

Not for use in potentially explosive atmospheres (zoned areas)

Technical Sheet
ref C1673-Ev5

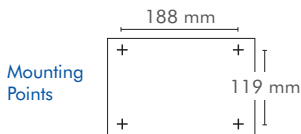
Operation

The control unit provides four zones to which 16 sensors in total may be connected (3 core cable network) this may be increased to 16 sensors per zone (64) in total when powered from an auxiliary 24v DC power supply. Each gas sensor continuously monitors the atmosphere for any hazardous conditions, on detection of gas the sensor will indicate the gas level status A1, A2, A3 by LED indication and sounder. Information received by the control panel from the sensor is then displayed, indicating the zone, gas type and alarm status. Alarm levels that are exceeded are then able to activate user selectable relays and appropriate control actions.

Installation – See C1144

CONTROL UNIT:

The control unit should be mounted in a position which is accessible and in the field of vision. Mains should be from a 1A fused supply. All equipment should be mounted away from direct heat and in accordance with its IP rating.



SITING THE SENSING HEADS (DETECTORS)

A key feature of the installation is the correct siting of the detectors. Several considerations must be taken into account, the most important being the density of the gas with respect to air.

HEAVIER THAN AIR GASES (LPG, Propane, Butane, Refrigerant Gases) - locate at 15 to 20 cm above floor level.

LIGHTER THAN AIR GASES (Methane, Natural Gas, Town Gas) - locate at 5 to 10cm from the ceiling.

EQUAL TO AIR GASES (Carbon Monoxide, Oxygen) - locate at 1.5 metres above floor level.

Under still air conditions, a 'lighter than air' gas such as methane leaking from a small orifice at ground level, will rise in a plume the shape of which approximates an inverted cone. As the gas rises, it draws air from the surroundings and creates a turbulence. Resulting from this there occurs rapid dilution and, unless a sensor is positioned within the plume, there will be no initial indication of a leak.

As gas continues to escape, the diluted concentration rises to ceiling level and begins to layer. In time the concentration at ceiling level will increase and this, in turn, will displace air downwards.

Dangerous levels will, therefore, tend to occur at ceiling level and the thickness of this layer will increase with the passage of time.

Ventilation of the room will of course alter the situation significantly but it should be remembered that if the ventilator is not at ceiling level, a dangerous concentration can still occur between the top of the ventilator and the ceiling.

For heavier than air gases such as propane or butane, the formation of dangerous layers occurs at ground level. These gases tend to behave like water and will run down gradients and pool at the lowest point.

The number of sensors required in individual rooms is determined by the number of possible hazards in the vicinity.

Gas leakage may occur around valves, flanges and anywhere where gas pipes are jointed. It may be possible to cover several probable gas leaks in one room by the careful siting of a single detector. Ducts, trenches and manholes are also likely places where a build up of heavy gases may collect.

When siting a detector in such places it is most important to ensure that there is no likelihood of flooding by water, or excessive dust which may block the sensor mesh element and prevent gas reaching the sensor.

When monitoring gases outside, those lighter than air will be quickly dispersed, but gases heavier than air will tend to form in layers and again cause a dangerous hazard. When siting detectors outside prevailing winds must be taken into consideration and adequate protection given against wind and rain.

POISONING OF CATALYTIC SENSORS

Catalytic elements used in most flammable gas sensors are liable to be rendered inactive due to 'poisoning' by certain groups of compounds.

In general contact with any gaseous compound capable of producing an involatile residue upon heating is to be avoided.

Examples of such substances are:

- Silicon containing vapours, as emitted by silicone polishes, greases and oils.
- Petroleum vapours containing tetra-ethyl lead or other organo-metallic compounds.

Fig. 1

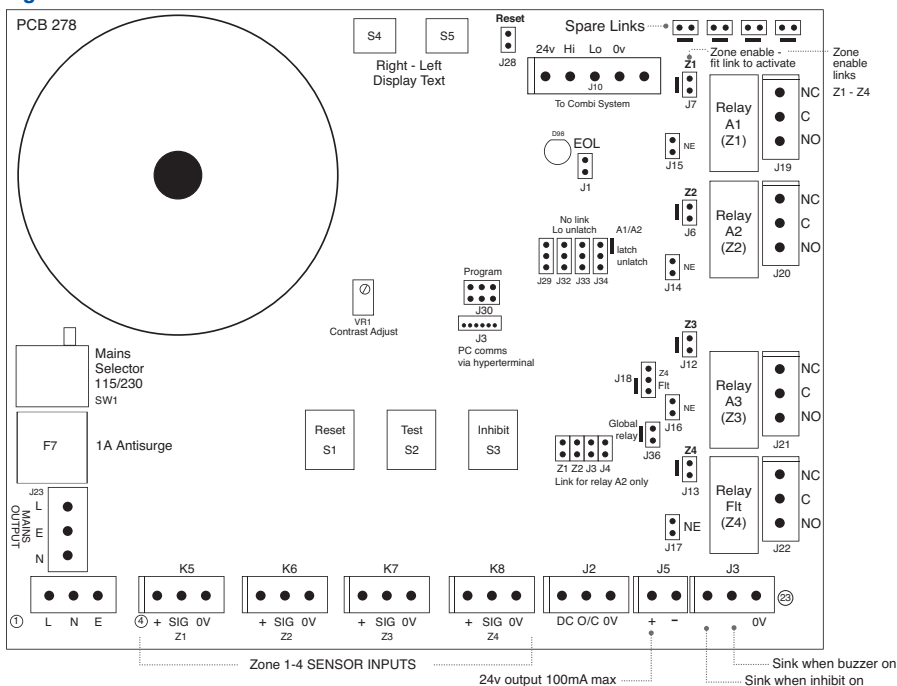


Fig. 2

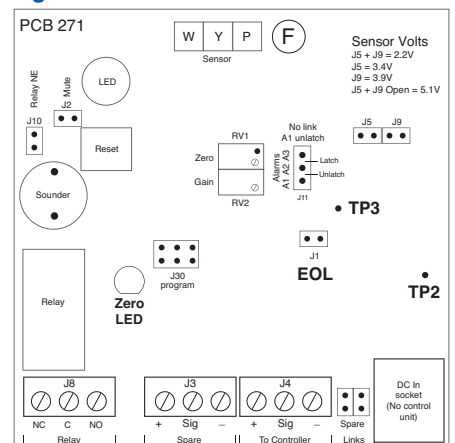
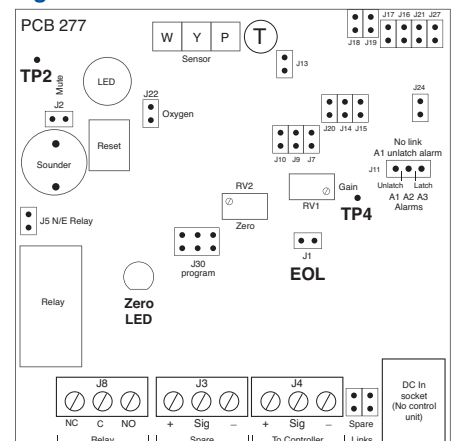


Fig. 3



Initial Set Up

All sensors are supplied calibrated and ready to install, with preset alarm levels (see test certificate). Having terminated all cables see fig 4, on each sensor line remove all but the last sensor end of line link (EOL). At the control panel change each used zone enable link from the parked position to the active position (across both pins). See fig.1 (spare links available).

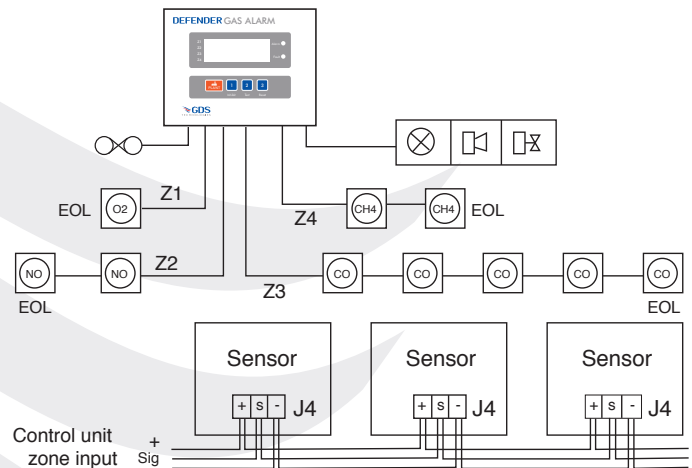
Control Unit

Power Supply	115/230vAC 50/60 Hz or/and 24vDC ± 15%
Consumption	3 watts
Detector Head	1 to 16 standard - 1 to 64 (4 zones 16 per zone) with additional power supply
Sensor Cable	3 core 1 mm ² Cable length - 200m max x4
Alarm Relays	Four selectable relays S.P.C.O 3A @ 230vAC
Ambient Temp:	Operation: -5 to +50°C Storage: +5 to +55°C
Protection	IP65
Status LED's	<u>Power up</u> - stabilising 3 minute period (inhibit) <u>Normal operation</u> - all LED's OFF <u>A1 Alarm</u> - Red alarm LED and sounder <u>A2 Alarm</u> - Red alarm LED and sounder <u>A3 Alarm</u> - Red alarm LED and sounder Inhibit - Amber LED <u>Fault</u> - Amber LED and sounder
Sounder	Internal 85 dB@ 30cm Open collector driver output - 100mA @ 24vDC (follows internal sounder operation)
Reset	Sounder - reset anytime Alarm LED's/relays - only possible on gas clear
Relays	<u>Options</u> normally latched or unlatched - energised or de-energised <u>Global relays</u> Any A1 alarm - Relay AL1 Any A2 alarm - Relay AL2 Any A3 alarm - Relay AL3 Any fault - Relay FLT <u>Zone relay</u> - option, one relay/zone Remove link J36 (Global relay) move link J18 - from fault position to Z4 position Relay time to ON and OFF delay - see menu
Inhibit	Press and hold inhibit button for 5 seconds Each zone will inhibit following 4 second countdown To override inhibit press reset during countdown
LCD Display	Normal operation - gas type + user text display Alarm condition - AL1, AL2 or AL3 flashing
User Menu	The user menu has the following options: Edit - company name, Z1 - Z4 text Relays off delay (0-3600s) 1 Hr Relays time to alarm (0-3600s) 1Hr CAN address To access the user menu: 1. place a link on reset (J28) 2. press and hold the test button while removing link (J28) 3. the panel will reset and go into the user menu, release the test button 4. to navigate the user menu Reset, Test, Inhibit, Left and Right buttons are used.
Factory Settings	Alarms - latched Relays - normally de-energised N/D Global relays - Alarm A1, A2, A3, Fault Alarm relays ON/OFF delay - zero seconds
Testing	System test excluding alarm relays (test mode 1) With the panel in normal operation press and hold the test button for 15 seconds the sounder and LED's will toggle ON and OFF. Press the reset button when prompted on the screen. System test including alarm relays (test mode 2) With the panel in normal operation press and hold the test button for 30 seconds. After the first 15 seconds test mode 1 commences after 30 seconds each alarm relay will activate. To clear the relays press the reset button. See also - Sensor Testing NOTE: Link selection must be made with power off

Sensor

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Power Supply	24vDC nominal 18 to 30v DC
Consumption	1.2 W
Alarm Relay	1 SPCO 3A @ 230vAC Global A1/A2/A3 option A2/A3 only latched/unlatched - selectable N/E - N/D
Ambient Temp	Operation: -5 to 50°C Storage: +5 to +55°C
Protection	Standard Sensor - IP42 Weatherproof - IP65
Options	Duct sensor probe - L27mm x 28mm diameter
Status LED	<u>Power up</u> - stabilising 1 minute period LED flashing (inhibit) <u>Normal operation</u> - Green LED ON <u>A1 Alarm</u> - Green LED changes to Red and sounder slow repeat ON/OFF <u>A2 Alarm</u> - Red LED and sounder rapid repeat ON/OFF <u>A3 Alarm</u> - Red LED and sounder ON constant <u>Fault</u> - Amber LED and sounder slow repeat ON/OFF
Sounder	Not less than 85 dB@ 10cm - mute option available (mute link)
Reset	Sounder - reset anytime Alarm LED/relays - only possible on gas clear
Relays	<u>Options</u> normally energised or de-energised Active on Alarm A1, A2, A3 Active only on Alarm A2, A3 A1 unlatched A2, A3 latched A1, A2, A3 unlatched / latched
Factory Settings	Alarms - unlatched Relay - normally de-energised - Active AL1, AL2, AL3
Testing/Maintenance	Press and hold the reset button for 15 seconds the relay will activate the LED will flash and the sounder will toggle ON/OFF. If the sensor is connected to the Defender control panel the alarm will be displayed on that zone. Releasing the test button will return the sensor to normal operating mode. To ensure that the sensor responds correctly to the presence of gas it should be exposed to test gas at six monthly intervals.
Adjustments	For further details contact your system provider or GDS Sensor zero in clean air - turn zero pot until the green zero LED is ON. Calibration - FSD = 4v measured at (TP2/3) Fig. 2 and (TP2/4) fig. 3 adjust using gain pot for test gas value. NOTE: Link selection must be made with power off

Fig. 4 Typical sensor grouping - factory settings



This document is not contractual and the equipment specification may be modified at any time without prior notice.