EX eq02+ lifemonitor

DATA MONITORING THAT MAKES A DIFFERENCE

Choose the leading solution for real-time biometric data capture, smart data management, analysis tools and secure data storage.

The EX eq02+ LifeMonitor is ideal for monitoring human physiology in hazardous environments. Typical applications include military training and deployment, hazardous area first response and CBRNe.

It measures clinical grade cardiorespiratory, temperature and activity data from mobile people. Data is stored on the sensor and can be transmitted wirelessly for viewing on a mobile phone or computer.

Measurements

- ECG, HR, R-R interval
- Respiratory Rate
- Skin Temperature
- Galvanic skin response*
- Accelerometer, X,Y,Z, Activity
- Body position/ Movement
- Oxygen saturation*
- Core temperature capsule*/ Dermal Patch*

*Measured using a compatible ancillary sensor

Unlock the power of the EX eq02+ LifeMonitor

Two shoulder straps ensure that the EX eq02+ LifeMonitor always stays in place, even during high ambulation.

The EX LifeMonitor belt is composed of materials that can safely be used in highly explosive environments.

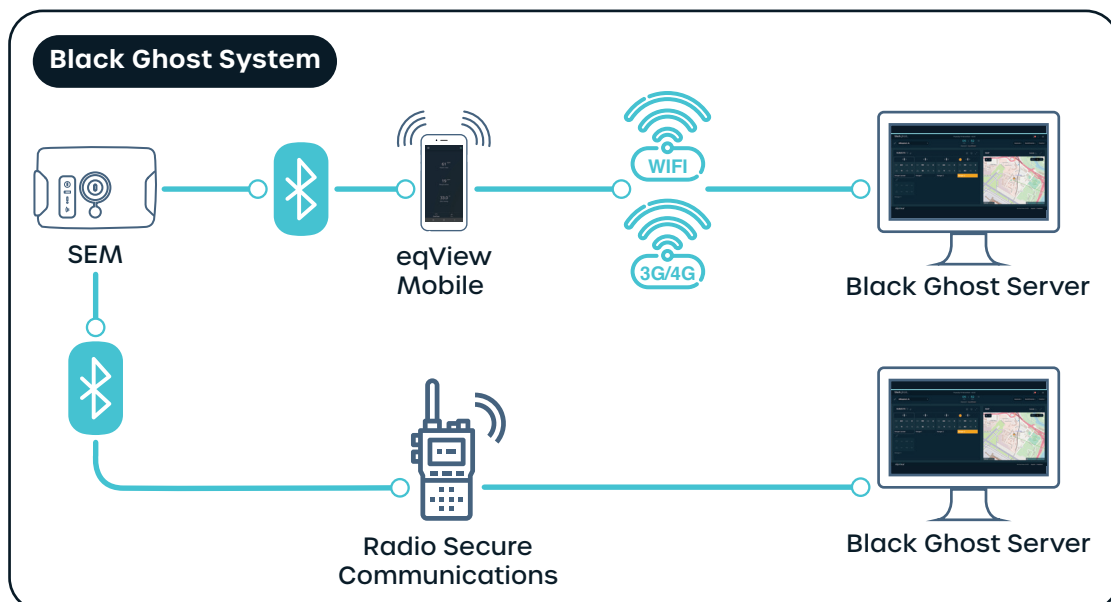Seamlessly integrated respiratory sensor and sweat optimised ECG electrodes ensure high accuracy data collection.

The EX LifeMonitor includes a medical grade infrared thermometer that measures temperature every 15 secs and a high resolution tri-axis accelerometer providing data for activity monitoring and gait analysis.

Benefits

- **ATEX, ETL and IECex marking:** The only body worn physiological monitoring device that you can safely wear in explosive environments
- **Combined heart rate and breathing rate data:** Monitor for heat related illness and effects of noxious gases
- **Body position, motion and falls monitoring:** Know in real time if your team member has suffered an injury or collapse
- **FDA and CE clearance:** Peace of mind that the system you are using meets the requirements of the rigorous medical device standards

Black Ghost System

Data can be transmitted in real time from the SEM, via Class 1 Bluetooth, to a mobile phone or computer, for viewing and analysis.

Black Ghost System

SEM — Bluetooth — eqView Mobile — WIFI / 3G/4G — Black Ghost Server

SEM — Bluetooth — Radio Secure Communications — Black Ghost Server

How it works

The LifeMonitor comprises 2 elements; the Sensor Belt and the Sensor Electronics Module (SEM). The sensor belt features low profile sensors embedded into a biocompatible fabric. The SEM docks into a cradle on the left hand side of the sensor belt where it processes, stores and transmits physiological data.

The Sensor Belt

The sensor belt is made from a breathable, lightweight fabric to ensure that it is comfortable for long-term use. The two-shoulder strap unisex design provides a secure and comfortable fit for both male and female users.

Key Features
- Unisex
- Breathable, sports fabric
- Available in Sizes covering 74-119cm (29in–47in)
- Washable
- Anti-static material for use in hazardous areas
- A belt extender can be worn to extend the belt by one size.

The SEM

The SEM slots into the low profile belt cradle and it's LEDs, visible when worn on body, provide status information including transmission, power and external sensor connections. It has a rechargeable Li Polymer battery which takes approximately an hour to reach full capacity. The SEM includes a medical grade infrared thermometer and tri-axis accelerometer.

All data is stored on an integral 8GB SD card, allowing retrospective data download and analysis. An external battery pack can be used to provide longer monitoring time between SEM charges. The SEM also supports a hot swap facility enabling the user to change over batteries in the external battery pack and reconnect during monitoring for uninterrupted use on long wears.

Software

The Black Ghost System

The EX eq02+ LifeMonitor works seamlessly as part of a Black Ghost system deployment.

Black Ghost is designed to monitor and help protect professional teams operating in challenging and hazardous environments.

Displaying predictive heat stress, safety and performance data, Black Ghost provides a critical overview on each team member's status in real time.

Key Features

- Remote view of real time physiological data
- Location tracking with Geofence capability
- After Action Review (AAR)
- Subject alerts sent remotely via Email or SMS
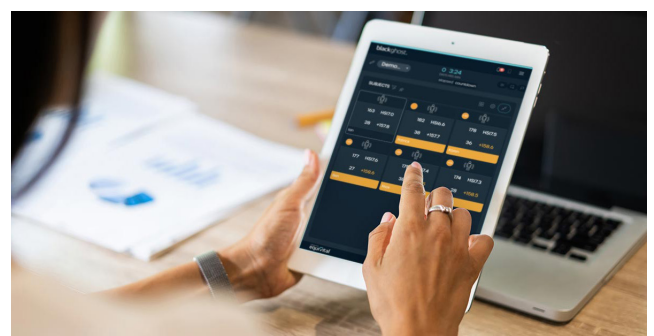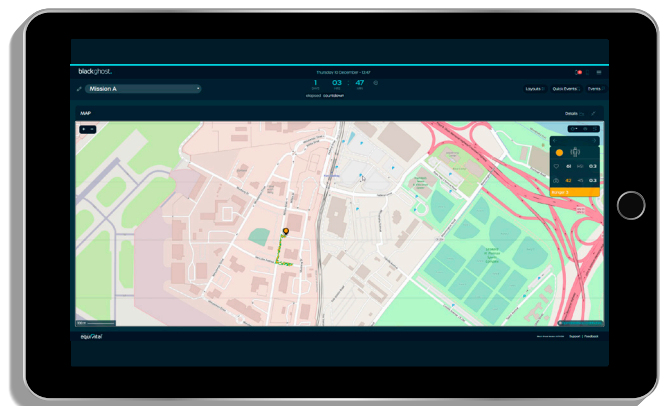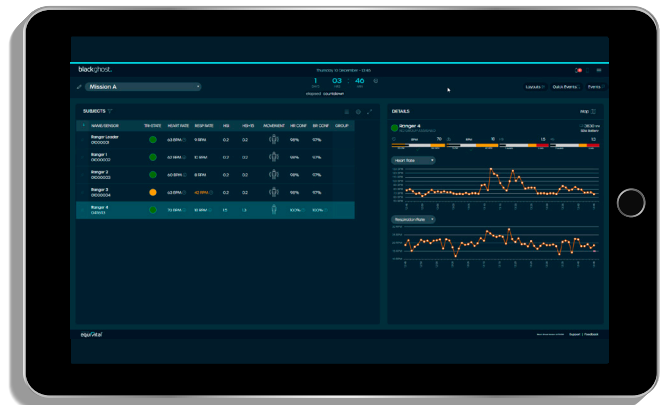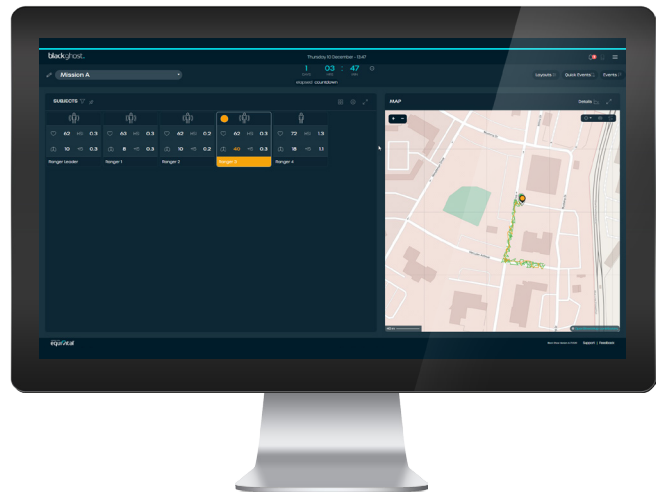- Web based or secure local deployment

Benefits

- Real time heat stress, safety and performance monitoring
- Unparalleled situational awareness
- Improved safety and welfare

The Black Ghost web application displays data sent from the LifeMonitor, along with GPS and other contextual information. The user can further contextualise live data with event markers and tags relevant to the subject, group, location or time.

Real Time Data Transmission

Data from the SEM can be transmitted in real time via Class 1 Bluetooth to a mobile phone or computer or over a tethered connection to a compatible mobile device.

Black Ghost System Architecture

Subjects

First Responders

Industrial Workers

Soldiers

ECG & HR | Respiratory Rate | Fall Alert | Heat Strain | GPS

Communication

Android Mobile

Radio Terminal

Mobile Network

WIFI

Radio Network

Black Ghost Server

On Premise Black Ghost

Local Secure Server

Cloud Hosted Black Ghost

Real-time Safety and Performance Monitoring with Alerts of Critical Events

Users

Heath & Safety Operatives

Industrial Team Lead

Command & Control

Health & Safety Operatives, Industrial Team Leads and Command & Control can access the mission status via Black Ghost

Black Ghost Track

Black Ghost Track is perfect for analysing retrospective physiological data, and enables you to start using Black Ghost without any real time infrastructure requirements. Collect data during your team training, download it to the Black Ghost software and analyse it back at base.
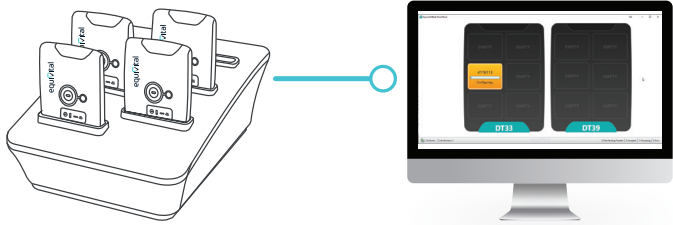
SDK

System Developers Kit

Equivital has a range of simple-to-use software developer kits (SDKs) to suit applications across various operating systems. The SDKs are designed to allow developers the ability to embed Equivital data into their own applications.

Using simple, standard programming techniques any data recorded by the SEM can be integrated into any .NET, Android or Java application. The SDK can interpret data at high speed for analysis and post-processing.

Support

Support options to suit your needs

Equivital has multiple ways to assit you with your EX eq02+ LifeMonitor and chosen software solution.

With a team of experts on hand, either on the phone, over email or via our comprehensive web support system, where we have a library of support FAQs, articles, videos and step-by-step guides to assist you in setting up and getting the most out of your data solution.

Visit https://support.equivital.com to find out more

EX eq02+ LifeMonitor Key Specifications

Parameter	Specification
Memory	8GB
Power	Li-Po rechargeable cell
Li Polymer recharge time	Recharge from flat in 1 hour
Communications	Class 1 Bluetooth 2.1, 100m operating range
Connectivity	USB 2.0 compatible
Configuration	Via USB

Physical specifications	SEM
Weight	60g
Size	78mm x 55mm x 11mm
Operating temperature	-10 to +50°C
Operating humidity	0 to 95% RH Non-condensing
Operating altitude	Up to 30,000ft
Water ingress protection	IPx7

Signals	Sampling rate	Resolution
ECG	256Hz	10 bit
Respiratory	25.6Hz	10 bit
Skin temperature	15 seconds	0.1°C
Accelerometer	25.6 or 256Hz	12 bit

Physiological parameters	Reporting range
Heart rate	25-240bpm
Breathing rate	0-70 Breaths per minute
Skin temperature	-10°C to +50°C ±0.3°C Accuracy using IR Thermometer at temperature of interest
Body position	All orientations Includes fall detection and motion

Approvals	
Europe	CE Certified, EU Device Classification Class IIb
USA	FDA Device Classification Class II
Hazardous Area	Europe: CE certified, EU ATEX, Equip Groups I and II North America: ETL, Class I, Div 1 Australia & New Zealand: IECex Equipment Protection Level: Ma and Ga

Battery Life Data

SEM use case	Operating life	Operating life with external battery pack connected*
All SEM data recorded	48hrs	150hrs
All SEM data recorded with core temperature pill receiver on	18hrs	60hrs