



**blackline**safety









## Wherever there's a need for safety, we're there.

Safety theory states that every incident is preventable. But we live in a practical world, limited by time and resources. The key is better leveraging new technology as it becomes available. In an ever-connected world, can the safety industry do better while remaining fiscally responsible and practical?

We say yes. For a decade, Blackline Safety has created technology that keeps lone workers and teams connected while on the job. And, we've raised the bar for connected safety and gas detection solutions — again.

Detect. Connect. Analyze. It's a simple concept and one that makes us, and keeps us, uniquely positioned in the connected safety market. Our portfolio of gas detectors, connected safety wearables, area monitors and software solutions are designed to detect anything from a facility gas leak to a man down incident, health event and more. You gain ultimate control over the safety of your sites and your team so they can return home after every shift.

**You may not know them by name — but you've probably used their products**



In the 1980's, Cody Slater founded BW Technologies. He was a key innovator in the portable gas detection market, creating the world's first disposable gas monitor and the Rig Rat — the industry's first wireless gas detector. Cody is now the CEO & Chairman of Blackline Safety.



Dr. John Finbow was a founder of City Technology, the world's largest supplier of gas sensors. In the early days, Cody and John collaborated to bring smaller and more affordable gas detectors to market. Dr. Finbow now occupies an influential position on Blackline's Board of Directors.



## The Blackline difference.

Supporting every ground-breaking innovation is a strong foundation, and this isn't our first rodeo.

Backed by collective decades of experience, the people who make up Blackline set out to revolutionize the world of safety and productivity and have already delivered some of the world's most advanced solutions in communications, location technology and gas detection. The team delivers deep product development and manufacturing knowledge with an emphasis on extensive investment into research and development to continuously push boundaries in the safety industry.



### OUR VISION

To transform the industrial workplace through connected safety technology.



### OUR PURPOSE

To ensure every worker has the confidence to get the job done, and return home safe.



### OUR VALUES

To drive, innovation, be resilient, demonstrate leadership, and do whatever it takes.







# Unmatched peace of mind.

## G7 WEARABLES

Prepared for anything. That's what the G7 connected gas detection and safety monitoring wearable leaves you feeling. G7 keeps up with the rapid pace of business, scaling over time to meet your needs, while protecting your people today. Simply turn it on and it automatically connects to a cellular or satellite network in seconds, opening up a new world of personal safety and productivity possibilities for you and your teams. Powerful, simple, prepared.

## G7 EXO AREA MONITOR

What keeps you up at night? G7 EXO area monitor is there to ensure that it's not worrying about the safety of your sites. Built for extremes with unimaginable battery life, it's your trustworthy source for real-time information about what's happening around your facilities, even when you can't be there yourself. It goes where you need it to and connects in minutes, always ready to alert you and your teams on site to any hazard or emergency. Sleep well knowing your business's most important assets are protected. Robust, trustworthy, always there.

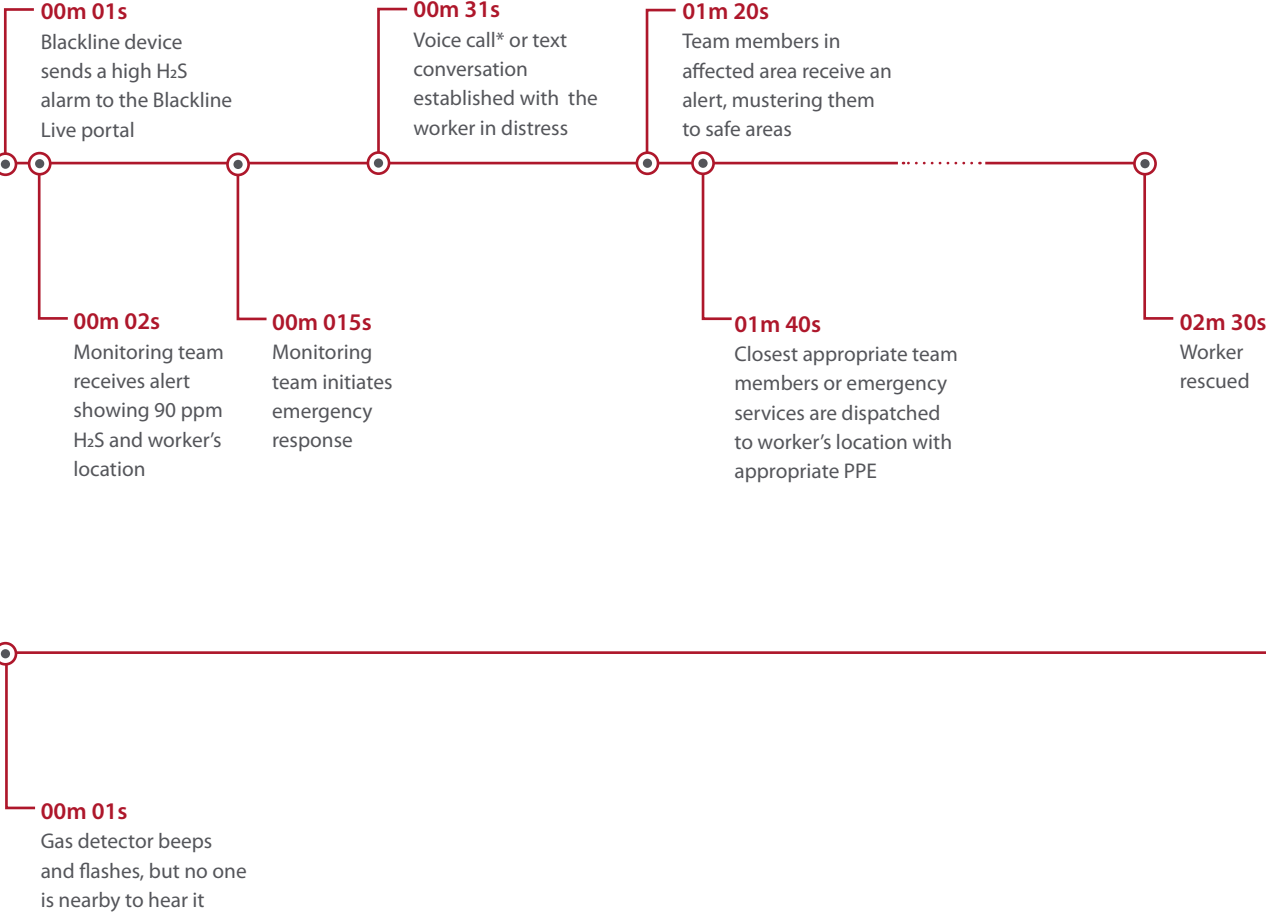


There's been an H<sub>2</sub>S leak...



With Blackline

**00m 00s** Worker is exposed to 90 ppm H<sub>2</sub>S gas



Traditional gas detector

**00m 01s**  
Gas detector beeps and flashes, but no one is nearby to hear it

*\*Cellular-connected devices only*



## SAFETY MONITORING SERVICES

### A critical lifeline.

When an incident occurs, the clock starts — and it doesn't stop until help arrives. What happens in between is in your hands. If an employee falls from a ladder or an explosion or gas leak has occurred, each passing minute without action could mean a worker not going home to their family.

Blackline's Safety Operation Center provides customers with optional professional safety monitoring and emergency response management, without drawing on your organization's resources. You can focus on your business goals and the jobs at hand, knowing your team's wellbeing is accounted for.

Rest easy knowing you can deliver your team to safety. No one is left behind.



**2h 00m**

Worker misses check-in



**2m 05m**

Safety manager notices missed check-in and worker is not responding to radio calls



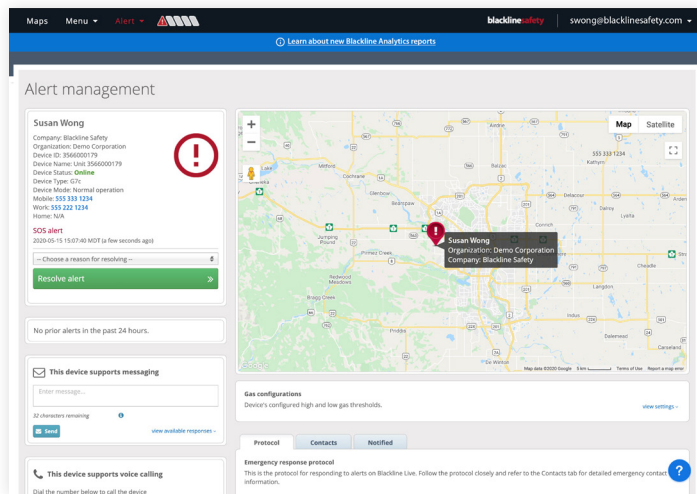
**2h 15m**

Teams scramble to search facility for missing worker

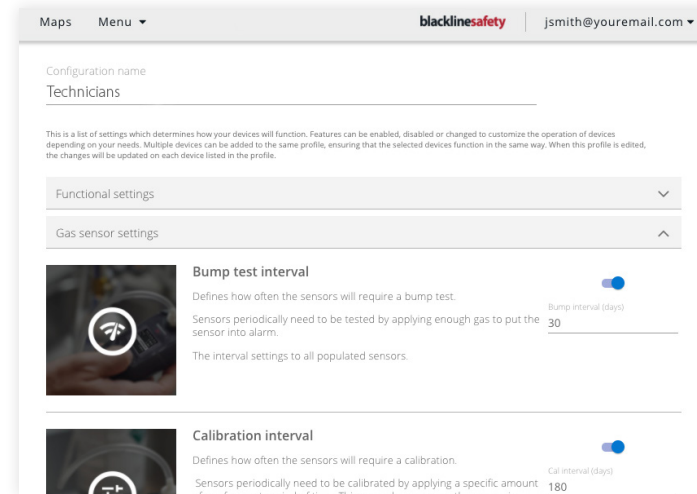


Worker's body recovered

We do it all, so you don't have to.



The safety of your people was on your shoulders. Now it's at your fingertips. Know the moment something happens and manage an event through to resolution with world-class emergency management tools.



Customize everything, from your device's functional settings to your emergency response protocols from the comfort of your computer or phone screen — without ever removing a unit from the field or manually collating reports.



## SOFTWARE

# Don't manage your fleet, master it.

Without ever having to manually collect devices from the field to access data, you gain real-time visibility of the wellbeing of your teams and ultimate control over your fleet.

Blackline Live is the hub at the center of your safety ecosystem, containing all the tools needed to run a leading safety program in one, easy-to-use platform. From any internet-connected smartphone, tablet or computer, you can monitor, configure and visualize all of your Blackline devices — configuration changes and firmware updates are even performed wirelessly and automatically.

- View your entire fleet on a single screen, along with real-time alert status per user
- Quickly locate a worker or an area of a site in distress on a live map
- Customize device configurations and roll them out to your devices in real-time, over-the-air
- Tailor user access according to their role in your organization with access control tools
- Scale your account capabilities with enterprise-grade tools and functionality

## DATA SERVICES

# Powered by Blackline Vision.

Blackline Vision is the engine that takes data to the next level, delivering the tools and support that leading businesses need to save time and move from reactive to proactive HSE practices. With a proven track record of helping enterprises achieve the next level in their digital transformation, Blackline Vision data and analytics resources deliver expert knowledge and insights that address your business's critical goals. Let Vision take the burden off your limited time and resources.

- 160 billion industrial workforce movement data points generated
- 7 billion gas readings processed by leading data science algorithms, producing insights for industrial hygienists
- 80% improvement in bump test and calibration compliance achieved with improved visibility
- 15 billion safety events plotted to help HSE professionals drive change and eliminate worksite risks
- 40+ continuous industrial site projects executed with industry leaders around the world, analyzing over 5.5 billion man-hours



## ANALYTICS REPORTING



## CONSULTING



## PREMIUM SERVICES



## Proactive safety.

It's one thing to have the tools in place to spring into action should an incident occur, it's another thing to know about a hazard and do something about it before anything happens at all. We believe in being proactive about safety, because waiting for an incident to happen can cost lives. Our predictive analytics allow you to identify hazards before they become costly and mitigate them before an incident occurs. It means protecting your teams from the previously unseen, without interfering with their important daily work.

You can do more to help keep your people safe, and the choices you make today can impact your business for years to come.

**blackline**vision



blacklinevision



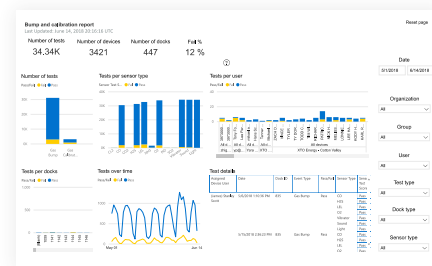
## DATA SERVICES

# Big data, big insights.

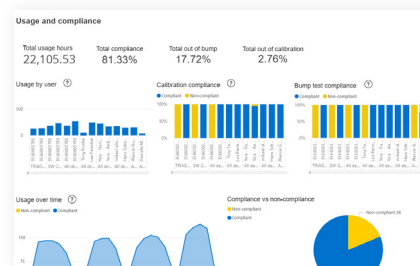
Our portfolio of Blackline Analytics reports, powered by the Blackline Vision engine, delivers a complete view of your fleet's operations. Gain insights into how and where equipment is being used, where and what hazards are being encountered, and even determine which devices are performing well and which can be better leveraged.

Every bump test, calibration, gas exposure and usage session is automatically recorded for hassle-free reporting. It's never been easier to dive deeper into data to uncover safety insights that help power your business.

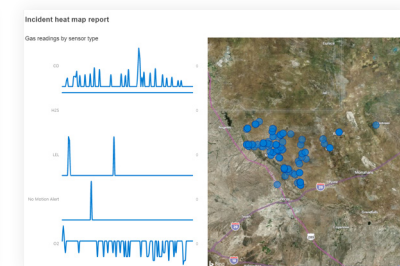
By leveraging out-of-the-box, integrated connectivity and automated device log collection, we help you build a body of data today, providing measurable performance for tomorrow.



Gas detection compliance dashboard



Device usage report



Incident heat map

**blacklinevision**

## DATA SERVICES

### The connected work site.

Make order out of chaos, drive asset utilization up and reduce idle time. Digital worksite services provide the customized services and systems you need to help take your short- and long-term projects to the next level. By building a cohesive analytics environment tailored to your business and projects, you gain simple access to insights and patterns previously hidden by piles of unused data.

Leveraging data collected by your existing solutions, we connect the disparate pieces in a cohesive ecosystem that provides you in-the-moment insights into your entire operation. Easily compare areas, groups or individuals against one another to identify aspects that aren't properly aligning with your schedules or objectives, allowing you to take corrective measures before more time or money is wasted.

Get the information you need to know, when and where you need to know it. By eliminating the use of historical data for project status updates, which provides only a snapshot of past activities, you are empowered by real-time visibility into your team's activities and asset utilization. This approach takes you from reactive to proactive, giving the opportunity to make decisions that can impact your project's timelines and schedules as the project unfolds.

### The connected worker.

Our technology was designed to address every facet of your safety program, without any of the hassle. When things go wrong, you have the industry-leading tools and technologies in place to professionally detect and manage an incident in the shortest possible time.

Blackline devices constantly stream situational data to the cloud, where the safety status of every team member is visible at a glance. Should something happen, you can identify precisely where to send help and the details of the incident to prepare first responders for the scene.

With a fully customized emergency response protocol, all your bases are covered. Choose to be notified by call, text or email in the event of an incident, or allow the Blackline Safety Operations Center to professionally manage every alert. Always be in control, even when you can't physically be there.

Everything is at your fingertips, from alert management and calibration status to real-time gas readings — all updated to your web portal with real-time data directly from your devices. With online device configuration and automatic over-the-air updates, your equipment is always current with zero downtime.

**blacklinevision**





EXO

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## HARDWARE

# Meet the family.

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### G7c / G7x LONE WORKER

Trustworthy communications, automated incident detection. Gain real-time visibility of your most vulnerable workers' wellbeing and deliver help should the worst occur.

- Instantly connects lone workers in distress with live monitoring personnel
- Achieve reliable communication using two-way text messaging or optional two-way voice calling and push-to-talk (G7c)
- Receive calls for help from workers, even when they can't do it themselves, with automated fall, no-motion and missed check-in detection
- Eliminate manual data collection and alert reporting, each incident is automatically time and location stamped for post-incident review



### G7c / G7x SINGLE-GAS

Simple gas detection, easy compliance. Keep your teams safe while identifying how, when and where your devices are being used to optimize asset utilization and improve site productivity.

- Leverage easy-to-use devices while also achieving powerful insights
- Access a complete view of your fleet's compliance status with automated real-time data and reports of all bump test, calibration and usage data
- Identify how, when and where G7 single-gas detectors are being used to understand worker behaviors, optimize asset utilization, improve scheduling and maximize productivity
- Easily scale your single-gas units to multi-gas units by swapping out the cartridge



### G7c / G7x MULTI-GAS DIFFUSION

Capable and customizable. Get connected in seconds and monitor for up to five gases while also gaining real-time visibility of workers' safety, including their alert status.

- Utilize flexible and customizable gas sensor configurations to tailor the device's gas detection capabilities to your business needs
- Attain insight into all incidents and gas detection compliance status in real-time knowing when and where they occurred
- Gain real-time visibility of workers' safety from any internet-connected device, including location-stamped alert status
- Know when and where incidents occur, and the compliance of your fleet in real-time with location stamped data for post-incident review



### G7c / G7x MULTI-GAS PUMP

When and where are your workers entering confined spaces? Where are they being exposed to gas and where are leaks occurring? With G7 multi-gas pump, you'll know.

- Gain unprecedented control and visibility into each confined space entry and leak check your team performs
- Ensure your teams' safety before and during confined space entries, without impacting business productivity
- Tailor your gas detection units to the task at hand with user-changeable diffusion and pump operating modes
- Access all confined space entry and leak check data in one place for easy project review

## Meet their friends.

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### G7 POWER PACK

- External battery that connects to the back of G7c safety wearables to keep them running around the clock
- Increases G7 battery life to 36 hours under normal operations
- Certified intrinsically safe for use in hazardous environments
- Can be safely hot-swapped within a hazardous area where flammable gases may be present
- Doesn't interfere with normal G7 operation
- Can be charged while attached to G7 or on its own using G7 charging equipment



### G7 DOCK

- Affordable and simple design
- All calibrations and bump tests are managed using G7 device's intuitive menu
- Calibration and bump test logs are communicated to the Blackline Safety Network via the inserted G7 device
- Supports G7 devices equipped with single-gas, multi-gas diffusion and multi-gas pump cartridges
- G7 Dock server-synchronized configurations are automatically updated when G7 is bumped or calibrated



### G7 BRIDGE

- Enables up to five G7x devices to connect through the Iridium network to the Blackline Live portal
- Facilitates two-way text messaging between G7x employee-worn device, G7 Bridge and monitoring personnel
- Compact, self powered and portable
- Industry-leading range of 2 km (1.2 miles) from G7 Bridge to G7x devices via 900 MHz radio link
- Radio link enables employees to confidently work indoors with satellite communications
- Durable, weatherproof IP65 sealed design and heated LCD for use in cold weather



### LOCATION BEACON

- Compact, wireless, self-powered positioning signal transmitters
- Ideal for use in areas where GPS may be inconsistent or unavailable
- Beacons broadcasts a unique ID number that is received by nearby G7 devices
- Beacon locations can be recorded on custom floor or site plans in Blackline Live, providing valuable situational context
- Precise positioning empowers the fastest emergency response — time is never wasted looking in the wrong places

## HARDWARE

# Meet the family.

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### G7 EXO AREA MONITOR

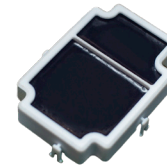
Less set up, more reliable 3G/4G coverage. It sets up and gets to work in minutes, so you can focus on the important job at hand. And a 100+ day battery life means it keeps working, even after your teams have left for the day.

- Focus on the task at hand, instead of on device set up, with drop and go deployment that sets up in minutes
- Save money by eliminating the need for backup devices to accommodate short battery life
- Achieve a connected worksite by integrating your facility operations with your area monitors using EXO's two output ports
- Rely on its durability, built in Canada to withstand the most extreme conditions



### G7 EXO PUMP MODULE

- Reduce confined space entry re-permitting requirements with constant run time up to 30 days on a single charge
- Save money by eliminating the need for backup devices to accommodate short battery life
- Review projects easily with automated time and location stamped confined space entry and leak check activity reports
- Expand G7 EXO capabilities by adding the pump module at any time



### G7 EXO SATELLITE MODULE

- Be confident knowing your area monitors are reliably connected, even in the most remote locations
- Know that you have satellite connectivity backup in areas where cellular networks can become overwhelmed
- Expand G7 EXO capabilities by adding the satellite module at any time



### G7 EXO POWER ACCESSORIES

- Leverage unheard-of wireless 100+ day battery life (under standard operating conditions) that is sure to outlast your projects
- Achieve unlimited battery life, even in extremely remote locations, using solar panel charging options
- Let your G7 EXO run indefinitely with hardwiring options



Meet their friends.

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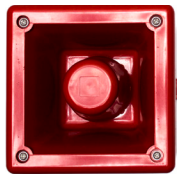
G7 EXO  
SURVEY TRIPOD



G7 EXO  
STAND-OFF MOUNT



G7 EXO  
UNIVERSAL MOUNT



G7 EXO  
EXTERNAL SIREN



G7 EXO  
FAST CHARGER



G7 EXO  
POWER AND OUTPUT  
PORT CABLES



G7 EXO  
SOLAR PANEL  
MOUNT KIT\*

*\*G7 EXO device not included*

# G7: detailed specifications.

### Safety features

**Fall detection and No-motion detection:** Tri-axis accelerometer, tri-axis gyro, software processing, configurable sensitivity, configurable time for no-motion  
**SOS latch:** Pull latch to trigger SOS alert  
**Silent SOS:** Press and hold latch to trigger SOS alert  
**Low-battery:** Configurable threshold  
**Worker check-in:** Configurable timer (30 – 180 min, or off), automatic check-in when driving

### Gas cartridge features

Under limit  
Over limit  
Time-weighted average (TWA)  
Short-term exposure limit (STEL)  
High gas alert  
Low gas alert  
Bump test and calibration notification  
Bump test and calibration failure

### Size & weight

**G7 with Standard Cartridge**  
**Size:** 64 mm x 124 mm x 29 mm (2.52" x 4.88" x 1.06")  
**Weight:** 162 g (5.7 oz)

### G7 with Single-gas Cartridge

**Size:** 64 mm x 128 mm x 29 mm (2.52" x 5.04" x 1.06")  
**Weight:** 167 g (5.9 oz)

### G7 with Multi-gas diffusion Cartridge

**Size:** 66 mm x 150 mm x 29 mm (2.52" x 5.91" x 1.06")  
**Weight:** 192 g (6.8 oz)

### G7 with Multi-gas pump Cartridge

**Size:** 66 mm x 151 mm x 38.5 mm (2.6" x 5.95" x 1.52")  
**Weight:** 238 g (8.4 oz)

### Wireless updates

**Device configuration changes:** Yes  
**Device firmware upgrade over-the-air (FOTA):** Yes

### User interface

168 by 144 pixel graphical, high contrast, liquid crystal display with front lighting, menu system driven by three-button keypad, power button (on/off), check-in button (check-in/silent SOS), SOS latch (send emergency alert)  
**Multi-language support:** Yes, EN, FR, ES, DE, IT, NL, PT

### User notification

**Green SureSafe® light:** Blinking (powered), continuous (connected)  
**Yellow top and front lights:** Yellow pending alarm and yellow warning alarm  
**Red top and front lights:** Red alert communicated  
**Blue LiveResponse™ top and front lights:** Confirmation that a monitoring team has acknowledged the alert  
**Alarm Indicators:** Speaker, LED lights and vibration motor  
**Speaker sound pressure level:** ~95 dB @ 30 cm (~95 dB @ 11.8")  
**Voice calling:** Speakerphone and phone modes (G7c model only)

### G7c wireless radio

**Wireless coverage:** 100 countries, 200 wireless carriers  
**North America:** 2G/3G radio, GSM 850 MHz, PCS 1900 MHz, 3G UMTS bands 2, 5 and 6  
**International:** 2G/3G radio, E-GSM 900 MHz, DSC 1800 MHz, 3G UMTS bands 1 and 8  
**Antenna:** Internal regionally optimized

### G7x wireless radio

Works with G7 Bridge satellite base station  
**Radio:** 902.0 – 928.0 MHz, 1 Watt  
**AS/NZ Radio:** 915.0-928.0 MHz  
**Antenna:** Internal  
**Radio link range:** 2 km (1.25 mi)

### Location technology

**GPS Radio:** 48-channel high sensitivity  
**Assisted-GPS:** Yes (G7c model only)  
**GPS Accuracy:** ~5 m (16 ft) Outdoors  
**Indoor location technology:** Blackline Safety location beacons  
**Location update frequency:** G7c 5 min, G7x 15 min defaults


### Power & battery

**Rechargeable Li-ion battery:** 1100 mAh Li-ion  
**Battery Life:** 18 hours at 20°C (68°F) under normal usage  
**Charge time:** 4 hours

### Environmental

**Storage temperature:** -30°C to 60°C (-22°F to 140°F)  
**Operating temperature:** -20°C to 55°C (-4°F to 131°F)  
**Charging temperature:** 0°C to 45°C (32°F to 113°F)  
**Ingress Protection:** Designed to meet IP67

### Approvals

**G7c:** SAR, RoHS, CE, RCM  
**Unit ID:** 3567xxxxxx  
**FCC ID:** XPY1CGM5NNN | **IC ID:** 8595A-1CGM5NNN  
Contains FCC ID: XPY1CGM5NNN, IC: 8595A-1CGM5NNN  
**OR**  
**Unit ID:** 3566xxxxxx  
Contains FCC ID: XPY1CGM5NNN, IC: 8595A-1CGM5NNN  
**Canada and USA:** Class I Division 1 Gr A, B, C, D T4; Class I Zone 0 AEx da ia IIC T4; Ex da ia IIC T4 Ga   
**IECEX:** Ex da ia IIC T4 Ga  
**ATEX:** Ex da ia IIC T4 Ga

**G7x:** SAR, RoHS, RCM  
**FCC ID:** W77G7X | **IC ID:** 8255A-G7X  
**Canada and USA:** Class I Division 1 Gr A, B, C, D T4; Class I Zone 0 AEx da ia IIC T4; Ex da ia IIC T4 Ga   
**IECEX:** Ex ib IIC T4 Gb  II 1 G

**LEL:** CSA C22.2 No. 152; ISA 12.13.01

Gas	Sensor type	Sensor model	Range	Resolution
Ammonia (NH <sub>3</sub> )	Electrochemical	Citytech, Sensoric NH3 3E 100 SE	0–100 ppm	0.1 ppm
High-range ammonia (NH <sub>3</sub> )	Electrochemical	Sensoric NH3 E3 500 SE	0–500 ppm	1 ppm
Carbon monoxide (CO)	Electrochemical	Citytech, 4CF+ CiTiceL	0–500 ppm	1 ppm
High-range carbon monoxide (CO)	Electrochemical	Citytech 4CM	0–2000 ppm	5 ppm
Hydrogen resistant carbon monoxide (CO-H)	Electrochemical	Citytech 2CF3	0–500 ppm	1 ppm
Carbon dioxide (CO <sub>2</sub> )	NDIR	Gas Sensing Solutions, MiniR	0–50,000 ppm	50 ppm
Chlorine (Cl <sub>2</sub> )*	Electrochemical	Citytech, Sensoric Cl2 3E 50	0–20 ppm	0.1 ppm
Chlorine dioxide (ClO <sub>2</sub> )*	Electrochemical	Sensoric ClO2 3E 1 O	0–2 ppm	0.01 ppm
COSH	Electrochemical	Citytech, 4COSH Dual Gas CO/H <sub>2</sub> S Sensor	0–500 ppm CO, 0–100 ppm H <sub>2</sub> S	1 ppm CO, 0.1 ppm H <sub>2</sub> S
Hydrogen cyanide (HCN)	Electrochemical	Sensoric HCN 3E 30 F	0–30 ppm	0.1 ppm
Hydrogen sulfide (H <sub>2</sub> S)	Electrochemical	City Technology, 4HS+ Hydrogen Sulfide CiTiceL	0–100 ppm	0.1 ppm
High-range hydrogen sulfide (H <sub>2</sub> S)	Electrochemical	City Technology, 4HS+ Hydrogen Sulfide CiTiceL	0–500 ppm	0.5 ppm
LEL-MPS™	Molecular property spectrometer™	Nevada Nano, LEL MPS™	0–100% LEL	0.1% LEL
LEL-infrared (LEL-IR)	NDIR	MIPEX, 02-X-X-X,1	0–100% LEL	1% LEL
Nitrogen dioxide (NO <sub>2</sub> )	Electrochemical	City Technology, 4ND	0–50 ppm	0.1 ppm
Oxygen (O <sub>2</sub> )	Pumped electrochemical	City Technology, 4OxLL Longlife Oxygen CiTiceL	0–25% vol	0.1% vol
Ozone (O <sub>3</sub> )*	Electrochemical	Sensoric O3 3E 1	0–1 ppm	0.01 ppm
Photoionization (PID)	PID	Ion Science, MiniPID 2	0–4,000 ppm	Dynamic resolution*, 0.1 ppm
Sulfur dioxide (SO <sub>2</sub> )	Electrochemical	City Technology, 4S Rev. 2 Sulfur Dioxide CiTiceL	0–100 ppm	0.1 ppm

*All specifications subject to change without notice.*  
\* Dependant on correction factor  
\*\*Does not work with the pump cartridge

# G7 EXO: detailed specifications

## Safety features

**SOS latch:** Pull latch to trigger SOS alert  
**Low-battery:** Configurable threshold  
**Connection lost:** Configurable threshold  
**Two-way voice calls:** Receive voice calls from monitoring personnel  
**Text messages:** Send and receive messages with monitoring personnel

## Gas cartridge features

High Gas Alert; Low Gas Warning  
Under limit; Over limit  
High gas alert; Low gas alert  
Bump test and calibration notification  
Bump test and calibration failure

## Convenience features

**Set-up Wizard**  
**Connection lost alarm:** Configurable time period  
**Siren volume setting:** Three levels available  
**Text messaging:** Custom messages and 10 pre-configured  
**Maintenance code:** Configurable 4 digits  
**Push to Talk Communication**

## Size & weight

**Size:** 385 mm x 188 mm x 220 mm (15.1" x 7.4" x 8.7")  
**Weight:** 12.25kg/27 lbs  
**Material:** Rugged housing built from aluminum, plastic and rubberized bumpers

## Wireless updates

**Device configuration changes:** Yes  
**Device firmware upgrade OTA:** Yes

## User interface

**Display:** 4.4 inch diagonal, 480 by 640 pixel, eight color active matrix liquid crystal display  
**Menu system:** driven by three-button keypad  
Power button: On/off  
**SOS latch:** Send SOS alert  
**Multi-language support:** (EN, FR, ES, DE, IT, NL, PT)

## User notification

**Green connectivity light:** Blinking (powered), continuous (connected)  
**360-degree visible yellow and red lights**  
**Yellow light:** pending and warning alarms  
**Red light:** Red alerts  
**Blue LiveResponse light:** Confirmation that a monitoring team has acknowledged the alert  
**Siren sound:** High-volume alarm siren. Optional 1siren accessory available through interface ports.

## Cellular wireless radio

**Wireless coverage:** 100 countries, 200 wireless carriers  
**North America:** 3G/4G radio; 3G UMTS bands 2 and 5; 4G bands 2, 4 and 5  
**International:** 2G/4G radio; 2G GSM bands E-GSM and PCS; 4G bands 3, 7 and 20  
**Asia Pacific:** 3G/4G radio; 3G UMTS band 1; 4G bands 3, 8 and 28  
**Antenna:** Internal

## Satellite module

**User-upgradeable add-on:** User-upgradeable satellite module allows EXO to connect to the iridium satellite network for remote areas outside of cellular connectivity.  
**Network:** Iridium, global coverage  
**Radio:** 1621 MHz, 2 Watts  
**Antenna:** Internal

**Four-channel pump module\*Optional module:** Yes  
**Number of pump channels:** 4  
**Sampling period per channel:** 2-999 min  
**Tubing length per channel:** Up to 30 m (100 ft)  
**Size:** 18x9.5x8 cm (7x3.7x3.1 in)  
**Weight:** 272 g (0.6 lb)

## Interface ports

Intrinsically safe, configurable external signal ports designed to integrate with external alarms and electrical systems.

## IS trickle charge port

Can be used to hard-wire an IS power supply to run EXO indefinitely.

## Location technology

**Multi-constellation:** GPS/QZSS, Galileo, Beidou  
**Receiver type:** 72-channel  
**Assisted-GNSS:** Yes  
**GNSS Accuracy:** 5m (16feet), CEP 50%, 24 hours static

## Power & battery

**Rechargeable battery capacity:** 144 Ah (LiFePO4)  
**Battery life in diffusion mode:** 100 days at 20°C (68°F), LEL-IR, H2S, CO and O2 configuration.  
**Battery life in pump mode:** 30 days at 20°C (68°F)  
**Charge time:** 8-12 hrs  
**Charge temp.:** 0°C to 45°C (32°F to 113°F)

## Environmental

**Storage temp.:** -40°C to 60°C (-40°F to 140°F)  
**Operating temp.:** -20°C to 50°C (-4°F to 122°F)  
**Ingress protection:** Designed to meet IP65

## Approvals

RoHS, CE, RCM  
**Canada & USA:** Class I Division 1 Group A,B,C,D T3; Class I Zone 0 AEx ia IIC T3; Ex ia IIC T3 Ga  
**IECEX:** Ex ia IIC T3 Ga  
**ATEX:** Ex ia IIC T3 Ga  
**LEL:** CSA C22.2 No.152; ISA 12.13.01  
**FCC ID:** W77EXO IC: 8255A-EXO  
**Contains:** FCC ID: XPY1EIQ24NN, Q639603N  
**IC:** 8585A-1EIQ24NN, 4629A-9603N

## Warranty

Three-year hardware warranty  
Extended warranty available

Gas	Sensor type	Sensor model	Range	Resolution
Ammonia (NH <sub>3</sub> )	Electrochemical	Citytech, Sensoric NH3 3E 100 SE	0–100 ppm	0.1 ppm
High-range ammonia (NH <sub>3</sub> )	Electrochemical	Sensoric NH3 E3 500 SE	0–500 ppm	1 ppm
Carbon monoxide (CO)	Electrochemical	Citytech, 4CF+ CiTiCeL	0–500 ppm	1 ppm
High-range carbon monoxide (CO)	Electrochemical	Citytech 4CM	0–2000 ppm	5 ppm
Hydrogen resistant carbon monoxide (CO-H)	Electrochemical	Citytech 2CF3	0–500 ppm	1 ppm
Carbon dioxide (CO <sub>2</sub> )**	NDIR	Gas Sensing Solutions, MiniR	0–50,000 ppm	50 ppm
Chlorine (Cl <sub>2</sub> )**	Electrochemical	Citytech, Sensoric Cl2 3E 50	0–20 ppm	0.1 ppm
Chlorine dioxide (ClO <sub>2</sub> )	Electrochemical	Sensoric ClO2 3E 1 O	0–2 ppm	0.01 ppm
COSH	Electrochemical	Citytech, 4COSH Dual Gas CO/H <sub>2</sub> S Sensor	0–500 ppm CO, 0–100 ppm H <sub>2</sub> S	1 ppm CO, 0.1 ppm H <sub>2</sub> S
Hydrogen cyanide (HCN)	Electrochemical	Sensoric HCN 3E 30 F	0–30 ppm	0.1 ppm
Hydrogen sulfide (H <sub>2</sub> S)	Electrochemical	City Technology, 4HS+ Hydrogen Sulfide CiTiCeL	0–100 ppm	0.1 ppm
High-range hydrogen sulfide (H <sub>2</sub> S)	Electrochemical	City Technology, 4HS+ Hydrogen Sulfide CiTiCeL	0-500 ppm	0.5 ppm
LEL-infrared (LEL-IR)	NDIR	MIPEX, 02-X-X-X.1	0–100% LEL	1% LEL
Nitrogen dioxide (NO <sub>2</sub> )	Electrochemical	City Technology, 4ND	0–50 ppm	0.1 ppm
Oxygen (O <sub>2</sub> )	Pumped electrochemical	City Technology, 4OxLL Longlife Oxygen CiTiCeL	0–25% vol	0.1% vol
Ozone (O <sub>3</sub> )**	Electrochemical	Sensoric O3 3E 1	0–1 ppm	0.01 ppm
Photoionization (PID)	PID	Ion Science, MiniPID 2	0–4,000 ppm	Dynamic resolution*, 0.1 ppm
Sulfur dioxide (SO <sub>2</sub> )	Electrochemical	City Technology, 4S Rev. 2 Sulfur Dioxide CiTiCeL	0–100 ppm	0.1 ppm

All specifications subject to change without notice.

\* Dependant on correction factor

\*\*Does not work with the pump module





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