown, the device will be stabilized. After stabilization is completed, the device will move to Measuring mode.



In the event that stabilization of the device fails, Ⓧ will appear on the display and Measuring mode will not be entered. In this case, contact authorized reseller or SENKO service center at 82-31-492-0445 for repair / return information.

To deactivate the device, pleas press and hold the button for three seconds.

< CAUTION >

Always ensure that the device makes the proper detection response to the pertinent gas. Verify that debris that could interfere with the detection of gas are not blocking the area where gas is to be detected.

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 parts per million. (PPM)

3.2. Display mode

In Measuring Mode, by pressing button for one second, the following ICONs will appear in order.

Min (only for oxygen) → Max → STEL value → TWA value → Clr Max → Clr TWA/STEL → 1st alarm set point → 2nd alarm set point → STEL set point → TWA set point → Firmware version → Remaining Calibration Day → Calibration

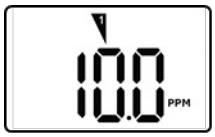
At the last step, if you press button or do not push any button for a second, the device will return to Measuring Mode.

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

When the gas concentration exceeds alarm set points, 1 or 2 will be displayed and the device will vibrate, flash (LED), and beep. To remove alarms, move to a clean air location. and then a gas concentration will decrease, and alarm will stop.

To set the alarm setpoints, please follow the steps below.

For 1st & 2nd Alarm



For TWA & STEL Alarm

- Press the button until the above alarm setpoint is displayed.
- Press and hold the button for three seconds and the first digit of alarm setpoint starts to blink.
- To increase the value, press the button for one second .
- To save the alarm setpoints, press the button for 3 seconds.
  * Ensure that the second alarm set point must be greater than first alarm setpoint.
  * Ensure Standard Factory alarm set points vary depending on countries, states, and companies.
- Before changing alarm setpoints, please ensure the alarm set points are in compliance with your local guidelines.

Alarm Set Point

Gas	O_2	CO	H_2S	H_2	SO_2	NH_3	NO_2	Cl_2	HCN	PH_3	ClO_2	HCl
1st	19%	30ppm	10ppm	100ppm	2ppm	25ppm	3ppm	0.5ppm	2ppm	0.5ppm	0.1ppm	1ppm
2nd	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 on all devices prior to shipment. Once received, calibration should be performed monthly (or quarterly) depending on frequency of use.

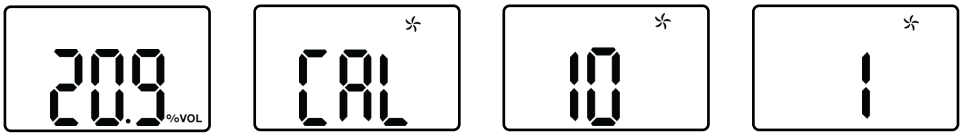
Fresh Air Calibration

Standard Gas Calibration

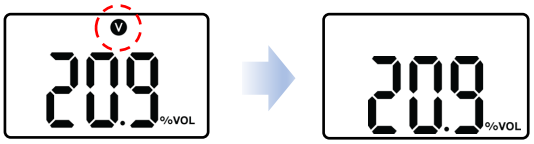
4.1. Fresh Air Calibration

When pressing and holding the button for 5 seconds in the calibration mode( ), icon and 'CAL' mark will appear on the LCD.

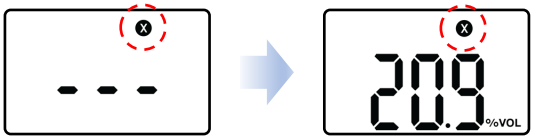
And, press the button to initiate calibration for three seconds. When calibration begins, a countdown (starting at 10) will appear on the screen.



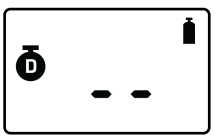
Once completed, V icon will appear on the LCD.



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

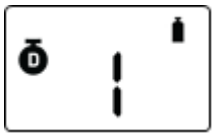


4.2. Remaining Calibration Day



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.

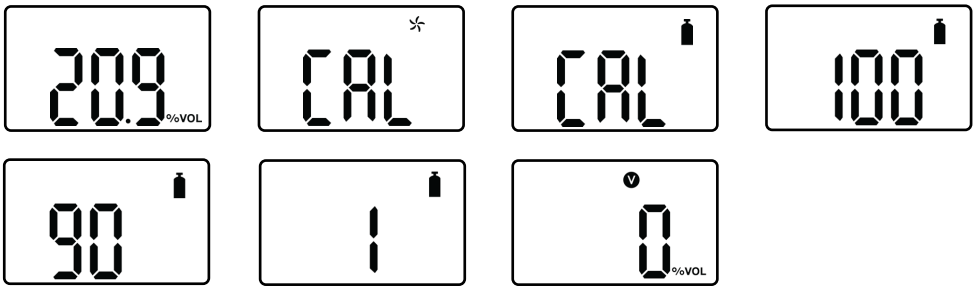
< CAUTION >

Calibration should be performed in a fresh-air environment that is free for any influence of other gases (since calibration is assumed to be performed in an environment with 20.9% of Oxygen). It is also recommended that calibration should be performed in a space that is not confined.

4. Calibration

4.3. Standard Gas Calibration

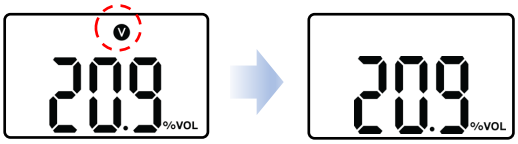
When pressing and holding the button for 5 seconds in the calibration mode , icon and 'CAL' mark will appear, and when pressing button once again, icon will appear. And then, press and hold the button for three second to initiate calibration. When calibration begins, a countdown (60 seconds or more depending on sensor types) will appear on the screen.



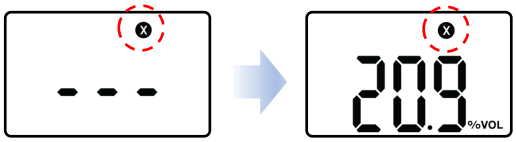
To set the calibration setpoints, please follow the steps below.

- Press the button until the above calibration setpoint is displayed.
- Press and hold the button for three seconds and the first digit of calibration setpoint starts to blink.
- To increase the value, press the button for one second.
- To save the calibration setpoints, press the button for 3 seconds.

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



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



4. Calibration

4.4. Return to Measuring Mode

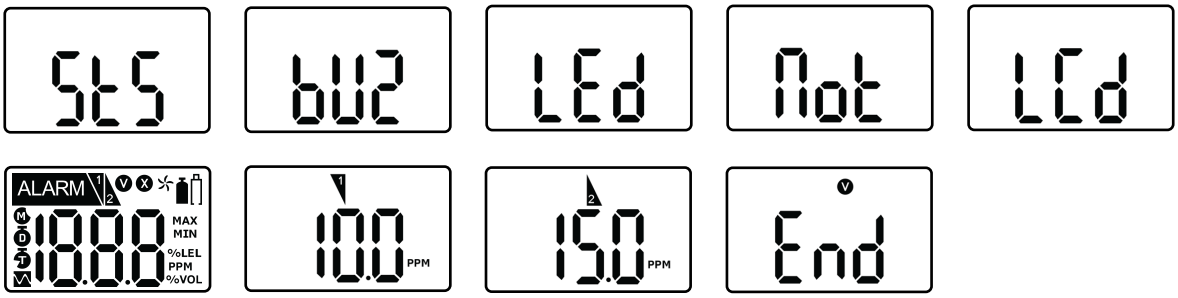
In the standard calibration mode , by pressing the button for a second, the fresh air calibration, standard calibration, and ESC will appear on the display consecutively. In the ESC mode, press the button for 3 seconds, the device will be get out of the calibration mode. And press the button one time, it will return Measuring mode.

Calibration Concentration

O_2	CO	H_2S	H_2	SO_2	NH_3	NO_2	Cl_2	HCN	PH_3	ClO2	HCl
0.0%Vol (N2:99.9%Vol)	100ppm	50ppm	500ppm	10pm	100ppm	10ppm	10ppm	10ppm	2.5ppm	NO2 2.5ppm	10ppm

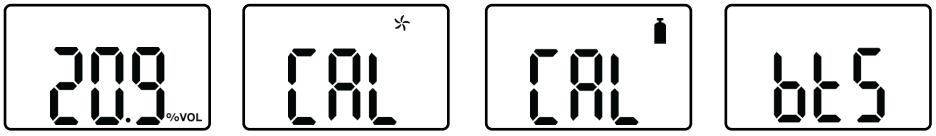
5. Self Test & Bump Test

5.1. Self Test



The default of Self-Test is N/A, and the interval is 8hr~20hr, or N/A. To initiate the self-test, please set the self-test interval via the IR link. After the setting interval is activated, STS message will flash. (The message will flash until users perform the Self-test.) Once you press the button, it will test buzzer, LED, Vibration, LCD, 1ST alarm, and 2ND alarm. After the test is completed, END message with (V) icon will be displayed. (Users are required to check the test processes manually.)

5.2. Bump Test



When pressing and holding the button for 5 seconds in the calibration mode , icon and 'CAL' mark will appear, and when pressing button once again, the bts message will appear.

Once you press and hold the button for 3 seconds, the tst message will be displayed for 45 seconds (To cancel, press the button for one second). Within the 45 seconds, apply a test gas (If no gases are applied, the bts message will flash again). After the selected gas is applied, if the test is successful, SUC message with (V) will be displayed after 30 seconds. And then, remove the calibration cap and gas tube. If the test fails, FA message with (X) will be displayed and bts message will be flashing until the test is successful.

6. Event Log

Last 30 events are stored on a device. Once more than 30 events are stored, the log events are removed automatically in the order starting at Event 1. And, the stored log events data can be transferred to SENKO-IR LINK. Each alarm event records followings:

- Types of alarms (1st or 2nd) / Alarm concentration in ppm or % / Peak concentration

7. Sensor & Battery Replacement

< CAUTION >

1. It is absolutely prohibited to replace battery at potential explosion or dangerous regions. Replace the battery in a clean environment, which has no hazardous gases.
2. Replacement of components can invalidate the intrinsic safety function. Replacing the sensor and battery should be performed by authorized sellers, agents, distributors, or managers.
3. The sensors published by SENKO should be used for replacement.
4. Disassembly should be necessary only for sensors & battery replacement. After the sensor replacement, the span gas calibration should be done.
5. Before disassembling, please turn off the power and remove screws.

7.1. Sensor Replacement

1. Deactivate the detector.
2. Remove the 6 screws on the back case.
3. Remove the 2 screws on the PCB board.
4. After removing the battery, replace with the new sensor matching with the gas type. For instance, If you have the SP-SGTP CO, the CO sensor should be used for the replacement.
5. Assemble the detector.
6. After assembling, perform the fresh air calibration and standard calibration with the concentration in this manual.
7. Have the sensor stabilized for 5 minutes before use.

7.2. Battery Replacement

1. Deactivate the detector.
2. Remove the 6 screws on the back case.
3. Replace with the new battery.
4. Assemble the detector.
5. After assembling, perform the fresh and standard calibration.
6. Before use, have the sensor stabilized for 5 minutes.

8. Specification

Model	SP-SGTP											
Measure Gas	O_2	CO	H_2S	H_2	SO_2	NH_3	NO_2	Cl_2	HCN	PH_3	ClO_2	HCl
Range	0~30 %Vol	0~500 ppm (Standard) 0~1999 ppm (Optional)	0~100 ppm	0~1000 ppm	0~50 ppm	0~100 ppm	0~20 ppm	0~20 ppm	0~50 ppm	0~5 ppm	0~5 ppm	0~20 ppm
Sensor Type	Electrochemical											
Measurement	Diffusion type											
Display	LCD display											
Audible	90dB at 10cm											
Warning Lamp	Red Flashing LEDs (Light-Emitting Diode)											
Vibration	Vibration Alarm											
Battery	Manufacture: Vitzrocell / P/N: SB-AA02(P) / System: Lithium Primary Battery Nominal voltage: 3.6V / Nominal capacity: 1.2Ah											
Temperature	-40 ℃~+50 ℃ (for CO, H2S, H2, NH3, and NO2) / -30 ℃~+50 ℃ (for O2 and SO2)											
Humidity	5% ~ 95% RH (non-condensing)											
Case	Rubber Enclosure											
Accessories	Calibration Cap, Manual, Test Report											
Option	External Sampling Pump (SP-Pump101), SENKO-IR Link, Docking Station											
Size	54mm(W) x 91mm(H) x 32mm(D)											
Weight	93g(Toxic), 104g(O2) *Battery, clip included											
Operating Life	24 months, based on 2 minutes of alarm per day											
Event Log	Recent 30 alarms											
Approval	Ex ia IIC T4 Ga / IP67 (Korea Ex, ATEX, IECEx, INMETRO)											

9. Certificates

Intrinsic Safety:

The detector is in conformity of the following standards

IECEx	**Ex ia IIC T4 Ga** → ① Explosion Protected ② Protection Concept ③ Gas Group ④ Temperature Classification ⑤ Equipment Protection level ① ② ③ ④ ⑤ IECEx KTL 19.0019X
ATEX	**CE 2198 Ex II 1 G Ex ia IIC T4 Ga IP67** KRH 19 ATEX 1022X Directive 2014/34/EU
KCs	**Ex ia IIC T4** KTL 19-KA2BO-0491X
INMETRO	**Ex ia IIC T4 Ga** BRA-22-GE-0019X
CSA/UL	**Ex ia IIC T4 Ga** Class I, Zone 0, AEx ia IIC T4 Ga Class I, Division 1, Groups A, B, C, D, T4
CNEx	**Ex ia IIC T4 Ga**
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:

- IEC 60079-0: 2011 Ed 7
- IEC 60079-11: 2011 Ed 6
- IEC 60079-26 : 2014-10 Ed 3
- EN IEC 60079-0:2018
- EN 60079-11: 2012

Manufacturing Approval:

The detector manufacturer is certified compliant with ISO 9001:2000 provisions

Limited Warranty

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

The manufacturer is not liable (under this warranty) if its testing and examination disclose that the alleged defect in the product does not exist or was caused by the purchaser's (or any third party's) misuse, neglect, or improper installation, testing, or calibrations. Any unauthorized attempt to repair or modify the product, or any other cause of damage beyond the range of the intended use, including damage by fire, lightening, water damage or other hazard, voids liability of the manufacturer.

In the event that a product should fail to perform up to manufacturer specifications during the applicable warranty period, please contact the product's authorized reseller or SENKO service center at +82-31-492-0445 to repair/return information.

SENKO

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