GASBADGE PLUS®

Personal Single Gas Monitor

Monitor shown actual size

GasBadge® Plus is a two-year, maintenance-free, single gas monitor ideal for personal protection from unsafe levels of carbon monoxide, hydrogen sulfide, oxygen, nitrogen dioxide or sulfur dioxide. The unit's compact size and light weight allow it to be worn comfortably with a variety of clip attachments, and the top-mounted sensor provides continuous and unobstructed protection even when placed in a shirt pocket.

The rugged enclosure is extremely durable and resistant to water and radio frequency interference. A protective concussion-proof overmold protects the unit from extreme abuse in a variety of harsh industrial environments. The large LCD display features a graphical interface and can be set up to show both gas type and direct gas readings, or just the gas type. The instrument's two-button operation allows for easy navigation and setup, which can be password-protected for added security.

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Continuous event-logging is a standard feature for the GasBadge Plus with the past 15 alarm events recorded. Optional Cal Plus™ calibration station and datalink accessories enable easy instrument maintenance, configuration and data downloading. Two year warranty.

- Low-cost CO, H_2S, O_2, NO_2 or SO_2 monitoring
- 2-year continuous monitoring
- PPM or % by volume readout
- Powerful audible alarm complemented by vibrating and visual alarms, standard
- Backlit display
- "Go/No Go" display mode
- User adjustable alarm and calibration gas setpoints
- Confidence indicator
- Water resistant
- 2-year warranty
- Automatic self test and user-activated test
- Event-logging (last 15 gas alarm events)
- Cal Plus™ calibration station option

SPECIFICATIONS

CASE: Rugged, water-resistant polycarbonate shell with protective concussion-proof overmold. RFI resistant.

DIMENSIONS: 3.2 x 1.9 x 1.1 inches (81.3 mm x 48.3 mm x 27.9 mm)

WEIGHT: 2.5 oz. (72 grams)

SENSORS: CO, H_2S, O_2, NO_2, SO_2

MEASURING RANGES:
CO range: 0-1,500 ppm in 1 ppm increments
H_2S range: 0-500 ppm in 0.1 ppm increments
O_2 range: 0-30% by volume in 0.1% increments
NO_2 range: 0-150 ppm in 0.1 ppm increments
SO_2 range: 0-150 ppm in 0.1 ppm increments

DISPLAY: Custom LCD with graphical icons for easy use
Segmented display for direct gas readings
Backlight for low light conditions
"Go/No Go" display mode
Peak reading indication

ALARMS: User selectable low and high alarms
Ultra-bright LEDs, loud audible alarm (95 dB) and vibrating alarm

BATTERY/RUNTIME: Lithium, non-replaceable
Maintenance-free operation for 2 years

EVENT-LOGGER: Continually on. Logs last 15 alarm events, stamping how long ago the event occurred, the duration of the event, and the peak reading seen during the event. Event-logger can be viewed on PC or printed directly from the instrument to an infrared printer.

TEMPERATURE RANGE: -40º to 60ºC (-40º to 140ºF), typical

HUMIDITY RANGE: 0-99% RH (non-condensing), typical

APPROVALS:
UL and cUL: Class I, Div 1, Groups A,B,C,D; T4
Class I, Zone 0, AEx ia IIC T4
CSA: Class I, Div 1, Groups A,B,C,D; T4
Ex ia IIC T4 (pending)
ATEX: Intrinsic Safety: EEx ia IIC T4
Equipment group and Category: II 2G
EMC: EN50270 (pending)
Performance: O_2 (EN50104); CO, H_2S, (EN45544) (pending)
Australia: Ex ia I/IIC T4 (pending)
IEC: Ex ia I/IIC T4 (pending)
Russia: GOST-R Approval (pending)
MSHA: Intrinsically safe for methane/air mixtures only (pending)

GASBADGE®PLUS

GASBADGE® PLUS MONITORS AND OPTIONAL ACCESSORIES

PART NUMBER	DESCRIPTION
18100050-1	GasBadge® Plus – Carbon Monoxide (CO)
18100050-2	GasBadge® Plus – Hydrogen Sulfide (H_2S)
18100050-3	GasBadge® Plus – Oxygen (O_2)
18100050-4	GasBadge® Plus – Nitrogen Dioxide (NO_2)
18100050-5	GasBadge® Plus – Sulfur Dioxide (SO_2)
18106500	GasBadge® Constant-Flow Hand Aspirated Pump
17121963	GasBadge® Neck Lanyard w/Safety Release
18106401	GasBadge® Plus Nylon Carrying Case
18106419	GasBadge® Plus 2-unit Nylon Carrying Case
17124504	Replacement water/dust sensor barriers (5 count)
18106260	GasBadge® Datalink
18106344-0X+	Cal Plus™ Calibration Station (calibration gas and regulator not included)
18106344-1X+	Cal Plus™ Calibration Station w/on-board dot matrix printer (calibration gas and regulator not included)
17117714	Serial data thermal printer with infrared interface (battery powered only)
17117722	Serial data dot matrix printer, 120 VAC powered
18100701	Calibration Gas – Carbon Monoxide, 100 ppm, 34L
18104984	Calibration Gas – Hydrogen Sulfide, 25 ppm, 34L
18100271	Calibration Gas – Oxygen, 20.9%, 34L
18104976	Calibration Gas – Nitrogen Dioxide, 5 ppm, 34L
18104992	Calibration Gas – Sulfur Dioxide, 5 ppm, 34L
17124348	Wall mounted gas cylinder holder
18100933	Regulator for CO, O_2
18100883	Regulator for H_2S, NO_2, SO_2
18103564	Demand Flow Regulator for CO, O_2 (for use with Cal Plus™)
18102509	Demand Flow Regulator for H_2S, SO_2, NO_2 (for use with Cal Plus™)

+ Ordering Information – X = Power Cord [0 (North America), 1 (United Kingdom), 2 (European), 3 (Australian)]
All GasBadge® Plus Monitors Include: attached suspender clip, stainless steel belt clip, calibration adapter and tubing, and operating instructions.

REV0905

Cal Plus™ shown with built-in printer option for immediate report documentation

CALPLUS™ Calibration Station

- Stand-alone operation – no PC is required
- Simple, push-button calibration or function (bump) testing
- Immediate report generation
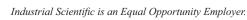- Built-in printer option

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GASBADGE® DATALINK

- Instantly download alarm events and instrument details
- Quickly and easily configure instrument preferences

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GasBadge PLUS®

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PRODUCT FEATURES

- Low-cost O_2, CO, H_2S, SO_2 or NO_2 monitoring

- 2-year continuous monitoring

- Actual PPM or % by volume readout

- Compact size and light weight 2.5 oz. (72 grams)

- Powerful audible alarm complemented by vibrating and visual alarms, standard

- Backlit display

- "Go/No Go" display mode

- User adjustable alarm and calibration gas setpoints

- Confidence indicator

- Water resistant

- 2-year warranty

- Automatic self test and user-activated test

- Event-logging (last 15 gas alarm events)

- Cal Plus™ calibration station option

GasBadge PLUS®

Personal Single Gas Monitor

SPECIFICATIONS

Detection Principle: Electrochemical

Sensors Available:

Carbon Monoxide (CO): 0-1,500 ppm in 1 ppm increments
Hydrogen Sulfide (H_2S): 0-500 ppm in 0.1 ppm increments
Oxygen (O_2): 0-30% by volume in 0.1 % increments
Nitrogen Dioxide (NO_2): 0-150 ppm in 0.1 ppm increments
Sulfur Dioxide (SO_2): 0-150 ppm in 0.1 ppm increments

Accuracy: < ± 5% Toxics; < ± 0.5% Oxygen

Repeatability: < 2% of signal (Toxics)

Long Term Drift: < 2% signal loss/month, < 5% over life (Oxygen)

Response Time to Alarm:
T50: < 12 sec.
T90: < 30 sec.

Display:
Custom LCD w/graphical icons
Segmented display for direct gas readings
LCD Backlight
"Go/No Go" display mode
Peak reading indication
Password protected
Over-range indication

Temperature and Humidity:
Temperature: -40º to 60ºC (-40º to 140ºF), typical
(Sensor-specific. Consult factory for specific operating ranges.)
Humidity: 0-99% (non-condensing), typical

Battery/Runtime:
Lithium, non-replaceable
Maintenance-free operation for 2 years

Enclosure:
Rugged polycarbonate shell with protective concussion-proof overmold
RFI resistant
Water resistant

Dimensions: 3.2 x 1.9 x 1.1 inches (81.3 mm x 48.3 mm x 27.9 mm)

Weight: 2.5 oz (72 grams)

Alarms:
User programmable low and high alarms
Audible – 95dB minimum (@ 10 cm)
Vibrating Alarm
Visual Alarms – Ultra-bright red LEDs, front and top mounted

Calibration Options:
Simple three-step calibration
Optional Cal Plus™ Calibration Station

User interface: Dual push button

Output Interface: Infrared

Accessories (Optional):
Portable infrared printer – prints event-log directly from instrument
Calibration Station – Cal Plus™
Datalink – View event-logger and monitor details. Configure user preferences.

Event-logger:
Standard feature, always running. Stores last 15 alarm events, stamping how long ago the event occurred, duration of the event, and peak reading seen during the event. Event-logger can be viewed on PC or printed directly from instrument to an infrared printer.

Self Tests:
Automatic (every 2 seconds) – tests functionality of electronics and presence of sensor
User initiated – tests functionality of all alarms and LCD

Approvals: Consult factory for current approval status
UL and cUL: Class I, Div 1, Groups A,B,C,D; T4
Class I, Zone 0, AEx ia IIC T4
CSA: Class I, Div 1, Groups A,B,C,D; T4
Ex ia IIC T4 (pending)
ATEX: Intrinsic Safety: EEx ia IIC T4
Equipment group and Category: II 2G
EMC: EN50270 (pending)
Performance: O_2 (EN50104); CO, H_2S, (EN45544) (pending)
Australia: Ex ia I/IIC T4 (pending)
IEC: Ex ia I/IIC T4 (pending)
Russia: GOST-R Approval (pending)
MSHA: Intrinsically safe for methane/air mixtures only (pending)

Warranty:
All inclusive, 2 years from date of activation (Consult factory for complete warranty details.)

Specifications are subject to change. Contact Industrial Scientific or log on to www.GasBadge.com for the most current information.

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CORPORATION

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                           www.indsci.com

GasBadge® Plus Features and Benefits:

Feature	Benefit
Maintenance-free operation	Once activated, under normal conditions, no maintenance is required by the end-user.
Runtime	Two year, continuous operation. Once activated, supervisors do not have to worry if units are being turned off.
Display	Users can configure the display to either show direct real time readings in either ppm or % by volume (O_2), or gas type only.
Display size	The direct gas reading display is the largest and most visible display for single gas instruments. Icons make the user interface simple and easy to understand anywhere in the world.
Display backlight	Allows the user to view current gas readings in low levels of light with a push of a button. Backlight will flash if an alarm condition occurs, serving as another indication that an unsafe condition exists.
Two button operation	Allows the user to easily configure the instrument. The GasBadge Plus offers the most user-selectable options for any single gas instrument.
Sensor options	The GasBadge Plus is available to detect either O_2, CO, H_2S, NO_2, or SO_2.
Water resistance	The GasBadge Plus is resistant to water which ensures protection from outdoor environmental conditions such as rain and water spray during wash downs and other harsh industrial applications.
Event-logging	The GasBadge Plus will continuously log the last 15 alarm events. When the event-logger is full, it will automatically overwrite the oldest records.
IR printer interface	An infrared interface allows the unit to easily print out the logged events to a POS printer containing an infrared port.
User-adjustable alarms	The low and high alarm set points are completely adjustable by the end user. This allows customers to set the instrument alarms according to company standards.
Cal Plus™ Calibration Station (optional accessory)	The wall mountable Cal Plus features two-button operation allowing the user to quickly and easily calibrate or function (bump) test the instrument. The Cal Plus can be connected to a PC to save or print records, or with an optional internal printer it can provide automatic, permanent calibration and bump test records.
Top mounted sensor	Provides continuous and unobstructed protection even when placed in a shirt pocket.
Sensor over-range protection	Ensures sensor is protected if exposed to high concentrations of gas. The instrument will display "OR" to alert the user of an over-range condition.
Powerful audible alarm complemented by vibrating and visual alarms, standard	Standard loud (95 dB) audible alarm, ultra-bright visual alarm indications that can be seen from all directions, and a vibration alarm alert users if a hazardous condition exists.

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Small Size (3.2 x 1.9 x 1.1 inches) (81.3 mm x 48.3 mm x 27.9 mm)	Compact design allows the unit to be worn comfortably with a variety of clip attachments or placed into a front shirt pocket. The top-mounted sensor ensures that it is not obstructed by the pocket.
Light weight - 2.5 oz (72 grams)	Weighing only 2.5 oz (72 grams), the unit can be worn anywhere on the body without being a nuisance.
Protective concussion resistant housing	The protective rubber overmold makes the unit extremely durable and provides a comfort grip for easy handling.
Peak detection	The instrument will continuously keep track and make viewable in the field, the highest gas reading the sensor has been exposed to since the last time the peak was cleared.
Last calibration indication	The "Days since last calibration" feature allows the end user to view how many days have past since the instrument was last calibrated.
Life indication	The GasBadge Plus continuously monitors and displays the amount of instrument life remaining until the unit is no longer operational.
Attachment clips	Every GasBadge Plus comes standard with a belt clip and alligator clip. Additional accessories such as carrying cases and lanyards are also available.
EMI/RFI immunity	No false alarms caused by external RF interference from cell phones, hand held radios, or other electronic devices.
Self check	Automatic functional self tests ensure that the instrument, sensor, and circuitry are operating properly. A secondary function test can be initiated by the user to ensure that the alarms are functioning properly.
End of life warning	At seven days of battery life remaining, the empty outline of the battery icon will blink to warn the user that the unit is nearing the end of its life. At four hours of life remaining, the user is alerted by a short burst of alarms every 15 seconds accompanied by the empty blinking icon. Both warnings are designed to give an advanced indication that it is time to get a new instrument.

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FAQs about the GasBadge® Plus

1. How long will the GasBadge Plus operate?

Once activated, the GasBadge Plus will run continuously for 2 years (based on typical operating environment and 1000 minutes or less of alarm during that period). After two years, the instrument will automatically shut down.

2. How do I know how long my instrument has been in alarm?

The total alarm time for the instrument is accessible on the Alarm Time screen which is viewable through the configuration mode menu of the unit. This screen shows the user how much time the instrument has spent in alarm.

3. Will I be informed that my instrument is nearing its two year life span?

Yes. The Battery Life Remaining screen shows the amount of runtime left with the instrument. Runtime is given in months until there is less than one month left, at which time the instrument will display remaining life in days. When there are 24 hours or less of battery life remaining, the battery life will be displayed in hours. When there are roughly 4 hours of runtime left, the instrument will emit a short beep once every 15 seconds accompanied by an empty blinking battery icon.

4. The GasBadge Plus displays real time gas readings. What if I do not want to see real time readings and just want to know if my alarm levels are exceeded?

The GasBadge Plus has the option to view real time readings and gas type on the LCD display, or it can be put into a "Go / No Go" display mode in which only the gas type is displayed.

5. Can I view Peak Readings on the GasBadge Plus?

Yes, the GasBadge Plus stores the peak readings for the sensor. This reading is the peak reading seen by the instrument since the last time the peak was cleared. Peak readings can be manually cleared by pressing the "ENTER" button on the Peak Reading screen. Please see the GasBadge Plus user manual for more details.

6. Does the GasBadge Plus have a self-test feature?

Yes. The GasBadge Plus has 2 different self-test features. The first self-test feature is an automatic test that occurs every 2 minutes. This tests to see if the sensor is present and if the electronics are operating properly. The second test that can be run on the GasBadge Plus is a manual test to verify that the display and all alarm functions are working properly. This test can be initiated by pressing the "ENTER" button on the Instrument Test screen. Please see the GasBadge Plus user manual for more details.

7. Can I service my GasBadge Plus?

No. The GasBadge Plus is a non-serviceable product. If you are having any technical difficulties with your instrument, please contact your local ISC sales or service representative.

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8. What information is stored in the event-logger?

The event-logger is continuously running and stores the last 15 alarm events. Once filled, the event-logger will automatically overwrite the oldest event. The information stored in the event-logger consists of gas type; peak exposure level; alarm duration in minutes and seconds; relative time that the alarm occurred, battery life remaining prior to alarm event and cumulative alarm time prior to alarm event.

9. How do I view the event-logger?

The event-logger can be viewed on a PC, or it can be printed directly to a point of sale (POS) printer with an infrared interface. This printer is available from Industrial Scientific as an optional accessory.

10. How do I get the data from the event-logger to a PC?

Data can be sent to a PC either by using the GasBadge Datalink accessory (18106260) or by using the Cal Plus™ Calibration Station. Both of these products have USB 2.0 interfaces that connect directly to a PC. A custom software package makes viewing and storing the data simple and easy.

11. Can I change the alarm set points in the instrument?

Yes. The low and high alarm values are user programmable.

12. Can I calibrate my GasBadge Plus?

Yes. The GasBadge Plus can be field calibrated. The instrument comes standard with a calibration cup and tubing. Simply applying the appropriate calibration gas while the instrument is in Calibration Mode will fully calibrate the instrument.   The Cal Plus is an automatic calibration station for the GasBadge Plus. Automatic calibration or bump test can be initiated by pushing the appropriate button.

13. Can I change my calibration gas concentration?

Yes. The calibration span gas value is user programmable.

14. What is the Cal Plus™?

The Cal Plus is an automatic bump test and calibration station that can be used with the GasBadge Plus. The instrument is placed into a calibration bay and the user presses either the "Bump" or" Cal" button to perform the desired task. When the station has completed the task, the user will be notified via LEDs, an LCD display, and an optional print-out of either a Pass or Fail result.

15. What is the warranty on the GasBadge Plus?

Industrial Scientific Corporation warrants the GasBadge Plus instrument to be free from defects in material and workmanship for two (2) years from the date of activation or 1000 minutes of total alarm time (TAT), whichever occurs first. The instrument must be activated by the date on the package for this warranty to be valid, which will be one year from the date of manufacture of an instrument with a toxic gas sensor, and six months from the date of manufacture for an instrument with an oxygen sensor.

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16. What happens if I have more than 1000 minutes of alarm time?

If 1000 minutes of runtime is exceeded, the instrument may not last the entire 2 years.   Runtime of the instrument is dependant on the amount of time it is in alarm. For every minute of alarm time in excess of the 1000 minutes, the instrument life will decrease by 8 hours.

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