GasAlertMicro 5 and GasAlertMicro 5 PID

O_2, CO, H_2S, PH_3, SO_2, Cl_2, NH_3, NO_2, HCN, ClO_2, O_3, VOC, and Combustibles

1, 2, 3, 4, and 5 Gas Detectors

Quick Reference Guide

"INNOVATORS IN GAS DETECTION"

BW Technologies

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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;
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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
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GasAlertMicro 5 & GasAlertMicro 5 PID

Introduction

This quick reference guide provides basic information for the GasAlertMicro 5 and GasAlertMicro 5 PID. Refer to the user manual on the accompanying CD-ROM for complete operating instructions. The GasAlertMicro 5 and GasAlertMicro 5 PID gas detector (“the detector”) warns of hazardous gas at levels above user-selectable alarm setpoints.

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

Note

The detector is shipped with English as the displayed language. The Portuguese, Spanish, German, and French guides have their screenshots displayed in the corresponding language.

Safety Information - Read First

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

Read the following **Cautions** before using the detector.

⚠ Cautions

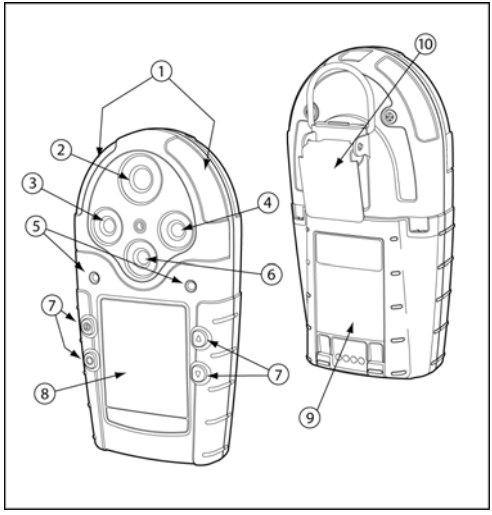
⇒ ***Warning:*** **Substitution of components may impair Intrinsic Safety.**

⇒ **Caution: For safety reasons, this equipment must be operated and serviced by qualified personnel only. Read and understand the user manual completely before operating or servicing.**

⇒ **Calibrate the detector before first-time use and then on a regular schedule, depending on use and sensor exposure to poisons and contaminants. BW recommends at least once every 180 days (6 months).**

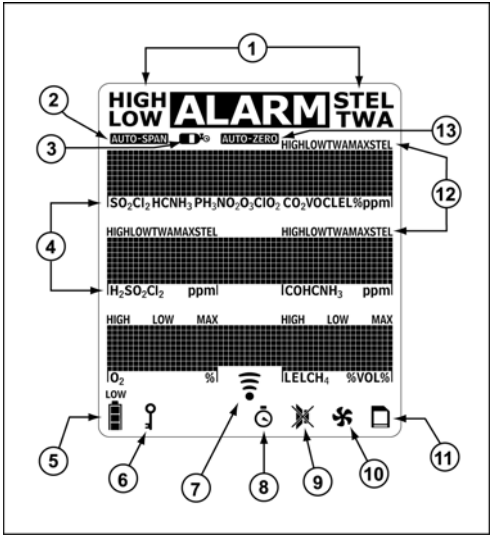
- ⇒ **It is recommended that the combustible sensor be checked with a known concentration of calibration gas after any known exposure to contaminants/poisons (sulfur compounds, silicon vapors, halogenated compounds, etc.).**
- ⇒ **BW recommends to "bump test" the sensors, before each day's use, to confirm their ability to respond to gas by exposing the detector to a gas concentration that exceeds the alarm setpoints. Manually verify that the audible and visual alarms are activated. Calibrate if the readings are not within the specified limits.**
- ⇒ **Only the combustible gas detection portion of this instrument has been assessed for performance by CSA International.**
- ⇒ **The combustible sensor is factory calibrated to 50% LEL methane. If monitoring a different combustible gas in the % LEL range, calibrate the sensor using the appropriate gas.**
- ⇒ **Caution: High off-scale readings may indicate an explosive concentration.**
- ⇒ **Protect the combustible sensor from exposure to lead compounds, silicones, and chlorinated hydrocarbons. Although certain organic vapors (such as leaded gasoline and halogenated hydrocarbons) may temporarily inhibit sensor performance, in most cases, the sensor will recover after calibration.**
- ⇒ **For use only in potentially explosive atmospheres where oxygen concentrations do not exceed 20.9% (v/v).**
- ⇒ **Any rapid up-scaling reading followed by a declining or erratic reading may indicate a gas concentration beyond upper scale limit, which may be hazardous.**
- ⇒ **Extended exposure of the GasAlertMicro 5 and GasAlertMicro 5 PID to certain concentrations of combustible gases and air may stress a detector element, which can seriously affect its performance. If an alarm occurs due to a high concentration of combustible gases, recalibration should be performed, or if needed, the sensor replaced.**
- ⇒ **Protect the PID sensor from exposure to silicone vapors.**
- ⇒ **The BW pump module (M5-PUMP) is certified for use with the GasAlertMicro 5 and GasAlertMicro 5 PID only.**

Parts of the GasAlertMicro 5 & GasAlertMicro 5 PID



Item	Description
1	Visual alarm bars (LED)
2	Toxic 1/PID sensor
3	Toxic 2 sensor
4	LEL sensor
5	Audible alarms
6	Oxygen sensor
7	Pushbuttons
8	Display (LCD)
9	Battery pack
10	Alligator clip

Display Elements

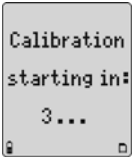
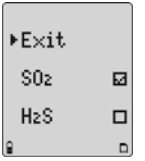
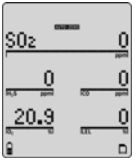
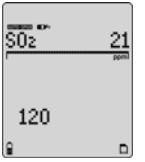
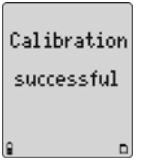


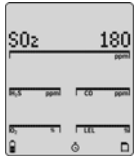
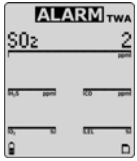
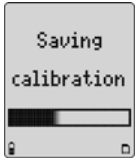
Item	Description
1	Alarm condition
2	Automatically span sensor
3	Gas cylinder
4	Gas identifier bars
5	Battery life indicator
6	Pass code lock
7	Data transmission
8	Clock
9	Stealth mode
10	Optional pump indicator
11	Optional datalogger card indicator
12	Alarm condition (low, high, TWA, STEL, or multi-gas) or view TWA, STEL, and maximum gas exposures (MAX)
13	Automatically zero sensor

Pushbuttons

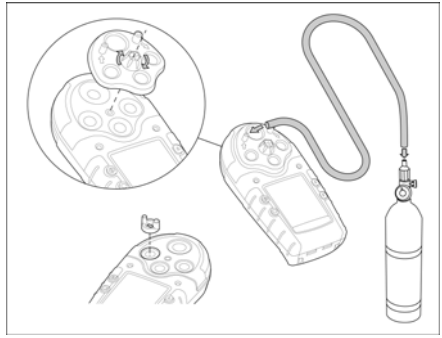
Pushbutton	Description
ⓘ	• To turn on the detector press ⓘ. • To turn off the detector, press and hold ⓘ until the countdown is complete.
▲	• To increment the displayed value or scroll up, press ▲. • To enter the user options menu, press ▲ and ▼ simultaneously and hold until the countdown is complete. • To clear the TWA, STEL, and maximum (MAX) gas exposure readings, press ◯ and ▲ simultaneously and hold until the countdown is complete. • To view the date and time, alarm setpoints (TWA, STEL, low, and high) of all the sensors, and the LEL/PID correction factor (if applicable), press ▲.
▼	• To decrement the displayed value or scroll down, press ▼. • To initiate calibration and setting alarm setpoints, press ◯ and ▼ simultaneously and hold until the countdown is complete.
◯	• To view the TWA, STEL, and maximum (MAX) hold readings, press ◯. • To acknowledge latched alarms press ◯.

Calibration

Procedure	Display	Procedure	Display
1. In a clean atmosphere, press and hold ◯ and ▼ simultaneously (as the detector beeps and flashes to the corresponding countdown) to enter calibration. The detector then reads **Starting calibration**.		4. This option allows the user to select which sensor to span. Use ▲ and ▼ to scroll to a sensor and press ◯ to deselect it. Sensors should be spanned in the following order: exotics (NH_3, ClO_2, O_3, and Cl_2), single gas, quad gas (H_2S, CO, O_2, and LEL), and lastly PID.	
2. AUTO-ZERO flashes while the detector zeroes all of the sensors and calibrates the oxygen sensor. If a sensor failed to auto zero, it will bypass the span.		5. Attach the calibration cap and apply gas at a flow rate of 500 ml/min. flashes as the unit senses which gas is being applied. After 30 seconds, AUTO-SPAN flashes and a countdown appears while the unit completes the span.	
3. Next, the following three screens appear: **- Apply span gas now to calibrate** **- or press ◯ to select sensor(s)** **- or press ⓪ to skip calibration** If no button is pressed, proceed to step #5. If ◯ is pressed, go to step #4. If ⓪ is pressed, go to the end of step #6.		6. Once the span is complete, the following three screens appear: **- Calibration successful** **- Press ▲ to apply a new cal gas** **- Press ▼ to end span** Repeat steps #3-6 to calibrate the remaining sensors. The display then advises to press ◯ to set or ⓪ to bypass the calibration due dates.	

Procedure	Display
7. Press ▼ or ▲ to change the calibration due date. Press ◯ to accept this value and proceed to the next due date. (If a sensor failed or did not span, you cannot change the calibration due date for that sensor.) The display then advises to press ◯ to set or ⓜ to bypass the alarm setpoints.	
8. Press ▼ or ▲ to change the alarm setpoint. Press ◯ to save the displayed value and proceed to the next setpoint. Set the remaining setpoints. The detector beeps twice at the end of the alarm setpoint stage.	
9. **Saving calibration** displays to indicate that calibration is complete. *Note* *The calibration cap should only be used during the calibration process.*	

Attach the Gas Cylinder to the Detector

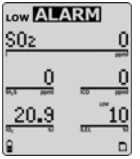
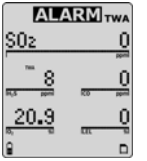
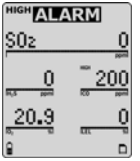
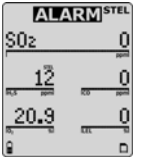


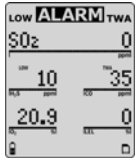
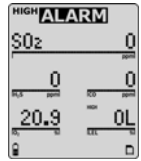
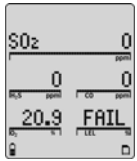
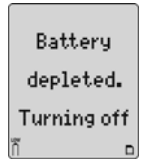
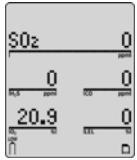
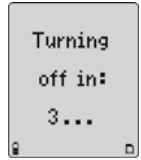
If an O_3 or ClO_2 sensor is located in the Toxic 2 sensor position, a single gas calibration cap must be used.

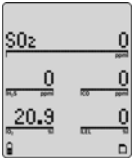
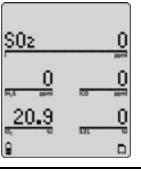
For complete information and procedures, refer to the *GasAlertMicro 5/PID/IR User Manual*.

Alarms

The following table lists the numerous alarms of the detector.

Alarm	Display	Alarm	Display
Low Alarm: • Fast beep • Slow flash • ALARM and target gas bar flash • Vibrator alarm activates		**TWA Alarm:** • Fast beep • Slow flash • ALARM and target gas bar flash • Vibrator alarm activates	
High Alarm: • Constant beep • Fast flash • ALARM and target gas bar flash • Vibrator alarm activates		**STEL Alarm:** • Constant beep • Fast flash • ALARM and target gas bar flash • Vibrator alarm activates	

Alarm	Display	Alarm	Display
Multi-Gas Alarm: • Alternating low and high alarm beep and flash • ALARM and target gas bars flash • Vibrator alarm activates		**Over Range Alarm:** **(Over Level Exposure)** • Fast beep and flash • ALARM and target gas bar flash • Vibrator alarm activates	
Sensor Alarm: • One beep every 15 seconds • **FAIL** flashes above the failed sensor		**Automatic Shutdown Alarm:** • Eight beeps and flashes • Vibrator alarm temporarily activates	
Low Battery Alarm: • One beep and two flashes every 25 seconds • LOW flashes		**Normal Shutdown:** • Three beeps and flashes	

Alarm	Display	Alarm	Display
Confidence Beep: • One beep, one flash, and one vibrate every 10 seconds		**Pump Alarm:** • Screen flashes: **- Pump flow change detected** **- Check for blocked inlet** **- or press ◯ to run a pump test** • Two fast beeps and alternating flashes • Vibrator alarm activates • ALARM and icons flash	
MMC Fail Alarm: • One beep every 5 seconds • icon flashes			

Note

Alarms can be set to be latching or non-latching. To confirm this setting, access the latching alarm option in the user options menu.

If the detector is in stealth mode, it only vibrates in alarm mode (the audible and visual alarms are disabled).

User Options Menu

To access the user options menu press and hold ▲ and ▼ until the detector completes the countdown.

To scroll through the options, press ▼ or ▲. Press ◯ to select the option. The following are the available user options:

1. **Exit:** Exits the user options menu.
2. **Options:**
   - **Backlght:** Enables the automatic backlight in low-light conditions;
   - **Confibeep:** Enables/disables the confidence beep;
   - **Due-lock:** Upon start-up, it prevents the user from operating a detector that is overdue for calibration by requesting a pass code;
   - **Latch:** This option allows an alarm to remain active until the user acknowledges the alarm;
   - **Passcode:** Prevents unauthorized personnel from having access to the user options menu, calibration function, and alarm setpoint adjust function;
   - **Safe:** Enables the display to read **Safe** if the detector does not enter an alarm;
   - **Fast pump:** Maximizes the pump speed if the sampling hose is longer than 50 ft. (15.24 m).

Note

Maximizing the pump speed will reduce the battery life.

3. **Sensors:**
   - **Sens on:** Enables/disables the sensor (the detector still operates if a sensor is disabled);
   - **Span gas:** Changes the span gas concentration for each sensor;
   - **STEL period:** Changes the short-term exposure limit (5-15 minutes; applicable to toxic sensors only);
   - **TWA method:** Choose either the OSHA or ACGIH standard of calculating the time-weighted average;
   - **Resolution:** Sets the resolution of the gas measurement as either regular or extra (if applicable);

- **%vol CH_4:** Shows the LEL reading in % vol. assuming a methane environment;
- **Correction:** Allows the user to adjust the instrument reading for a specific gas (only applicable to LEL and PID sensors);
- **Autocal:** Automatic oxygen calibration upon start-up.

4. **Logger:** Allows the user to change the datalogging interval (between 1-127 seconds).
5. **Clock:** Allows the user to set the date and time for the detector.
6. **Language:** Enables the display's language in the user's choice of English, French, Spanish, German, or Portuguese.

Maintenance

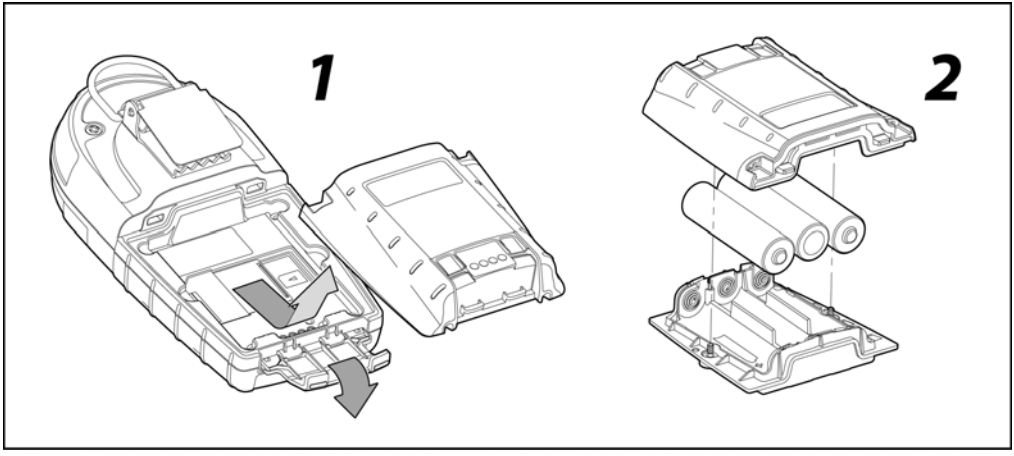
To keep the detector in good operating condition, perform the following basic maintenance as required:

- Calibrate, bump check, and inspect the detector at regular intervals.
- Keep an operations log of all maintenance, bump checks, 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.

Replacing the Batteries

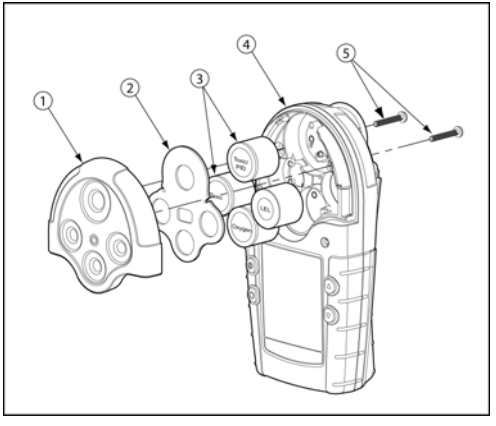
⚠ Warning: Always turn off the detector before removing the battery pack.

The battery packs are hot-swappable, but alkaline batteries inside the pack must be changed in a non-hazardous atmosphere.



1. Open the latch on the bottom of the detector and remove the battery pack by lifting up the end of the pack.
2. Unscrew the two captive screws on the battery pack, open the pack, and replace the three alkaline batteries.
3. Replace the shell and screw the battery pack back together.
4. Insert the battery pack back into place and secure the latch.

Replacing a Sensor or Sensor Filter



Item	Description
1	Sensor cover
2	Sensor filter
3	Sensors
4	Detector
5	Machine screws (2)

Specifications

Instrument dimensions: 14.5 x 7.4 x 3.8 cm
(5.7 x 2.9 x 1.5 in.)

Weight: 370 g (13.1 oz.)

Operating and storage conditions
Temperature:
VOC: -10°C to +40°C (14°F to +104°F)
Other gases: -20°C to +50°C (-4°F to +122°F)
Humidity:
O_2: 0% to 99% relative humidity (non-condensing)
VOC: 0% to 95% relative humidity (non-condensing)
Combustibles: 5% to 95% relative humidity (non-condensing)
Cl_2: 10% to 95% relative humidity (non-condensing)
HCN, ClO_2: 15% to 95% relative humidity (non-condensing)
Other gases: 15% to 90% relative humidity (non-condensing)
Pressure: 95 to 110 kPa

Alarm setpoints: May vary by region and are user-settable

Detection range:

O_2: 0 – 30.0% vol. (0.1% vol. increments)
CO: 0 – 999 ppm (1 ppm increments)
CO (TwinTox sensor): 0 – 500 ppm (1 ppm increments)
H_2S: 0 – 500 ppm (1 ppm increments)
H_2S (TwinTox sensor): 0 – 500 ppm (1 ppm increments)
Combustibles: 0 – 100% LEL (1% LEL increments) or
0 – 5.0% v/v methane
PH_3: 0 – 5.0 ppm (0.1 ppm increments)
SO_2: 0 – 150 ppm (1 ppm increments)
Cl_2: 0 – 50.0 ppm (0.1 ppm increments)
NH_3: 0 – 100 ppm (1 ppm increments)
NO_2: 0 – 99.9 ppm (0.1 ppm increments)
HCN: 0 – 30.0 ppm (0.1 ppm increments)
ClO_2: 0 – 1.00 ppm (0.01 ppm increments)
O_3: 0 – 1.00 ppm (0.01 ppm increments)
VOC: 0 – 1000 ppm (1.0 ppm increments)

Sensor type:

H_2S/CO: Twin plug-in electrochemical cell
Combustibles: Plug-in catalytic bead
VOC: Photoionization detector (PID)
Other gases: Single plug-in electrochemical cell

O_2 measuring principle: Capillary controlled concentration sensor

Alarm conditions: TWA alarm, STEL alarm, low alarm, high alarm, multi-gas alarm, over range alarm, sensor alarm, pump alarm, MMC fail alarm, low battery alarm, confidence beep, automatic shutdown alarm

Audible alarm: 95 dB at 1 ft. (0.3 m) variable pulsed dual beepers

Visual alarm: Dual red light-emitting diodes (LED)

Display: Alphanumeric liquid crystal display (LCD)

Backlight: Automatically activates whenever there is insufficient light to view the display (if enabled) and during alarm conditions

Self-test: Initiated at activation

Calibration: Automatic zero and automatic span

Oxygen sensor: Automatic span on activation (selectable)

User field options: Confidence beep, latching low and high alarms, pass code protection, enable/disable safe display mode, enable/disable fast pump, combustible sensor measurement, sensor disable, TWA and STEL, language selection, enable/disable automatic oxygen calibration, set span concentration values, set STEL calculation period, set TWA method, gas measurement resolution, enable/disable automatic backlight, adjust clock calendar, and set logging rate (datalogger models only).

Datalogger units: Contact BW Technologies for a list of approved MMC or SD cards.

Battery operating time
Toxic, O_2, and LEL sensors: 20 hours (three alkaline cells or one rechargeable battery pack)

Toxic, O_2, LEL, and PID sensors: 10 hours (three alkaline cells or one rechargeable battery pack)

Approved batteries
Approved batteries for product (standards IEC 60079-11, EN50020, UL913, C22.2 No. 157)

Alkaline:		**Temperature Code**
Duracell MN1500	-20°C ≤ Ta ≤ 50°C	T3C (139.8°C)
	-20°C ≤ Ta ≤ 40°C	T4 (129.8°C)
Energizer E91	-20°C ≤ Ta ≤ 50°C	T3B (163°C)
	-20°C ≤ Ta ≤ 40°C	T3C (153°C)
NiMH rechargeable:		
M5-BAT01	-20°C ≤ Ta ≤ 50°C	T4

Battery charger: GasAlertMicro 5 battery charger

First-time charge: 4 hours per battery pack

Normal charge: 3-4 hours per battery pack

Warranty: 2 years including sensors (1 year NH_3 sensor and PID lamp)

Approvals
Approved by CSA to both U.S. and Canadian Standards

Approved: Class I, Division 1, Group A, B, C, and D;
Class I, Zone 0, Group IIC

Standards: CAN/CSA C22.2 No. 157 and C22.2 152
ANSI/UL – 913 and ANSI/ISA – S12.13 Part 1

ATEX: CE 0539 Ⓔx II 1 G EEx ia IIC
KEMA 05ATEX 1096X

IECEx: Ex ia IIC

ABS Type Approved: VA-348169-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 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.

D5614/6 English
iERP: 123020