Carbon Dioxide Monitoring

Carbon dioxide monitors should be considered where there is a significant risk of elevated CO2 concentration. CO2 has toxic effects at concentrations far below the level at which it is an asphyxiant. However, oxygen monitoring should also be considered.

At 4% CO2 (a hazardous level of CO2) the oxygen concentration would be 20% and this would not typically trigger an oxygen depletion unit. To expand further on this, at 30 minutes exposure at 4% CO2 an individual would show signs of poisoning and feel a choking sensation, their breathing rate would be more than doubled, their heart rate and blood pressure would increase and there is potential that their hearing may be impaired.

Figure 1-Multizone - Touch Screen & Sensing Unit

To determine if you need carbon dioxide monitoring, a risk assessment of the area and activities should be carried out. If the risk assessment identifies that long term workplace exposure limit (5000ppm, 0.5% for 8 hours*) or short-term workplace exposure limit (15000ppm, 1.5% for 15 minutes*) are calculated, you require a carbon dioxide monitor. However, a required risk assessment often does not cover specific areas where a leak may occur (such as directly next to CO2 storage tank) and even in situations in which carbon dioxide concentration does not reach life-threatening levels, the effect of CO2 levels on the health of working personnel is still a major health and safety concern.

*Health and Safety Executive, EH40/2005 Workplace Exposure Limits (Fourth Edition 2020)

Series Overview

Britannia's solution for carbon dioxide monitoring and alarming is the CARBSAFE Series. Whether it be a standalone single zone sensor, or up to a 32 multi-zone system a solution is available.

The range of CARBSAFE units allows a bespoke and cost-effective solution depending on your requirements.

CARBAFE Standalone– Standalone, single sensor oxygen monitor with advanced options

CARBSAFE Multi-zone– Multi-zone touch screen system, up to 32 sensor carbon dioxide monitors with advanced features

Sensor Details

The CO2 sensor used is a double beam infrared absorption cell that continuously operates and monitors by diffusion. The cell has an infinite life span but requires routine calibration to maintain accuracy.

Figure 2 – CARBSAFE Standalone w/ Display option

CARBSAFE Series

Models	Sensors	Range/Accuracy	Features
Standalone	1 x built in Sensor	• Range: 0-5% (*Others are available on request*) Accuracy: ± 2% f.s.d	• Power & Status Indicators • Internal Sounder • Supplied with 1 remote alarm (sounder & xenon) • LCD Display (*Optional*) • Analogue Output (*Optional*) • Additional Single Relay (*Optional*) • Wireless Transceiver (*Optional*)
Multi-Zone	Up to 32 sensing units	As Standalone	• + 7-inch coloured touch screen • + Dual Relay • + user interaction is very intuitive • + up to 32 remote zones • + Sensor measurement data is recorded • + Graphing of data is available • + User levels can be assigned that are password protected. • + Audit trail is recorded • + Up to 8 configurable relays typically used for. o Supply Tank Shut Off feature o Supply Tank Override o Fan control o Activate Klaxons/ additional remote alarms • Connect to Building Management Systems • o

Additional Hardware Options

Hardware Option	Usage
LCD Display	LCD Display installed on the sensing unit to show the gas concentration
Analogue Output	Output to monitor the gas concentration on third party equipment
Additional Single Relay	Additional Relay to control other items of equipment
Battery Back-up	Allows the unit to stay operational if the power supply is interrupted
Remote Alarms & Klaxons	Additional remote alarms to warn of any alarms *(all entrances should have a remote alarm)*
Remote alarms with Displays	Inclusion of a display to the remote alarm to indicate gas measurement
PIR	An infrared (IR) light sensor that once triggered by objects in its field of view can activate/ deactivate. • Fans (Ventilation & Extraction) • Remote Alarms & Klaxons • Door Locks
Emergency buttons/ key switches	An emergency button or key switch that once operated can activate/ deactivate. • Fans (Ventilation & Extraction) • Remote Alarms & Klaxons • Door Locks
Ventilation + Extraction	Wall mounted or Inline fans to provide ventilation to remove hazardous gases or deliver fresh air.
Wireless Hardware	Additional wireless hardware that allows the sensing zones and remote alarms to be installed without long cable runs.
Perspex stand	Stand to house portable units
Secondary Touch Screen	Touch screens with restricted functionality, that display the gas concentration
Britannia's Wireless Monitoring System	Wireless monitoring system to allow thorough logging and analysis for the gas measuring data.

For any site-specific requirements, please contact Britannia.

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Pricing on any accessories shown can be found by keying the part number into the search box on our website.

The specifications listed in this brochure are subject to change by the manufacturer and therefore cannot be guaranteed to be correct.
If there are aspects of the specification that must be guaranteed, please provide these to our sales team so that details can be confirmed.

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Please contact us if this literature doesn't answer all your questions.