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# SGT

(Portable Single Gas Detector)

SGT: Disposable

## User's Manual



## Product Overview

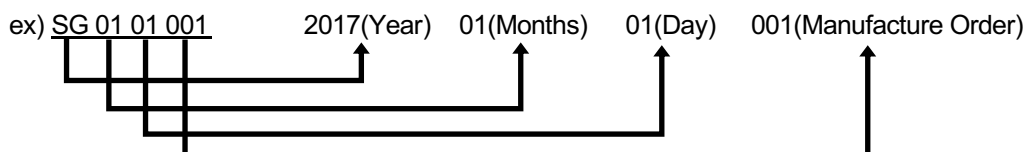
SGT is a portable single gas detector designed to detect the presence of oxygen, toxic and combustible gases in the ambient environment. When activated, SGT continuously monitors ambient air for the presence of a specific gas and alerts the user to potentially unsafe exposure with LED, vibrating, and audible alarms in the event that gas concentration exceeds alarm set points. And the alarm set point, 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, lightning, 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

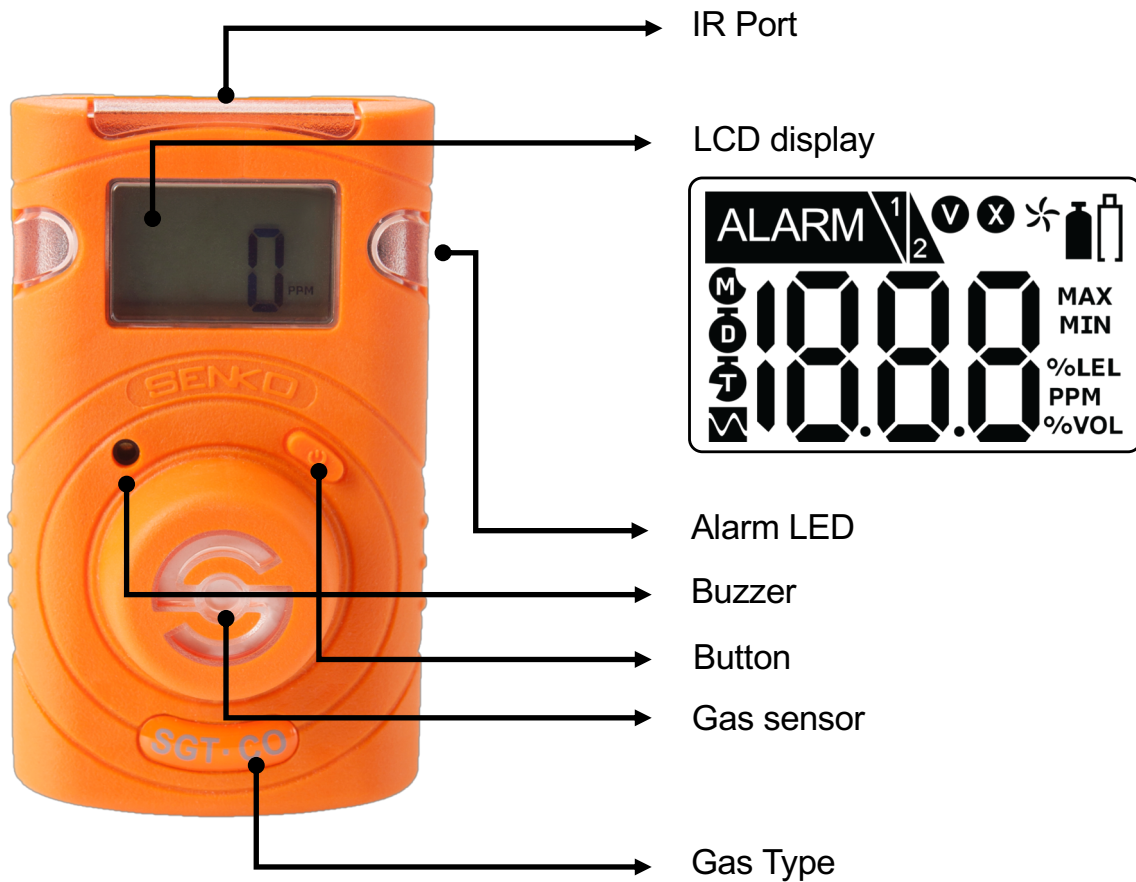
- ⚠ Before operating this device, please read the manual carefully.
- ⚠ This device is not a measurement device, but a gas detector.
- ⚠ If calibration and self-test fails continuously, please do not use the device.
- ⚠ For the O<sub>2</sub> detector, perform calibration every 30 days in the fresh air 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 life time, 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 SGT IR Link frequently except the bump testing.
- ⚠ View a serial number on the label at the back side of the device. (ex, 20170101)



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# 1. Product Overview



## LCD Display Symbols

|                          |                          |                              |                                              |
|--------------------------|--------------------------|------------------------------|----------------------------------------------|
| <b>ALARM</b>             | Alarm condition          | <b>M</b>                     | Remaining Month(Month)                       |
| <b>1</b>                 | Low Alarm Display        | <b>D</b>                     | Remaining Day                                |
| <b>2</b>                 | High Alarm Display       | <b>T</b>                     | Remaining Time(Hour)                         |
| <b>V</b>                 | Stabilization Success    | <b>MAX</b>                   | Max Peak Value                               |
| <b>X</b>                 | Stabilization Failure    | <b>MIN</b>                   | Min Peak Value                               |
| <b>Wind icon</b>         | Fresh Air Calibration    | <b>%LEL<br/>PPM<br/>%VOL</b> | Measurement Unit                             |
| <b>Gas cylinder icon</b> | Standard Gas Calibration | <b>Gas cylinder icon</b>     | Lifetime less than 30 days<br>Or Low Battery |

## 2. Activation

### < CAUTION >

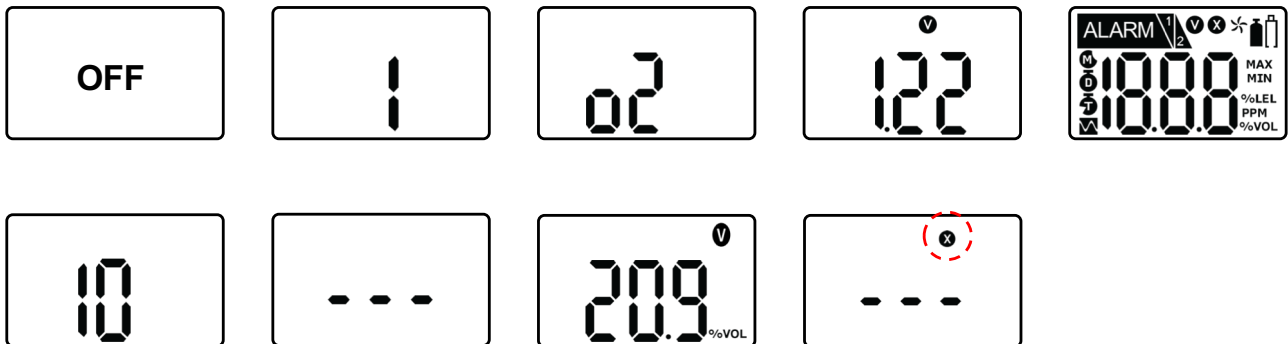
Before use, check the manufacturing date on the box. Please do not open it if it is over the shelf life below.

#### 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. For 10 seconds countdown, the device will be stabilized. After stabilization is completed, "V" icon will appear on the display screen and the device will move to Measuring mode.



In the event that stabilization of the device fails, **X** 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, in Measuring mode, gas concentration or remaining life (Option) appears 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.


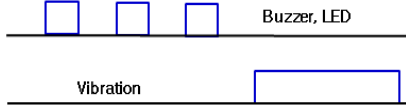

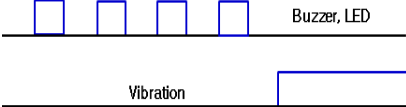




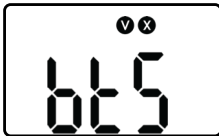

Min (only for oxygen) -> Max -> clr -> Remaining Life time(  ,  ,  ) -> 1st alarm set point -> 2nd alarm set point -> Firmware version -> Calibration Concentration

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. Alarms / Battery / Test Failure Display

When the gas concentration exceeds alarm set points,  or  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.

Failure of Test and Calibration: Display  icon with beeping

| Alarm               | Alarm Standard                                  | LCD Display                                                                                            | Alarm and Vibration Display                                                         |
|---------------------|-------------------------------------------------|--------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 1st Alarm           | Exceeds 1st alarm                               |  Icon & concentration |  |
| 2nd Alarm           | Exceeds 2nd alarm                               |  Icon & concentration |  |
| Remaining life      | Below 30 days                                   |  Icon                 |                                                                                     |
| Lifetime Expiration | Past 24 months (End Of Life)                    |                       | Lifetime is over.<br>(Replace with a new SGT.)                                      |
| Test Failure        | Failure of sensor test / Failure of calibration |  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 | O2  | CO    | H2S   | H2     | SO2  | Cl2    | NH3   | NO2  |
|-----|-----|-------|-------|--------|------|--------|-------|------|
| 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. 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

## 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.

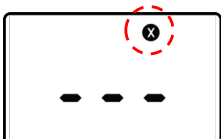
And, press the button to initiate calibration for three seconds. When calibration begins, a countdown (starting at 10) will appear on the screen.



Once completed,  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.






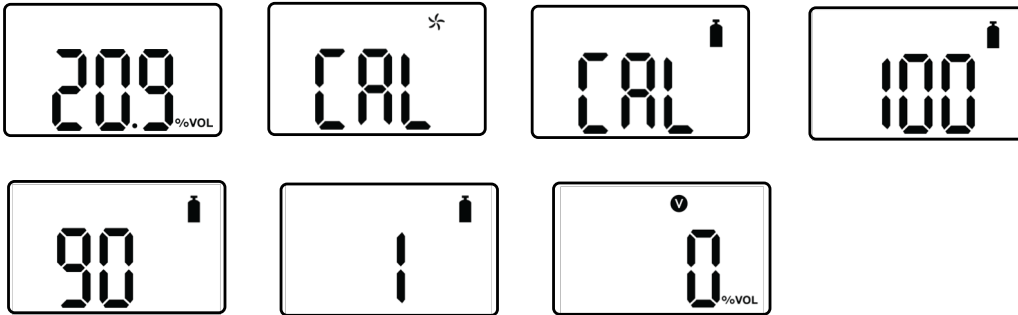
### < CAUTION >


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.

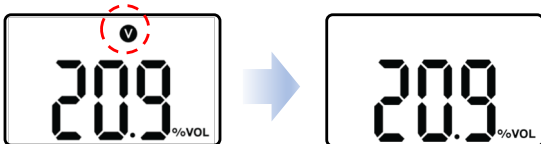



### 5.2. Standard Gas Calibration

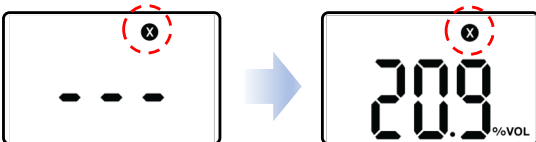
When pressing and holding the button for 5 seconds in the calibration mode  ,  icon and 'CAL' mark will appear, and when pressing button once again,  icon will appear. And then, press and hold the button for three second to initiate calibration. When calibration begins, a countdown (60 seconds or more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




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, the device will be get out of the calibration mode. And press the button one time, it will return Measuring mode.

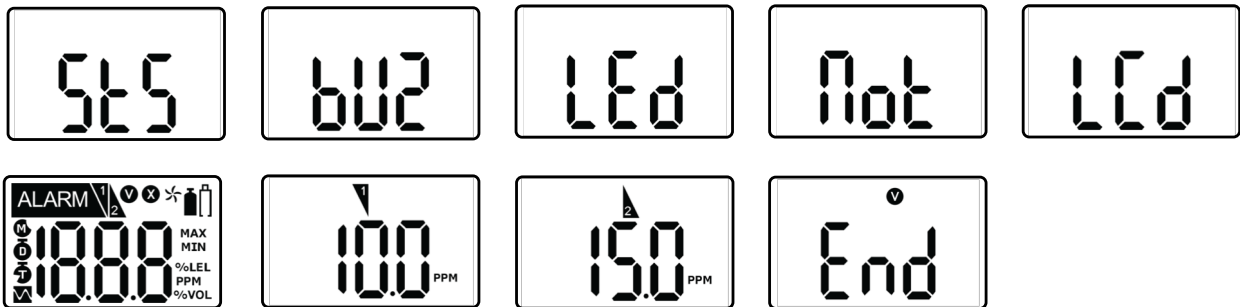


### Calibration concentration.

| Gas           | O2                       | CO      | H2S    | H2      | SO2    | Cl2    | NH3     | NO2   |
|---------------|--------------------------|---------|--------|---------|--------|--------|---------|-------|
| Concentration | 0.0%Vol<br>(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 **V** icon will be displayed. (Users are required to check the test processes manually.)

### 6.2. Bump Test



The interval of Bump-test is 1~365days, and the default is N/A. To initiate the bump test, set the bump test interval. Once the bump test time reaches, bts message will flash. 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.

## 7. Specification

| Model                  | SGT                                                                                                                            |          |                  |                |                 |                 |                 |                 |
|------------------------|--------------------------------------------------------------------------------------------------------------------------------|----------|------------------|----------------|-----------------|-----------------|-----------------|-----------------|
| Measure Gas            | O <sub>2</sub>                                                                                                                 | CO       | H <sub>2</sub> S | H <sub>2</sub> | SO <sub>2</sub> | Cl <sub>2</sub> | NH <sub>3</sub> | NO <sub>2</sub> |
| 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<br>Nominal voltage: 3.6V / Nominal capacity: 1.2Ah |          |                  |                |                 |                 |                 |                 |
| Temperature & Humidity | -40°C ~ +50°C(for Toxic) / -35°C ~ +50°C(for O <sub>2</sub> )<br>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)<br>Weight: 93g(Toxic), 104g(O <sub>2</sub> ) (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



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

IECEX KTL 15.0018



**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.



73, Oesammi-ro 15 beon-gil, Osan-si, Gyeonggi-do, 18111, South Korea

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Fax : 82-31-492-0446

Email : sales@senko.co.kr

Web : www.senko.co.kr