

Product Data Sheet – CARBSAFE Series

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 be 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.

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 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.

CARBSAFE Series 1 (S1) – Standalone, single sensor Carbon Dioxide monitor

CARBSAFE Series 1+ (S1+) – Standalone, dual sensor Carbon Dioxide monitor

CARBSAFE Series 2 (S2) – Standalone, single sensor Carbon Dioxide monitor with advanced features

CARBSAFE Series 3 (S3) – Multi-zone, up to 32 sensor Carbon Dioxide monitors with advanced features

CARBSAFE Touch Screen Compact (TS-Compact) – Multi-zone touch screen system, up to 32 sensor Carbon Dioxide monitors with basic features

CARBSAFE Touch Screen Pro (TS-Pro) – 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.



CARBSAFE Series

Models	Sensors	Range/Accuracy	Features
Series 1 (S1)	1 x built in Sensor	<ul style="list-style-type: none"> Range: 0-5% (<i>Others are available on request</i>) Accuracy: $\pm 2\%$ f.s.d 	<ul style="list-style-type: none"> LCD Display Analogue Output Power & Status Indicators Internal Sounder Alarm Test Function Supplied with 1 remote alarm (sounder & xenon)
Series S1+ (S1+)	1 x built in sensor 1 x external sensor	As Series 1 (S1)	<ul style="list-style-type: none"> As Series 1 (S1) + remote sensor + display for remote sensor
Series 2 (S2)	1 x built in sensor	As Series 1 (S1)	<ul style="list-style-type: none"> As Series (S1) + Supply Tank Shut Off + Supply Tank Override feature + Fan control, 2 speed + Spare Relay Trigger + Built in Battery Back-up
Series 3 (S3)	Up to 32 sensors built into S1-S3	As Series 1 (S1)	<ul style="list-style-type: none"> As Series 2 (S2) + up to 32 remote zones + Displays for each zone + Alarm Indicator for each zone + Alarm indicator reset button + Backlight Display feature + Built in sounder and xenon
Touch Screen Compact (TS-Compact)	Up to 32 sensors built into sensing units	As Series 1 (S1)	<ul style="list-style-type: none"> + 7-inch coloured touch screen + 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
Touch Screen Pro (TS-PRO)	Up to 32 sensors built into sensing units	As Series 1 (S1)	<ul style="list-style-type: none"> As Touch Screen Compact (TS-Compact) + Up to 8 configurable relays (3 preassigned) + Supply Tank Shut Off feature + Supply Tank Override + Fan control, 2 speed + Built in Battery Back-up

Additional Hardware

Hardware Option	Usage
Battery Back-up (<i>if not included as default</i>)	Allows the unit to stay operational if the power supply is interrupted
Remote Alarms & Klaxons	Additional remote alarms to warn of any alarms (<i>all entrances should have a remote alarm</i>)
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. <ul style="list-style-type: none"> Fans (Ventilation & Extraction) Remote Alarms & Klaxons Door Locks
Emergency buttons/ key switches	An emergency button or key switch that once operated can activate/ deactivate. <ul style="list-style-type: none"> 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.
Britannia's Wireless Monitoring System	Wireless monitoring system to allow thorough logging and analysis for the gas measuring data.



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