

## USE AND MAINTENANCE



 **be safe SG ---**



**Portable Single-Gas Detector**



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## 1.0 IMPORTANT INFORMATION

### 1.1 About this manual

- ◊ This manual describes the features, operation, and maintenance of **Be Safe SG**.
- ◊ Read this manual before using the device. The operator must be familiar with the manual and follow its directions carefully.
- ◊ This manual is subject to change as a result of technical improvements-the manufacturer assumes no responsibility for any content or printing errors.



**Respect your environment, think before you print the full manual.**

### 1.2 Safety Warnings



#### **WARNING!**

The Be Safe SG gas detectors are personal safety devices designed to detect the presence of specific gases:

**Be Safe SG H2S**                      **Hydrogen sulfide (H2S)**

**Be Safe SG CO**                      **Carbon monoxide (CO)**

**Be Safe SG SO2**                      **Sulfur dioxide (SO2)**

**Be Safe SG O2**                      **Oxygen (O2).**

**For safety reasons, users must be properly trained in using the equipment and appropriate actions in case of alarm.**

**All persons who have or will have responsibility for operating or servicing the device must read and understand the contents of the User's Manual before operating. Failure to do so may result in serious injury or death.**

### 1.3 Disposal

#### **WARNING! Proper disposal**

**Be Safe SG** contains a lithium battery; arrange for proper disposal only through the appropriate containers. **Be Safe SG** should not be disposed of as municipal waste. The complete Waste Electrical and Electronic Equipment (WEEE) management document can be found at: [www.seitron.com/legals](http://www.seitron.com/legals)



### 1.4 Warranty

The user is guaranteed against product conformity defects according to the European Directive 2019/771 as well as the Seitron warranty conditions document, which can be found at [www.seitron.com](http://www.seitron.com). The user is invited to visit our website to consult the most up-to-date version of technical documentation, manuals and catalogs.

### 1.5 Manufacturer's address

In case of need, the manufacturer can be contacted at the following references:

Seitron S.p.A. a socio unico  
Via del Commercio, 9/11 - 36065 Mussolente (VI)  
Tel. +39.0424.567842 - [www.seitron.com](http://www.seitron.com) - Email: [info@seitron.it](mailto:info@seitron.it)

 [customer.care@seitron.it](mailto:customer.care@seitron.it)

 +39 329 1444390

## 2.0 SAFETY

### 2.1 Safety check

- Use the equipment within the scope of what is described in the “Permitted Use of the Product” chapter.
- When using the equipment, follow the ATEX safety instructions given in the product’s quick guide.
- Do not use the equipment if it appears damaged; inspect it before each use.
- For maintenance of **Be Safe SG**, strictly follow what is described in this manual in the “Maintenance” chapter.
- All work not specified in this manual may only be performed by Seitron service centers. Otherwise Seitron accepts no responsibility for the normal operation of **Be Safe SG**.

### 2.2 Permitted use of the product

This chapter describes the normal operating conditions of **Be Safe SG**:

- **Be Safe SG** is designed and certified with intrinsic safety.
- This product is classified for use in hazardous atmospheres with an O<sub>2</sub> content of no more than 21%.
- Temperature range, with relative humidity range 5% ... 95% non-condensing:
 

|                                                                          |                                |
|--------------------------------------------------------------------------|--------------------------------|
| Be Safe SG H <sub>2</sub> S / Be Safe SG CO / Be Safe SG SO <sub>2</sub> | - 40 .. 60 °C (- 40 .. 140 °F) |
| Be Safe SG O <sub>2</sub>                                                | - 30 .. 60 °C (- 22 .. 140 °F) |

### 2.3 Unauthorized use of the product

The use of **Be Safe SG** under operating conditions other than those mentioned in Section 2.2 “Permitted Use of the Product” is at the operator’s own risk and the manufacturer assumes no responsibility for the loss, damage, or costs that may result.



#### **WARNING!**

**THE FOLLOWING PRODUCT VERSIONS (“NC”) ARE NOT CERTIFIED FOR USE IN HAZARDOUS ENVIRONMENTS:**

**Be Safe SG O<sub>2</sub> NC**  
**Be Safe SG CO NC**  
**Be Safe SG H<sub>2</sub>S NC**  
**Be Safe SG SO<sub>2</sub> NC**

## 3.0 OVERVIEW

**Be Safe SG** are portable personal safety devices designed to detect the presence of specific individual gases:

Be Safe SG H<sub>2</sub>S    Hydrogen sulfide (H<sub>2</sub>S)  
 Be Safe SG CO    Carbon monoxide (CO)  
 Be Safe SG SO<sub>2</sub>    Sulfur dioxide (SO<sub>2</sub>)  
 Be Safe SG O<sub>2</sub>    Oxygen (O<sub>2</sub>)

In case an alarm condition is detected, the device alarms the user with audible, visual and vibration signals.

These are single-use devices, which once activated operate for 24 months without charging the internal battery and without any replacement of components.

**Be Safe SG** is equipped with a single button, which allows activation of the device, verification of alarm settings and the possibility of performing the Self-test, and through the infrared communication port it communicates with **Be Safe SG IR-Link** which connected to a PC, after installation of the **Be Safe SG IR-Link manager** software allows the user to configure some parameters of the device.

**Users of the device must understand what is described in this manual.**

**For safety reasons, users must be properly trained in the use of the equipment and appropriate actions in case of an alarm.**

## 4.0 TECHNICAL FEATURES

|                      |                                                               |
|----------------------|---------------------------------------------------------------|
| Power supply:        | Lithium battery, 3.6 Vdc, 1.65 A/h                            |
| Communication port:  | Infrared (with Be Safe SG IR-Link accessory)                  |
| Display:             | Liquid Crystal Display (LCD)                                  |
| Operating life:      | 24 months from first activation (2 minutes of alarms per day) |
| Alarms: Sound alarm: | 95 dB @ 10 cm                                                 |
| Vibration alarm:     | Vibrating motor                                               |
| Visual alarm:        | 3 Flashing red LEDs                                           |
| Alarm thresholds:    | Minimum and Maximum                                           |
| Event memory:        | Last 30 events                                                |
| Protection rating:   | IP67                                                          |

### Operating conditions

|              |                                                |
|--------------|------------------------------------------------|
| Use:         | Indoor and outdoor use.                        |
| Temperature: | Be Safe SG O2: - 30 .. 60 °C (- 22 .. 140 °F)  |
|              | Be Safe SG CO: - 40 .. 60 °C (- 40 .. 140 °F)  |
|              | Be Safe SG H2S: - 40 .. 60 °C (- 40 .. 140 °F) |
|              | Be Safe SG SO2: - 40 .. 60 °C (- 40 .. 140 °F) |
| Humidity:    | 5% to 95% RH, non-condensing                   |

### Storage conditions

|                      |                                                |
|----------------------|------------------------------------------------|
| Storage temperature: | Be Safe SG O2: - 30 .. 60 °C (- 22 .. 140 °F)  |
|                      | Be Safe SG CO: - 40 .. 60 °C (- 40 .. 140 °F)  |
|                      | Be Safe SG H2S: - 40 .. 60 °C (- 40 .. 140 °F) |
|                      | Be Safe SG SO2: - 40 .. 60 °C (- 40 .. 140 °F) |
| Humidity limit:      | 5% to 95% RH                                   |

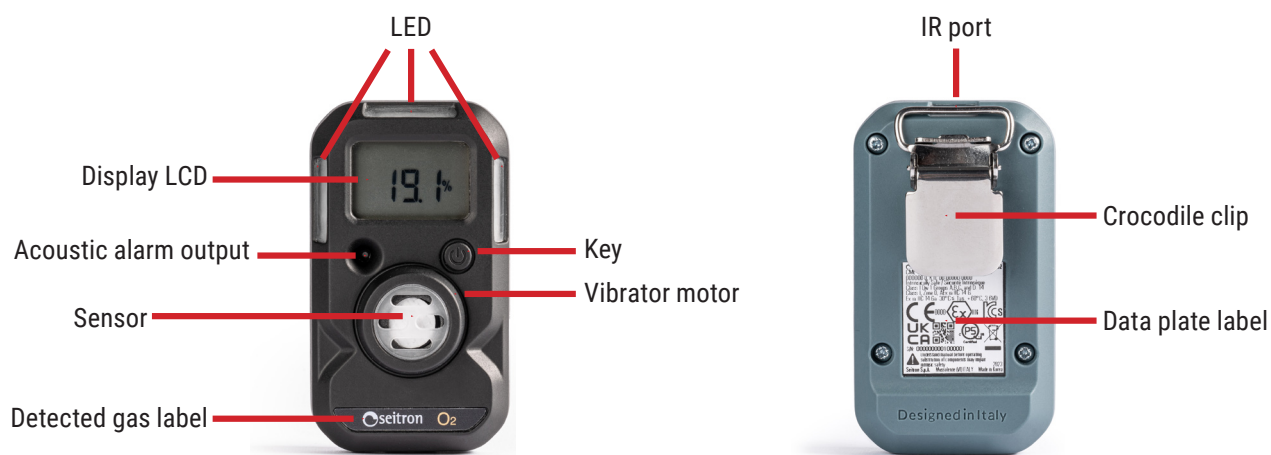
## 4.1 Dimensions



## 5.0 MEASUREMENT RANGES AND SENSOR ACCURACY

| MEASURE          | MEASUREMENT RANGE | SENSOR TYPE     | RESPONSE TIME T90 |
|------------------|-------------------|-----------------|-------------------|
| O <sub>2</sub>   | 0 .. 25% Vol.     | Electrochemical | <15 s             |
| CO               | 0 .. 300 ppm      | Electrochemical | <30 s             |
| SO <sub>2</sub>  | 0 .. 100 ppm      | Electrochemical | <30 s             |
| H <sub>2</sub> S | 0 .. 50 ppm       | Electrochemical | <30 s             |

## 6.0 HARDWARE DESCRIPTION



## 7.0 PRODUCT ACTIVATION

To activate the Be Safe SG detector, press and hold the button for about 5 seconds.

Upon activation, the detector will perform the following sequences:

- All LCD display icons are displayed for 2 s.
- An audible signal is emitted.
- The LEDs flash.
- A vibration is emitted.

If activation is successful, the display will show the remaining duration (24 months) or the value of the detected gas concentration (depending on the factory setting).

**When the product is activated, the user cannot turn it off and it will remain on for the instrument entire life span.**

## 8.0 DISPLAY LCD



| MODE         | SYMBOL                                                                             | DESCRIPTION                                                                        |
|--------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| ALARM        |   | Alarm (HIGH / LOW)                                                                 |
|              |   | Alarm LOW                                                                          |
|              |   | Alarm HIGH                                                                         |
| DETECTED GAS | H2S                                                                                | H2S SENSOR<br>If the writing is flashing, the Self-test execution is required.     |
|              | CO                                                                                 | CO SENSOR<br>If the writing is flashing, the Self-test execution is required.      |
|              | O2                                                                                 | O2 SENSOR<br>If the writing is flashing, the Self-test execution is required.      |
|              | SO2                                                                                | SO2 SENSOR<br>If the writing is flashing, the Self-test execution is required.     |
| WARNING!     |   | Self-test / Bump Test / Calibration Failed.                                        |
|              | max                                                                                | A gas concentration above the HIGH alarm threshold has been detected (ALARM HIGH). |
|              |   | Flashing: bump test is required to be performed.                                   |
|              | CAL                                                                                | Flashing: performing calibration is required                                       |
| MEAS. UNIT   | %                                                                                  | O2 sensor unit of measurement                                                      |
|              | ppm                                                                                | H2S/CO/SO2 sensors measurement unit                                                |
| TIME         |  | Remaining life time of the device                                                  |
|              | months                                                                             | Remaining life time in months (over 1 month)                                       |
|              | days                                                                               | Remaining life time in days (over 24 h)                                            |

During normal operation and without gas in the environment, the display, depending on the settings, will show:

- The type of sensor and the sensor reading only
- The type of sensor and the remaining life of the device
- The type of sensor and the remaining life of the device or the gas concentration (if detected)

**Note: The display mode can be changed through the PC software "Be Safe SG IR-Link manager".**

Example of display during normal operation of Be Safe SG:



When gas is present, the display will automatically show the detected gas concentration, in addition to alarm-related displays.



**WARNING!**

**If the display has no icons or is not clearly readable, please contact the Seitron service center.**

## 8.1 Display visualization

During normal operation of Be Safe SG, the information displayed varies depending on the configuration settings. The device provides continuous monitoring and, if gas concentrations exceeding the configured alarm levels are detected, the display will promptly indicate the alarm status and, if necessary, the measured values.

### Remaining life / Sensor reading

In the Be Safe IR-Link PC software, this mode is called "Sensor/Remaining Time."

Under standard conditions (no gas present or 20.9% vol O<sub>2</sub>), the display shows the type of gas being monitored and the remaining battery life of the device. For the oxygen (O<sub>2</sub>) sensor, this display remains active as long as the measured value is 20.9%.



In the event of gas detection, the device automatically displays the measured concentration, whatever it may be.



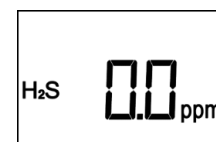
If the set alarm thresholds are exceeded, the display will show the corresponding alarm type (LOW ALARM / HIGH ALARM). For the oxygen sensor, the concentration is displayed as soon as the value deviates from the standard parameter of 20.9%.



### Sensor Reading

In the Be Safe IR-Link PC software, this mode is called "Sensor Reading."

The display constantly shows the type of gas being monitored and the relative concentration detected, even under standard conditions (absence of gas or 20.9% vol O<sub>2</sub>).



If the set alarm thresholds are exceeded, the display continues to show the gas type and concentration, adding the specific indication of the threshold exceeded (LOW ALARM or HIGH ALARM).



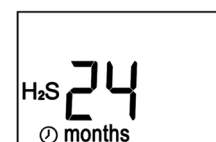
### Remaining life

In the Be Safe IR-Link PC software, this mode is called "Remaining Time."

Under standard conditions (no gas present or 20.9% vol O<sub>2</sub>), the display shows the type of gas being monitored and the remaining battery life of the device.



Even in the presence of gas, the device continues to indicate the type of gas and the remaining battery life. This also applies to the oxygen (O<sub>2</sub>) sensor if it detects a value that deviates from 20.9%.



If the set alarm thresholds are exceeded, the display will indicate the corresponding alarm type (LOW ALARM / HIGH ALARM), but will not display the measured gas concentration.



**Note:** The display mode can be changed using the "Be Safe SG IR-Link manager" PC software. See "APPENDIX A - Be Safe SG IR-Link & Be Safe SG IR-Link manager"

## 9.0 OPERATION

### 9.1 User's Guide



#### WARNING!

For safety, the detector must be positioned near the user (as close to the head as possible), for example, by attaching it to the top of clothing, taking care not to cover the device. This requirement is crucial to enable the product to effectively detect any gas leaks and to distinguish alarms in case the device detects a concentration of toxic gas and/or oxygen deficiency above the set alarm threshold. Ignoring or failing to perceive a device alarm condition can lead to serious injury or death of the user.

Before using **Be Safe SG**, ensure that the self-test has been performed successfully (confirmation of display functionality, audible alarm, visual alarm, and vibration device). During normal operation, **Be Safe SG** will automatically detect gas and alert the user if an alarm condition is detected (exceeding the alarm threshold).

### 9.2 Periodic self-test

Before daily use, it is recommended to perform the self-test procedure to verify that the acoustic signal, visual alarm, and vibration are activated.

You can start the self-test procedure if the message relating to the sensor type flashes on the device display. If the message does not flash, it will not be possible to perform the self-test procedure.

The self-test procedure is activated on the device every 20 hours (factory setting) since the last successful self-test.

The self-test interval setting can be changed from 8 hours to 7 days using the "Be Safe SG IR-Link manager" PC software. See "APPENDIX A - Be Safe SG IR-Link & Be Safe SG IR-Link manager".

The procedure for performing the test is explained step by step below:

#### ATTENTION!

- To ensure safe operation, perform the self-test before daily use.
- The device self-test must be performed in clean air, at 20.9% oxygen.

1. When the device needs to perform a self-test, the sensor type icon flashes; press the button on **Be Safe SG**.



2. After pressing the button, the following screen will appear and the device will perform the indicated sequence:



- Acoustic alarm and vibration activation.
- Upper LED + left LED light up, followed by upper LED + right LED.

3. The display then shows the low alarm (LOW ALARM) and high alarm (ALARM HIGH) settings.



4. Once the self-test procedure is complete, the device will notify the user whether the self-test was successful or unsuccessful:

#### POSITIVE RESULT



The acoustic signal emitted will be brief, then Be Safe SG will return to the normal operating screen.

#### NEGATIVE RESULT



If Be Safe SG fails the self-test, the warning icon "▲" appear flashing and the sensor type icon will also start flashing.  
The self-test must therefore be repeated.

### 9.3 Manual Self-Test (toxic gas sensors only)

The self-test can be performed at any time, regardless of the scheduled verification interval for the device. This function can be activated via the "Be Safe SG IR-Link manager" software by selecting the "Enable manual self-test" option. For configuration details, consult "APPENDIX A - Be Safe SG IR-Link & Be Safe SG IR-Link manager".

The procedure for performing the test is illustrated below, step by step:

1. The manual self-test can be performed exclusively if the device is not in an alarm state.

From the normal operation screen, hold down the button on the **Be Safe SG** for 5 seconds.



2. After pressing the button, the following screen will appear and the device will perform the indicated sequence:



- Activation of acoustic alarm and vibration.
- Turning on of top LED + left LED and subsequently top LED + right LED.

3. Once the self-test procedure is finished, the device will notify the user if the self-test resulted in a pass or fail:

#### POSITIVE RESULT



The acoustic signal emitted will be brief, then **Be Safe SG** will return to the normal operation screen.

#### NEGATIVE RESULT



If Be Safe SG fails the self-test, the flashing warning icon "▲" will appear and the sensor type icon will begin to flash. The self-test must then be repeated.

## 9.4 Zero Calibration (only for “Be Safe SG 02”)

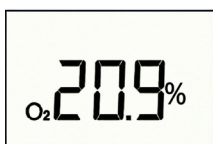
For the **Be Safe SG 02** detector only, it is possible to perform sensor zero calibration at any time, regardless of the programmed calibration interval, provided it is performed in clean air.

The procedure for performing zero calibration is illustrated below, step by step:

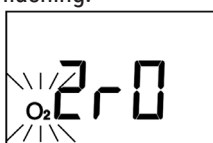
### WARNING

- **Sensor zero calibration must be performed in clean air, at 20.9% Oxygen. Therefore, it is possible to perform calibration in air without the aid of a certified test gas cylinder.**
- **Before starting the Calibration procedure, ensure the device is not in an alarm or fault state.**
- **Check and resolve any alarms or faults before proceeding with calibration.**
- **At altitudes above 2,000 meters, calibration may result in lower readings; calibration performed at high altitudes may lead to less accurate or underestimated readings compared to conditions at lower altitudes. This is important to consider because altitude can influence gas properties and, consequently, the effectiveness of calibration.**

1. Sensor zero calibration can be performed exclusively if the device is not in an alarm state.  
From the normal operation screen, hold down the button on the **Be Safe SG 02** for 5 seconds.



2. **After pressing the button, Be Safe SG 02 performs the calibration** and the display shows the following screen with O2 flashing:



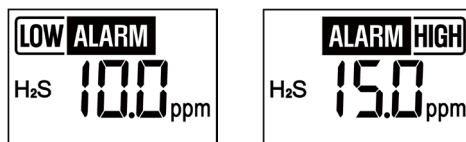
3. **Calibration is successfully completed** when the detector displays the gas concentration with the sequential activation of the buzzer, vibration, and LED flashing.

**If, conversely, the calibration yields a negative result, the device will enter an alarm state, activating the acoustic alarm, and the LEDs will flash. If calibration fails, contact the Seitron service center.**

### 9.5.1 Alarm signal verification

During the display of set alarm thresholds, it is possible to verify the correct operation of alarm signals: Visual - Acoustic - Vibration.

1. When the display shows the low alarm (LOW ALARM) and high alarm (HIGH ALARM) settings, press the button.



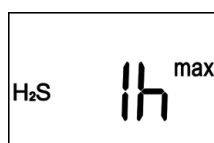
2. The device will perform the indicated sequence:
  - Activation of acoustic alarm and vibration.
  - Turning on of top LED + left LED and subsequently top LED + right LED.
3. The display continues to show the remaining screens.

### 9.5.2 Viewing and Clearing Peak Value

In case of exposure of Be Safe SG to a gas concentration higher than the HIGH ALARM threshold, the display will show the "max" icon and the peak (maximum) value detected:



In the next screen, the date (time, day, month) of when the High alarm occurred and the time elapsed since the peak value detection will be displayed in sequence.



As the last screen, the display shows the text "CLP" (Clear Peak): by pressing the Be Safe SG button while CLP is displayed, the stored peak value will be cleared and the "max" icon will not be displayed.



## 9.6 BUMP TEST EXECUTION Visualization

Via **Be Safe SG IR-Link manager** (see "APPENDIX A - Be Safe SG IR-Link & Be Safe SG IR-Link manager"), **Be Safe SG** can be configured for periodic Bump Test execution.

If **Be Safe SG** requires a Bump Test to be performed, the flashing icon "" will be displayed. Additionally, the top LED + left LED and top LED + right LED will begin to flash alternately at 32-second intervals.

For Bump Test execution, refer to the chapter "Bump Test Execution".



## 9.7 CALIBRATION EXECUTION Visualization

Via **Be Safe SG IR-Link manager** (see "APPENDIX A - Be Safe SG IR-Link & Be Safe SG IR-Link manager"), **Be Safe SG** can be configured for periodic sensor calibration execution.

If **Be Safe SG** requires calibration to be performed, the display will show the text "CAL" alternating with the main product screen

For calibration execution, refer to the chapter "Calibration Execution".



## 10.0 GAS ALARM SIGNAL

### WARNING!

If one or more alarms activate, leave the contaminated area immediately; the gas concentration in the environment has reached the preset alarm threshold.

Failure to observe this warning causes excessive exposure to toxic gases, and those relying on this product for their safety may suffer serious injury or death.

The alarm stops if the measured value drops below the set alarm threshold. To silence the alarm, press the button.

Alarms are disabled if set to zero, or if the instrument is in CALIBRATION state or connected to the PC.

The expected alarms and the instrument's behavior in the alarm state are described below.

### Low alarm state (LOW ALARM)

A gas concentration has been detected that is higher (for CO, H<sub>2</sub>S, SO<sub>2</sub> sensors) or lower (for the O<sub>2</sub> sensor) than the set LOW ALARM level:

- 1) Acoustic alarm (1 time/second)
- 2) Flashing LED (1 time/second)
- 3) Vibrating alarm (0.5 times/second)



### HIGH ALARM state (HIGH ALARM)

A gas concentration has been detected that is higher than the set HIGH ALARM level:

- 1) Acoustic alarm (2 times/second)
- 2) Flashing LED (2 times/second)
- 3) Vibrating alarm (1 time/second)



Restoration to the normal operating state, after an alarm condition has been detected, occurs automatically after the alarm condition has been resolved.

To view the Be Safe SG alarm threshold settings, press the detector button and wait for the screens to scroll. See paragraph "9.5 Viewing main configurations (alarm - User ID)".

Alarm thresholds can be modified via the "Be Safe SG IR-Link manager" PC software (see "APPENDIX A - Be Safe SG IR-Link & Be Safe SG IR-Link manager").

## 11.0 DETECTOR SHUTDOWN ALARM SIGNALING

If one of the **Be Safe SG** SHUTDOWN alarms occurs, the detector will generate an acoustic alarm, a flashing LED alarm, and a vibration alarm every 5 seconds.

The alarms will be continuous until the user presses the button. By pressing the button, **Be Safe SG** will silence the alarm signals, keeping the error code visible on the display.

The expected shutdown alarms and the instrument's behavior in the alarm state are described below.

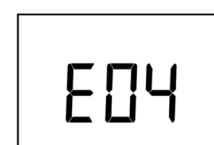
### ALARM Remaining life less than 8 hours

The remaining life of **Be Safe SG** is less than 8 hours.



### ALARM Low battery

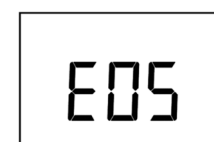
After 3 hours of operation from the "EOL" message, the internal battery voltage of **Be Safe SG** is too low or below a certain level.



### Self-test failed

The self-test failed three consecutive times.

If the self-test fails three consecutive times, the unit will emit a warning as HIGH ALARM.



## 12.0 EVENTS LOG

**Be Safe SG** stores the last 30 alarms. The logging system stores alarm events according to FIFO (First In First Out) logic. For example, the 31st event will replace the first event, and the 32nd event will replace the second, and so on.

Alarm events stored on **Be Safe SG** can be confirmed and downloaded using the PC software '**Be Safe SG IR-Link manager**' (see "APPENDIX A - Be Safe SG IR-Link & Be Safe SG IR-Link manager").

The stored information includes:

- Serial number of the detector
- Remaining life of the detector
- Number of self-tests performed
- Number of alarms occurred and cumulative duration
- Event log data:
  - Time elapsed since the last alarm
  - Alarm duration
  - Alarm level(s) in ppm or %.
  - Type of alarms
  - Bump test (yes or no)

## 13.0 BUMP TEST AND CALIBRATION

This section outlines the fundamental instructions for correctly performing the Bump Test and calibration of the **Be Safe SG** device. These procedures are essential to ensure measurement accuracy and sensor operational efficiency.

The Bump Test for all **Be Safe SG** detectors must be performed directly on the instrument.

Calibration, however, follows different methods depending on the sensor type.

Specifically, the calibration of the **Be Safe SG O2** oxygen sensor offers a dual operational possibility: it can be performed in ambient air acting directly on the instrument, or via PC using a specific gas cylinder.

Conversely, the calibration of toxic gas detectors must necessarily be performed via PC.

PC calibration must be carried out via the "**Be Safe SG IR-Link**" interface, following the installation of the dedicated "**Be Safe SG IR-Link manager**" software (for full details, consult "APPENDIX A - Be Safe SG IR-Link & Be Safe SG IR-Link manager").

### WARNING

- Before starting the Calibration / Bump test procedure, ensure the device is not in an alarm or fault state.
- Check and resolve any alarms or faults before proceeding with calibration or the Bump test.
- At altitudes above 2,000 meters, calibration may result in lower readings; calibration performed at high altitudes may lead to less accurate or underestimated readings compared to conditions at lower altitudes. This is important to consider because altitude can influence gas properties and, consequently, the effectiveness of calibration.

### 13.1 Necessary tools and equipment

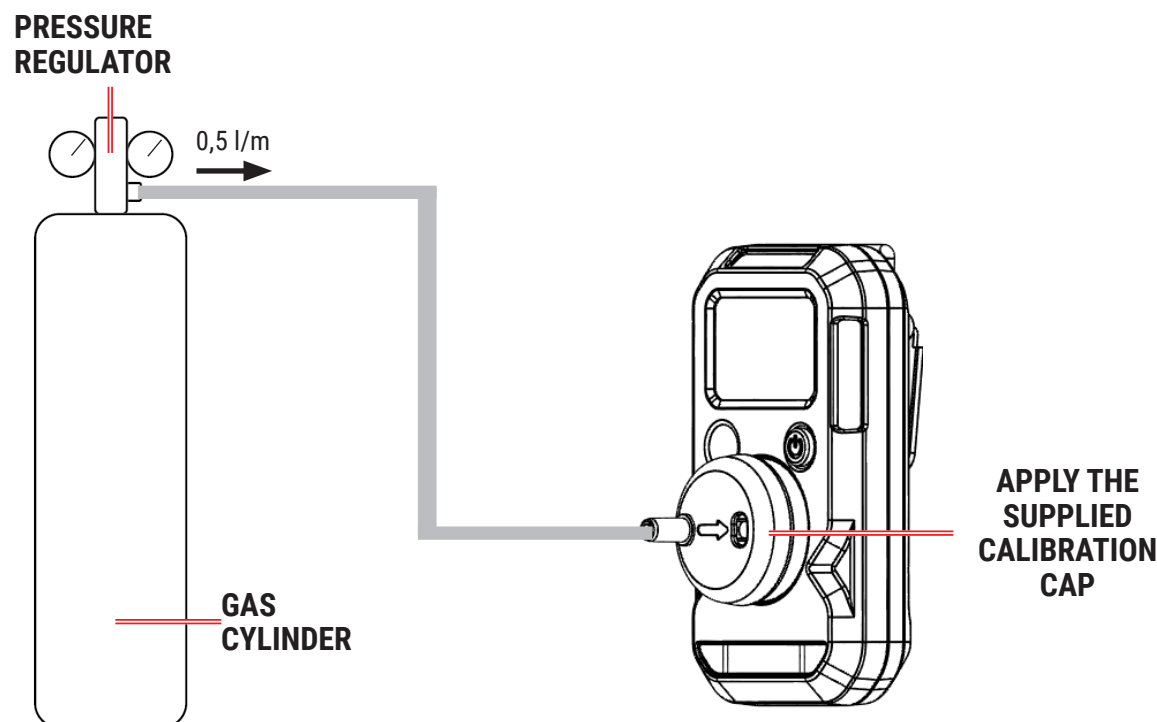
- Certified gas mixtures recommended for Bump Test / Calibration:
 

|            |                                                                                        |
|------------|----------------------------------------------------------------------------------------|
| H2S        | 25 ppm (balance gas Air)                                                               |
| CO         | 100 ppm (balance gas Air)                                                              |
| SO2        | 10 ppm (balance gas Air)                                                               |
| <b>O2</b>  | <b>in clean air (20.9%) - For performing Bump Test and Calibration via instrument.</b> |
| <b>18%</b> | <b>balance gas Air</b>                                                                 |
|            | <b>(to be used if performing calibration via "Be Safe SG IR-Link manager")</b>         |
- Use the adapter supplied with the instrument, mounted on the sensor nose.
- Use a flow meter and T-tubing to connect the cylinder, flow meter, and instrument.

### WARNING: BUMP TEST AND CALIBRATION Be Safe SG O2

- The procedure performed directly from the instrument does not require the aid of a certified test gas cylinder, as these sensors require periodic calibration at 20.9% Oxygen (atmospheric oxygen value).
- For Bump Test and Calibration execution, ensure you are in clean air.

## 13.2 Wiring diagram



## 13.3 Performing the Bump Test

Through the PC software '**Be Safe SG IR-Link manager**' (see Appendix A), you can adjust the frequency of performing the Bump Test, which can be set from 1 to 365 days. If the interval is set to zero, **Be Safe SG** will not prompt for the Bump Test

NOTE: The device comes from the factory set to zero (Bump test not required).

NOTE: Seitron recommends performing the bump test before each use to verify the device's reliability.

### PROCEDURE

1. If **Be Safe SG** requires the Bump Test to be performed, the flashing icon " " will be displayed on the display. Additionally, the upper LED + left LED and upper LED + right LED will start flashing alternately at intervals of 32 seconds.
2. Connect the adapter and gas cylinder as described in the previous section.
3. **Press the button** to switch to the inspection screen; the display shows the alarm and user ID configuration sequence and finally settles on the "GAS" screen:



4. From the inspection screen, expose the instrument to the relevant gas for 45 seconds.  
**If the button is pressed without exposing the instrument to the gas for 45 seconds, the bump test will stop. The detector will then continue to indicate the bump test status, prompting the user to repeat the procedure if necessary.**
5. The bump test is completed when the detector displays the applied gas concentration on the inspection screen after being exposed to the gas.  
Note: during the bump test, it is normal for the instrument to activate the LOW and HIGH alarm thresholds if the detected gas concentration matches the set alarm thresholds.
6. Stop the gas flow and remove the calibration adapter.
7. Place the instrument in fresh air. The alarms will automatically reset as the detected gas concentration decreases. The alarm log will be automatically stored in the detector.

### 13.4 Performing the calibration of “Be Safe SG O2”

**For the Be Safe SG O2 detector only**, sensor calibration can be performed directly on the instrument or, alternatively, via PC using the “Be Safe SG IR-Link” interface, after installing the “Be Safe SG IR-Link manager” software on the PC (See “APPENDIX A - Be Safe SG IR-Link & Be Safe SG IR-Link manager”).

#### WARNING

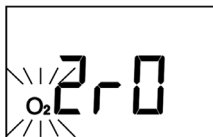
- “Be Safe SG O2” detectors require periodic calibration at 20.9% Oxygen. Therefore, calibration can be performed in air without the aid of a certified test gas cylinder.
- Before starting the Calibration procedure, ensure the device is not in an alarm or fault state.
- Check and resolve any alarms or faults before proceeding with calibration.
- At altitudes above 2,000 meters, calibration may result in lower readings; calibration performed at high altitudes may lead to less accurate or underestimated readings compared to conditions at lower altitudes. This is important to consider because altitude can influence gas properties and, consequently, the effectiveness of calibration.

Via the “Be Safe SG IR-Link manager” PC software (see “APPENDIX A - Be Safe SG IR-Link & Be Safe SG IR-Link manager”), it is possible to modify the Calibration execution periodicity, which is configurable from 1 to 365 days. If the interval is set to zero, **Be Safe SG O2** will not request calibration

The factory setting for **Be Safe SG O2** schedules detector calibration every 30 days.

#### PROCEDURE

1. If **Be Safe SG O2** requires Calibration to be performed, the text “O<sub>2</sub> 20” and the gas concentration will be displayed alternately.
2. **Hold the button for 5 seconds**; **Be Safe SG O2** performs the calibration and the display shows the following screen with O2 flashing:



3. **Calibration is successfully completed** when the detector displays the gas concentration with the sequential activation of the buzzer, vibration, and LED flashing.

**If, conversely, the calibration yields a negative result, the device will enter an alarm state, activating the acoustic alarm, and the LEDs will flash. If calibration fails, contact the Seitron service center.**

**Note: if the sensor calibration procedure was successful, but the text O2 remains flashing, it means the self-test must be performed.**

## 14.0 FAULTS

| PROBLEM                                                                                                                                                                       | CAUSE                                                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The detector emits an acoustic signal, the LEDs flashes for 10 times and on the display the signaling icon "▲" appears flashing and the sensor type icon will start flashing. | The self-test outcome is negative.<br>Repeat the self-test.                                                                                                                                                                                                                                        |
| An E05 STOP alarm has occurred; the detector has generated an audible alarm, flashing LED alarm, and vibrating alarm every 5 seconds.<br>The display shows "E05"              | The self-test failed three consecutive times.<br>By pressing the button, Be Safe SG will turn off the alarm signals while keeping the error code visible on the display. In case this notification occurs, please contact Seitron support center for assistance.                                   |
| An EOL STOP alarm has occurred; the detector has generated an audible alarm, flashing LED alarm, and vibrating alarm every 5 seconds.<br>The display shows "EOL".             | The battery is continuously monitored throughout the entire duration of the detector's operation.<br>If the remaining life of Be Safe SG is less than 8 hours, the detector has reached the end of its operational life. Please discontinue use and contact Seitron support center for assistance. |
| An E04 STOP alarm has occurred; the detector has generated an audible alarm, flashing LED alarm, and vibrating alarm every 5 seconds. The display shows "E04".                | After 3 hours of operation since the "EOL" message, the voltage of the internal battery in <b>Be Safe SG</b> is too low or below a certain level: the detector has reached the end of its operational life. Please discontinue use and contact Seitron support center for assistance.              |
| The detector restarts shortly after firmware download, and the display shows "E01" or "E02".<br>"E01" or "E02" can also occur due to firmware or power supply issues.         | Press the button to stop the alarm. If this error occurs, please contact Seitron support center for assistance.                                                                                                                                                                                    |
| After updating the firmware, Be Safe SG restarts, and the display shows "E03".                                                                                                | Download the firmware again and repeat the firmware update procedure.<br>If the error persists, please contact Seitron support center.                                                                                                                                                             |

## 15.0 MAINTENANCE

### 15.1 Repair

There is no provision for repairing the device.

### 15.2 Cleaning

Clean the detector with a soft cloth dampened with a neutral, anti-static detergent. Do not use solvents, soaps, or polish products.

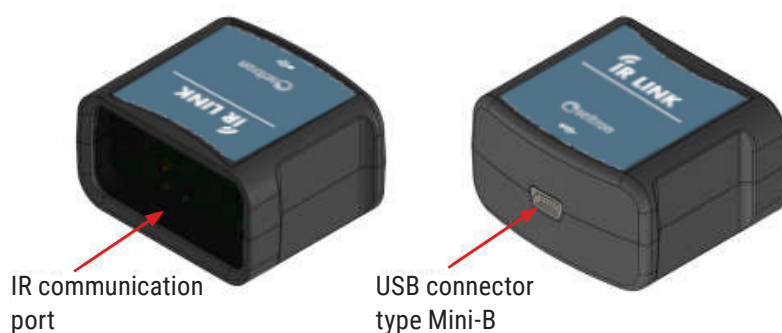
## APPENDIX A - Be Safe SG IR-Link & Be Safe SG IR-Link manager

**Be Safe SG IR-Link** is an IR device (available separately) that, when connected to the PC via a USB cable, can communicate with the single gas detector **Be Safe SG** after installing the “**Be Safe SG IR-Link Manager**” software on the PC, which can be downloaded from the website [www.seitron.com](http://www.seitron.com).

The main operations that can be performed through the PC software “**Be Safe SG IR--Link Manager**” include:

- Modifying alarm threshold values;
- Setting the interval for Calibration execution;
- Setting the interval for Bump Test execution;
- Setting the interval for Self-test execution;
- Associating the device with a User ID;
- Display mode selection;
- Firmware update for gas detectors;
- Checking the alarm history.

### Overview



#### USB Type A / Mini B Cable

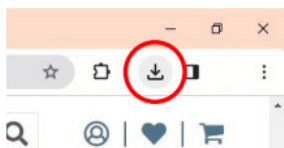


### Technical features

|                             |                                 |
|-----------------------------|---------------------------------|
| PC connection:              | Via USB type A connector        |
| Communication:              | Infrared                        |
|                             | Communication speed: 115200 bps |
| Connector:                  | USB Mini-B (5 pins)             |
| Supported operating system: | Windows XP and later            |
| Operating temperature:      | 10 .. 50 °C (50 .. 122 °F)      |
| Relative humidity:          | 5 .. 95 % RH (non-condensing)   |
| Dimensions:                 | 46×39×26 mm                     |
| Weight:                     | 21 g                            |

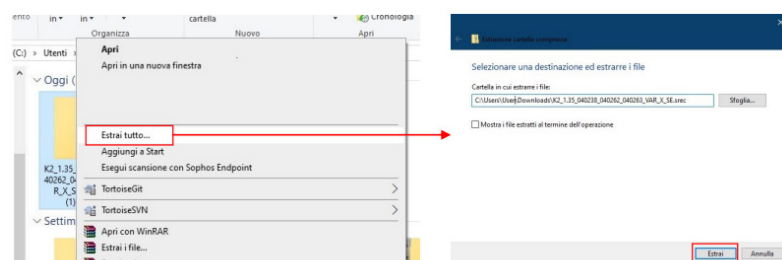
## Software installation instructions

1. Access the website [www.seitron.com](http://www.seitron.com) and select the DOWNLOAD => Apps and Software section.
2. Scroll down the page until you find the section dedicated to the **"Be Safe SG IR-Link Manager"** software.
3. Click on "Download: version X.XX" where X.XX is the current version of the software.
4. A .zip file download will start. Once the download is complete, click on the button at the top right of your browser to access the "Downloads" folder.

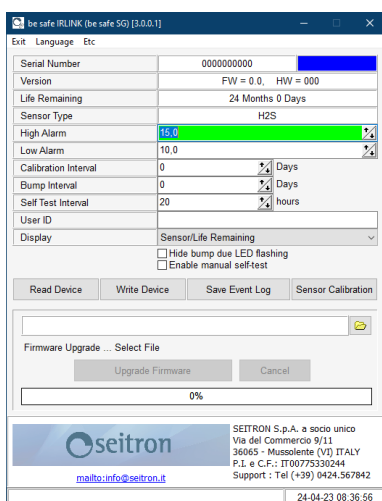


CAUTION: The symbol may vary depending on the browser being used.

- 5) Right-click on the recently downloaded .zip file. Select "Extract All" from the dropdown menu. In the window that opens, select the location where you want to extract the contents of the .zip folder and click "Extract."



- 6) Double-click on the extracted folder.
- 7) Double-click on the previously downloaded "beSafeSGDockManager.exe" file (step 5). The main screen of the **Be Safe SG IR-Link Manager** software will appear.



## Connect Be Safe SG

**Be Safe SG IR-Link** and the single gas detector **Be Safe SG** communicate with each other through an IR interface by placing them as shown in the image below. **Be Safe SG IR-Link** can communicate with only one instrument at a time.



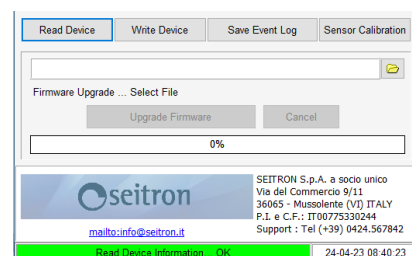
**From the software screen, click on "Read Device."**

At the bottom left, the "Read Device Information" bar turns green, with the indication "OK," indicating that the instrument is connected to the PC.

If the bar turns red, the instrument is not connected.

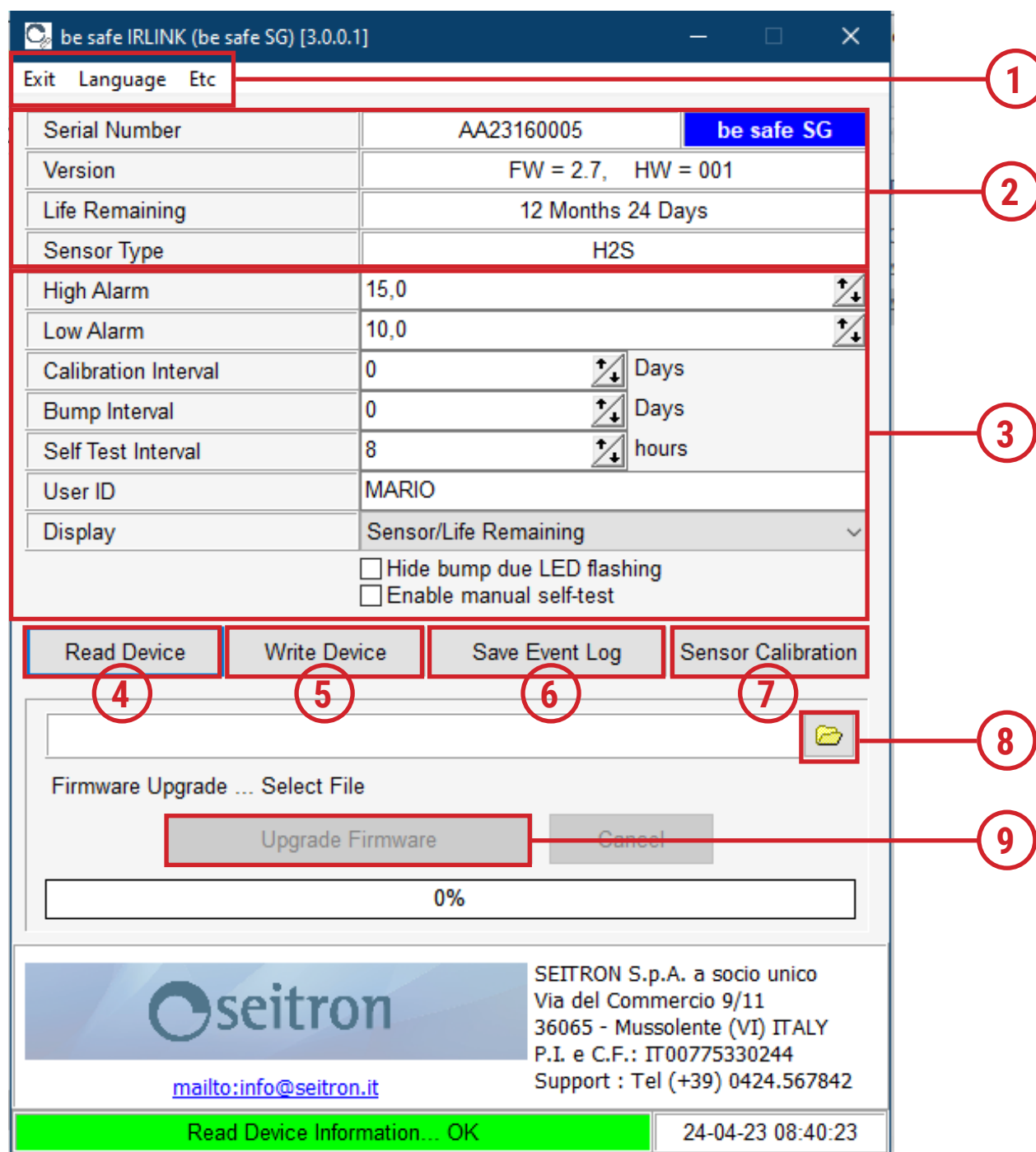
It may happen that the instrument on the first connection does not connect, in this case reposition the instrument near **Be Safe SG IR-Link** by holding it horizontally, then **click again on "Read Device"**.

After several unsuccessful attempts, contact Seitron support center.



## Further information

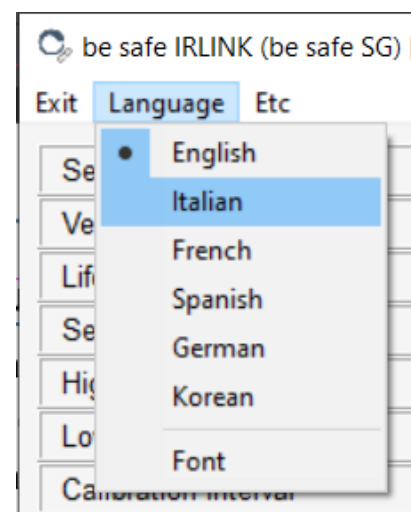
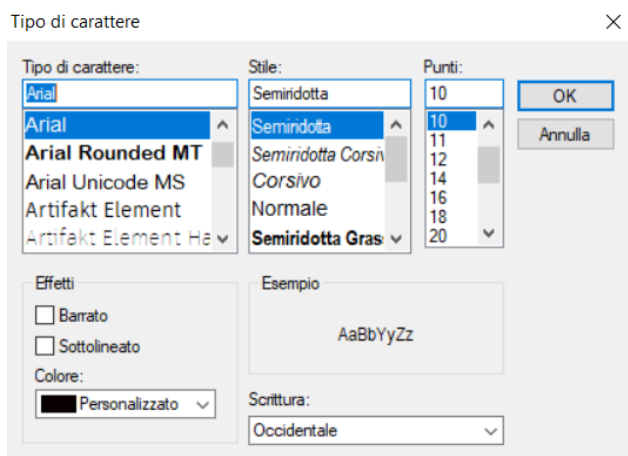
When the instrument is connected and the reading is successful, the instrument can be configured.



|   |                                                   |                                                                                                                                                                                                                                                                                                                                                                                                    |
|---|---------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | "Exit" Button                                     | Closes the App.                                                                                                                                                                                                                                                                                                                                                                                    |
|   | "Language" Button                                 | Set the App language.                                                                                                                                                                                                                                                                                                                                                                              |
| 2 | Information about the connected <b>Be Safe SG</b> | <p>Users can view information about the connected device.<br/>This section is not editable.</p> <p>Serial number.<br/>Firmware version and hardware version of the connected device.<br/>Remaining life of the device.<br/>Gas type detected by the device.</p>                                                                                                                                    |
| 3 | User-configurable data                            | High Alarm: Configures the gas concentration at the HIGH alarm limit.                                                                                                                                                                                                                                                                                                                              |
|   |                                                   | Low Alarm: Configures the gas concentration at the LOW alarm limit.                                                                                                                                                                                                                                                                                                                                |
|   |                                                   | Calibration Interval: Specifies how often the device requires calibration (0 to 365 days).                                                                                                                                                                                                                                                                                                         |
|   |                                                   | Bump Test Interval: Specifies how often the device requires a Bump test (0 to 365 days).                                                                                                                                                                                                                                                                                                           |
|   |                                                   | Self-test Interval: Specifies how often the device requires an Self-test (8 to 168 hours).                                                                                                                                                                                                                                                                                                         |
|   |                                                   | User ID: Customized ID for the device. Up to 6 characters.                                                                                                                                                                                                                                                                                                                                         |
|   |                                                   | <p>Display: Device display mode.<br/><b>Sensor/Remaining Life:</b> When a gas concentration is detected, the sensor reading or remaining life of the device is displayed.<br/><b>Sensor reading:</b> The sensor reading is always displayed.<br/><b>Remaining life:</b> The remaining life is always displayed.<br/><b>For further details, see the paragraph "8.1 Display visualization".</b></p> |
|   |                                                   | <p>Hide Bump Test LED flashing: checked, hides LED flashing during bump test execution.</p> <p>Enable manual self-test (<b>function limited to toxic gas sensors only</b>).<br/>It is activated if you check the box for "Enable manual self-test."<br/><b>For further details, see the paragraph:</b><br/>"9.3 Manual Self-Test (toxic gas sensors only)"</p>                                     |
| 4 | "Read Device" button                              | Allows to read device information and settings.                                                                                                                                                                                                                                                                                                                                                    |
| 5 | "Write Device" button                             | Transmits the new configuration on the device.                                                                                                                                                                                                                                                                                                                                                     |
| 6 | Button<br>"Save Event Log"                        | Reads and exports in .csv format the event logs stored on the device.                                                                                                                                                                                                                                                                                                                              |
| 7 | Pulsante "Calibrazione"                           | Starts the sensor calibration procedure.                                                                                                                                                                                                                                                                                                                                                           |
| 8 | Seleziona file                                    | Select the Firmware update file from the PC.                                                                                                                                                                                                                                                                                                                                                       |
| 9 | Button<br>"Upgrade Firmware" / "Cancel"           | Start / Cancel the firmware update.                                                                                                                                                                                                                                                                                                                                                                |

## Language configuration

1. Click on the "language" button.
2. Select one of the available languages.
3. Click on "Font" to set font details.



## Features

### Read device information and settings

- Click on "Read".

### Change device settings

1. After clicking on "Read Device" and reading the information and setting of the device, you can change the settings the device by clicking on the "↕" and/or "□" icons or directly typing in the value.
2. Click on "Write device" to save the changed settings to the **Be Safe SG**.

### Save event log

1. Click "Save Event Log."
2. The pop-up to save the .csv file will be displayed.  
Specify the folder and file name and save the document.

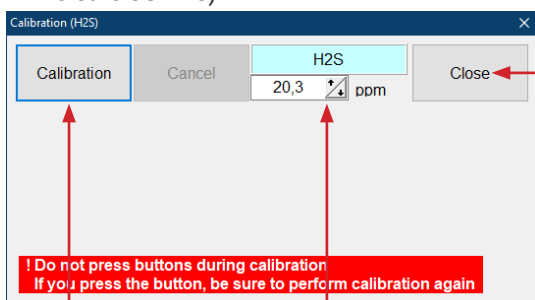
## Sensor calibration

Through the **Be Safe SG IR-Link PC software**, Calibration of **Be Safe SG** gas detectors can be performed, regardless of whether the instrument requires calibration or not, using certified gas cylinders.

See chapter "13.0 BUMP TEST AND CALIBRATION".

### Procedure:

1. Place the device in an environment with fresh air.
2. **Click on the "Sensor Calibration" button** the screen appears through which you can set the gas concentration contained in the certified gas cylinder, which you will use to perform the calibration and start the calibration (example referred to **Be Safe SG H2S**):

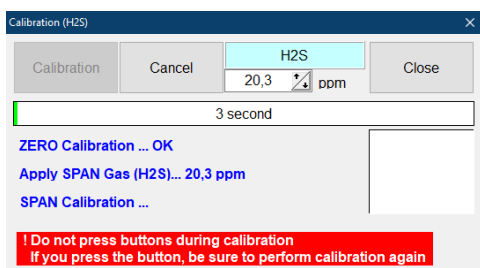


Start sensor calibration

Exits the screen

\* Performing the calibration for the Oxygen sensor, should only be done with a certified gas concentration of 18% that cannot be changed. For other sensors, a different certified gas concentration can be used, within the range allowed by the App.

3. Click on "Calibration" to start calibration.
4. The device will perform the calibration of ZERO.  
Details on the progress of calibration, are displayed on the lower left corner of the App.
5. When the "OK" result of the Zero calibration is displayed on the App screen, proceed to the SPAN calibration.

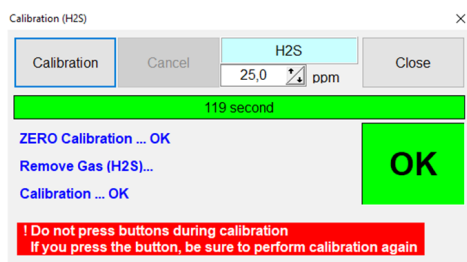


6. Connect the adapter and the certified gas cylinder. See the details in sections "11.1 Tools and necessary equipment" and "11.2 Wiring diagram".
7. Supply gas to the instrument. The instrument's display will show the message "C 90" ("C 20" for the O2 sensor) indicating the duration in seconds for which the instrument should be exposed to the calibration gas. The countdown starts when the sensor begins to detect the calibration gas.
8. After 90 seconds (20 seconds for the O2 sensor), the calibration will be completed.

**To stop the calibration, click on "Cancel".**

**If you start the SPAN calibration without exposing the instrument to the gas, the calibration will stop. The detector will continue to indicate the Calibration status, so the user can repeat the procedure.**

9. Wait for the calibration result:



Result:

- OK: Positive result indicated by the green square "■".
- Fail: Negative result indicated by the red square "■" containing the error that caused the calibration to fail.

**If the calibration fails, the device's display will show "CAL" and the flashing "⚠" icon. Repeat the calibration, and if it fails again, contact Seitron support center.**

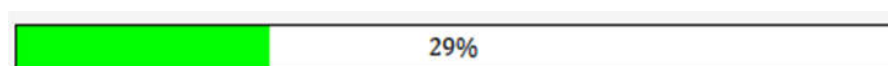
6. Stop the gas flow and remove the calibration adapter.

## Firmware Update

The manufacturer periodically updates the firmware to correct or improve the instrument's performance or to add additional features.

The update can be performed by the user following the simple instructions below:

1. Connect to the website [www.seitron.com](http://www.seitron.com) and download the firmware file available in the "Download - Firmware" section; this file is compressed with a .zip extension.
2. Open the compressed folder with a .zip extension and extract the file.
3. Click on the "📁" button to select the firmware update file previously downloaded from the website.
4. Click on the "Upgrade Firmware" button.
5. The progress of the firmware update is displayed in the progress bar. The firmware update will take from 5 to 10 seconds.



6. At the end of the update, the device will be restored.

## TROUBLESHOOTING

| SYMPTOM                                                                                                |                                                                                                                                                                                                                                    |
|--------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| More than one <b>Be Safe SG IR-Link</b> connected to the PC is detected.                               | Make sure that only one <b>Be Safe SG IR-Link</b> is connected to the PC.                                                                                                                                                          |
| <b>Be Safe SG IR-Link</b> is not installed on the PC.                                                  | Delete the existing driver or program and reinstall it. If this symptom recurs after reinstallation, contact the Seitron service center.                                                                                           |
| The USB communication port of the PC to which <b>Be Safe SG IR-Link</b> is connected is not installed. | Make sure that <b>Be Safe SG IR-Link</b> is connected to the PC. Delete the existing driver or program and reinstall it. If this symptom recurs after reinstallation, contact Seitron service center.                              |
| <b>Be Safe SG IR-Link</b> is not detected by the PC.                                                   | Make sure that <b>Be Safe SG IR-Link</b> is connected to the PC. Make sure that the smooth surface of <b>Be Safe SG IR-Link</b> and the top of the <b>Be Safe SG</b> instrument are facing each other at a distance of about 5 cm. |
| Operating system not supported.                                                                        | The operating system of the PC in use is not supported by <b>Be Safe SG IR-Link</b> or its driver. The operating system supported by <b>Be Safe SG IR-Link</b> is Windows XP or later.                                             |
| An error occurred on <b>Be Safe SG IR-Link</b> .                                                       | Delete the existing driver or program and reinstall it. If this symptom recurs after reinstallation, contact the Seitron service center.                                                                                           |
| Connection error of <b>Be Safe SG IR-Link</b> .                                                        | Make sure that <b>Be Safe SG IR-Link</b> is connected to the PC. Make sure that the smooth surface of <b>Be Safe SG IR-Link</b> and the top of the <b>Be Safe SG</b> instrument are facing each other at a distance of about 5 cm. |
| Communication error                                                                                    | Make sure that the smooth surface of <b>Be Safe SG IR-Link</b> and the top of the <b>Be Safe SG</b> instrument face each other at a distance of about 5 cm.                                                                        |





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