SGT

(Portable Single Gas Detector)

SGT: Disposable

User's Manual

SENKO

SenKo Co., Ltd

Product Overview

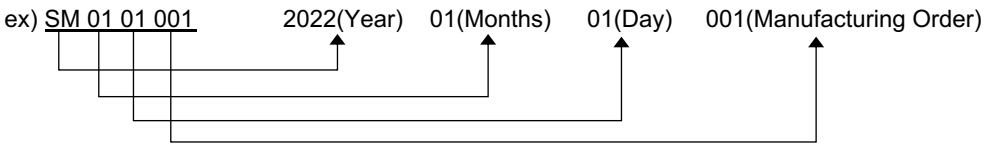
SGT is a portable single gas detector designed to detect the presence of toxic gases in the ambient environment and protect workers from oxygen deficiency. When activated, SGT continuously monitors ambient air for the presence of a specific gas and alerts the user to potentially unsafe exposure with LED, vibrating, and audible alarms in the event when gas concentration exceeds alarm set points. And the alarm set points, calibration range and display configuration can be changed via SENKO-IR Link (Optional).

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 SGT 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 SGT after the gas concentration value has stabilized.
- ⚠ Severe vibration or shock to the device may cause a sudden reading change. Please use SGT after the value of gas concentration has stabilized. Excessive shock to SGT 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.
- ⚠ Do not attempt to replace the battery and sensor as SGT is designed to be disposable. Changing the battery and sensor may impair intrinsic safety and the attempt will void warranty.

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 zero calibration every 30 days in the fresh air environment.
- ⚠ Check the activation date before use. Please do not use the device if the activation date has passed.
- ⚠ Clean detectors with a soft cloth and do not use chemical substances for cleaning.
- ⚠ To maintain 24 months lifespan, avoid the below activities except the necessary cases to check events(Max/Min), lifetime/concentration and alarm set points. The frequent use of the button will deplete the battery lifetime less than 24 months.
  1. Pushing 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. Connecting with the SGT IR Link frequently except the bump testing.
- ⚠ View the serial number on the label at the back side of the device. (ex, 20160101)
  1. The serial number indicates below.



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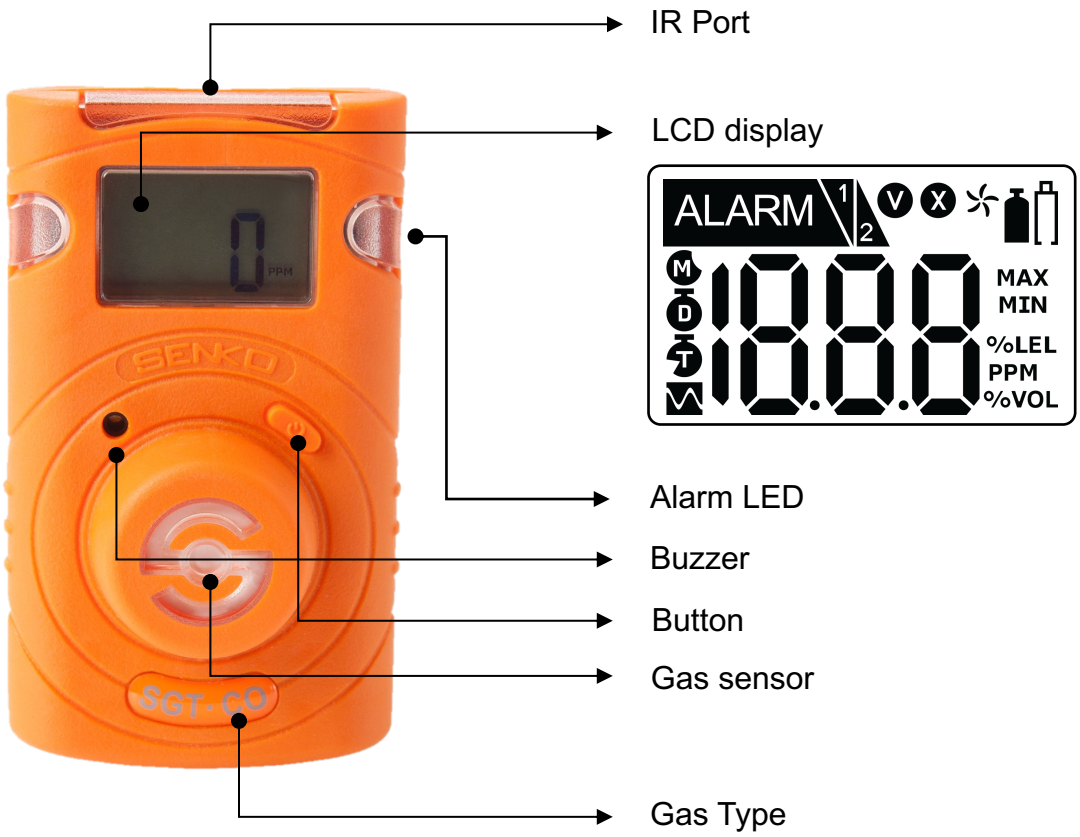


LCD Display Symbols

ALARM	Alarm condition	M	Remaining Month
1	Low Alarm Display	D	Remaining 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		Lifetime less than 30 days Or Low Battery

2. Activation

< CAUTION >

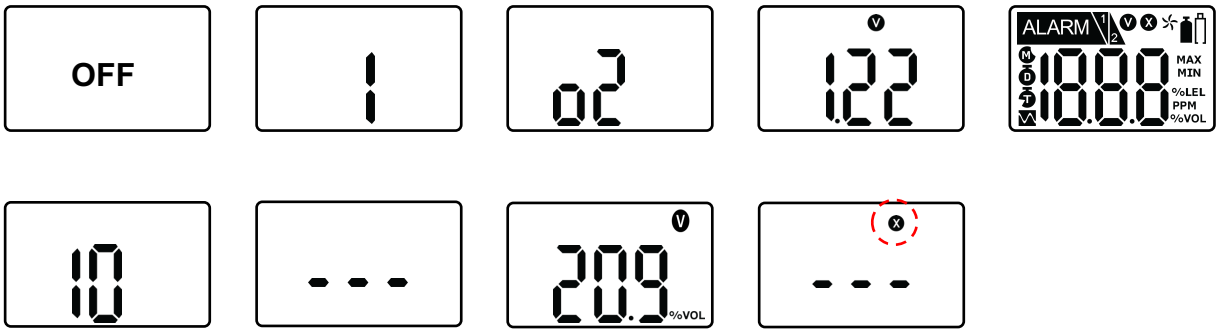
Before use, check the manufacturing date on the box. Please do not open if it is over the shelf life below.

Shelf Life

SGT-Oxygen: 3 months from the manufacturing date

SGT-Toxic: 6 months from the manufacturing date

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



In the event if 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.

< CAUTION >

Appropriate calibration of the device is required prior to operation. 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, the gas concentration or remaining lifetime (Option) appears on the display in measurement mode.
- Oxygen concentration is displayed in percent by volume (%Vol) and the toxic concentration is displayed in parts per million. (PPM)

3.2. Display mode

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

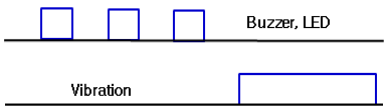
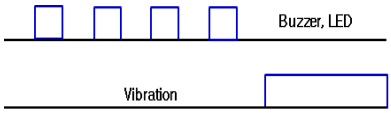
Min (only for oxygen) -> Max -> clr -> Remaining Lifetime (M , D , T) -> 1st alarm set point -> 2nd alarm set point -> Firmware version -> Calibration Concentration.

In the last step, if you press the button or do not press it for a second, the device will return to the measurement mode.

3.3. Alarms / Battery / Test Failure Display

When the gas concentration exceeds alarm set points, 1 or 2 will be displayed and the device will vibrate, flash (LED) and beep. Move to fresh air to remove the alarms, after which the gas concentration decreases, and the alarm stops.

Failure of Test and Calibration: display X icon and beeping

Alarm	Alarm Standard	LCD Display	Alarm and Vibration Display
1st Alarm	Exceeding low alarm set point	1 Icon & concentration	
2nd Alarm	Exceeding high alarm set point	2 Icon & concentration	
Remaining life	Below 30 days	Icon	
Lifetime Expiration	Past 24 months (**E**nd **O**f **L**ife)		Lifetime is over. (Replace with a new SGT.)
Test Failure	Failure of sensor test / Failure of calibration	X Icon displays	
Battery Test	Low Power		
Bump Test	Bump Test Period		Press the button to activate the bump test
Calibration	Calibration Period		Press the button to activate the calibration

Alarm Set Point

Gas	O_2	CO	H_2S	H_2	SO_2	Cl_2	NH_3	NO_2
1st	19%	30ppm	10ppm	100ppm	2ppm	0.5ppm	25ppm	3ppm
2nd	23%	60ppm	15ppm	500ppm	5ppm	1ppm	35ppm	5ppm

< CAUTION >

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

4. 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. The stored log events data can be transferred to a PC via SENKO-IR LINK. Each alarm event records followings:
- Types of alarms (1st or 2nd) / Alarm concentration in ppm or % / Peak concentration

5. 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.

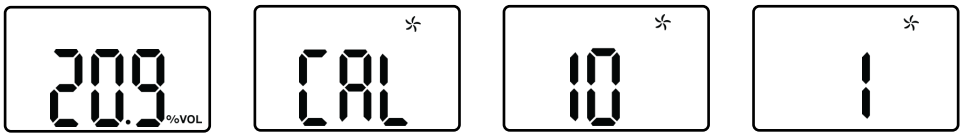
Fresh Air Calibration

Standard Gas Calibration

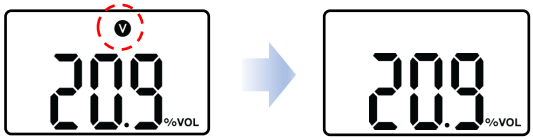
5.1. Fresh Air Calibration

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

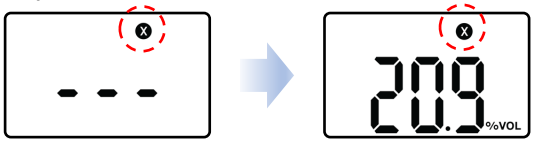
Press the button for three seconds to initiate calibration. When calibration begins, a countdown (starting at 10) will appear on the screen.



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.

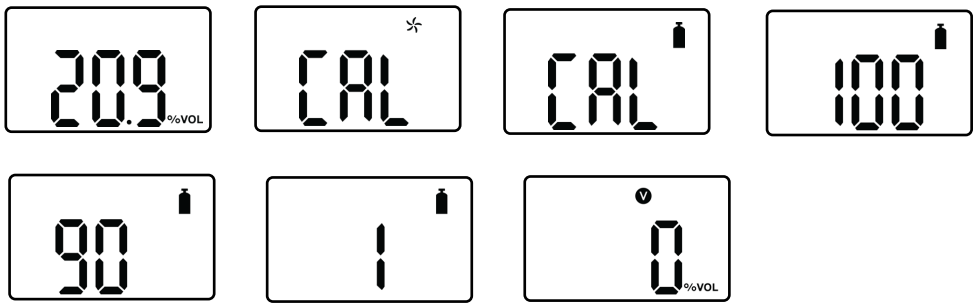


< CAUTION >

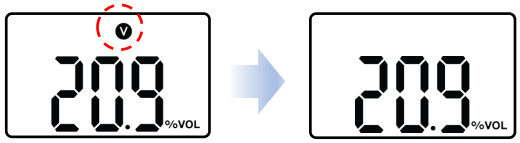
Calibration should be performed in a fresh-air environment that is free of any influence of other gases (since calibration is assumed to be performed in an environment with 20.9% of Oxygen). It is also recommended that calibration should be performed in a space that is not confined.

5.2. Standard Gas Calibration

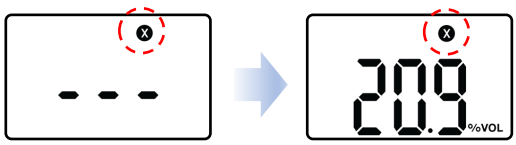
When pressing and holding the button for 5 seconds in the calibration mode , icon and 'CAL' mark will appear, and when pressing button once again, icon will appear. Press and hold the button for three second to initiate calibration. When calibration begins, a countdown (60 seconds or more depending on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



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



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



5.3. Return to Measuring Mode.

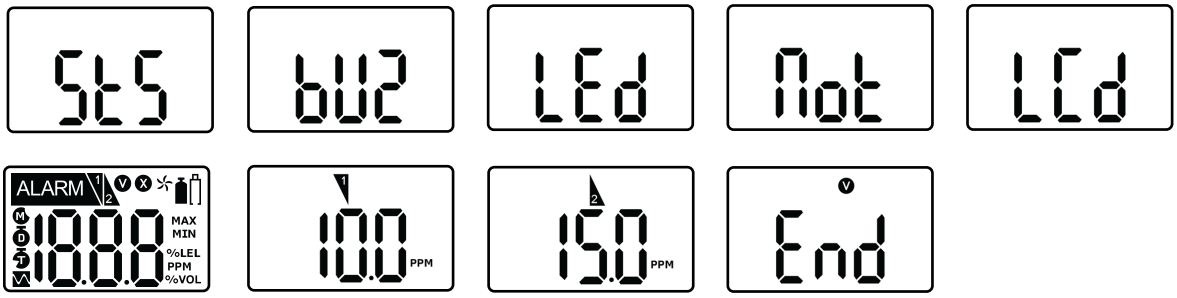
In the standard calibration mode , by pressing the button for a second, the fresh air calibration, standard calibration, and "ESC" will appear on the display consecutively. In the ESC mode, press the button for 3 seconds and the device will get out from calibration mode. By pressing the button one time,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

Calibration concentration.

Gas	O_2	CO	H_2S	H_2	SO_2	Cl_2	NH_3	NO_2
Concentration	0.0%Vol (N2:99.9%Vol)	100 ppm	50 ppm	500 ppm	10 ppm	10 ppm	100 ppm	10 pm

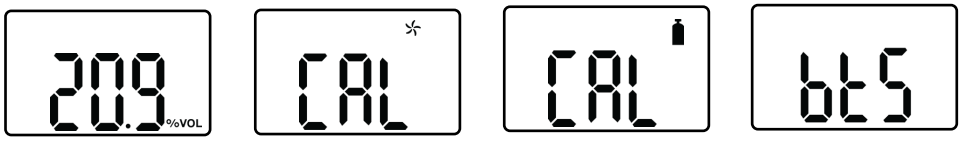
6. Self Test & Bump Test

6.1. 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 Ⓥ icon will be displayed. (Users are required to check the test processes manually.)

6.2. 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 Ⓥ will be displayed after 30 seconds. And then, remove the calibration cap and gas tube. If the test fails, FA message with Ⓧ will be displayed and bts message will be flashing until the test is successful.

7. Specification

Model	SGT							
Measure Gas	O_2	CO	H_2S	H_2	SO_2	Cl_2	NH_3	NO_2
Range	0~30%Vol	0~500ppm	0~100ppm	0~1000ppm	0~50ppm	0~20ppm	0~100ppm	0~20ppm
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 & Humidity	-40℃ ~ +50℃(for Toxic) / -35℃ ~ +50℃(for O2) 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 & Weight	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, IECEx, ATEX, CSA & UL, INMETRO							

8. Certificates

Intrinsic Safety:

The detector is in conformity of the following standards

IECEx: **Ex ia IIC T4 Ga**
① ② ③ ④ ⑤

IECEx KTL 15.0018

① Explosion Protected
② Protection Concept
③ Gas Group
④ Temperature Classification
⑤ Equipment Protection level

Ex ia IIC T4 Ga

Class I, Zone 0, AEx ia IIC T4 Ga
Class I, Division 1, Groups A, B, C, D, T4
C22.2 No. 60079-0:2015; C22.2 No. 60079-11:2014;
C22.2 No. 61010-1-12:2010; UL 61010-1,
Ed. 3; UL 913, Ed. 8; UL 60079-0, Ed. 6; UL 60079-11, Ed. 6

ATEX: **CE 2198 Ex II 1 G Ex ia IIC T4 Ga IP67**

KRH16ATEX1048
Directive 2014/34/EU

KCS: **Ex ia IIC T4**

KTL 16-KA2BO-0457

INMETRO **Ex ia IIC T4 Ga**

BVC16.5919

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. 6
- IEC 60079-11: 2011 Ed 6
- UL 61010-1, Ed. 3
- UL 913, Ed. 8
- UL 60079-0, Ed. 6
- UL 60079-11, Ed. 6
- C22.2 No. 60079-0:2015
- C22.2 No. 60079-11:2014
- C22.2 No. 61010-1-12:2012
- EN 60079-0: 2012+A11:2013
- 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
SenKo Co., Ltd

445, Doksanseong-ro, Osan-si, Gyeonggi-do, Republic of Korea

Tel : 82-31-492-0445 Fax : 82-31-492-0446
Email : sales@senko.co.kr Web : www.senko-detection.com