

**GENERAL MONITORS**

# **Model ZN002A**

Zero Two Series  
Zone Control Module



The information and technical data disclosed in this document may be used and disseminated only for the purposes and to the extent specifically authorized in writing by General Monitors.

**Instruction Manual**

**11/04**

General Monitors reserves the right to change published specifications and designs without prior notice.

Part No.:  
Revision:

MANZN002A-EU  
G/11.04

## Warranty Statement

General Monitors warrants the model ZN002A to be free from defects in workmanship or material under normal use and service within two (2) years from the date of shipment. General Monitors will repair or replace without charge any such defective equipment to be found defective during the warranty period. Full determination of the nature of, and responsibility for, defective or damaged equipment will be made by General Monitors' personnel. Defective or damaged equipment must be shipped prepaid to General Monitors' plant or the representative from which shipment was made. In all cases this warranty is limited to the cost of the equipment supplied by General Monitors. The customer will assume all liability for the misuse of this equipment by its employees or other personnel. All warranties are contingent upon proper use in the application for which the product was intended and do not cover products which have been modified or repaired without General Monitors' approval or which have been subjected to neglect, accident, improper installation or application, or on which the original identification marks have been removed or altered. Except for the express warranty stated above, General Monitors disclaims all warranties with regard to the products sold, including all implied warranties of merchantability and fitness and the express warranties stated herein are in lieu of all obligations or liabilities on the part of General Monitors for damages including, but not limited to consequential damages arising out of or in connection with the use or performance of the product.

## Warnings

- TOXIC, COMBUSTIBLE & FLAMMABLE GASES AND VAPOURS ARE VERY DANGEROUS. EXTREME CAUTION SHOULD BE USED WHEN THESE HAZARDS ARE PRESENT.
- All Zero Two Series Modules contain components, which can be damaged by static electricity. Special care must be taken when wiring the system to ensure that only the connection points are touched.
- Only sensor and field devices approved by General Monitors will work with associated Zero Two Series Gas & Flame Detection Modules. Any attempt to use a sensor or device that has not been approved by General Monitors will void the Warranty.

### **Safety Warning**

**Suitably skilled and competent personnel must carry out installation and maintenance only.**

## **E C Declaration of Conformity in accordance with EC Directives**

We at General Monitors Ireland Ltd., Ballybrit Business Park, Galway, Republic of Ireland, hereby declare that the equipment described below, both in its basic design and construction, and in the version or versions marketed by us, conforms to the relevant safety and health related requirements of the appropriate EC Directives, only as follows:

- a) Conforms with the protection requirements of Council Directive 89/336/EEC, + Amd 92/31/68/EEC relating to Electromagnetic Compatibility, by the application of:

A Technical Construction File No: GM 95005 and Competent Body Certificate No. 4473-95-106 and Report No. 4473/1K8

And

- b) Conforms with the protection requirements of IEC 1010-1 1990 + Amd 1: 1992 + Amd 2:1995 relating to safety by the application of:

A Technical Construction File No: GM 95005 and Competent Body Certificate No 4146/699L-6870, 4146/1119/9150 and 4146/1119/9507 issued by:

ERA Technology Ltd. Cleeve Road, Leatherhead Surrey KT22 7SB, England. Tel: +44 1372 370900

This declaration shall cease to be valid if modifications are made to the equipment without our approval.

**PRODUCT: Zone Control Module**

**MODEL: ZN002A**

It is ensured through internal measures and our ISO9001: 1994 certifications, that series production units conform at all times to the requirements of these current EC Directives and relevant standards.

Responsible Person: \_\_\_\_\_



Date: 15-07-97

General Manager European Operations

The signatory acts on behalf of company management, and with full power of attorney



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# 1.0 Introduction

## 1.1 General Description

The Zero Two Series of Trip Amplifiers and Control Modules have been developed for the purpose of creating combined fire and gas detection systems. There is a module for flame detection and each type of gas detection that General monitors offers.

<b>Module</b>	<b>Type of field device</b>
4802A	Combustible Gas Sensors
2602A	Hydrogen Sulphide (H <sub>2</sub> S) Gas Sensors
TA102A	Combustible Gas Smart Sensor/IR Point Detector
TA202A	Hydrogen Sulphide (H <sub>2</sub> S) Gas Smart Sensors
TA402A	FL3100 Family of Flame Detectors and FL3112 Family of Flame Detectors
TA502A	Multipurpose Module

In addition to Fire and Gas Detection Modules there are Accessory Modules that perform system functions (e.g. alarm reset, alarm accept), which enhance the performance of the system (e.g. zoning and voting).

<b>Module</b>	<b>Description</b>
FM002A	Facilities Module
IN042	Four Zone Input Module
ZN002A	Zone Control Module (FIG.1)
MD002	Monitored Solenoid Driver



**Figure 1**



The Zero Two Series modules reside in a 4, 8 or 16 channel chassis that can be rack or panel mounted. The back of each chassis provides a buss for the common and system signals that are sent to and from the Zone Control Module (ZN002A).

The bussed power connections are:

<b>24 VDC</b>	<b>Positive Supply Voltage</b>
<b>Common</b>	<b>System Ground</b>
<b>A1</b>	<b>Alarm level 1</b>
<b>A2</b>	<b>Alarm level 2</b>

There are two separate alarm levels labeled “A1” and “A2”. The “A2” alarm level is the most severe condition. These signals are sent to the Zone Control Module.

<b>Fault</b>	<b>Malfunctions</b>
--------------	---------------------

The “Fault” line signals the signals the Zone Control Module any time any of the modules in the system enter into a malfunction condition.

<b>Accept</b>	<b>Alarm Accept</b>
---------------	---------------------

Alarm levels are accepted and UA outputs (see below) are de-activated when the “ACCEPT” button on the front panel of the Zone Control Module is depressed. This signal is sent to all of the modules on the buss by the Zone Control Module.

<b>UA</b>	<b>Unaccept/Acknowledge</b>
-----------	-----------------------------

The “UA” is activated anytime a new alarm level is activated. When an activated alarm level is accepted, the “UA” is de-activated. The “UA” will re-activate if another alarm level is activated.

<b>Reset</b>	<b>Master Reset</b>
--------------	---------------------

Another button is provided on the front panel of the Zone Control Module so that latched alarm levels can be “RESET”. This signal is sent to all of the modules on the buss by the Zone Control Module.

<b>CAL</b>	<b>Cal Mode</b>
------------	-----------------

Any time a module in the system is placed in the “CAL” mode a signal is sent on the Zone Control Module.

## 1.2 Model ZN002A Description

The Zone Control Module (ZN002A) provides zoning and voting functions for three separate and independent zones of gas and/or flame detection. This Module takes up one channel in a Zero Two Series chassis.

The outputs from this Module include:

- One open collector output with a red front panel LED for each A1 and each A2 output. There is an A1 and A2 output associated with each zone (3 A1’s and 3 A2’s – 6 in total).
- One open collector output for Fault indications with an amber front panel LED
- One green front panel LED for ready indications.



The open collector (OC) outputs from other modules are the inputs to the Model ZN002A. Up to eight (8) of these OC outputs from other Modules may be grouped together in a zone such that an output signal (A1) will occur when any single open collector of the group is active. A second output (A2) will occur if two or more open collectors of the same group are active. Each ZN002A consists of three such groups (zones).

When an alarm (A1 or A2) goes active, a front panel LED will flash until the ACCEPT button on the Facilities is pressed. The front panel LED will then change to a steady ON condition until Reset.

During a fault condition, the Fault LED on the front panel will flash until the fault condition is accepted or corrected. If the fault is accepted, the Fault LED will stop flashing and stay ON until the fault is corrected. When the fault is corrected the Fault LED will turn OFF.

## 1.3 Features And Benefits

The Model ZN002A provides the system with three independent zones for additional flexibility. The outputs from these zones can connect to interposing Relays. Additionally, each Model ZN002A has the standard features listed below:

### **Multiple Zones**

Three independent zones, monitoring up to 24 gas and flame detection modules, can be achieved using a single Model ZN002A.

### **Independent Voting**

Each zone has independent voting, 1 and 2 votes per zone.

### **Microprocessor Based Electronics**

Monitors fault conditions, inputs and provides outputs in the form of LEDs and open collector activations.

### **Live Insertion/Removal**

Allows the user to insert or remove a module while power is applied to the chassis without damage to any of the components in the system.

### **Card Test**

This feature tests the input logic of every channel into each zone and is initiated by the operator.

### **LED Test**

Tests the integrity of each LED on the front panel.





## 2.0 Specifications

### 2.1 System Specifications

Available chassis:

4-channel rack or panel mount  
8-channel rack or panel mount  
16-channel rack or panel mount

#### **Number of channels for modules**

The ZN002A requires one channel of chassis space per module.

#### **Number of Modules Supported**

The ZN002A provides support for up to 24 modules in 3 zones.

#### **Warranty Period**

Two years.

### 2.2 Mechanical Specifications

Model ZN002A

Length: 251mm (9.900")  
Height: 173mm (6.825")  
Width: 19mm (0.750")  
Weight: 318 grams (11.20 oz)



## 2.3 Electrical Specifications

### Electrical Classifications:

The Zero Two Series are designed for use in safe (non-hazardous) locations.

### Operating Power

24 VDC nominal @ 125mA

20 to 32 VDC maximum range

Low voltage fault @ 20 VDC

(This module will not operate below 18 VDC)

PSU noise and ripple voltage 1.0Vpp max. The customer supplied PSU must comply with IEC 1010-1, limiting current to 8A under Fault conditions, in order to comply with CE Marking requirements.

### Open Collector Ratings :

100mA @ 35 VDC maximum

## 2.4 Environmental Specifications

### Operating Temperature Range:

-18°C to +66°C (0°F to 150°F)

### Storage Temperature Range:

-40°C to +66°C (40°F to 150°F)

### Operating Humidity Range:

5 to 100% Relative Humidity (non-condensing)

### EMC Susceptibility: (EN50082-2 : 1995)

10 V/m max.

## 2.5 Engineering Specifications

Zero Two System – Each system utilises modules capable of monitoring gas sensing elements or a 0 – 20mA analogue signal from gas or flame detection transmitters. The system chassis is available in 4, 8 and 16 channels. Each chassis contains a buss for the following independent signals:

- A1 Alarm
- A2 Alarm
- Fault
- Master Accept
- Master Reset
- Unaccept
- Cal
- +24 VDC
- System Common

Module signals are capable of being bussed from one chassis to another (16 channel chassis only), such that 100 modules can comprise a single system. The gas and flame detection modules are electrically and physically compatible and capable of being used in the same chassis to form combined fire and gas detection systems. The system consists of Zero Two Series component modules manufactured by General Monitors (Lake Forest, California, USA and Galway, Republic of Ireland).

### **Model ZN002A**

Each Zone Control Module provides voting and zoning logic for three independent zones. Each zone accepts up to eight inputs (open collector outputs) from other modules in the system.

The polarity of each input is DIP switch selectable such that each input for a single zone can have the same polarity. Single (A1) and dual (A2) voting is available for each zone in the form of independent front panel LED indications and rear terminal open collector outputs. The logic of the voting outputs is DIP switch selectable.

The Zone Control Module has the following additional features:

- LED Test
- Card Test
- Low Power “Fault” monitoring



## 3.0 Installation

### 3.1 On receipt of your Equipment

All equipment shipped by General Monitors is pre-packed in shock absorbing containers, which provide considerable protection against physical damage. The contents should be carefully removed and checked against the packing slip. If any damage has occurred, or there is any discrepancy in the order, please notify General Monitors as soon as possible. All subsequent correspondence with General Monitors must specify the equipment part number and the serial number. Each item and piece of equipment is completely checked by the factory. However, a complete check-out is necessary upon initial installation and start-up to ensure system integrity.

### 3.2 Chassis Installation

The chassis should be mounted in a non-hazardous, protected environment and should be subjected to a minimum of shock and vibration. Chassis must be connected to Safety Earth. In installations where two or more module types have been mixed in one chassis, check that the individual channel coding strips match the channel application. The coding strips are pre-configured at the factory and the male portion is already mounted on each module. The female portion, if unmounted, must be fastened in position on the mounting strip so as to mate with its counterpart on the module (See Figure 2). Female portion is pre-mounted as standard on chassis fitted with connectors.

Connectors for system expansion should be fastened using the screws provided. Do not over-tighten the connector or coding strip fasteners, as this may damage the moulded parts.

If more than one chassis is stacked vertically within an enclosure, forced air may be required for adequate cooling.

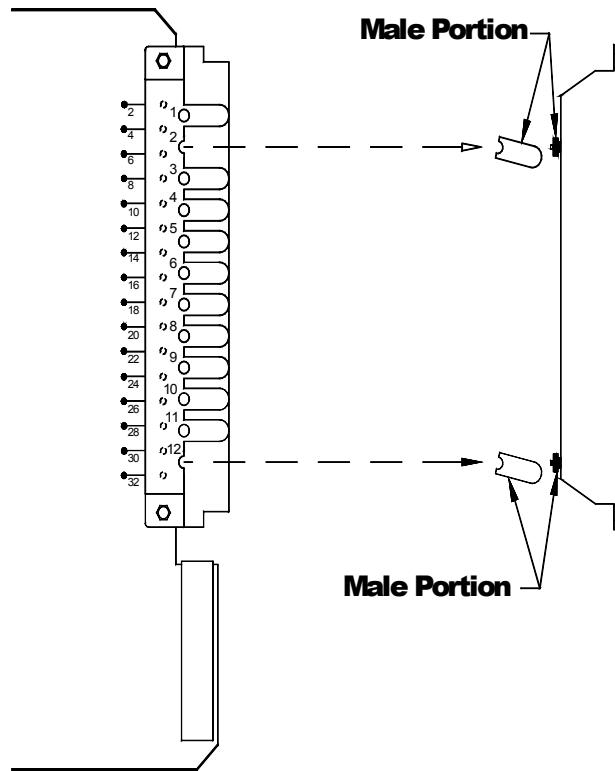


Figure 2

### 3.3 Module Installations

Zero Two Series modules comply with the EMC Directive for application of CE Marking. However, they should not be mounted in close proximity to a radio transmitter or similar requirement. Cables should be screened or screened and armoured to BS5308 or equivalent. These modules require some air circulation to avoid excessive heat build-up inside an enclosure. The far right channel, in each chassis, is dedicated to the Zone Control Module (ZN002A). This channel will not accommodate any other module.

Equipment is to be installed in Rack System or Cabinet meeting the fire enclosure requirements of IEC 1010-1.



### 3.4 Terminal Connections

When wiring the terminal connections, it will be necessary to properly strip the wire as shown (figure 3)

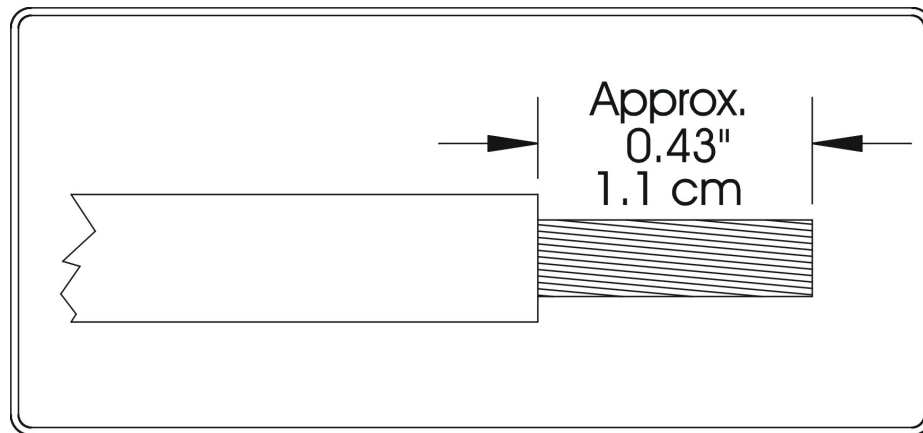


Figure 3

The terminal block accepts  $1.5\text{mm}^2$  to  $0.75\text{mm}^2$  (16 to 22 AWG) stranded or solid core wire.  $2.5\text{mm}^2$  (14 AWG) wire may be used if it is stripped according to figure 3.

Contact with PC Board components should be avoided in order to prevent damage by static electricity.

To connect wires to the terminal block on the rear of the Model ZN002A, loosen the desired screw, insert the stripped end of the wire and tighten. Non screw-type connectors are available. (Alternative connector styles are available - Contact GM for details.)

Refer to Figure 4 for the terminal designations for the Model (ZN002A).

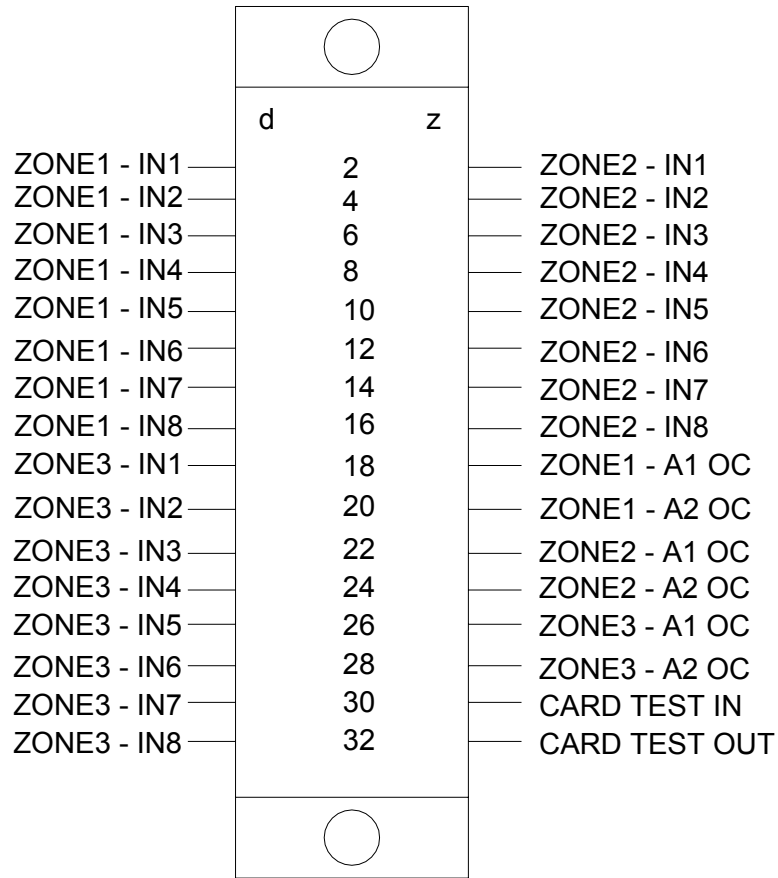


Figure 4

For the Gas and Flame Detection Modules, refer to the specific manual for detailed information on terminal connections on those modules

The input terminations for **Zone 1** are as follows:

Label	Term	Contact
Zone 1 – IN1	2d	Zone 1 – Input1
Zone 1 – IN2	4d	Zone 1 – Input2
Zone 1 – IN3	6d	Zone 1 – Input3
Zone 1 – IN4	8d	Zone 1 – Input4
Zone 1 – IN5	19d	Zone 1 – Input5
Zone 1 – IN6	12d	Zone 1 – Input6
Zone 1 – IN7	14d	Zone 1 – Input7
Zone 1 – IN1	16d	Zone 1 – Input8



The input terminations for **Zone 2** are as follows:

Label	Term	Contact
Zone 2 – IN1	2z	Zone 2 – Input1
Zone 2 – IN2	4z	Zone 2 – Input2
Zone 2 – IN3	6z	Zone 2 – Input3
Zone 2 – IN4	8z	Zone 2 – Input4
Zone 2 – IN5	19z	Zone 2 – Input5
Zone 2 – IN6	12z	Zone 2 – Input6
Zone 2 – IN7	14z	Zone 2 – Input7
Zone 2 – IN1	16z	Zone 2 – Input8

The input terminations for **Zone 3** are as follows:

Label	Term	Contact
Zone 1 – IN1	18d	Zone 3 – Input1
Zone 1 – IN2	20d	Zone 3 – Input2
Zone 1 – IN3	22d	Zone 3 – Input3
Zone 1 – IN4	24d	Zone 3 – Input4
Zone 1 – IN5	26d	Zone 3 – Input5
Zone 1 – IN6	28d	Zone 3 – Input6
Zone 1 – IN7	30d	Zone 3 – Input7
Zone 1 – IN1	32d	Zone 3 – Input8

The output and card test terminations are as follows:

Label	Term	Contact
Zone 1 – IN1	18z	Zone 1 – A1 OC
Zone 1 – IN2	20z	Zone 1 – A2 OC
Zone 1 – IN3	22z	Zone 2 – A1 OC
Zone 1 – IN4	24z	Zone 2 – A2 OC
Zone 1 – IN5	26z	Zone 3 – A1 OC
Zone 1 – IN6	28z	Zone 3 – A2 OC
Zone 1 – IN7	30z	Card Test Input
Zone 1 – IN1	32z	Card Test OC

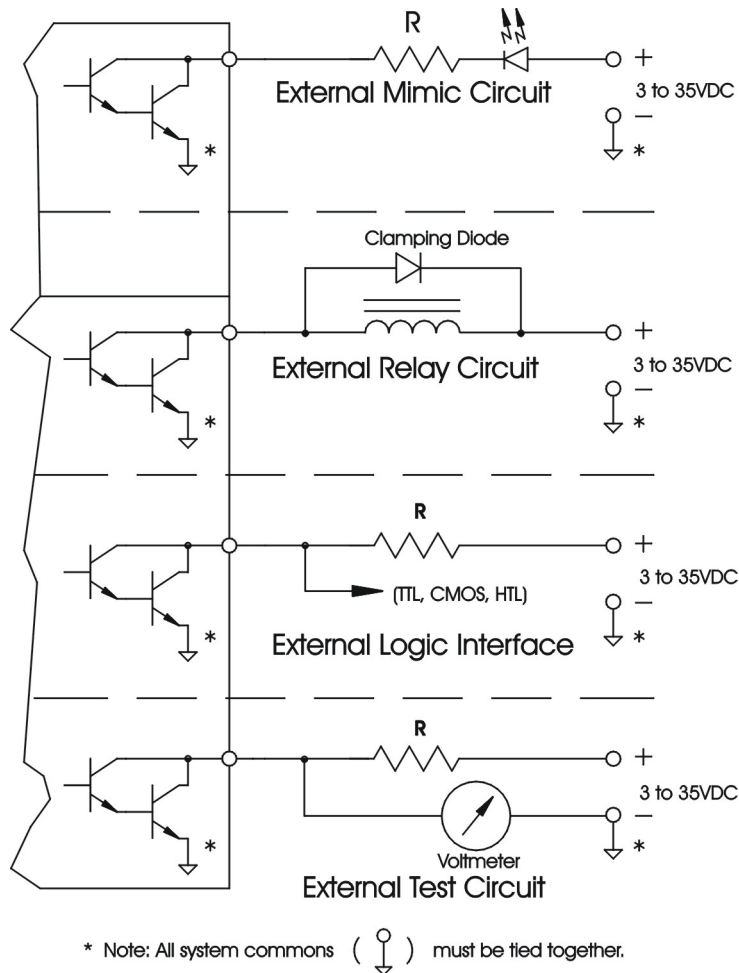


**Terminal Connections (continued)**

OC = Open Collector

All of the input (except Card Test In) terminations accept open collector outputs from other modules in the system. All of the output terminations are open collector outputs. The maximum electrical ratings for the open collector outputs are 35VDC at 100mA. See figure 5 for typical open collector external circuits.

Figure 5 illustrates some typical open collector external circuits.



**Figure 5**

Note: No connection should be made to terminal 30z, other than a normally open switch between ground (system common) and the terminal. General Monitors recommends using a single pole, single throw (SPST) normally open switch.

### 3.5 Applying Power

Zero Two Series Modules do not have an ON/OFF switch. Each module in the Zero Two Series is designed to operate on 24VDC nominal voltage. The current requirements will vary according to the number and type of modules in the system, as well as the number and type of field devices.

The power connections for all of the Zero Two Chassis are located on the buss board at the rear of each chassis (see Figure 10). **DO NOT** daisy chain +24VDC and Common between individual chassis. Apply power separately.

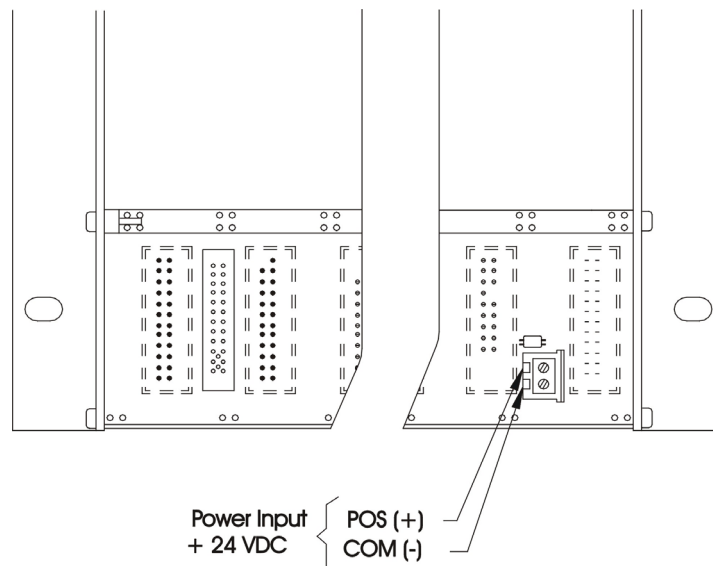


Figure 6

### 3.6 Interconnecting cable Guidelines

The interconnecting cable should have an overall screen or screen and armour. Cables to BS5308 or equivalent are suitable. Note that the terms “screen” and “shield” are equivalent for the purposes of this manual.

Interconnecting cables should be segregated from power and other “noisy cables”. Avoid proximity to cables associated with radio transmitters, welders, switch mode power supplies, inverters, battery chargers, ignition systems, generators, switchgear, arc lights and other high frequency or high power switching process equipment. In general, maintain a separation of at least 1m between instrument and other cables. Greater separations are required where long parallel cable runs are unavoidable. Avoid running instrument cable trenches close to lightning conductor earthing pits.

General Monitors do not recommend the use of cable shoes or crimps on any junction box or housing wiring terminals. Poor crimping can cause bad connection when unit experiences temperature variations. We therefore recommend good practice is to just terminate cable or sensor wires as is, especially in remote sensor applications.

Complete all cable insulation testing **before** connecting the cable at either end.



## 4.0 Operation

### Safety Warning

Suitably skilled and competent personnel must carry out installation and Maintenance only.

### 4.1 General Maintenance

Once the Model ZN002A has been installed, no maintenance, other than periodic checks to verify the integrity of the system, is required.

- Each gas and flame detection site, in the field, should be evaluated to determine the frequency of calibration and/or maintenance checks.
- A functional test of the system should be performed at least once each year. This test should include full operation on stand-by systems or back up power for the prescribed period.
- An LED test of the complete system should be performed. This test verifies the integrity of each front panel LED and each segment of the digital displays.
- All wiring should be checked for tightness, verifying that all of the components and devices are connected correctly.

### 4.2 Electrical Inputs

The electrical inputs to the Model ZN002A consist of the +24 VDC & common power connections, the 24 open collectors from the other modules and the card test switch connection. The power connections (+ 24VDC and common) are accessed from the buss. The open collectors from the other modules provide the Model ZN002A with the inputs to the Zones.

Open collectors associated with the alarm conditions can be one of two normal states, energized or de-energised. An energized open collector provides a path to common by sinking current. Conversely, a de-energised open collector does not provide a path to common because it does not sink current.

Since open collector outputs are bi-polar, it will be necessary to ensure all the inputs to the same zone have the same polarity (energized or de-energised). The Model ZN002A provides an eight-position DIP switch for each Zone, to ensure that input polarities match within each zone. Switch SW1 corresponds with Zone 1, SW2 with Zone 2 and SW3 with Zone 3. Position 1 of a switch (SW1, SW2, or SW3) is associated with the first input (channel) of the zone and position 8 is associated with the eighth input (channel) of the zone. Use the table below to set the polarity of each input into each zone.

**All switches closed is factory default.**



Channel	Open	Closed
1	Inverted Input	Normal Input
2	Inverted Input	Normal Input
3	Inverted Input	Normal Input
4	Inverted Input	Normal Input
5	Inverted Input	Normal Input
6	Inverted Input	Normal Input
7	Inverted Input	Normal Input
8	Inverted Input	Normal Input

The card test switch connection is provided to allow the operator to initiate the card test software routine. This software routine tests the input logic of each channel to each zone.

The duration of the Card Test is the length of time the test is activated. If the operator accesses the card test routine, all the front panel LEDs will illuminate if the test is successful. An unsuccessful test will cause the Fault LED on the front panel to flash.

### 4.3 Electrical Outputs

The electrical outputs from the Model ZN002A consist of the A1 and A2 voted open collectors for each zone (6 outputs in total), and the Card Test Out open collector. The A1 and A2 outputs on the Model ZN002A are unlike the A1 and A2 outputs on the gas and flame detection modules. The A1 and A2 output on the ZN002A represent levels of voting. (the A1 and A2 outputs on the other modules represent degrees of hazard). The A1 and A2 open collectors for each zone represent single voted and dual voted outputs. This means that in order for an A1 output to activate, any input to the zone needs to activate, and in order for an A2 output to activate, any two or more inputs to the zone need to activate. A1 requires one vote and A2 requires two or more votes. There are front panel LEDs that are associated with each A1 and A2 (six total)

The Card Test Out open collector is normally de-energised. When the Card Test is activated, this output energises and remains energized for the duration of the test.

There are two kinds of faults that are monitored on the Model ZN002A, low voltage conditions and an unsuccessful Card Test. A low voltage condition or fault will occur when the input voltage to the ZN002A drops below 20 VDC, however the unit will continue to operate as low as 18VDC.

### 4.4 Accepting Alarm Conditions

Whenever an input activates, the A1 LED, and possibly the A2 LED, for that zone will begin to flash (ZN002A only). This flashing front panel LED indicates that a new condition/alarm has occurred. On some Zero Two Modules (not the ZN002A) the unaccept (UA) outputs will activate. New conditions/alarms should be acknowledged or accepted. This is accomplished with the Accept Button located on the Facilities Module (FM002A). Pressing the Accept Button de-activates all unaccepted outputs and causes the flashing front panel LEDs to stop flashing. The front panel LEDs will remain on until reset (by Master Reset Button, also located on the FM002A, if latching).



There is a unique situation that may occur with some frequency in certain applications. An alarm may occur and the operator will accept it by pressing the Accept Button. If the output is latching and the condition that caused the alarm is no longer present, the output will need to be Reset as stated in section 4.5 of this chapter. If, however, the output is not reset and a similar condition causes the alarm to occur, the front panel LED will flash or re-activate. This gives the operator an indication of a new alarm condition that must be re-accepted.

On some modules, a Fault Unaccept (FUA) output will activate. Whenever a fault condition occurs, the front panel LED will begin to flash. If the operator presses the Accept Button, the LED will stop flashing, but stay on until the condition that caused the fault is no longer present. Fault outputs are always non-latching, they reset automatically.

**Note:** The Model ZN002A does not have a fault Unaccept output.

## 4.5 Resetting Latched Alarms

The operator may select a latching or non-latching output for A1 and/or A2. See Section 4.6 of this chapter for selecting latching and/or non-latching output options. If an output activates and the input(s) that caused the activation de-activates, a non-latching output will reset automatically, whereas a latched output will need to be reset manually.

Resetting latched outputs is accomplished with the Master Reset Button on the Facilities Module (FM002A). Pressing the Master Reset Button will reset any latched condition in the system, provided the condition that caused the output to latch is no longer present.

### Led Test

If the operator presses and holds the Master Reset Button for two or more seconds, all of the LEDs and LED segments on each module in the system will illuminate for as long as the operator presses the button.



## 4.6 User Selectable Options

The SW5 DIP switch is reserved for user selectable options. The table below lists the switch selectable options and their settings:

Position	Open	Closed
1	Zone 1, A1 Open Collector Inverted Output	Zone 1, A1 Open Collector Normal Output
2	Zone 1, A1 Open Collector Inverted Output	Zone 1, A2 Open Collector Normal Output
3	Zone 1, A1 Open Collector Inverted Output	Zone 2, A1 Open Collector Normal Output
4	Zone 1, A1 Open Collector Inverted Output	Zone 2, A2 Open Collector Normal Output
5	Zone 1, A1 Open Collector Inverted Output	Zone 3, A1 Open Collector Normal Output
6	Zone 1, A1 Open Collector Inverted Output	Zone 3, A2 Open Collector Normal Output
7	Latching A2 Open Collector Outputs	Non-Latching A2 Open Collector Outputs
8	Latching A1 Open Collector Outputs	Non-Latching A1 Open Collector Outputs

Factory default settings are: All Zone OC, Outputs Normal and A1 & A2 OC Outputs Latching.



# Appendix A

## Glossary of Terms

**Analogue** – Continuous, without steps.

**Ambient Temperature** – Surrounding or background Temperature

**AWG** – American Wire Gauge

**Canadian Standards Association** – CSA is an approval agency. Testing laboratories will test Gas Detection Equipment to the Standards that are set by approval agencies such as CSA. CSA certification is required for selling equipment in Canada. CSA standards are recognized by many organizations outside Canada.

**COM** – Common

**DC** – Direct Current

**De-energised** – A relay is de-energised when it is at mechanical rest. That is, the position of the contacts will not change until power is applied to the relay.

**Digital** – Stepped in specific increments.

**Energised** – When a relay is energised, power is applied to the relay such that the contacts are held in a position for as long as the power is applied.

**FM** – Factory Mutual Research Laboratory.

**Latching** – To latch is to hold on to. A latching condition is a result of a condition occurring and going away, but the signal will be held by the electronics until manually reset.

**mA** – Milliampere, one thousandth (.001) of an amp.

**Microprocessor Based Electronics** – All of the input signal processing, fault monitoring, calibrating routines, setup routines, and the outputs are under the control of a microprocessor unit (MPU).

**MPU** – Microprocessor Unit.



**Non-latching** – A non-latching condition exists when the signal follows the condition (i.e. if a condition occurs, a signal occurs; if the condition returns to normal, the signal returns to normal). The signal automatically resets.

**PLC** – Programmable Logic Controller

**Potentiometer** – An adjustable resistor

**PTFE** – Polytetrafluoroethylene, otherwise known by its trade name, Teflon.

**SPST** – Single Pole Single Throw. Each Pole is a set of throws. Each Throw is a normally open or closed set of contacts. So an SPST switch has 1 open and 1 closed contact.

**TB** – Terminal block.

**Voting** – The number of channels within the same zone required to activate an alarm.

A1 Voting requires 1 channel within the zone to activate the A1 output for that zone. A2 Voting requires 2 or more channels within that zone to activate the A2 output for that zone.

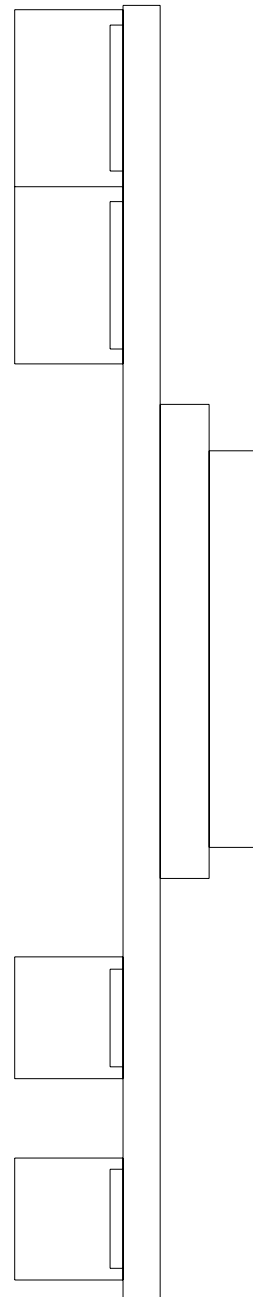
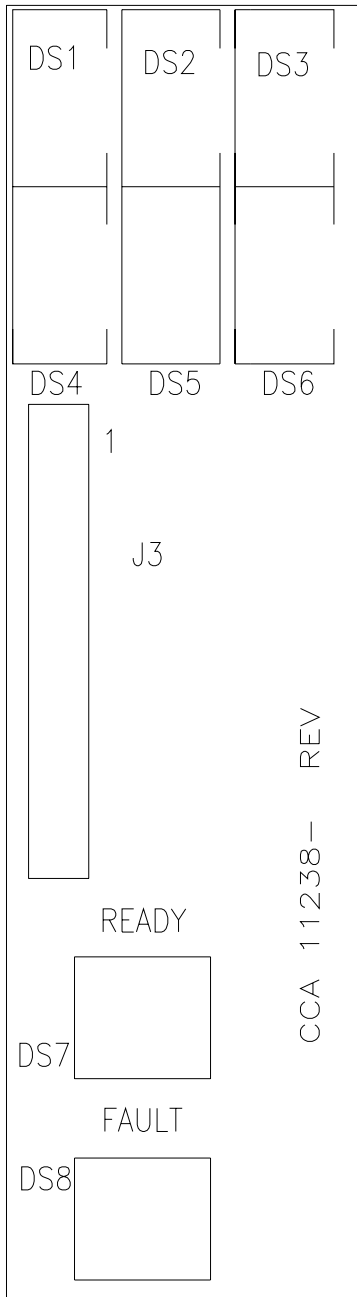




# Appendix B

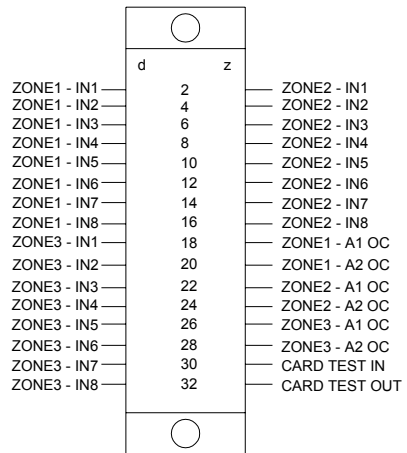
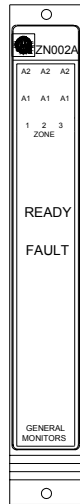
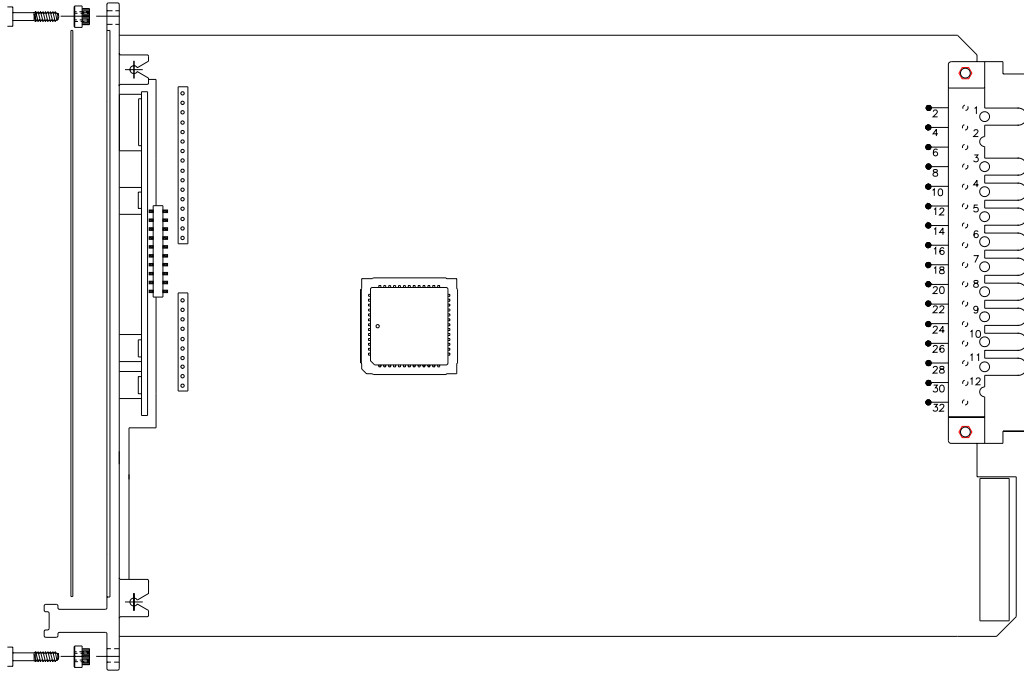
Engineering Documentation

Reference Drawing # 11238-2



Circuit Card Assembly – Display Board

Figure 7



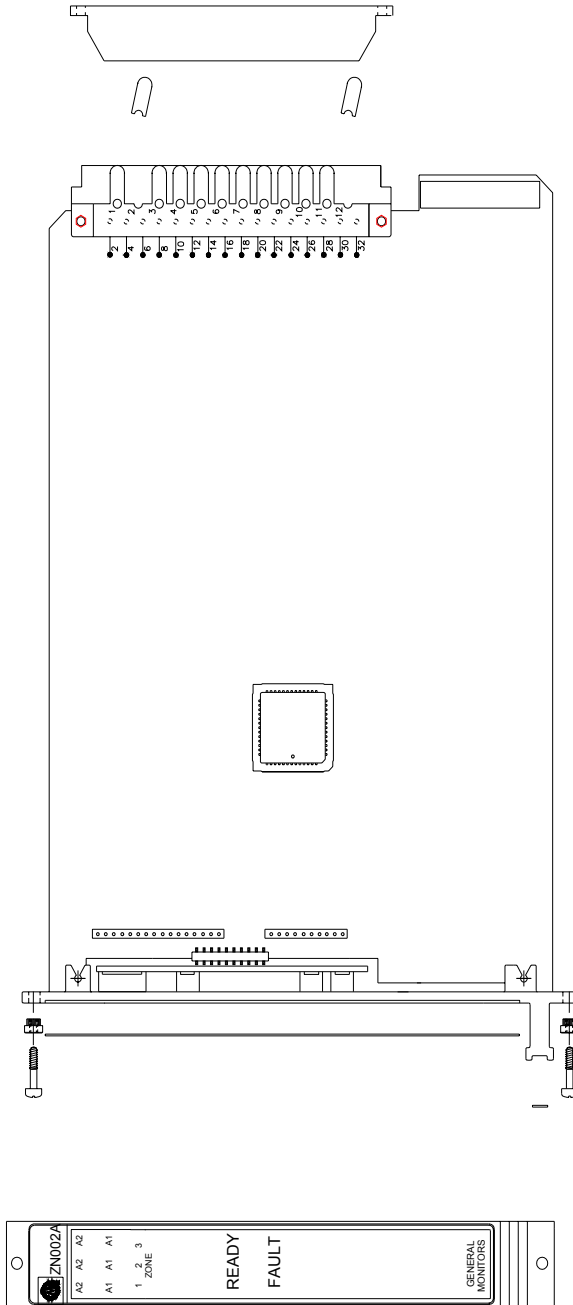
Outline & Dimensional Drawing – ZN002A

Figure 8



Engineering Documentation

Reference Drawing # 11230-1



Final Assembly Drawing – ZN002A

Figure 9

## Appendix C

### Zero Two Series Modules

**Model 2602A**

Zero Two Series Control Module for Hydrogen Sulphide Gas Applications

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**Model 4802A**

Zero Two Series Control Module for Combustible Gas Applications

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**Model TA102A**

Zero Two Series Trip Amplifier Module for Combustible Gas Applications

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**Model TA202A**

Zero Two Series Trip Amplifier Module for Hydrogen Sulphide Gas Applications

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**Model TA402A**

Zero Two Series Trip Amplifier Module for Flame Detection Applications

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**Model TA502A**

Zero Two Series Trip Amplifier Module  
A flexible multipurpose module for a variety of GM Products.

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**Model FM002A**

Zero Two Series Facilities Module  
Performs Common Functions for Zero Two Series Systems

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**Model ZN002A**

Zero Two Series Zone Control Module  
Performs Zoning and Voting Functions for Zero Two Series Systems

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**Model MD002**

Zero Two Series Monitored Solenoid Module  
For Monitoring/Driving High Current Output Devices

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**Model IN042**

Zero Two Series Four Zone Input Module for  
Call points, Smoke & Heat Detectors

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# Customer Satisfaction Questionnaire

## Attention Field Operations:

We would appreciate your help in assessing and thus improving the quality of our Equipment and Service and would therefore be grateful if you would complete the Questionnaire below and return it to:

General Monitors Ireland Ltd,  
Ballybrit Business Park,  
Galway,  
Republic of Ireland.

**Thank you for your assistance**

Client \_\_\_\_\_

Client Order No. \_\_\_\_\_

General Monitors Sales Order No. \_\_\_\_\_

(Please tick appropriate box)

	Yes	No
1. Was the equipment the correct option?	<input type="checkbox"/>	<input type="checkbox"/>
2. Are sensors correct type and range?	<input type="checkbox"/>	<input type="checkbox"/>
3. Is mechanical assembly good? (everything proper fit and tight)	<input type="checkbox"/>	<input type="checkbox"/>
4. Did you receive the necessary accessories to commission the equipment?	<input type="checkbox"/>	<input type="checkbox"/>
5. Has the equipment been commissioned?	<input type="checkbox"/>	<input type="checkbox"/>
6. Any problems encountered during commissioning?	<input type="checkbox"/>	<input type="checkbox"/>
7. Is the equipment functioning correctly at present?	<input type="checkbox"/>	<input type="checkbox"/>

If you have answered **NO** to any of the above, please provide further details overleaf. **Thank you.**

Completed by: \_\_\_\_\_

Date: \_\_\_\_\_