

# ***GasAlert Extreme***

O<sub>2</sub>, CO, H<sub>2</sub>S, PH<sub>3</sub>, SO<sub>2</sub>, Cl<sub>2</sub>, NH<sub>3</sub>, NO<sub>2</sub>, HCN, ETO, ClO<sub>2</sub>, O<sub>3</sub>, or NO

Single Gas Detector

User Manual

*"INNOVATORS IN GAS DETECTION"*

**BW**  
Technologies

## Limited Warranty & Limitation of Liability

BW Technologies LP (BW) warrants this product to be free from defects in material and workmanship under normal use and service for a period of two years, beginning on the date of shipment to the buyer. This warranty extends only to the sale of new and unused products to the original buyer. BW's warranty obligation is limited, at BW's option, to refund of the purchase price, repair, or replacement of a defective product that is returned to a BW authorized service center within the warranty period. In no event shall BW's liability hereunder exceed the purchase price actually paid by the buyer for the Product.

This warranty does not include:

- a) fuses, disposable batteries or the routine replacement of parts due to the normal wear and tear of the product arising from use;
- b) any product which in BW's opinion, has been misused, altered, neglected or damaged by accident or abnormal conditions of operation, handling or use;
- c) any damage or defects attributable to repair of the product by any person other than an authorized dealer, or the installation of unapproved parts on the product; or

The obligations set forth in this warranty are conditional on:

- a) proper storage, installation, calibration, use, maintenance and compliance with the product manual instructions and any other applicable recommendations of BW;
- b) the buyer promptly notifying BW of any defect and, if required, promptly making the product available for correction. No goods shall be returned to BW until receipt by the buyer of shipping instructions from BW; and
- c) the right of BW to require that the buyer provide proof of purchase such as the original invoice, bill of sale or packing slip to establish that the product is within the warranty period.

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# GasAlert Extreme

## Introduction

### Warning

To ensure your personal safety, read “Safety Information” before using the detector.

The GasAlert Extreme gas detector (“the detector”) warns of hazardous gas at levels above a factory set alarm setpoint. This product is a gas detector, not a measurement device.

The detector is a personal safety device. It is your responsibility to respond properly to the alarms.

Table 1 lists the GasAlert Extreme models. This manual includes examples from each model.

**Table 1. GasAlert Extreme Models**

Model	Gas Monitored
GasAlert Extreme O <sub>2</sub>	Oxygen (% by volume)
GasAlert Extreme CO	Carbon monoxide (ppm) Low H <sub>2</sub> sensitivity
GasAlert Extreme CO	Carbon monoxide (ppm)
GasAlert Extreme H <sub>2</sub> S	Hydrogen sulfide (ppm) High range

Model	Gas Monitored
GasAlert Extreme H <sub>2</sub> S	Hydrogen sulfide (ppm)
GasAlert Extreme H <sub>2</sub> S	Hydrogen sulfide (ppm) Low methanole
GasAlert Extreme PH <sub>3</sub>	Phosphine (ppm)
GasAlert Extreme SO <sub>2</sub>	Sulfur dioxide (ppm)
GasAlert Extreme Cl <sub>2</sub>	Chlorine (ppm)
GasAlert Extreme NH <sub>3</sub>	Ammonia (ppm)
GasAlert Extreme NH <sub>3</sub>	Ammonia (ppm) High range
GasAlert Extreme NO <sub>2</sub>	Nitrogen dioxide (ppm)
GasAlert Extreme HCN	Hydrogen cyanide (ppm)
GasAlert Extreme ETO	Ethylene oxide (ppm)
GasAlert Extreme ClO <sub>2</sub>	Chlorine dioxide (ppm)
GasAlert Extreme O <sub>3</sub>	Ozone (ppm)
GasAlert Extreme NO	Nitric oxide (ppm)

## **Contacting BW Technologies**

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Visit BW Technologies' web site at: [www.gasmonitors.com](http://www.gasmonitors.com)

**ISO 9001**

## **Safety Information - Read First**

Use the detector only as specified in this manual, otherwise the protection provided by the detector may be impaired.

International symbols used on the detector and in this manual are explained in Table 2.

Read the **Warnings** and **Cautions** on the following pages before using the detector.



**Note**

***This instrument contains a lithium battery. Do not mix with the solid waste stream. Spent batteries should be disposed of by a qualified recycler or hazardous materials handler.***

**⚠ Caution**

To avoid possible personal injury:

- ⇒ **Warning:** Substitution of components may impair Intrinsic Safety.
- ⇒ **Warning:** To prevent ignition of flammable or combustible atmospheres, disconnect power before servicing.
- ⇒ Do not use the detector if it is damaged. Before using the detector, inspect the case. Look for cracks or missing plastic.
- ⇒ If the detector is damaged or parts are missing, contact [BW Technologies](#) immediately.
- ⇒ Make sure the back is closed and fastened before operating the detector.
- ⇒ Use only a sensor specifically designed for your GasAlert Extreme model. Refer to [Replacement Parts and Accessories](#).
- ⇒ Make sure the sensor screen is not blocked.
- ⇒ Periodically test the sensor's response to gas by exposing the detector to a targeted gas concentration that exceeds the high alarm setpoint. Manually verify that the audible and visual alarms are activated.
- ⇒ Calibrate the detector before first-time use, and then at least once every 180 days. (For HCN detectors, calibrate once every 90 days.)
- ⇒ Do not turn off the detector during a work shift. Turning off the detector resets the TWA (time-weighted average), STEL (short-term exposure limit), and maximum gas exposure values to 0. Refer to [Alarms](#).
- ⇒ Use only the following battery: Energizer 1CR2. Refer to [Replacing the Battery or Sensor](#).
- ⇒ To reduce the risk of ignition of a flammable atmosphere, batteries must only be changed in an area known to be nonflammable.

**⚠ Caution**

To avoid possible damage to the detector:

- ⇒ Do not expose the detector to electrical shock and/or severe continuous mechanical shock.
- ⇒ Do not attempt to disassemble, adjust, or service the detector unless instructions for that procedure are contained in the user manual and/or that part is listed as a replacement part. Use only BW Technologies [Replacement Parts](#).
- ⇒ The detector warranty will be voided if customer personnel or third parties damage the detector during repair attempts. Non-BW Technologies repair/service attempts void this warranty.
- ⇒ The oxygen GasAlert Extreme detector is classified by Underwriters Laboratories Inc. up to an atmosphere of 21% oxygen.

**Table 2. International Symbols**

Symbol	Meaning
	Classified to both U.S. and Canadian Safety standards by Underwriter's Laboratories, Inc.
	Conforms to European Union Directives
	European Explosives Protection
<b>ATEX</b>	Conforms to European ATEX Directives
<b>IECEX</b>	International Electrotechnical Commission Scheme for Certification to Standards for Electrical Equipment for Explosive Atmospheres

## **Getting Started**

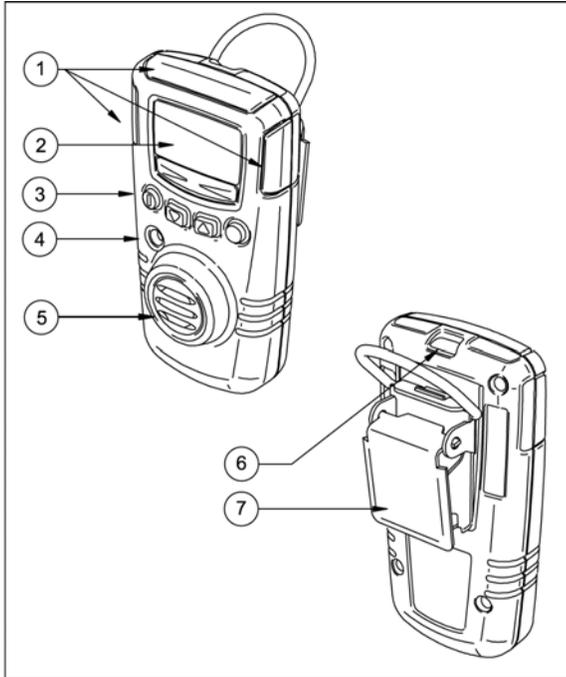
The items listed below are included with the detector. If the detector is damaged or parts are missing, contact the place of purchase immediately.

- 3 V lithium CR2-series battery.
- GasAlert Extreme O<sub>2</sub> model: O<sub>2</sub> sensor;  
GasAlert Extreme CO model: CO sensor (low H<sub>2</sub> sensitivity);  
GasAlert Extreme CO model: CO sensor;  
GasAlert Extreme H<sub>2</sub>S model: H<sub>2</sub>S sensor (high range);  
GasAlert Extreme H<sub>2</sub>S model: H<sub>2</sub>S sensor (low methanol);  
GasAlert Extreme H<sub>2</sub>S model: H<sub>2</sub>S sensor;  
GasAlert Extreme PH<sub>3</sub> model: PH<sub>3</sub> sensor;  
GasAlert Extreme SO<sub>2</sub> model: SO<sub>2</sub> sensor;  
GasAlert Extreme Cl<sub>2</sub> model: Cl<sub>2</sub> sensor;  
GasAlert Extreme NH<sub>3</sub> model: NH<sub>3</sub> sensor;  
GasAlert Extreme NH<sub>3</sub> model: NH<sub>3</sub> sensor (high range);  
GasAlert Extreme NO<sub>2</sub> model: NO<sub>2</sub> sensor;  
GasAlert Extreme HCN model: HCN sensor;  
GasAlert Extreme ETO model: ETO sensor;  
GasAlert Extreme ClO<sub>2</sub> model: ClO<sub>2</sub> sensor;  
GasAlert Extreme O<sub>3</sub> model: O<sub>3</sub> sensor;  
GasAlert Extreme NO model: NO sensor.
- Test cap and hose.

The detector is shipped with the battery and sensor installed. To order replacement parts and accessories, refer to [Replacement Parts and Accessories](#).

To become familiar with the features and functions of the detector, study the following figures and tables:

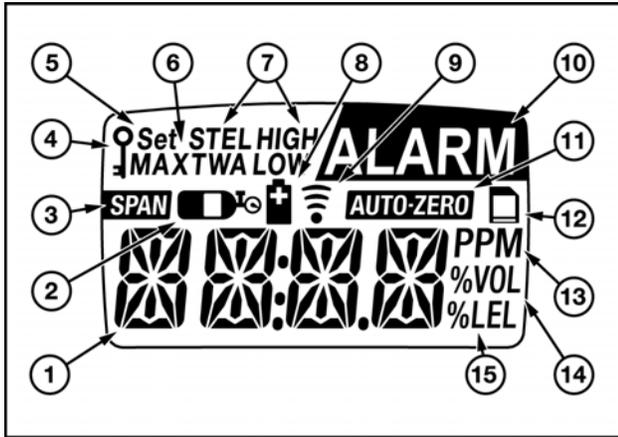
- Figure 1 and Table 3: GasAlert Extreme Detector (describes the detector's components).
- Figure 2 and Table 4: Display Elements (describes the LCD screen and icons).
- Table 5: Pushbuttons (describes the buttons on the detector).



**Figure 1. GasAlert Extreme Detector**

**Table 3. GasAlert Extreme Detector**

<b>Item</b>	<b>Description</b>
1	Visual alarm
2	Liquid crystal display (LCD)
3	Pushbuttons
4	Audible alarm
5	Sensor and sensor screen
6	Infrared communication port
7	Alligator clip



**Figure 2. Display Elements**

*Note*

*When enabled, the backlight option automatically activates for 3 seconds whenever there is insufficient light to view the LCD. Press and hold (until light activates) any button to activate the backlight for 6 seconds. The detector is shipped with the backlight option enabled.*

*Backlight does not operate while in stealth mode.*

**Table 4. Display Elements**

Item	Description
1	Numeric value
2	Gas cylinder
3	Automatically span sensor
4	Pass code lock
5	Set alarm setpoints and user options
6	Maximum gas exposure
7	Alarm conditions
8	Battery
9	Data transmission
10	Alarm or alarm setpoint
11	Automatically zero sensor
12	Optional datalogger indicator
13	Parts per million (ppm)
14	Percentage by volume (% vol.)
15	Percentage by lower explosive limit (% LEL) (future use)

**Table 5. Pushbuttons**

Pushbutton	Description
	<ul style="list-style-type: none"> <li>To activate the detector, press .</li> <li>To enable/disable the confidence beep, while the detector is deactivated press and hold . While holding , press . This enables/disables the confidence beep while activating start-up.</li> <li>To deactivate the detector, press  and hold until <b>OFF</b> displays (approximately 5 seconds). If the detector is pass code protected to prevent deactivation, <b>PASS</b> will display. A pass code must be entered to deactivate the detector. For more information refer to <a href="#">No Deactivation Pass Code Protection</a>.</li> </ul>
	<ul style="list-style-type: none"> <li>To decrement the displayed value or to scroll down, press .</li> <li>To enter the user options menu, press  and  simultaneously and hold until <b>OPIN</b> and then <b>EXIT</b> displays (approximately 5 seconds) .</li> <li>To initiate calibration and setting alarm setpoints, press and hold  and  simultaneously until <b>CAL.</b> displays.</li> </ul>
	<ul style="list-style-type: none"> <li>To increment the displayed value, press .</li> <li>To view the TWA, STEL and maximum (MAX) gas exposures, press  and  simultaneously.</li> </ul>
	<ul style="list-style-type: none"> <li>To save a displayed value, press .</li> <li>To clear TWA, STEL, and maximum (MAX) gas exposures, press and hold  for 6 seconds.</li> <li>To acknowledge a latched alarm, press .</li> </ul>

## Activating the Detector

To activate the detector, press .

The detector begins a self-test.

### Self-Test

When the detector is activated it performs several system tests. Verify that all tests have been performed prior to using the detector.

1. **Display Elements Test:** The LCD displays all of the screen elements.



2. **Alarm Function Test:** The audible alarm beeps, the visual alarm flashes, the backlight activates briefly, and the detector emits one vibration.

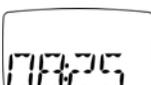
*Note*

*The following tests are listed in the order they are automatically performed on the detector.*

3. **Battery Test:** The detector tests the batteries. If the battery voltage is too low to continue, the

detector performs an automatic shutdown. Refer to [Automatic Shutdown Alarm](#).

4. **Date and Time:** The LCD displays the date and time automatically in the following order.

	Year: The LCD displays the current year ( <b>20XX</b> ).
	Month: <b>JAN, FEB, MAR</b> , etc.
	Day of the month: ( <b>1 to 31</b> )
	Day of the week: <b>MON, TUE, WED</b> , etc.
	Hour/Minute: <b>00:00</b> hours to <b>23:59</b> hours
To adjust the date or time, refer to <a href="#">Clock (CLCK) option</a> .	

5. **Sensor Test:** The detector now tests the sensor. If the sensor test fails, the audible alarm emits a slow tone, the visual alarm flashes slowly, and the **ALARM** flashes.



If the sensor test passes, the self-test continues.

6. **Gas Type:** The LCD displays the type of gas the detector is manufactured to measure.

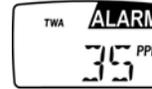


Refer to Table 1: GasAlert Extreme Models.

If the battery is low, the LCD displays the low battery icon and the self-test continues.



**TWA Alarm Setpoint:** The LCD displays the TWA alarm setpoint.



*Note*

*The TWA alarm setpoint screen does not apply to O<sub>2</sub> detectors.*

7. **STEL Alarm Setpoint:** The LCD displays the STEL alarm setpoint.



*Note*

*The TWA alarm setpoint screen does not apply to O<sub>2</sub> detectors.*

8. **Low Alarm Setpoint:** The LCD displays the low alarm setpoint.



9. **High Alarm Setpoint:** The LCD displays the high alarm setpoint.

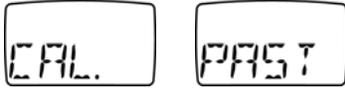


10. **Calibration Due Test:** The LCD displays the calibration due date.



The LCD displays the number of days remaining before the detector must be calibrated. For more information, refer to [Calibration Procedures](#).

If calibration is past due, a warning message displays.

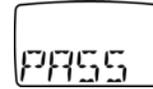


Press  to acknowledge the warning message.

Depending upon if the detector is pass code protected or not, one of the following three events will occur.

**1) Not Pass Code Protected:** If the detector is not pass code protected, after the **CAL. PAST** message is acknowledged, the detector continues the self-test and then enters normal operating mode.

**2) Pass Code Protected:** If the detector is pass code protected, when **CAL. PAST** displays, press  to acknowledge the message and to access the **PASS** screen. If required, refer to [Pass Code Protection Option](#).



Press  or  to scroll to the required pass code, and within 10 seconds press  to confirm the selection. The LCD then displays the normal operating screen.

*Note*

*Calibrate the detector before continuing operation.*

If the pass code is not confirmed within 10 seconds or the pass code is incorrect, the LCD displays the following screen.



The detector then automatically deactivates.

**3) Automatic Shutdown:** If the pass code is not known the detector beeps and flashes eight times while the LCD displays the following screen.



The detector then automatically deactivates.

**Bump Check Fail Test:** If a bump check has not been performed or if the bump check was performed but failed, the detector beeps, flashes, vibrates, and the following error message displays:



Press  to acknowledge the alarm.

*Note*

*Bump check the detector before continuing operation.*

For information regarding bump check tests, refer to the MicroDock II User Manual.

### **Self-Test Pass**

If the detector passes the self-test, it enters normal operating mode. The LCD displays the ambient gas reading.



The detector begins recording immediately. It records the

- maximum (MAX) gas exposure,
- the short-term exposure levels (STEL), and
- calculates the time-weighted average (TWA).

### **Self-Test Fail**

If the detector fails the self-test, refer to [Troubleshooting](#).

## Deactivating the Detector

*Note*

*A detector can be enabled to not deactivate by enabling a second pass code protection option. If **PASS** displays immediately after **OFF**, refer to [No Deactivation Pass Code Protection](#).*

To deactivate the detector, complete the following:

Press and hold  until **OFF** displays (approximately 5 seconds).



The audible alarm beeps four times, the visual alarm flashes four times, the detector vibrates, and then powers off.

*Note*

*If  is not held down until **OFF** displays, the detector will remain activated.*

## Confidence Beep

The confidence beep is used to confirm that the detector is activated and the batteries have sufficient power to respond to a hazardous level of gas.

When battery power is sufficient, the audible alarm beeps once every 5 seconds. The confidence beep stops when battery power is low. The confidence beep can be enabled or disabled.

*Note*

*The detector is shipped with the confidence beep disabled.*

To enable/disable the confidence beep, complete the following:

1. Ensure the detector is deactivated.
2. Press and hold . While holding , press .

When the confidence beep option is enabled, the detector automatically begins beeping when activated.

When the confidence beep option is enabled in stealth mode, the detector vibrates once every 60 seconds. For more information refer to [Stealth Option](#) and [Alarms](#).

## User Options Menu

The user options menu provides access to fourteen user selections.

To access the user options menu, complete the following:

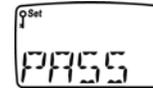
1. From the normal operating screen, press and hold  and  simultaneously until **OPTN** displays and then release the buttons.

The detector beeps four times, flashes four times, and vibrates while accessing the user options menu.

If the pass code protection is not enabled, the **EXIT** screen automatically displays.



If the detector is pass code protected, the following screen displays:



2. Press  or  to scroll to the required pass code. Press  to confirm the selection and access the **EXIT** screen.

### Note

*If the pass code is not confirmed within 10 seconds, the following error message displays.*



3. From the **EXIT** screen, press  or  to scroll through all of the user options.

4. Press  to select a displayed option.

*Note*

*As a safety precaution, if an option is not selected within 20 seconds the detector automatically returns to normal operating mode.*

When the required activities have been performed for a selected option, the **EXIT** screen automatically displays.

5. Press  or  to select another option or press  to exit the user options menu and return to normal operating mode.

### **Exit Option**

When user options is entered, the **EXIT** screen displays immediately following the options (**OPTN**) screen. The LCD automatically returns to the **EXIT** screen after a user option function has been completed.

From the **EXIT** screen, use  or  to scroll to additional user options,

or

Press  to exit user options and return to normal operating mode.

### Clock Option

The clock (**CLCK**) option is used to set the date (year/month/day/day of the week) and time (hour/minute) of the detector. To set the time or date complete the following:

1. From the **EXIT** screen, press ▲ or ▼ to scroll to the **CLCK** option.
2. Press ○ to select the option and access the first date/time option, the year screen. **Set** and the value(s) that is currently available to change continually flash.
3. Press ▲ or ▼ to scroll to the required year (last two numerals only) and press ○ to confirm the selection.

Or

To bypass the year, press ○ to retain the current value and automatically proceed to the month screen.

4. Repeat step #3 for the remaining date/time changes.
5. Press ▲ or ▼ to select another option or press ○ to exit the user options menu and return to normal operating mode.

<i>Note</i>	
<i>The time and date values can only be changed in the order they are presented in this table. To bypass any setting, press ○. The detector automatically retains the current value and proceeds to the next date/time option.</i>	
	Year: Requires only the last two numerals of the year ( <b>00-99</b> ).
	Month: Scroll to select the required month ( <b>JAN, FEB, MAR</b> , etc.).
	Day: Scroll to select the required day ( <b>1-31</b> ). For months that have 30 days only ( <b>1-30</b> ) will be available to select from. For Feb the options are ( <b>1-28 and 29</b> ).
	Day of the week: Scroll to select the required day ( <b>Mon, Tue, Wed</b> , etc.).
	Time: The hour value flashes first. Scroll to select ( <b>0:00 hrs. to 23:59 hrs.</b> ).

*Note*

If an option is not selected or bypassed (confirmed) by pressing  within 10 seconds, the LCD automatically times-out and returns to the **EXIT** screen.

If a value is selected but not confirmed, an error message displays and then proceeds to the next date/time option.



**Pass Code Protection Option**

The pass code protection option (**PASS**) is used to prevent access to the user options and the calibration/set alarm setpoint functions.

The pass code protection option can be enabled or disabled.

*Note*

The detector is shipped with the pass code protection option disabled.

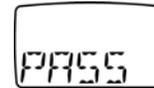
**Enable Pass Code Protection**

To enable pass code protection, complete the following:

*Note*

The pass code is provided on a separate card inside the shipping container.

1. From the **EXIT** screen in user options, press  or  to select the **PASS** option.



2. Press  to confirm the selection.
3. **Set PASS** begins flashing. Press  or  to select the pass code number, and press  to confirm the selection.
4. The flashing pass **ON** screen displays. Press  to confirm. The LCD then returns to the user options **EXIT** screen.



5. Press  or  to select another user option, or press  to exit the user options and return to normal operating mode.

*Note*

*If an incorrect pass code is selected or a correct pass code is not confirmed within 10 seconds, the following error message displays and the LCD returns to the **EXIT** screen.*



### *Disable Pass Code Protection*

When the detector is pass code protected, the key icon displays continually. To disable the pass code protection option, complete the following:

1. Press and hold  and  simultaneously to access the user options menu.

The **OPTN** screen displays briefly before the flashing pass code screen displays.



2. Press  or  to select the pass code and press  to confirm. The following **EXIT** screen displays.



The key icon indicates that the pass code protection is currently enabled.

3. Press  or  to scroll to the **PASS** option, and press  to confirm the selection.
4. The LCD displays a flashing **OFF** screen. Press  to confirm the disabling option.

*Note*

*To ensure if the pass code protection option is enabled/disabled, use  and  to toggle between the **ON** and **OFF** options. Display the desired option and press  to confirm the selection.*

The LCD returns to the user options **EXIT** screen.

5. Press  or  to select another user option, or press  to exit the user options and return to normal operating mode.

### *No Deactivation Pass Code Protection*

#### *Note*

*A detector can be enabled to prevent deactivation without a pass code. If requested, the detector is shipped with this option enabled permanently. This option cannot be disabled by a customer.*

As a backup safety precaution, the detector can be manufactured to prevent deactivation. A separate security pass code is required to for this option and will be available to limited personnel only.

The pass code must be entered every time the detector is deactivated.

To deactivate the detector, complete the following:

1. From normal operating mode, press and hold  to deactivate the detector.

If the detector is pass code protected to prevent powering down, **OFF** displays briefly and then **PASS** immediately displays.



2. Press  or  to select the security pass code. Press  to confirm the selection.

The detector then deactivates.

### **Stealth Mode Option**

The stealth (**STLH**) mode option is designed to ensure that the detector is undetected in situations that require concealment. This option is used to disable the

- audible alarms,
- visual alarms, and
- backlight.

Only the vibrate alarm remains enabled.

*Note*

*The detector is shipped with stealth mode disabled.*

To enable/disable the stealth mode, complete the following:

1. From the **EXIT** screen of the user options menu, press  or  to select the **STLH** option.



2. Press  to confirm the selection. The LCD flashes either **ON** or **OFF**.



**Enabled**



**Disabled**

3. Press  or  to toggle between the **ON/OFF** options. Ensure the desired option is displayed and press  to confirm the selection.

The LCD returns to the **EXIT** screen.

If stealth mode has been enabled, the screen displays **STLH** continually unless

- functions are being performed,
- readings are not 0 ppm for toxics, or
- reading is not 20.9% vol for oxygen.

*Note*

*The vibrator alarm is disabled at -20°C.*

4. Press  or  to scroll to a new user option or press  to exit and return to normal operating mode.

### **Automatic Backlight Option**

The automatic backlight (**BKLT**) option is used to enable or disable the automatic backlight of the detector. When enabled, the backlight automatically turns on for 3 seconds whenever there is insufficient light to view the LCD.

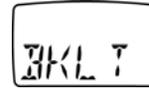
Press and hold (until backlight activates) any button to activate the backlight for 6 seconds.

#### *Note*

*The detector is shipped with the automatic backlight option enabled. Backlight does not operate while in stealth mode.*

To enable/disable the automatic backlight, complete the following:

1. From the **EXIT** screen of the user options menu, use  or  to scroll to the **BKLT** option.



2. Press  to accept the option. The LCD flashes either **ON** or **OFF**.
3. Press  or  to toggle between the **ON/OFF** options. Ensure the desired option is displayed and press  to confirm the selection.

The LCD returns to the **EXIT** screen.

#### *Note*

*The **BKLT** option is not available in the user options menu while stealth mode is enabled.*

4. Press  or  to scroll to a new user option or press  to exit and return to normal operating mode.

### **Latching Alarm Option**

The latch alarm (**LTCH**) alarm option is used to ensure that an alarm persists until it is acknowledged by the user.

In the event of an alarm condition, and if the high and low alarms are set to latch, the audible and visual alarms persist until the alarm is acknowledged.

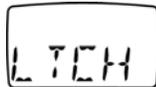
In stealth mode, the detector continues to vibrate until the alarm is acknowledged.

*Note*

*The detector is shipped with the latching alarm option disabled.*

To enable/disable the latching alarm option, complete the following:

1. From the **EXIT** screen of the user options menu, press  or  to scroll to the **LTCH** option.



2. Press  to accept the option. The LCD flashes either **ON** or **OFF**.
3. Press  or  to toggle between the **ON/OFF** options. Ensure the desired option is displayed and press  to confirm the selection.

The LCD returns to the **EXIT** screen.

4. Press  or  to scroll to a new user option or press  to exit and return to normal operating mode.

### **Automatic Oxygen (O<sub>2</sub>) Calibration Option**

*Note*

*For oxygen detectors only.*

This option is used to enable/disable the automatic oxygen (O<sub>2</sub>) calibration. The O<sub>2</sub> calibration begins automatically during start-up after the calibration due screen displays.

*Note*

*The detector is shipped with the automatic O<sub>2</sub> calibration option disabled.*

To enable/disable the automatic O<sub>2</sub> calibration option, complete the following:

1. From the **EXIT** screen of the user options menu, press  or  to scroll to the **ACAL** option.



2. Press  to accept this option and display the current mode **ON** or **OFF**.
3. Press  or  to toggle between the **ON/OFF** options. Ensure the desired option is displayed and press  to confirm the selection.

The LCD returns to the **EXIT** screen.

4. Press  or  to scroll to a new user option or press  to exit and return to normal operating mode.

### **Calibration Past Due Option**

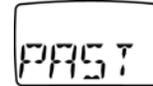
The calibration past due (**PAST**) option is used to enable an automatic shutdown during start-up if the detector is past due for calibration.

#### *Note*

*The detector is shipped with the calibration past due shutdown option disabled.*

To enable/disable the calibration past due automatic shutdown option, complete the following:

1. From the **EXIT** screen of the user options menu, press  or  to scroll to the **PAST** option.



2. Press  to accept the option and to display the current mode (**ON** or **OFF**).

3. Press  or  to toggle between the **ON/OFF** options. Ensure the desired option is displayed and press  to confirm the selection.

The LCD returns to the **EXIT** screen.

4. Press  or  to scroll to a new user option or press  to exit and return to normal operating mode.

## **Languages**

The detector can be set to display text in different languages. Refer to the following language options:

### *Portuguese Option*

The Portuguese (**PORT**) option is used to convert all of the LCD screens to display the text in Portuguese.

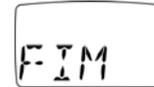
#### *Note*

*If the language option is included, the detector is shipped with English selected as the default.*

1. From the **EXIT** screen of the user options menu, press  or  to scroll to the **PORT** option.



2. Press  to accept the option. The LCD then displays the **EXIT** screen in Portuguese.



3. Press  or  to scroll to a new user option or press  to exit and return to normal operating mode.

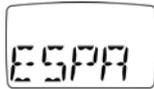
### Spanish Option

The Spanish (**ESPA**) option is used to convert all of the LCD screens to display the text in Spanish.

#### Note

*If the multi-language option is included, the detector is shipped with English selected as the default.*

1. From the **EXIT** screen of the user options menu, press  or  to scroll to the **ESPA** option.



2. Press  to accept the option. The LCD then displays the **EXIT** screen in Spanish.



3. Press  or  to scroll to a new user option or press  to exit and return to normal operating mode.

### German Option

The German (**DEUT**) option is used to convert all of the LCD screens to display the text in German.

#### Note

*If the language option is included, the detector is shipped with English selected as the default.*

1. From the **EXIT** screen of the user options menu, press  or  to scroll to the **DEUT** option.



2. Press  to accept the option. The LCD then displays the **EXIT** screen in German.



3. Press  or  to scroll to a new user option or press  to exit and return to normal operating mode.

### French Option

The French (**FRAN**) option is used to convert all of the LCD screens to display the text in French.

#### Note

*If the language option is included, the detector is shipped with English selected as the default.*

1. From the **EXIT** screen of the user options menu, press  or  to scroll to the **FRAN** option.



2. Press  to accept the option. The LCD then displays the **EXIT** screen in French.



3. Press  or  to scroll to a new user option or press  to exit and return to normal operating mode.

### English Option

The English (**ENGL**) option is used to convert all of the LCD screens to display the text in English.

#### Note

*If the language option is included, the detector is shipped with English selected as the default.*

1. From the **EXIT** screen of the user options menu, press  or  to scroll to the **ENGL** option.



2. Press  to accept the option. The LCD then displays the **EXIT** screen in English.



3. Press  or  to scroll to a new user option or press  to exit and return to normal operating mode.

### **Datalogger Sampling Rate Option**

The datalogger sampling rate (**RATE**) option is used to determine how often the detector is to record a sample. The datalogger value ranges from **1** to **60** seconds.

*Note*

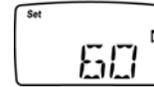
*The detector is shipped with the factory default set to sample every **5** seconds.*

To adjust the datalogger sampling rate, complete the following:

1. From the **EXIT** screen of the user options menu, press  and  to scroll to the **RATE** option.



2. Press  to select the option and display the sample rate screen.



3. The sample rate screen displays the current selected rate. Press  or  to scroll to a new rate and press  to save the new value.
4. Press  or  to scroll to a new user option or press  to exit and return to normal operating mode.

### Data Transfer Option

The data transfer (**SEND**) option is used to transfer the datalog/event log information from the detector to the PC.

*Note*

*An IR DataLink (or other BW accessory) is required to transfer the data from the detector to the PC.*

To transfer data, complete the following:

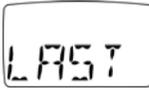
1. Connect the IR DataLink (or other BW accessory) to the detector and the PC.

Refer to the IR DataLink Instruction Sheet.

2. From the **EXIT** screen of the user options menu, press  or  to scroll to the **SEND** option.



3. Press  to accept the option and to access the data transfer option screens.
4. Select one of the following options to transfer data.

	Press  or  to scroll to the event ( <b>EVENT</b> ) option. Press  to automatically transfer all of the events.
	Press  or  to scroll to the last ( <b>LAST</b> ) option. Press  to automatically send all of the datalogs since the last time they were downloaded.
	Press  or  to scroll to the all ( <b>ALL</b> ) option. Press  to automatically send all of the datalogs that are saved on the detector.
When the transfer(s) is complete, the LCD automatically returns to the <b>EXIT</b> screen.	

### *LAST and ALL Transfers*

If the **LAST** or **ALL** option is selected, the LCD displays a countdown and the data transmission icon to notify that the data is transferring.



*Note*

*The number that the countdown begins at is dependant upon the amount of data that is being transferred.*

### *EVNT Transfer*

When event logs are transferred, nothing displays on the LCD as there is little data to transfer.

### *Unsuccessful Transfer*

If the connection between the detector and the IR DataLink is disturbed during a transfer, the following error message displays.



The LCD then returns to the **EXIT** screen.

1. From the PC, save the previously transferred data to ensure that it will not be deleted.
2. Repeat steps #3-5 (back to the beginning of the Data Transfer Option section).
3. From the detector, select **LAST** to automatically resume the transfer from where it stopped sending.

Or

Select **ALL** to transfer all of the data again.

## ***Datalog and Event Log***

The GasAlert Extreme datalogger version allows the detector to record various information so a report can be compiled.

### ***Datalog***

Datalog information is recorded based upon the sampling rate set in the detector user options. The following information is recorded in a datalog:

- The date and time;
- The detector serial number;
- The type of gas the detector monitors;
- The current gas reading;
- The sensor status;
- The detector status;
- Pass code protect is on/off;
- The period that STEL is calculated;

- Confidence beep is on/off;
- Automatic backlight is on/off;
- Stealth mode is on/off;
- Latching alarm is on/off;
- The calibration past due user option is on/off; and
- The language that the LCD displays.

### ***Event Log***

An event log is data that is recorded when an event (i.e., an alarm) occurs. The following information is recorded in an event log:

- The detector serial number;
- The type of exposure the detector experienced;
- The time the alarm started and ended; and
- The peak exposure of the alarm.

**Alarms**

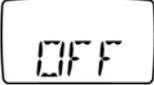
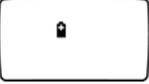
Table 6 describes detector alarms and shows how the LCD looks for each alarm.

Table 7 describes the computed gas exposures.

**Table 6. Alarms**

Alarm	Display	Alarm	Display
<p><b>Low Alarm:</b></p> <ul style="list-style-type: none"> <li>• Slow tone</li> <li>• Slow flash</li> <li>• <b>ALARM</b> flashes</li> <li>• Slow vibrations</li> </ul>		<p><b>TWA Alarm:</b></p> <ul style="list-style-type: none"> <li>• Slow tone</li> <li>• Slow flash</li> <li>• <b>ALARM</b> flashes</li> <li>• Slow vibrations</li> </ul>	
<p><b>High Alarm:</b></p> <ul style="list-style-type: none"> <li>• Fast tone</li> <li>• Fast flash</li> <li>• <b>ALARM</b> flashes</li> <li>• Fast vibrations</li> </ul>		<p><b>STEL Alarm:</b></p> <ul style="list-style-type: none"> <li>• Fast tone</li> <li>• Fast flash</li> <li>• <b>ALARM</b> flashes</li> <li>• Fast vibrations</li> </ul>	
<p><b>Sensor Alarm:</b></p> <ul style="list-style-type: none"> <li>• Slow tone</li> <li>• Slow flash</li> <li>• <b>ALARM</b> flashes</li> <li>• Slow vibrations</li> </ul>		<p><b>Low Battery Alarm:</b></p> <ul style="list-style-type: none"> <li>• One beep and one flash every 5 seconds, and one quick vibration every minute (when confidence beep is disabled).</li> <li>• No beeps, flashes, or vibrations (when confidence beep is enabled)</li> <li>• <b>LOW</b>  displays</li> </ul>	

**Table 6. Alarms (cont.)**

Alarm	Display	Alarm	Display
<p><b>Automatic Shutdown Alarm:</b> (Low battery)</p> <ul style="list-style-type: none"> <li>• Eight beeps, flashes, and vibrations</li> <li>• <b>LOW</b>  displays</li> </ul>		<p><b>Automatic Shutdown Alarm:</b> (Calibration past)</p> <ul style="list-style-type: none"> <li>• Eight beeps, flashes, and vibrations</li> </ul>	
<p><b>After Automatic Shutdown:</b> (Low battery)</p> <ul style="list-style-type: none"> <li>• No tone</li> <li>• No flash or vibrations</li> <li>•  displays for a short time</li> </ul>		<p><b>Confidence Beep:</b></p> <ul style="list-style-type: none"> <li>• One beep every 5 seconds</li> <li>• One quick vibration per minute</li> </ul>	

*Note*

*During an alarm condition, the detector activates the backlight and the LCD displays the current ambient gas reading.*

*The high alarm and STEL alarm have the same priority. A high alarm and/or STEL alarm override a low alarm and/or TWA alarm. To check STEL and TWA alarms specifically, press and hold  and  simultaneously.*

*The vibrator alarm is disabled at -20°C.*

### Computed Gas Exposures

#### **⚠ Warning**

To avoid possible personal injury, do not deactivate the detector during a work shift. The detector automatically resets the TWA, STEL, and MAX gas exposures at start-up. If the detector is restarted during a work shift, the values will not reflect the entire work shift.

**Table 7. Computed Gas Exposures**

Gas Exposure	Description
TWA	<ul style="list-style-type: none"><li>• Time-weighted average based on an 8-hour workday.</li><li>• Accumulated value.</li></ul>
STEL	<ul style="list-style-type: none"><li>• Short-term exposure limit based on a 15-minute period.</li><li>• Accumulated value.</li></ul>
MAX*	<ul style="list-style-type: none"><li>• Highest gas level encountered during the period the detector is turned on.</li></ul>

\*Maximum gas exposure for oxygen describes the furthest level reached from 20.9% vol.

### Viewing Gas Exposures

#### Toxic Gases

Press **○** and **▲** simultaneously. The LCD displays the TWA gas exposure first.



The LCD next displays the STEL gas exposure.



Lastly, the LCD displays the MAX gas exposure.



Press **○** and hold for 6 seconds to clear the TWA, STEL, and MAX gas exposure. The detector emits two beeps and two vibrations to confirm that the exposures have been cleared.

### Oxygen

For oxygen detectors, press  and  simultaneously to view both the maximum low and maximum high levels of oxygen exposure.



### Gas Alarm Setpoints

The detector gas alarm setpoints trigger the gas alarms that are described in Table 8.

**Table 8. Gas Alarm Setpoints**

<b>Alarm</b>	<b>Condition</b>
TWA alarm	TWA above TWA alarm setpoint. (O <sub>2</sub> : not applicable)
STEL alarm	STEL above STEL alarm setpoint. (O <sub>2</sub> : not applicable)
Low alarm	Toxic gases: Ambient gas level above low alarm setpoint.  O <sub>2</sub> : ambient gas level may be set to above or below 20.9%.
High alarm	Toxic gases: ambient gas level above high alarm setpoint.  O <sub>2</sub> : ambient gas level may be set to above or below 20.9%.

## Resetting Gas Alarm Setpoints

*Note*

Standard factory alarm setpoints vary by region.

Table 9 lists the factory alarm setpoints.

To change the factory alarm setpoints, refer to [Calibration and Setting Alarm Setpoints](#).

*Note*

To disable an alarm, set the alarm setpoint to 0.

The ETO sensor is extremely cross sensitive and it responds strongly to CO.

**Table 9. Factory Alarm Setpoints**

Gas	TWA	STEL	Low	High
O <sub>2</sub>	N/A	N/A	19.5% vol.	22.5% vol.
CO (low H <sub>2</sub> )	35 ppm	200 ppm	35 ppm	200 ppm
CO	35 ppm	200 ppm	35 ppm	200 ppm
H <sub>2</sub> S (high range)	10 ppm	15 ppm	10 ppm	15 ppm
H <sub>2</sub> S (low methanol)	10 ppm	15 ppm	10 ppm	15 ppm
H <sub>2</sub> S	10 ppm	15 ppm	10 ppm	15 ppm

Gas	TWA	STEL	Low	High
PH <sub>3</sub>	0.3 ppm	1.0 ppm	0.3 ppm	1.0 ppm
SO <sub>2</sub>	2.0 ppm	5.0 ppm	2.0 ppm	5.0 ppm
Cl <sub>2</sub>	0.5 ppm	1.0 ppm	0.5 ppm	1.0 ppm
NH <sub>3</sub>	25 ppm	35 ppm	25 ppm	50 ppm
NH <sub>3</sub> (high range)	25 ppm	35 ppm	25 ppm	50 ppm
NO <sub>2</sub>	2.0 ppm	5.0 ppm	2.0 ppm	5.0 ppm
HCN	4.7 ppm	10.0 ppm	4.7 ppm	10.0 ppm
ETO	1.0 ppm	5.0 ppm	1.0 ppm	5.0 ppm
ClO <sub>2</sub>	0.10 ppm	0.30 ppm	0.10 ppm	0.30 ppm
O <sub>3</sub>	0.10 ppm	0.10 ppm	0.10 ppm	0.20 ppm
NO	25 ppm	25 ppm	25 ppm	25 ppm

### **Stopping a Gas Alarm**

The low and high alarms stop when the ambient gas level returns to the acceptable range.

The detector computes the TWA and STEL value. If the value is above the alarm setpoint, the detector activates the TWA and/or the STEL alarm. To stop the TWA and/or STEL alarm, press and hold  for 6 seconds, or deactivate the detector.

If the detector is pass code protected to prevent deactivation, refer to [No Deactivation Pass Code Protection](#).

### **Acknowledge Latched Alarm**

Until it is acknowledged, if an alarm is set to latch the audible and visual alarms persist in the event of an alarm condition.

To acknowledge a latched alarm condition, press  to reset the latched alarm when the gas level has dropped below the alarm setpoint.

### **Sensor Alarm**

The detector tests for a missing or defective sensor during the activation self-test. Refer to [Troubleshooting](#).

### **Low Battery Alarm**

The detector tests the battery during the activation self-test and continuously thereafter. If the battery voltage is low, the detector activates the low battery alarm.

The low battery alarm continues until the battery is replaced or the battery power is almost depleted. If the battery voltage drops too low, the detector executes an automatic shutdown.

#### *Note*

*If the confidence beep is enabled, the audible alarm does not beep during a low battery alarm. Refer to [Confidence Beep](#).*

## **Automatic Shutdown Alarm**

There are two situations when an automatic shutdown alarm occurs:

1. If the battery voltage is in immediate danger of dropping below the minimum operating voltage, the audible alarm beeps eight times, the visual alarm flashes eight times, and the detector emits eight vibrations. After 3 seconds, the LCD powers off and the detector stops normal operation. The LCD periodically displays the low battery icon  until the battery power is depleted.

For directions about how to replace the battery, refer to [Replacing the Battery or Sensor](#).

### *Note*

*The low battery alarm continues for approximately 30 minutes before an automatic shutdown occurs.*

2. If the calibration past protection user option is active and the detector is past the calibration due date, the detector performs an automatic shutdown.

## **Calibration and Setting Alarm Setpoints**

### **Guidelines**

When calibrating the detector, adhere to the following guidelines.

- Recommended gas mixture:
  - O<sub>2</sub>: clean air, 20.9% vol.
  - CO (low H<sub>2</sub> sensitivity): 50 to 500 ppm balance N<sub>2</sub>
  - CO: 50 to 500 ppm balance N<sub>2</sub>
  - H<sub>2</sub>S (high range): 10 to 100 ppm balance N<sub>2</sub>
  - H<sub>2</sub>S (low methanol): 10 to 100 ppm balance N<sub>2</sub>
  - H<sub>2</sub>S: 10 to 100 ppm balance N<sub>2</sub>
  - PH<sub>3</sub>: 1 to 5 ppm balance N<sub>2</sub>
  - SO<sub>2</sub>: 10 to 50 ppm balance N<sub>2</sub>
  - Cl<sub>2</sub>: 3 to 25 ppm balance N<sub>2</sub>
  - NH<sub>3</sub>: 20 to 100 ppm balance N<sub>2</sub>
  - NH<sub>3</sub> (high range) 20 to 100 ppm balance N<sub>2</sub>
  - NO<sub>2</sub>: 5 to 50 ppm balance N<sub>2</sub>
  - HCN: 5 to 20 ppm balance N<sub>2</sub>
  - ETO: 5 to 50 ppm balance N<sub>2</sub>
  - ClO<sub>2</sub>: 0.1 to 1.0 ppm balance N<sub>2</sub>
  - O<sub>3</sub>: 0.1 to 1.0 ppm balance N<sub>2</sub>
  - NO: 10 to 250 ppm balance N<sub>2</sub>
- For ETO detectors (before each day's use) allow the instrument to fully stabilize in the temperature that it is to be operated in and then zero the detector.

- It is necessary to periodically re-zero the ETO detector.
- Calibration accuracy is never better than the calibration gas accuracy. BW Technologies recommends a premium grade calibration gas. Gases with the National Institute of Standards and Technology (NIST) traceable accuracy will improve the validity of the calibration. Do not use a gas cylinder beyond its expiration date.
- Calibrate a new sensor before use. Allow the sensor to stabilize before starting calibration (used: 60 seconds; new: 5 minutes).
- Calibrate the detector at least once every 180 days (for HCN detectors calibrate at least once every 90 days), depending upon use and sensor exposure to poisons and contaminants.
- Calibrate the detector if the ambient gas display varies at start-up.
- It is best to calibrate the sensor before changing the alarm setpoints.
- Calibrate only in a clean atmosphere, which is free of background gas.
- To disable an alarm, set the alarm setpoint to zero.
- If a certified calibration is required, contact [BW Technologies](#).

*Note*

*A generator must be used to calibrate O<sub>3</sub>, ClO<sub>2</sub>, and Cl<sub>2</sub> GasAlert Extreme sensors.*

### Test Cap

The calibration cap and hose that are shipped with the detector simplifies the sensor testing and calibration.

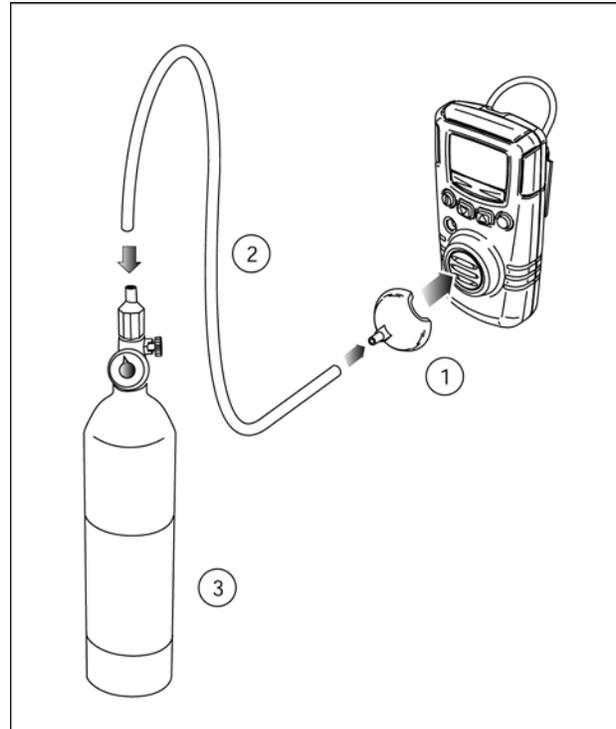
Refer to Table 10 and Figure 3 for installation information.

*Note*

*Only use the calibration cap during the calibration process.*

**Table 10. Test Cap**

Item	Description
1	Test cap
2	Hose
3	Regulator and gas cylinder



**Figure 3. Test Cap**

## Calibration Procedure

The calibration (**CAL.**) process requires several functions, some of which can be bypassed. A note is added to each option that can be bypassed.

### Start Calibration

To calibrate the detector and set the corresponding alarm setpoints, perform the following procedure.

#### Note

*To quit at any point, press  $\odot$ . The detector retains any saved values and emits four beeps and four vibrations before returning to normal operation.*

*Calibrate O<sub>2</sub> in clean air.*

1. From normal operating mode, press and hold  $\odot$  and  $\nabla$  simultaneously until the alarm beeps, flashes, and vibrates four times. The **CAL.** screen then displays.



After the **CAL.** Screen displays, the detector beeps once and the auto zero screen displays.

### Auto Zero

The auto zero function automatically zeros the toxic sensors and calibrates the O<sub>2</sub> sensor.



2. The LCD flashes **Auto Zero** while the detector automatically zeroes the sensor. When the auto zero is complete the audible alarm beeps twice.

#### Note

*Do not apply the calibration gas until the LCD displays the flashing gas cylinder icon; otherwise, the auto zero step will fail.*

### Auto Zero Fail

If the sensor fails auto zero, an error message displays.



The detector then bypasses the sensor span and automatically proceeds to the alarm setpoints.

Press **Ⓢ** to exit the calibration/alarm setpoint screens and to return to normal operating mode.

Restart the calibration procedures in an atmosphere that is free of the targeted gas. If auto zero fails a second time, deactivate and then reactivate the detector to test the sensors.

If the auto zero passes and the pass code protection is disabled, the detector automatically proceeds to the auto span function.

### Pass Code Protected

After a successful auto zero, and if the pass code protected option is enabled, the **PASS** code protection screen displays. When enabled, the pass code is required to access the auto span and alarm setpoint functions.



3. Press **▲** or **▼** to scroll to the required pass code and press **○** to confirm. For additional information, refer to [Pass Code Protection Option](#).

If the correct code is entered within 10 seconds, the detector beeps twice and automatically proceeds to the set span screen.



If the pass code is selected incorrectly or if the pass code is correct but not confirmed within 10 seconds, the LCD displays the following error message.



The detector then beeps four times and automatically returns to normal operation.

### Set Span

*Note*

*To bypass the set span function, press  $\bigcirc$  to automatically proceed to the span screen.*

The set span function is used to input a new calibration gas concentration.



The **Set SPAN** screen flashes.

4. Press  $\blacktriangle$  or  $\blacktriangledown$  to select the required gas concentration. The detector value must match the concentration value of the calibration gas.

*Note*

*If a new value is selected but not confirmed within 10 seconds by pressing  $\bigcirc$ , the detector rejects the new value. The LCD displays a **NO** error message, the audible alarm beeps six times, and the detector retains the original value.*

5. Press  $\bigcirc$  to save the new value and proceed to the span screen.



### Span

*Note*

*To bypass the span function, press  $\bigcirc$  to automatically proceed to the alarm setpoint screens. If the span is bypassed, the calibration due date cannot be changed.*

*Note*

*Verify that the calibration gas being used matches the span concentration values that are defined for the detector. For more information, refer to Span Concentration.*

The set span screen displays a flashing gas cylinder.

*Note*

*The flashing gas cylinder icon does not display for oxygen (O<sub>2</sub>) detectors.*

6. Apply the calibration gas.
7. Apply gas to the sensor at a flow rate of 500 ml/min.  
(for NH<sub>3</sub>, Cl<sub>2</sub>, and ETO: 1000 ml/min.)

The gas readings change as gas is applied to the sensor. When the detector senses a sufficient concentration of gas (approximately 30 seconds), the audible alarm beeps once.

The detector then begins spanning the sensor as follows:

- NH<sub>3</sub>, Cl<sub>2</sub>, ClO<sub>2</sub>, O<sub>3</sub>, and ETO: 5 minutes;
- O<sub>2</sub>: 30 seconds;
- other gases: 2 minutes (approximately).

The audible alarm beeps three times when the span is complete.

### **Successful Span**

If the span is successful, the LCD automatically displays the calibration due date screen.

### **Unsuccessful Span**

If the detector fails to span a sensor successfully, the LCD displays an error message.



The detector flashes, vibrates, and emits a long tone and then automatically proceeds to the alarm setpoint screens.

If the span fails confirm that

- gas is being applied to the sensor,
- the sensor is detecting a sufficient gas concentration within 30 seconds, and
- the gas concentration has not dropped significantly during the 2-minute span.

If the span is still unsuccessful, attach a new gas cylinder.

If the span continues to be unsuccessful, replace the sensor. Refer to [Replacing the Battery or Sensor](#).

### Setting the Calibration Due Date

After a successful calibration, the LCD displays the **CAL.** **DUE** screens and the number of days remaining before the next calibration is due.



#### Note

To bypass the calibration due notification, press . The LCD automatically proceeds to the TWA alarm setpoint.

*BW Technologies recommends that the detector be calibrated every 180 days (6 months). The detector is shipped with the factory default setting of 180 days.*

8. Press  or  to scroll to the required value (1 to **365**).
9. Press  to save the new value and automatically proceed to the TWA alarm setpoint screen.

#### Note

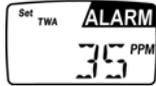
*If the new value is not confirmed within 10 seconds after selecting, the detector automatically retains the existing value. The new value that is selected becomes the default value.*

### Setting the TWA Alarm Setpoint

#### Note

*To bypass and retain the current TWA alarm setpoint value, press . The LCD automatically proceeds to the STEL alarm setpoint.*

When the **CAL DUE** function has been completed, the **Set TWA** alarm setpoint screen automatically displays.



10. Press  or  to scroll to the required value.
11. Press  to save the new value and proceed to the STEL alarm setpoint.

*Note*

*If the new value is not confirmed within 10 seconds after selecting, the detector automatically retains the existing value and proceeds to the next alarm setpoint.*

**Setting the STEL Alarm Setpoint**

*Note*

*To bypass and retain the current STEL alarm setpoint value, press . The LCD automatically proceeds to the low alarm setpoint.*

When the TWA alarm setpoint value has been changed or bypassed, the **Set STEL** alarm setpoint screen displays.



12. Press  or  to scroll to the required value.
13. Press  to save the new value and proceed to the low alarm setpoint.

*Note*

*If the new value is not confirmed within 10 seconds after selecting, the detector automatically retains the existing value.*

**Setting the Low Alarm Setpoint**

*Note*

*To bypass and retain the current low alarm setpoint value, press . The LCD automatically proceeds to the high alarm setpoint.*

When the STEL alarm setpoint value has been changed or bypassed, the **Set LOW** alarm setpoint screen displays.



14. Press  or  to scroll to the required value.
15. Press  to save the new value and proceed to the high alarm setpoint.

*Note*

*If the new value is not confirmed within 10 seconds after selecting, the detector automatically retains the existing value.*

### Setting the High Alarm Setpoint

*Note*

*To bypass and retain the current high alarm setpoint value, press . The detector then returns to the normal operating mode.*

When the low alarm setpoint value has been changed or bypassed, the **Set HIGH** alarm setpoint screen displays.



16. Press  or  to scroll to the required value.
17. Press  to save the new value and return to normal operating mode.

*Note*

*If the new value is not confirmed within 10 seconds after selecting, the detector automatically retains the existing value.*

When the calibration procedures are complete, the detector beeps, flashes, and vibrates four times before returning to normal operating mode.

### Verification

After calibration is complete and the detector is in normal operating mode, test the detector using a gas cylinder other than the one used for calibration. The gas concentration should not exceed the sensor's detection range. Verify that the detector LCD displays the expected concentration.

## **Maintenance**

To maintain the detector in good operating condition, perform the following basic maintenance as required:

- Calibrate, bump test, and inspect the detector on a regular schedule.
- Maintain an operations log of all maintenance, calibrations, and alarm events.
- Clean the exterior with a soft damp cloth. Do not use solvents, soaps, or polishes.
- Do not immerse the detector in liquids.

### **Cleaning a Sensor Screen**

Perform the following as required:

1. Remove the screen.
2. Using a soft, clean brush, wash with clean, warm water.
3. Ensure the screen is dry before reinserting back into the detector.

### **Cleaning a Sensor**

Remove the sensor. Clean using a soft, clean brush. Do not use water.

*Note*

*BW Technologies recommends that a test gas be applied to test the detector's response to gas following any cleaning procedure.*

### **Clearing a Sensor**

Each sensor has a high degree of resistance to common vapors and gases. A sensor typically clears within 10-30 minutes in a clean atmosphere that is free of hazards.

*Note*

*Do not expose a sensor to the vapors of inorganic solvents, such as paint fumes or organic solvents.*

## **Replacing the Battery or Sensor**

### **⚠ Warning**

**To avoid possible personal injury:**

**Replace the battery as soon as the detector emits a low battery alarm.**

**Use only the Energizer 1CR2 battery.**

**Use only the sensor specifically designed for your GasAlert Extreme model. Otherwise, the detector will not monitor the target gas. Refer to [Replacement Parts and Accessories](#).**

#### *Note*

*When the battery is removed from the detector, the clock reverts back to the default value.*

To preserve the life of the battery, deactivate the detector when not in use.

Figure 4 and Table 11 illustrate how to replace the battery or sensor. If the detector is activated, deactivate it before replacing the battery or sensor. Use a Phillips screwdriver to loosen and tighten any screws.

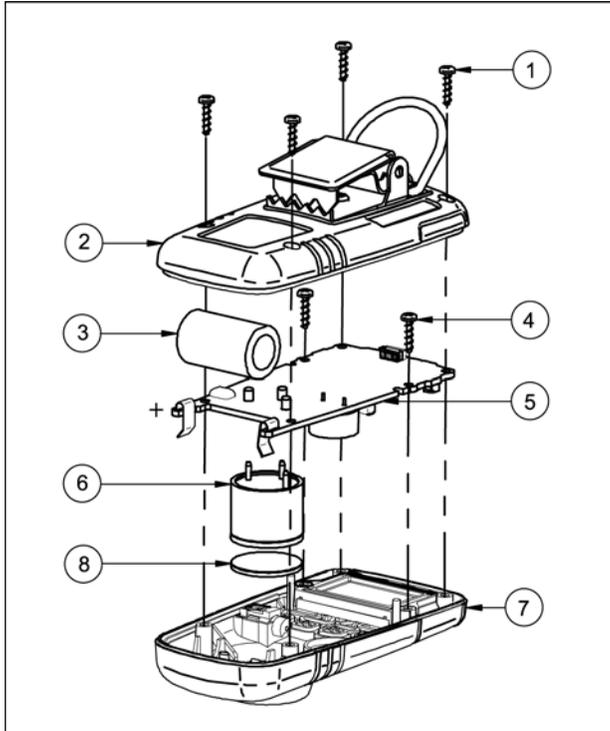
To prevent damage, do not use excessive force when removing and inserting the sensor. Gently rock back and forth to remove a tightly held sensor.

When inserting the sensor screen back into the detector, ensure that the shiny side is facing away from the sensor.

The sensor provides consistent and accurate ambient gas readings. The sensor lasts 2 years under normal operation.

After replacing a sensor or battery, ensure that the detector's back screws are torque to 3-4 in-lbs in a crisscross pattern to ensure a proper environment seal.

For additional information regarding problems caused by a sensor requiring calibration or replacement, refer to [Troubleshooting](#).



**Figure 4. Replacing the Battery or Sensor**

**Table 11. Replacing the Battery or Sensor**

Item	Description
1	Detector back screws (4)
2	Detector back
3	Battery
4	Main board screws (2)
5	Main board
6	Sensor
7	Detector front
8	Sensor screen

## ***Troubleshooting***

The electronics of the detector are protected from variations in humidity and corrosive atmospheres. If a problem is encountered, try the solutions listed in the following table.

If you still are unable to correct the problem, contact [BW Technologies](#).

**Table 12. Troubleshooting Tips**

<b>Problem</b>	<b>Possible Cause</b>	<b>Solution</b>
The detector does not activate.	<ul style="list-style-type: none"> <li>→ No battery</li> <li>→ Depleted battery</li> <li>→ Damaged or defective detector</li> <li>→ Reversed battery</li> </ul>	<ul style="list-style-type: none"> <li>→ Install battery</li> <li>→ Replace battery</li> <li>→ <a href="#">Contact BW</a></li> <li>→ Reinstall battery correctly</li> </ul>
The detector enters alarm mode immediately when it is activated.	<ul style="list-style-type: none"> <li>→ Sensor needs to stabilize</li> <li>→ Low battery alarm</li> <li>→ Sensor alarm</li> </ul>	<ul style="list-style-type: none"> <li>→ Used sensor: wait 60 seconds</li> <li>→ New sensor: wait 5 minutes</li> <li>→ Replace battery</li> <li>→ Replace sensor</li> </ul>

**Table 12. Troubleshooting Tips (cont.)**

<b>Problem</b>	<b>Possible Cause</b>	<b>Solution</b>
The activation self-test fails during one of the checks.	<ul style="list-style-type: none"> <li>→ General fault</li> <li>→ Alarm setpoints are incorrect</li> </ul>	<ul style="list-style-type: none"> <li>→ <a href="#">Contact BW</a></li> <li>→ Reset alarm setpoints</li> </ul>
The detector does not display normal ambient gas reading after activation self-test.	<ul style="list-style-type: none"> <li>→ Sensor not stabilized</li> <li>→ Detector requires calibration</li> <li>→ Targeted gas is present</li> </ul>	<ul style="list-style-type: none"> <li>→ Used sensor: wait 60 seconds New sensor: wait 5 minutes</li> <li>→ Calibrate detector</li> <li>→ Detector is operating properly. Use caution in suspect areas.</li> </ul>
The detector does not respond to the pushbuttons.	<ul style="list-style-type: none"> <li>→ Battery is depleted</li> <li>→ Detector is performing operations that do not require user input</li> </ul>	<ul style="list-style-type: none"> <li>→ Replace battery</li> <li>→ Pushbutton operation restores automatically when the operation ends</li> </ul>
The detector does not accurately measure the gas.	<ul style="list-style-type: none"> <li>→ Detector requires calibration</li> <li>→ Detector is colder/hotter than ambient gas</li> <li>→ Sensor screen is blocked</li> </ul>	<ul style="list-style-type: none"> <li>→ Calibrate sensor</li> <li>→ Allow detector to acquire ambient temperature before use</li> <li>→ Clean sensor screen</li> </ul>

**Table 12. Troubleshooting Tips (cont.)**

<b>Problem</b>	<b>Possible Cause</b>	<b>Solution</b>
The detector does not enter alarm mode.	<ul style="list-style-type: none"> <li>→ Alarm setpoint(s) are set incorrectly</li> <li>→ Alarm setpoint(s) set to zero</li> <li>→ Detector is in calibration mode</li> </ul>	<ul style="list-style-type: none"> <li>→ Reset alarm setpoints</li> <li>→ Reset alarm setpoints</li> <li>→ Complete the calibration procedure</li> </ul>
The detector intermittently enters alarm mode without apparent reason.	<ul style="list-style-type: none"> <li>→ Ambient gas levels are near alarm setpoint or the sensor is exposed to a puff of the targeted gas</li> <li>→ Alarms set incorrectly</li> <li>→ Missing or faulty sensor</li> </ul>	<ul style="list-style-type: none"> <li>→ Detector is operating normally. Use caution in suspect areas. Check MAX gas exposure reading.</li> <li>→ Reset alarm setpoints</li> <li>→ Replace sensor</li> </ul>
The detector automatically deactivates.	<ul style="list-style-type: none"> <li>→ Automatic shutdown feature activated due to weak battery</li> </ul>	<ul style="list-style-type: none"> <li>→ Replace battery</li> </ul>
Detector does not auto zero or calibrate	<ul style="list-style-type: none"> <li>→ Sensor may be expired</li> </ul>	<ul style="list-style-type: none"> <li>→ Change the sensor</li> </ul>
O <sub>2</sub> sensor reading is erratic	<ul style="list-style-type: none"> <li>→ Sensor may be expired</li> </ul>	<ul style="list-style-type: none"> <li>→ Change the sensor</li> </ul>

## Replacement Parts and Accessories

### Warning

To avoid personal injury or damage to the detector, use only specified replacement parts.

To order any parts or accessories, contact [BW Technologies](#).

**Table 13. Replacement Parts and Accessories**

Model No.	Description	Qty
SR-X10	Replacement O <sub>2</sub> sensor	1
SR-M204	Replacement CO (low H <sub>2</sub> sensitivity) sensor	1
PS-RM04	Replacement CO sensor	1
PS-RH04S	Replacement H <sub>2</sub> S sensor	1
SR-P04	Replacement PH <sub>3</sub> sensor	1
PS-RS04	Replacement SO <sub>2</sub> sensor	1
PS-RC10	Replacement Cl <sub>2</sub> sensor	1
SR-A04	Replacement NH <sub>3</sub> sensor	1
SR-A204	Replacement NH <sub>3</sub> sensor(high range)	1
PS-RD04	Replacement NO <sub>2</sub> sensor	1
PS-RZ10	Replacement HCN sensor	1
SR-E04	Replacement ETO sensor	1

Model No.	Description	Qty
SR-V04	Replacement ClO <sub>2</sub> sensor	1
SR-G04	Replacement O <sub>3</sub> sensor	1
SR-N04	Replacement NO sensor	1
GA-SS	Sensor screens	10
GA-TC-1	Test cap and hose	1
GA-HC-1	Hard hat clip	1
GA-AG-1	Alligator clip (non-conductive)	1
GA-AG-2	Alligator clip (stainless-steel)	1
REG-0.5	Gas regulator (0.5 L/min)	1
G0042-H25	Calibration gas, H <sub>2</sub> S (58 L)	1
CG2-M-200-103	Calibration gas, CO (103 L)	1
CG2-S-25	Calibration gas, SO <sub>2</sub> (58 L)	1
CG2-C-5	Calibration gas, Cl <sub>2</sub> (58 L)	1
CG2-Z-10	Calibration gas, HCN (58 L)	1
CG2-D-10	Calibration gas, NO <sub>2</sub> (58 L)	1
CG2-P-1-58	Calibration gas, PH <sub>3</sub> (58 L)	1
GA-USB2	IR DataLink	1

## **Specifications**

### **Operating temperature:**

H<sub>2</sub>S, SO<sub>2</sub>, HCN: -40°C to +50°C (-40°F to +122°F)

CO: -30°C to +50°C (-22°F to +122°F)

NH<sub>3</sub> (high range): -20° to +40°C (-4°F to +104°F)

Other gases: -20°C to +50°C (-4°F to +122°F)

### **Operating humidity:**

CO, H<sub>2</sub>S, SO<sub>2</sub>, Cl<sub>2</sub>, HCN, NO<sub>2</sub>, NH<sub>3</sub>, PH<sub>3</sub>, ETO, NO, O<sub>3</sub>:

15% to 90% relative humidity (non-condensing)

Cl<sub>2</sub>: 10% to 95% relative humidity (non-condensing)

ClO<sub>2</sub>: 15% to 95% relative humidity (non-condensing)

O<sub>2</sub>: 0% to 99% relative humidity (non-condensing)

### **Detection ranges:**

GasAlert Extreme O<sub>2</sub>: 0 – 30.0% vol. (0.1% vol. increments)

GasAlert Extreme CO: 0 – 1000 ppm (1 ppm increments)

GasAlert Extreme CO (low H<sub>2</sub> sensitivity): 0 – 1000 ppm  
(1 ppm increments)

GasAlert Extreme H<sub>2</sub>S: 0 – 100 ppm (1 ppm increments)

GasAlert Extreme H<sub>2</sub>S (high range): 0 – 500 ppm  
(1 ppm increments)

GasAlert Extreme H<sub>2</sub>S (low methanol): 0 – 100 ppm  
(1 ppm increments)

GasAlert Extreme PH<sub>3</sub>: 0 – 5.0 ppm (0.1 ppm increments)

GasAlert Extreme SO<sub>2</sub>: 0 – 100.0 ppm (0.1 ppm increments)

GasAlert Extreme Cl<sub>2</sub>: 0 – 50.0 ppm (0.1 ppm increments)

GasAlert Extreme NH<sub>3</sub>: 0 – 100 ppm (1 ppm increments)

GasAlert Extreme NH<sub>3</sub>: (high range) 0 – 400 ppm  
(1 ppm increments)

GasAlert Extreme NO<sub>2</sub>: 0 – 100.0 ppm (0.1 ppm increments)

GasAlert Extreme HCN: 0 – 30.0 ppm (0.1 ppm increments)

GasAlert Extreme ETO: 0 – 100.0 ppm (0.1 ppm increments)

GasAlert Extreme ClO<sub>2</sub>: 0 – 1 ppm (0.01 ppm increments)

GasAlert Extreme O<sub>3</sub>: 0 – 1 ppm (0.01 ppm increments)

GasAlert Extreme NO: 0 – 250 ppm (1 ppm increments)

**Sensor type:** Plug-in electrochemical cells

**Calibration:** Auto zero, set span, and span sensor

**Alarm conditions:** TWA alarm, STEL alarm, low alarm, high alarm, sensor alarm, low battery alarm, confidence beep, automatic shutdown alarm.

**Audible alarm:** 95 dB at 0.3 m (1 ft.) typical

**Visual alarm:** Red light-emitting diode (LED)

**Display:** Alpha-numeric liquid crystal display (LCD)

**Backlight:** Automatically activates for 3 seconds whenever there is insufficient light to view the display and during alarm conditions. Any pushbutton reactivates the backlight for 6 seconds.

**Self-test:** Initiated upon activation

**Battery test:** Every 0.5 seconds

**Battery:** 3 V lithium Energizer 1CR2-series battery

### **Intrinsic safety:**

Classified by UL to both U.S. and Canadian Standards as Intrinsically Safe for Class I, Division 1, Group A, B, C, D European Explosives Protection EEx ia IIC

CE 0539  II 1 G DEMKO 04 ATEX 03 36363  
IECEX

ABS Type Approved: VA-348-169-X

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules and ICES-003 Canadian EMI requirements. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that radio interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

## **General Specifications for Datalogger Units**

**Storage:** Maximum of 8 months of data at 5 second intervals (based on a normal workweek).

**Memory Type:** Wrap-around memory ensures most recent data is always saved.

**Sample Rate:** One reading every 5 seconds (standard).

**Data Recorded:** All sensor readings, all alarm conditions, calibrations, event flags, battery status, sensor status, confidence beep activation, and detector status along with the time and date and the detector serial number.

**Indicators:** Icon advising datalogger is operating normally.

**Transfer Accessory:** IR DataLink or other BW accessory.

### **Support:**

**BW Excel Datalog Manager (EDM):** This software organizes GasAlert Extreme datalog and event log files into a readable report.

**Fleet Manager CD Support:** This software organizes GasAlert Extreme datalog and event log files into a readable report.



D5561/5 English

iERP: 119065

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