G-Finder Single Instruction Manual

G-Finder Single is a personal safety device designed for monitoring the atmosphere for potentially hazardous level of a gas enrichment or deficiency in diffusion mode using one electrochemical sensor for one of three gases: Oxygen (O_2), Carbon Monoxide (CO) or Hydrogen Sulfide (H_2S) by selecting at order. Power is provided by one, non-user replaceable, lithium-thionyl chloride primary cell. Readings are displayed on LCD and the device has audible, visual, and vibrating alarms when set, user-configurable conditions are exceeded. It is your responsibility to respond appropriately to the alarms. G-Finder Single has no facilities for connection of external electrical circuits. G-Finder Single has IR communications for changing the alarm set point, the calibration range and etc. The IR communications shall only be used in safe area.

WARNING

1) G-Finder Single is designed for single use and comes with a non-field replaceable primary lithium-thionyl chloride cell, filter and sensor already installed and ready for use.
2) Do not attempt replacement or substitution of components. Replacement or Substitution of components may impair Intrinsic Safety and will void the warranty of the product.
3) The electrical, electronic and battery elements of this product must not be disposed of via municipal waste streams; they should be disposed of by a qualified recycler or hazardous materials handler. Correct disposal will contribute to recycling of materials and prevent negative consequences for the environment.
4) It is recommended performing a bump test prior to G-Finder Single use every day to confirm sensor response and alarm activation by exposing the detector to a concentration of target gas that exceeds the low alarm set point.
5) In case of G-Finder Single O_2, for optimal performance, periodically calibrate zero for the sensor.
6) For all gas type of G-Finder Single, always proceed bump test and calibration at room temperature and in a fresh air environment (20.9% v/v O_2) that is free of hazardous gas.
7) The display window may have potential electrostatic charging hazard. Therefore, do not rub or wipe the display window, in order to avoid to build up of electrostatic charge on the surface. Additionally, the display window shall only be cleaned with a damp cloth.

CAUTION

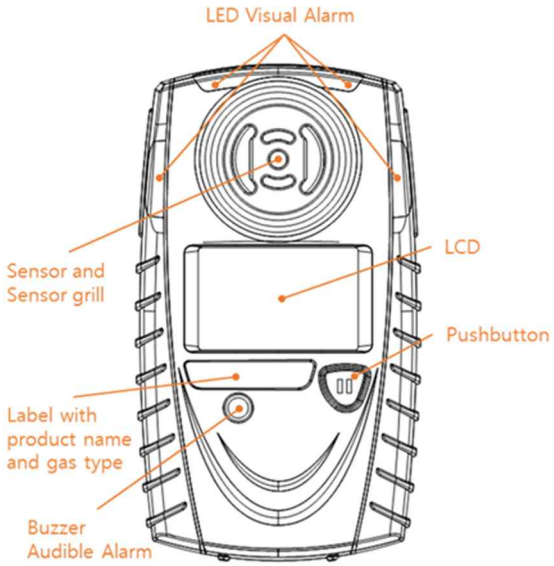
1) Activate G-Finder Single before the activation date on the package.
2) In order to maintain normal operation of G-Finder Single, keep the gas sensor grill from clogging and keep the gas sensor, LED and buzzer hole surfaces free from dust and dirt. Clean the exterior with a soft and damp cloth.
3) When using G-Finder Single, sudden change in the temperature may cause change in the detected gas concentration value suddenly. Using in a stable temperature environment is recommended for more accurate detection.
4) G-Finder Single is a gas detector, not a measurement device.
5) Portable safety gas detectors are life safety devices. Accuracy of ambient gas reading is dependent upon factors such as accuracy of the calibration gas standard used for calibration and frequency of calibration.

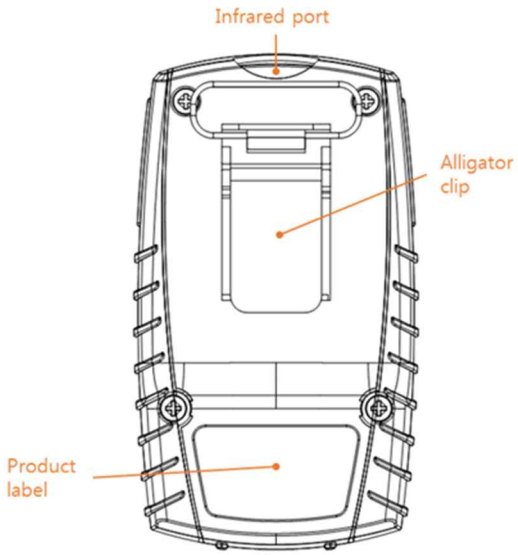
1. Specification

Item	Description
Ex marking	ATEX : CE 0344 Ex II 1 G Ex ia IIC T4 Ga IECEx / KCs / NEPSI : Ex ia IIC T4 Ga
Approvals	IECEx : IECEx KTL 19.0018 KCs : 19-KA2BO-0360 ATEX : DEKRA 19ATEX0080 NEPSI : GYJ19.1195X

Dimensions	87x50x41 mm (Alligator clip included)
Weight	103 g (Alligator clip included)
Temperature	-20˚C ~ 50 ˚C
Humidity	5 ~ 95 % RH
IP	IP 67
Sensor type	O_2 or CO or H_2S - electrochemical cell
Alarms	Visual, vibrating, audible (min. 95dB)
Display	Liquid Crystal Display (LCD)
Battery	Primary lithium-thionyl chloride (Li-SOCl2)
Event Log	Last 128 events. Newer events replace older events.
Battery Life	24 months of operation/ 2 minutes of alarm per day.
Warranty	Full 2 years

2. Each part for G-Finder Single





3. LCD Icons Description

Icon	Description
LOW ALARM / HIGH ALARM	Low alarm and high alarm. These signs are displayed when gas concentration exceeds alarm setpoints.
PPM	CO, H_2S models only. Toxic gas concentration is measured in parts per million.
%VOL	O_2 model only. Oxygen concentration is measured as percent by volume.
	Time Indicator. (Remaining product life with 00M / 00d / 00h display, 00 means remaining months / days / hours)
	When this symbol is displayed, press the pushbutton once or hold until the symbol disappears
	Alarm event indicator. This icon is displayed when an alarm event has occurred within the past 8 hours.
	Low battery warning indicator.
	End of operating life warning indicator.
C C	Calibration reminder. This icon is displayed when a sensor calibration is due. / indicates a failed calibration.
B B	Bump test reminder. If the detector is configured to display a bump test reminder, this icon is displayed when a bump test is due. / indicates a failed bump test.

4. Activating the New Detector

1) Move to normal atmosphere (20.9% v/v O_2) that is free of hazardous gas.
2) Press and hold the pushbutton until 5 second countdown is displayed, then continue to hold until the countdown is completed to activate G-Finder Single.
3) When the countdown is completed, the LCD, LEDs, vibration, and beep turn on and then turn off.
4) The alarm setpoints are displayed and the sensor stabilization countdown is displayed. The time required to stabilize varies depending on sensor type. When the countdown reaches 0, the activation is completed.

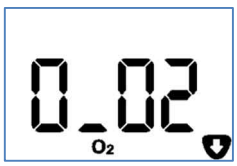
*** In case of G-Finder Single O2, when the countdown reaches 0, the zero calibration is performed automatically and after the zero calibration, the activation is completed.*

5) The detector is in normal operating mode when the gas type and concentration are displayed.

5. Normal Operating Mode

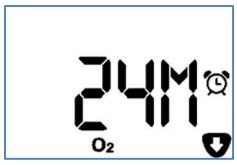
Normal Display

1) When the detector is in normal operating mode, the type of gas detected is permanently displayed. The detected concentration of the gas is displayed until it is disrupted by a pushbutton action, gas alarm, or error event. If you want to see the status information about the detector, please press the pushbutton once.



Firmware Version Display

2) The display information on the LCD is changed to the current firmware version of the detector from the normal display by pressing the button once. The number before the underline '_' means major number of the firmware version, and the number after the underline means minor number. In other word, "0_02" indicates the firmware number is '0.02'.



Remaining Product Life Display

3) The display information on the LCD is changed to the remaining product life from the current firmware version of the detector by pressing the button once. The unit of the remaining life will be changed automatically refer to the remaining life scale; "24M" ~ "1M", "30d" ~ "1d", "24h" ~ "1h".

Low Alarm Set Value Display

4) The display information on the LCD is changed to the low alarm set value from the remaining product life by pressing the button once.

High Alarm Set Value Display

5) The display information on the LCD is changed to the high alarm set value from the low alarm set value by pressing the button once.

6) The display information on the LCD is changed to the normal display from the high alarm set value after self-test for the indicating-functions (LCD, LED, Vibration, and Buzzer) by pressing the button once if there is not any alarm event occurred within the past 8 hours.

Elapsed Time Display

Alarm Value Occurred Display

7) Or if there is any alarm event occurred within the past 8 hours, the display information on

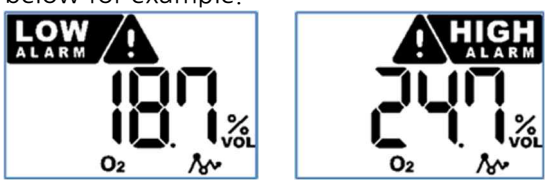
the LCD is changed to elapsed time since the alarm occurred from the high alarm set value by pressing the button once, and then it is changed to the alarm value occurred by pressing the button once again, and then it is changed to the normal display after self-test for the indicating-functions (LCD, LED, Vibration, and Buzzer) by pressing the button once again.

6. Alarms

An alarm is initiated when the sensor is exposed to a gas concentration that exceeds alarm setpoints. The alarm has two types; a low alarm and a high alarm.
The alarm persists until the gas concentration returns to an acceptable range. Battery life decreases rapidly when the detector is in alarm condition.
For G-Finder Single O_2 type, a low alarm occurs when the measured concentration value is lower than the low alarm setting value, while a high alarm occurs when the measured concentration value is higher than the high alarm setting value. The following alarm settings are default for each detector gas type.

Gas Type	Low Alarm	High Alarm
O_2	19.5% v/v O_2	23.5% v/v O_2
CO	35 ppm	200 ppm
H_2S	10.0 ppm	15.0 ppm

When the alarm occurs, LEDs flash, vibration and beep sounds occur and display will be changed as below for example.



Low Alarm / High Alarm Value

7. Bump Test

⚠ *This mode requires necessarily a test gas at a concentration to be able to occur an alarm. Only perform this mode if that gas is available.*
Performing this mode without that gas will cause the test to fail and generate a fail icon ⊗*, which will not disappear until this mode is successfully completed.*

1) Press the button twice at the normal operating mode in succession to get into the menu, it shows "bUMP" on the screen.
2) Press and hold the button until a 3 second countdown is displayed, then continue to hold until the countdown is completed to perform the bump test.
3) Then the gas Injection display, the low alarm setpoint display, and the high alarm setpoint display occur cross and the detector waits for injection of gas which causes an alarm.

4) If the detector detects the gas concentration for the bump test, the bump test process is performed automatically. The result will be displayed on the screen at the end of the test. If an alarm occurs during the bump test, the test is succeeded, otherwise the test is failed.

8. Zero the Sensor

In case of G-Finder Single O_2, over time and through use, the sensor baseline at zero exposure may drift from the manufacturer's baseline.
For optimal performance of O_2 models, it is recommended to zero the O_2 sensor at least once in a month at the condition of room temperature and in a fresh air environment (20.9% v/v O_2) that is free of hazardous gas.
The user will be noted by the display of the calibration reminder icon when the sensor calibration is due. If the icon is showing please zero the sensor as instructed below:
*** For all gas types, we recommend to zero the sensor periodically.*

1) Move to a normal atmosphere (20.9% v/v O_2) that is free of hazardous gas.

2) Press the button twice at the normal operating mode in succession to get into the menu, "bUMP" will be displayed on the screen.
3) "ZEro" is displayed on the screen by pressing the button once, then press and hold the button until a 3 second countdown is displayed. Continue to hold until the countdown is completed to calibrate zero.
4) Wait until the zeroing process is completed.
5) When the zeroing process is completed, "PASS" or "FAIL" appears.
6) After displaying the result, "ZEro" is displayed on the screen again automatically.
7) If "FAIL" appears, repeat the zeroing process according to above procedure.
8) If the zeroing process fails again, please contact our service center.
9) To calibrate gas, press the button once, and "SPAn" will be displayed on the screen. Continue calibrating according to the "Calibration Gas" section.
10) Or to exit the menu, press the button repeatedly to go back to normal operating mode.

9. Gas Calibration

⚠ ***This mode requires necessarily a gas at a calibration gas concentration. Only perform this mode if that gas is available. Performing this mode without that gas will cause the calibration to fail and generate a fail icon ⊗, which will not disappear until this mode is successfully completed. Furthermore, calibration with the wrong concentration may cause serious problems in gas concentration measurement.***

For more optimal performance of G-Finder Single, gas calibration may be needed. To calibrate the detector, we recommend gas calibration after doing zero calibration at room temperature and in a fresh air environment (20.9% v/v O_2) that is free of hazardous gas.

By default, G-Finder Single is configured to use the following calibration gas mixtures:

Gas Type	Standard Calibration Gas Concentration
O_2	18.0 % v/v O_2
CO	150 ppm (balance N_2)
H_2S	25 ppm (balance N_2)

1) Move to a normal atmosphere (20.9% v/v O_2) that is free of hazardous gas.
2) Press the button twice at the normal operating mode in succession to get into the menu. "bUMP" will be displayed on the screen.
3) "ZEro" will be displayed on the screen by pressing the button once, by pressing the button again, "SPAn" will be displayed on the screen.
4) Press and hold the button until a 3 second countdown is displayed. Continue to hold until the countdown is completed.
5) The gas injection display and the standard calibration gas concentration display occur cross and the detector waits for injection of calibration gas.

6) If the detector detects the gas concentration for the gas calibration, the gas calibration process will be performed automatically.
7) When the gas calibration process is completed, "PASS" or "FAIL" appears.
8) After displaying the result, "SPAn" will be displayed on the screen again automatically.
9) If "FAIL" appeared, repeat the gas calibration process according to above procedure.
10) If the gas calibration fails again, please contact our service center.
11) Or to exit the menu, press the button repeatedly to go back to normal operating mode.

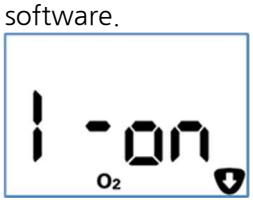
10. Infrared Communication

IrDA communication mode is supported for user convenience. A separate PC software is required in order to use this mode normally. In this mode, you can check G-Finder Single internal.

*** Battery life decreases more rapidly during use the infrared communication mode. It is recommended to save battery by using infrared communication mode only when absolutely necessary.*

1) Press the button twice at the normal operating mode in succession to get into the menu, it shows "bUMP" on the screen.
2) Press the button 3 times to display “IrdA” on the screen.

3) Press and hold the button until a 3 second countdown is displayed. Continue to hold until the countdown is completed.
4) Then “I-on” is displayed on the screen and the communication mode is ready to operate normally. With “I-on” displayed on the screen, proceed with the necessary actions via the PC software.



5) To exit communication mode, with “I-on” displayed, press the button until a 3-second countdown is displayed, then keep holding it until the countdown is completed.
6) When the countdown is completed, “oFF” is briefly displayed on the screen, and then “IrdA” is displayed, returning to the communication mode menu.

*** For the use of the PC software related to the infrared communication mode, refer to the separate “G-Finder Infrared Communication Module Instruction Manual”.*

11. Display Off

Display off mode is supported for user convenience. With this mode, all indications except for the detection gas name are lost.

*** The display off mode is irrelevant to saving battery.*

1) Press the button twice at the normal operating mode in succession to get into the menu, it shows "bUMP" on the screen.
2) Press the button 4 times to display “oFF” on the screen.

3) Press and hold the button until a 3 second countdown is displayed. Continue to hold until the countdown is completed.
4) Then the LED, vibration and buzzer will turn on and off, and all indications except the gas name will disappear.
5) To exit the display off mode, press and hold the button until the 3 second countdown is displayed, and hold it until the countdown is complete.
6) When the countdown is completed, “on” is briefly displayed on the screen, the LED blinks twice, and then it returns to the normal operation mode.

12. Detection Range

Detection ranges for each gas type are noted in the table below.

Gas Type	Detection Range
O_2	0 to 25.0% Vol with 0.1 increments
CO	0 to 500 ppm with 1 increment
H_2S	0 to 100.0 ppm with 0.1 increments

13. Manufacturer Information

If there are any problems with our products, please contact us at the address below.

1) Address :
Gastron Co., Ltd. 23, Gunpocheomdansaneop 1-ro, Gunpo-si, Gyeonggi-do, Korea
2) Tel : 82-31-490-0800
3) Fax : 82-31-490-0801
4) URL : www.gastron.com
5) e-mail : gastron@gastron.com

14. Ordering Information

Please put an order according to model code description below.

- GFS-100-X-Y
  - GFS-100 : standard model name
  - X : Gas type
    (O2 : O_2 gas, CO : CO gas, H2S : H_2S gas)
  - *Y : Housing body color
    (OG : orange(default), YE : yellow, GN : green, VT : violet, etc.)
    - ➢ *Y : Option which does not affect intrinsic safety. This option code is needed at the order if you want some color different with default for the housing body. This option code will be not printed on the label.

15. Certifications and Approvals

1) The certification marking and certificate numbers are in the table below.

Ex marking	ATEX : CE 0344 Ex II 1 G Ex ia IIC T4 Ga IECEx / KCs / NEPSI : Ex ia IIC T4 Ga
Approvals	IECEx : IECEx KTL 19.0018 KCs : 19-KA2BO-0360 ATEX : DEKRA 19ATEX0080 NEPSI : GYJ19.1195X

2) The product is in conformity with the following standards:
IECEx : IEC 60079-0:2011, IEC 60079-11:2011
KCs : Announcement No. 2019-15 of Ministry of Employment and Labor
ATEX : EN 60079-0:2012, EN 60079-11:2012
NEPSI : GB 3836.1-2010, GB 3836.4-2010, GB 3836.20-2010

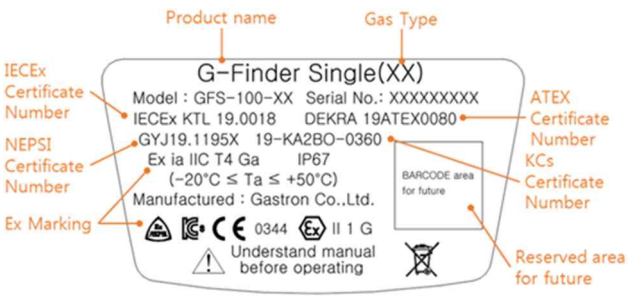
3) The product may be used in zones 0, 1 & 2 with flammable gases and vapors with apparatus groups IIC and with temperature classes T1, T2, T3, T4.

4) The product is only certified for use in ambient temperatures in the range -20℃ ≤ Ta ≤ +50℃ and should not be used outside this range.

5) With regard to explosion safety, it is not necessary to check for correct operation.

6) The product contains no user-replaceable parts and is not intended to be repaired by the user. Repair of the equipment is to be carried out by the manufacturer, or their approved agents, in accordance with the applicable code of practice.

7) The certificate label is described as below.



16. Revision History

REV.	CONTENTS	DATE
0.1	Initial Document	15 MAR 2019
0.2	Revised by Initial Certification Audit	29 MAY 2019
0.3	Revised by Additional Certificate Updated	21 JUN 2019
1.0	Revised by Additional function / CO detection range spec. changed	23 SEP 2022
1.1	Revised by added notice for a bump test mode and a gas calibration mode	21 FAB 2023