

PRODUCT APPLICATION INFORMATION

Combination Carbon Monoxide fire detection systems are the most reliable solution for fire detection in Parking Garages.

The Addressable CO system from ZYTEQfire offers a range of impressive features that incorporate CO, fire detection and extract fan control in one panel.



ZA830CO Sensor & GEKKO Control Panel

Carbon Monoxide (CO) Fire Detection Systems for Parking Garages

Basic Design and Function

The Parking Garage fire detection system consists of multiple sensors fitted to the roof of the parking garage. The sensors are connected to a control panel via flame retardant cable. A variety of other devices such as call points and sounder/beacons may also be installed to allow an alarm condition to be raised by activating a call point or alerting occupants to an alarm condition by sounder and/or beacon.

The system operates as a fully certified and functioning fire alarm system with the added feature of carbon monoxide detection, critical in parking garage applications. The ZYTEQfire system integrates CO monitoring into the fire system to allow extract fans to be triggered when CO emissions exceed safe levels and to trigger an alarm at elevated CO levels. The system has a feature to allow fans to be reset after a configurable delay. This integrated solution reduces cost and increases flexibility.

System Components

- The **ZA830CO** Addressable multi-sensor is a versatile sensor that includes Carbon Monoxide, Optic and Heat elements. The Sensor may be configured via dipswitch at the rear of the detector. Refer to the table below for settings.
- The **GEKKO** Addressable Fire Panel is fully configurable to customer requirements and can be integrated into existing fire alarm systems or networked to other GEKKO fire panels in larger distributed networks.
- The **Mains I/O** unit is an addressable mains switching input/output unit that is used to control activation of extract fans. An adjustable time delay (max 10 mins) ensures that extract fans are only activated when required.

- Complies with the relevant EN54 standards.
- Three CO level options and 3 smoke and heat sensitivities.
- Integrated extract fan control and reset logic.
- 125 addresses per loop which can be made up of multiple device types.
- Robust digital loop protocol.
- Sensors manufactured in South Africa, balance of equipment manufactured in Europe.
- All sensor circuit boards are conformally coated for longer life
- Can be integrated into existing fire systems
- Full range of configuration and monitoring software available.



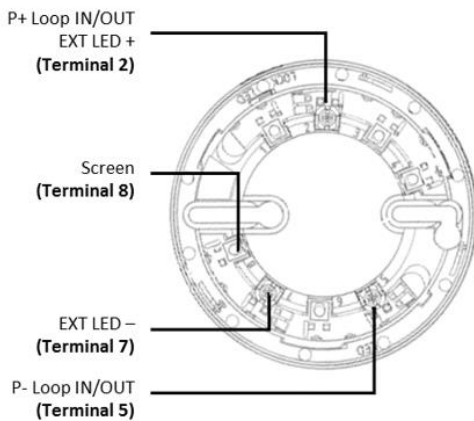
ZYTEQfire

Technical Specifications:

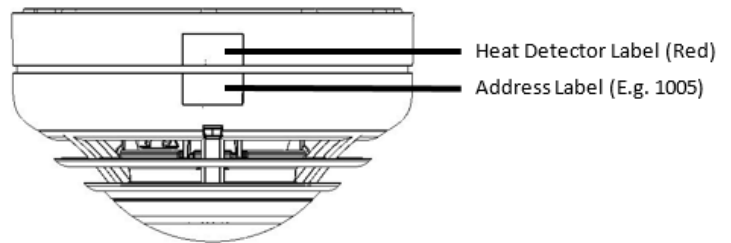
Parameters	
Supply Voltage	Loop powered: 20V to 30V DC
Current - Quiescent	400uA
Current – Device in alarm	2mA
Operating temperature	-10 to 50 degrees Celsius
Max Humidity	95% RH non condensing
Weight	115g without base; 155g with base
Dimensions	100mm Diameter; 50mm Height
Colour	White/Black
Material	ABS

Base Connections	
Pin	Connection
2	P+ Loop IN/OUT & EXT LED (+)
5	P- Loop IN/OUT
7	EXT LED (-)
8	Loop cable screen terminal

1. Wiring Diagram

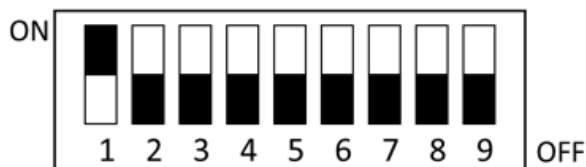


2. Mounting- and Label Diagram



Switches 1-7 used to configure the device address.
Switches 8-9 Used to set CO sensitivity level and enable/disable smoke sensor. The heat sensor remains active for all settings.

3 D.I.L Switch Configuration



Address Switches Binary Weights

1 ON = 1 4 ON = 8 7 ON = 64
 2 ON = 2 5 ON = 16
 3 ON = 4 6 ON = 32

Switch 8	Switch 9	HEAT	OPTIC	CO	Configuration	Device Type
ON	ON	✓	✓	✓	Smoke ON / CO pre alarm at 40 ppm and alarm at 50 ppm	Multi sensor
OFF	OFF	✓	✓	✓	Smoke ON / CO pre alarm at 50 ppm and alarm at 100 ppm	Multi sensor
ON	OFF	✓		✓	Smoke OFF / CO pre alarm at 50 ppm and alarm at 100 ppm	CO sensor
OFF	ON	✓		✓	Smoke OFF / CO pre alarm at 50 ppm and alarm at 150 ppm	CO sensor

Application Notes:

System Operation

There are two trigger levels namely, Pre-alarm and Alarm. A pre-alarm is triggered when the CO in the protected area reaches the pre-programmed level (40 or 50 ppm). An alarm is triggered when the CO reaches the pre-programmed alarm level or the smoke (if ON) or heat sensor is activated.

These alarms are used to trigger an extract fan control module. This relay module will always be triggered by a pre-alarm and may be programmed to trigger by an alarm, if required. All programming is either pre-programmed in the panel firmware (fixed functions only) or may be programmed using our Chameleon Connector Software. Please refer to the panel manual for more information.

To prevent excessive & unnecessary running of the extract fan, an auto reset function has been built into the system. When triggered, the fan will run for a pre-programmed time. When this time has elapsed, the system will automatically be reset and the fan will stop. If the CO levels are still at the pre-alarm level, after a reset, the fan will restart and run for the pre-programmed time. If the CO has reached the alarm level (or the smoke or heat sensor has triggered) after a reset, the panel will indicate an alarm condition and the extract fan will restart (*only if pre-programmed to trigger on alarm*).

The above process will be repeated until the CO, smoke (if ON) and heat levels have normalised.

Time Delayed Auto Reset Function

- The panel has two programmable remote inputs as standard. Only one is required for this function. The selected input must be configured as a RESET input.
- A suitable Input/Output (I/O) module will be required. Only the output portion of the module will be used.
- The I/O module is to be configured as a delayed output. The maximum delay time is 10 minutes.
- The I/O module may be triggered by Fault, Pre-Alarm and Alarm as standard. For this application the module must be configured to respond to Pre-Alarm and Alarm only.
- The output of the I/O module is connected to the programmed RESET input of the panel.

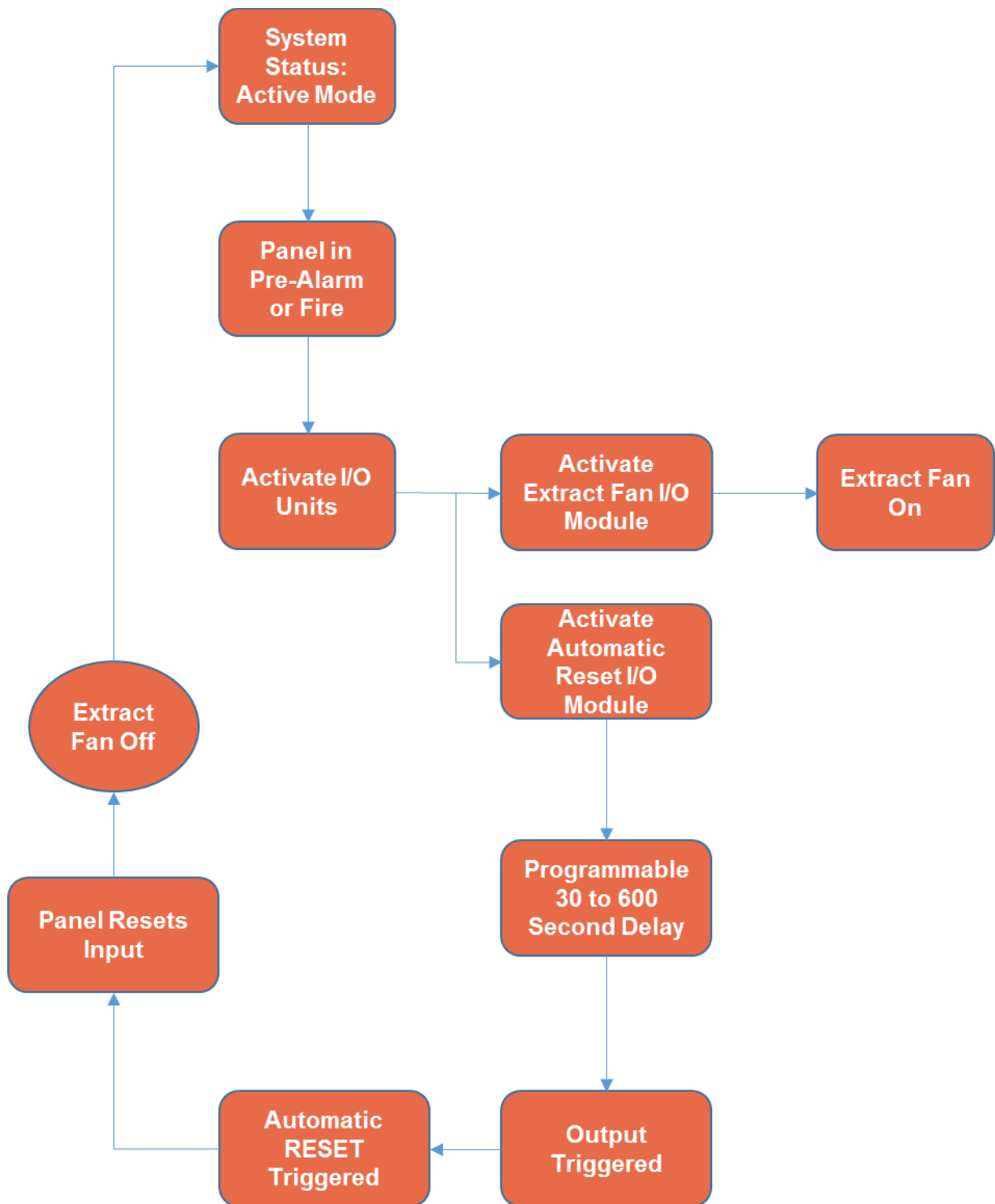
Typical Application Example:

An early warning CO and fire detection system with extract fan control and automatic reset function. The system uses a standard ZYTEQfire GEKKO panel.

- Two suitable I/O modules will be required (only the output functions will be utilised):
 - One for the automatic RESET function as described above.
 - One for extract fan control (*this may require a mains switching output*). Please verify requirements.
- The system is configured to automatically turn on the extract fans via the above I/O module when a ZA830CO addressable CO multi-sensor detects a pre alarm or an alarm condition (*alarm, only if pre-programmed to do so*).
- The fans will turn on immediately as programmed.
- The automatic RESET module will start the pre-programmed time delay as soon as the fans are switched on. This time delay may be programmed for between 30 seconds and 10 minutes. Time delay increments are detailed in the manual.
- Please refer to the flowchart below for typical system operation.



Process Flow:



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