



**GENERAL MONITORS**

# **Model CC02A**

Zero Two Series  
Communications 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**

**04/03**

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



Part No.  
Revision

MANCC02A  
C/04-03

## Warranty

General Monitors warrants the Model CC02A to be free from defects in workmanship or material under normal use and service within two years from the date of shipment.

General Monitors will repair or replace without charge any such equipment found to be 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 to General Monitors' plant or representative from which the original 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 performance of the product.

## Warning



**WARNING** - 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.



**WARNING** - Installation and Maintenance must be carried out by suitably skilled and competent personnel only.

Full backward compatibility can be specified at the time of order. If this configuration is specified, the rear terminal output designations will be identical to the previous generation of Zero Two Series Modules.

This generation of product can be distinguished from the previous generation by the lack of a door on the front panel. Adjustments are not necessary on the current generation of this product.

## **E C Declaration of Conformity in accordance with EC & ATEX 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 97005 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 97005 and Competent Body Certificate No. 4146/699L-6870, 4146/1119/9510 and 4146/1119/9507 issued by:

ERA Technology Ltd. Cleeve Road, Leatherhead Surrey KT22 7SA, England. Tel: +44 1372 367000

- c) Conforms to EN50270:1999 as tested by ITS Testing & Certification Cleeve Road, Leatherhead Surrey KT22 7SB. Report No. EM02006611.

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

**PRODUCT: Communications Module**

**MODEL: CC02A**

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.

Note:        The Following Information applies to ATEX.

**This equipment has been assured for use as a safety related device under the terms of Directive 94/9/EC EHSR 1.5.**

**General Monitors Ireland Ltd. in order to comply with ATEX will provide this Instruction Manual in a European Language required to operate the product upon request. Should this be necessary, General Monitors Ireland Ltd. should be notified of this request to allow adequate time to process the request.**

ATEX Certificate Markings:

CC02A

General Monitors Ireland Ltd.



**II (2) G      SIRA02ATEX 9378**



**0518      T ambient  
-18°C to +66°C**

Responsible Person:

Date: 05-12-02

Denis Connolly  
General Manager European Operations

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

# System Integrity Verification

General Monitors' mission is to benefit society by providing solutions through industry- leading safety products, services and systems that save lives and protect capital resources from the dangers of hazardous flames, gases and vapors.

The safety products you have purchased should be handled carefully and installed, calibrated and maintained in accordance with the respective product instruction manual. Remember, these products are for your safety.

To ensure operation at optimum performance, General Monitors recommends that certain maintenance items are performed.

## **Commissioning Safety Systems**

Before power up, verify wiring, terminal connections and stability of mounting for all integral safety equipment including, but not limited to:

- Power supplies
- Control modules
- Field detection devices
- Signaling / output devices
- Accessories connected to field and signaling devices

After the initial application of power (and any factory specified warm-up period) to the safety system, verify that all signal outputs, to and from devices and modules, are within the manufacturers' specifications. Initial calibration / calibration checking / testing should be performed per the manufacturers' recommendations and instructions.

Proper system operation should be verified by performing a full, functional test of all component devices of the safety system, ensuring that the proper levels of alarming occur.

Fault/Malfunction circuit operation should be verified.

## **Periodic Testing/Calibration of Field Devices**

Periodic testing/calibrating should be performed per the manufacturers' recommendations and instructions. Testing/Calibrating procedures should include, but not be limited to:

- Verify zero reading
- Apply a known concentration of gas, or a simulated test device provided by the manufacturer
- Verify integrity of all optical surfaces and devices.

When testing produces results outside of the manufacturers' specifications, re-calibration or repair/replacement of the suspect device(s) should be performed as necessary. Calibration intervals should be independently established through a documented procedure, including a calibration log maintained by plant personnel, or third party testing services.

**Periodic System Verification**

The following system verifications should be performed at least annually:

Verify wiring, terminal connections and stability of mounting for all integral safety equipment including, but not limited to:

- Power supplies
- Control modules
- Field detection devices
- Signaling / output devices
- Accessories connected to field and signaling devices.

Proper system operation should be verified by performing a full, functional test of all component devices of the safety system, ensuring that the proper levels of alarming occur.

Fault/Malfunction circuit operation should be verified.

Calibration intervals should be independently established through a documented procedure, including a calibration log maintained by plant personnel, or third-party testing services.

# 1.0 Quick Start Guide

## 1.1 CC02A Module Installation

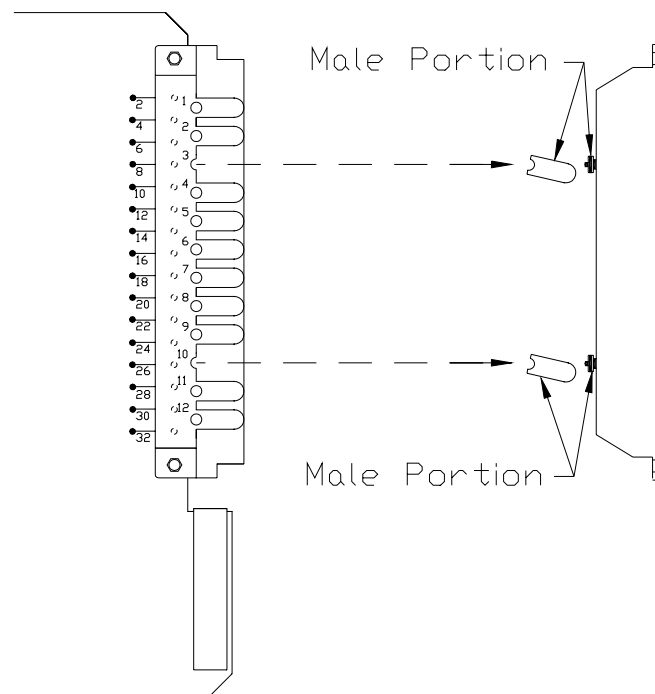


**WARNING** - All Zero Two Series Modules contain components, which can be damaged by static electricity. Special care must be taken when wiring the system to ensure that only the connection points are touched.



**WARNING** - Installation and Maintenance must be carried out by suitably skilled and competent personnel only.

A rack or panel mounted chassis will be required when installing any Zero Two Series Module. These chassis should be mounted in non-hazardous, weather-protected locations and should be subjected to minimal shock and vibrations. The rack and panel mounted chassis are available in 4, 8 and 16 channel sizes. Multiple 16-channel chassis may be connected to each other to form larger systems. In installations where two or more module types are to be mixed in the same chassis, ensure that the individual coding strips match the channel applications. The coding strips are pre-configured in the factory and the male portion is already on each module. The female portion, if un-mounted, must be fastened into position on the mounting strip of the desired chassis channel so as to mate with its counterpart on the module (see Figure 1).



**Figure 1 – Mounting Instructions**

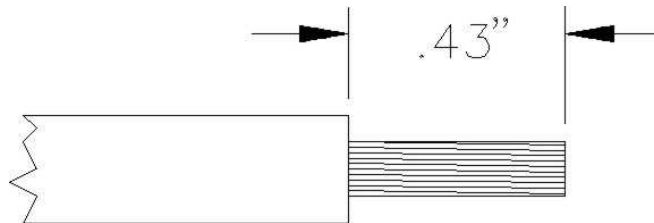
Equipment is to be installed in a Rack system or Cabinet meeting the fire enclosure requirements of IEC 1010-1.

Zero Two Series modules require air circulation to avoid excessive heat build-up. If the chassis are stacked vertically within an enclosure, forced air circulation may be required.

## 1.2 Rear Terminal Connections

All wires to the Model CC02A are made to the terminal block located at the rear of the chassis. The terminal block accepts  $1.5\text{mm}^2$  to  $0.75\text{mm}^2$  (16 to 20 AWG) stranded or solid core wire.  $2.5\text{mm}^2$  (14 AWG) wire may be used if it is properly stripped according to Figure 2.

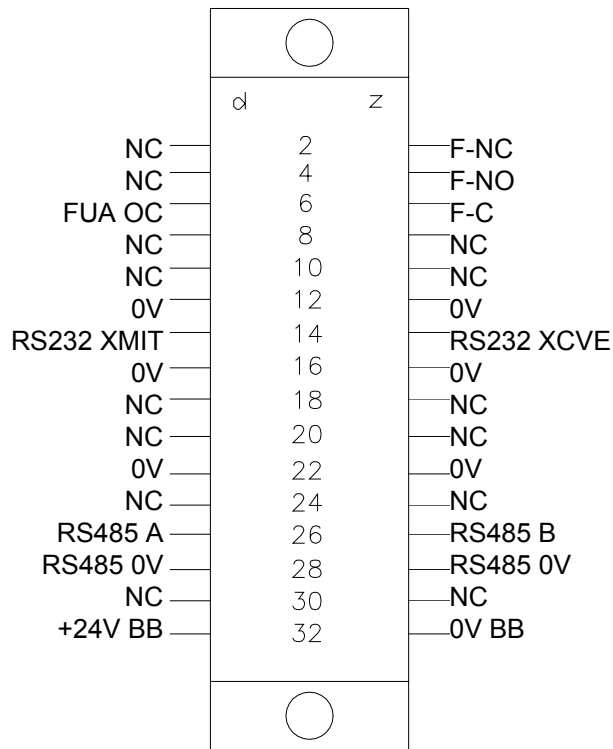
Contact with PC Board components should be avoided in order to prevent damage by static electricity.



### Strip Length

**Figure 2 – Wire Strip Length**

To connect wires to the terminal block on the Model CC02A, loosen the desired screw, insert the stripped end of the wire and tighten. (Alternate connector styles available - contact the factory). For the rear terminal designations, please refer to Figure 3.



**Figure 3 – Rear Terminal Connections**

**1.2.1 FUA OC**

Fault Unaccept open-collector output (de-energized when in-active).  
Output rating: 35VDC, 100mA sink max

**1.2.2 F-NC**

Fault relay contact (closed in absence of a fault).

**1.2.3 F-NO**

Fault relay contact (open in absence of a fault).

**1.2.4 F-C**

Fault relay contact common  
Contact rating: 4A@30VRMS/42.2V<sub>PK</sub>, 3A@30VDC resistive.

**1.2.5 RS232 XMIT and RS232 XCVE**

Port 2 RS232 Modbus RTU transmit output and receive input. Replicated on front panel RJ45 connector

**1.2.6 RS485 A and RS485 B**

Port 1 RS485 Modbus RTU inputs/outputs A and B. Electrically isolated from other CC02A circuitry

**1.2.7 RS485 0V**

Port 1 RS485 zero volt connection. Connects to power supply common via 1Mohm resistor paralleled by 10nF, 1kV capacitor



### 1.2.8 +24V BB and 0V BB

Battery backup power inputs. (0V BB connects to 0V and power supply common via chassis)

### 1.2.9 0V

Zero volt connections for RS232 return. Connects to chassis power supply common.

## 1.3 Front Panel RJ 45 Connections

Pin No.	Connection
1	Port 2 RS232 Modbus RTU Receive Input
2	Port 2 RS232 Modbus RTU Transmit Output
3	Zero volt connections for RS232 return. Connects to chassis power supply common.

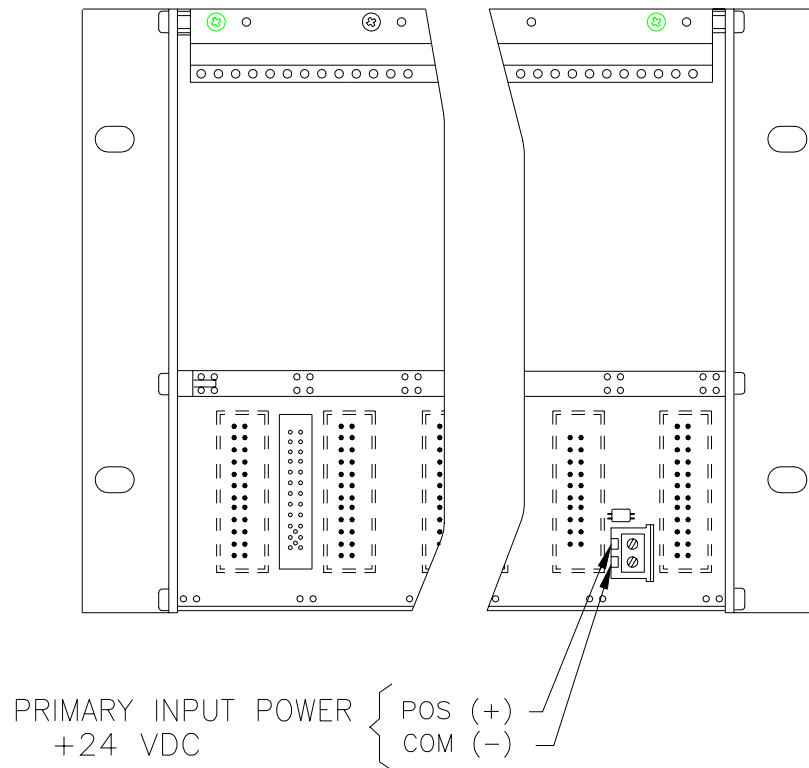
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**NOTE** - These connections are replicated on the rear terminal. Refer to Figure 3.

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## 1.4 Power Connections

Figure 4 indicates where the power connections for the chassis are made.



**Figure 4 – Rear Power Connection**

**Do not daisy chain +24V and Common on the chassis. Apply separate power to each chassis.**

Zero Two Series Modules do not have an ON/OFF power switch. If the application of power does not turn on the Module CC02A, check fuse F2, or in case of the Battery Backup supply, check fuse F1.

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**NOTE** - The instrument is now ready to operate! Please consult the manual for more information on the instrument's many features.

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**NOTE** - If you have any problems in the setup or testing of the detector, please refer to the "Troubleshooting Section", or call the factory direct.

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**Worldwide Service is available by calling:**

<b>Lake Forest, California (24 hr. service)</b>	<b>Phone:</b>	<b>+1-949-581-4464</b>
	<b>Fax:</b>	<b>+1-949- 581-1151</b>
<b>Houston, Texas</b>	<b>Phone:</b>	<b>+1-281-855-6000</b>
	<b>Fax:</b>	<b>+1-281-855-3290</b>
<b>Ireland</b>	<b>Phone:</b>	<b>+353-91-751175</b>
	<b>Fax:</b>	<b>+353-91-751317</b>
<b>Singapore</b>	<b>Phone:</b>	<b>+65-748-3488</b>
	<b>Fax:</b>	<b>+65-748-1911</b>
<b>United Arab Emirates</b>	<b>Phone:</b>	<b>+971-4-8815751</b>
	<b>Fax:</b>	<b>+971-4-8817927</b>
<b>United Kingdom</b>	<b>Phone:</b>	<b>+44-1625-619583</b>
	<b>Fax:</b>	<b>+44-1625-619098</b>

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## 2.0 Introduction

### 2.1 General Description

The General Monitors Model CC02A is a Communications Module designed for use in Zero Two Series Systems. This Module facilitates serial communications between each module in a Zero Two Series system and an external host computer, allowing fast access to operational and setup data. It supports a Burst Read feature, which returns all relevant data in a single transmission. The CC02A acts as an intelligent bridge between the Zero Two System communications bus and the host, implementing all necessary protocol conversions and error check routines. User selected Zero Two module node addresses are mapped into the Modbus node address space by the CC02A. The Module presents an RS485 based Modbus RTU Slave interface to the host computer, while an additional and independent RS232 based Modbus RTU Slave interface supports simultaneous communication with a second or local host. The CC02A can be configured to act as Master or Slave of the Zero Two system communications bus.



Figure 5 – Model CC02A

This Module connects to other Zero Two System modules via the chassis busboard and interfaces with the Fault, Master Accept and Master Reset buss. Accept, Reset, LED Test and Card Test commands can be transmitted to individual Zero Two System modules. In Broadcast mode, these commands are executed by all Zero Two System modules, simultaneously. The CC02A supports LED Test and detects low-supply conditions. It has a normally energized Fault relay and a Fault Unaccept open-collector output. Communications errors are flagged by their corresponding error codes in the Modbus response.

The Model CC02A is electrically and physically compatible with the other gas detection, flame detection and system modules in the Zero Two Series. It is distinguished from the other modules by its gray border and “CC02A” in the upper right corner of the front panel. The Model CC02A is designed for use in non-hazardous environments.

## 2.2 Features and Benefits

- Fast access to Zero Two System operational and setup data
- Ease of Zero Two System maintenance and diagnostics
- Dual host operation possible for local and remote host with single CC02A
- Increased fault tolerance with dual CC02A
- RS485 and RS232 Modbus RTU ports
- CC02A master/slave operation
- Battery backup, watchdog, fault relay and communications error detection
- User configurable
- Communications status LED's.



## 3.0 Installation

### 3.1 Upon Receipt of Equipment

All items shipped by General Monitors are packed in shock absorbing containers, which affords a considerable degree of protection against physical damage. When received, the contents should be carefully removed and checked against the enclosed packing slip. If any damage has occurred or if there is any discrepancy in the order, General Monitors should be notified as soon as possible. All subsequent correspondence with General Monitors must specify the equipment part number and serial number.

Each Model CC02A is completely checked at the factory; however, complete checkout is necessary upon initial installation and start-up to ensure system integrity.

### 3.2 CC02A Module Installation

A rack or panel mounted chassis will be required when installing any Zero Two Series Module. These chassis should be mounted in non-hazardous, weather-protected locations and should be subjected to minimal shock and vibrations. The rack and panel mounted chassis are available in 4, 8 and 16 channel sizes. Multiple 16-channel chassis may be connected to each other to form larger systems. In installations where two or more module types are to be mixed in the same chassis, ensure that the individual coding strips match the channel applications. The coding strips are pre-configured in the factory and the male portion is already on each module. The female portion, if unmounted, must be fastened into position on the mounting strip of the desired chassis channel so as to mate with its counterpart on the module (see Figure 6).

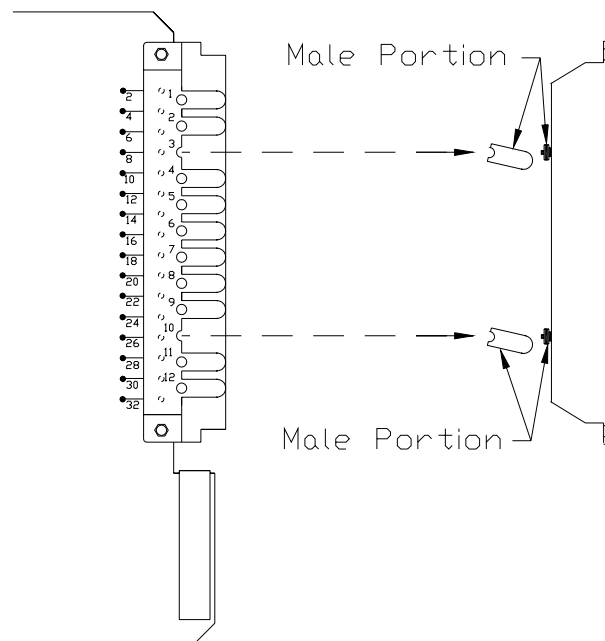


Figure 6 – Mounting Instructions



**WARNING** – Installation and Maintenance must be carried out by suitably skilled and competent personnel only.

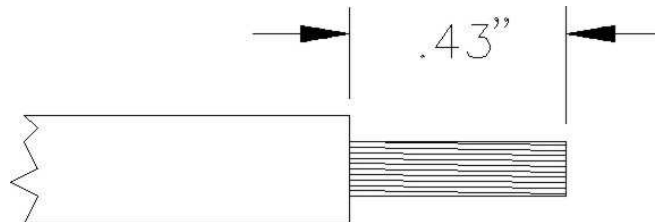
Equipment is to be installed in a Rack system or Cabinet meeting the fire enclosure requirements of IEC 1010-1.

Zero Two Series modules require air circulation to avoid excessive heat build-up. If the chassis are stacked vertically within an enclosure, forced air circulation may be required.

### 3.3 Rear Terminal Connections

All wires to the Model CC02A are made to the terminal block located at the rear of the chassis. The terminal block accepts  $1.5\text{mm}^2$  to  $0.75\text{mm}^2$  (16 to 20 AWG) stranded or solid core wire.  $2.5\text{mm}^2$  (14 AWG) wire may be used if it is properly stripped according to Figure 7.

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



Strip Length

Figure 7 – Wire Strip Length

To connect wires to the terminal block on the Model CC02A, loosen the desired screw, insert the stripped end of the wire and tighten. (Alternate connector styles available - contact the factory). For the rear terminal designations, please refer to Figure 8.

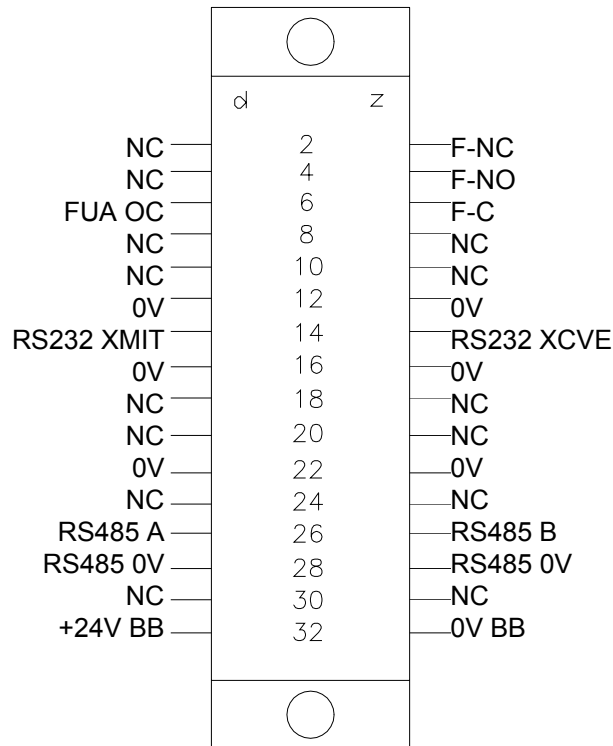


Figure 8 – Rear Terminal Designations

### 3.3.1 FUA OC

Fault Unaccept open-collector output (de-energized when in-active)  
Output rating: 35VDC, 100mA sink max

### 3.3.2 F-NC

Fault relay contact (closed in absence of a fault)

### 3.3.3 F-NO

Fault relay contact (open in absence of a fault)

### 3.3.4 F-C

Fault relay contact common  
Contact rating: 4A@30VRMS/42.2V<sub>PK</sub>, 3A@30VDC resistive

### 3.3.5 RS232 XMIT and RS232 XCVE

Port 2 RS232 Modbus RTU transmit output and receive input. Replicated on front panel RJ45 connector

### 3.3.6 RS485 A and RS485 B

Port 1 RS485 Modbus RTU inputs/outputs A and B. Electrically isolated from other CC02A circuitry

### 3.3.7 RS485 0V

Port 1 RS485 zero volt connection. Connects to power supply common via 1Mohm resistor paralleled by 10nF, 1kV capacitor

### 3.3.8 +24V BB and 0V BB

Battery backup power inputs. (0V BB connects to 0V and power supply common via chassis)

### 3.3.9 0V

Zero volt connections for RS232 return. Connects to chassis power supply common.

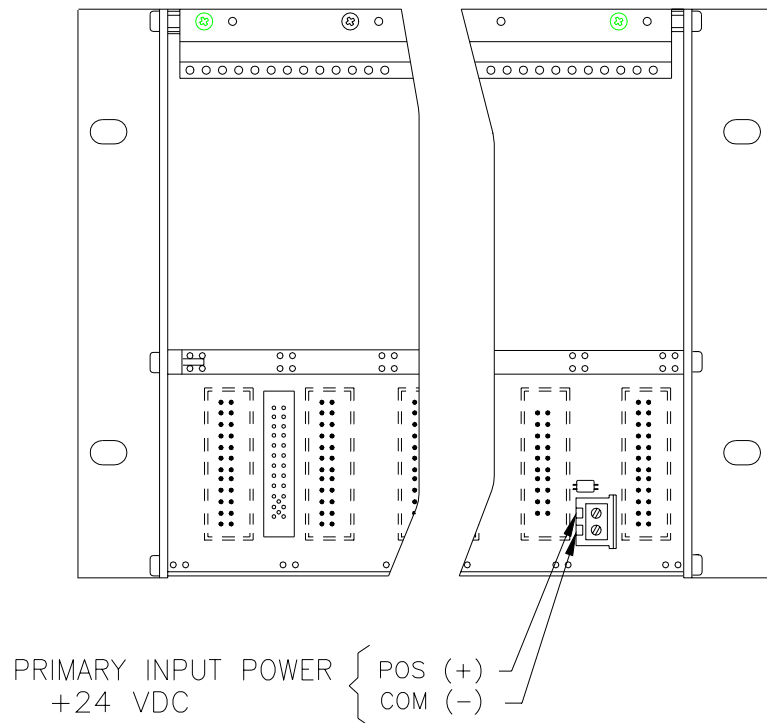
## 3.4 Front Panel RJ 45 Connections

Pin No.	Connection
1	Port 2 RS232 Modbus RTU Receive Input
2	Port 2 RS232 Modbus RTU Transmit Output
3	Zero volt connections for RS232 return. Connects to chassis power supply common.

**NOTE** - These connections are replicated on the rear terminal. Refer to Figure 8.

## 3.5 Power Connections

Figure 9 indicates where the power connections for the chassis are made.



**Figure 9 – Rear Power Connection**

**Do not daisy chain +24V and Common on the chassis. Apply separate power to each chassis.**

Zero Two Series Modules do not have an ON/OFF power switch. If the application of power does not turn on the Module CC02A, check fuse F2, or in case of the Battery Backup supply, check fuse F1.

## 4.0 Modbus RTU Serial Communications

### 4.1 Operation

The Model CC02A implements all data format and speed conversions required to allow Zero Two Series modules to communicate with a host controller, using the Modbus RTU protocol. This will make Zero Two Series operational and setup data available to the host.

The device presents a Modbus RTU Slave Interface to the host, while it can be Master or Slave on the Zero Two Series System communications bus.

A single CC02A may be used to interface with a Zero Two Series system. Alternatively, an additional CC02A increases fault tolerance.

The CC02A operating as Master can map 246 Node addresses, corresponding to Zero Two Series modules, into the Modbus Node address space. Its own Modbus Node address may be selected in the 1 – 247 range.

When operating as Slave it is accessible via its Modbus Node address in the 1 – 247 range but also via its Node address on the Zero Two Series System communications bus.

The CC02A acts as a Zero Two Series Front-end, which maps Zero Two Series Module Node addresses into the Modbus Node address space, using a Node Address Enable look-up table. When the CC02A detects a Modbus message, it will check if the Node address for that message is enabled, convert the message and pass it on to the Zero Two Series communications buss. If the Node address is not enabled, the CC02A takes no action. This prevents congestion on Zero Two Series communications buss and reduces the occurrence of errors. The look-up table is user configurable.

The CC02A does not support Modbus Broadcast (Node address = 0) as the register allocation among the Zero Two Series modules is not identical. Instead, the CC02A will initiate a Zero Two Series communications buss Broadcast for ACCEPT, RESET, LED TEST and CARD TEST, when the corresponding registers in the CC02A are written. Individual ACCEPT, RESET, LED TEST and CARD TEST commands may be written to the corresponding registers at any Zero Two Series Module Node.

A Modbus multiple Read (11 registers) will return all registers from the corresponding Zero Two Series Module Node. Modbus multiple Writes are not supported.

The CC02A, when GMIbus master, uses a 100 mS timeout between a Zero Two Series System communications buss request and its corresponding reply. When no reply is received, the CC02A will retry up to 4 more times.

Errors on the Zero Two Series System communications buss and/or Modbus will be flagged by corresponding error codes in the Modbus reply.

## 4.2 Specification

### 4.2.1 Communications Port 1

Driver	RS485		
Protocol	Modbus RTU Slave		
	Read	Func. Code 3	Nr. Regs. 1
	Burst Read	Func. Code 3	Nr. Regs. 11
	Write	Func. Code 6	Nr. Regs. 1
BAUD Rate (User Selectable)	38400 19200 9600 4800 2400		
Data Format	8 Data bits (Fixed) Even, Odd, No Parity 1,2 Stopbits		
Node Address Range	1-247		

Figure 10 – Comm1 Specifications

### 4.2.2 Communications Port 2

Driver	RS232		
Protocol	Modbus RTU Slave		
	Read	Func. Code 3	Nr. Regs. 1
	Burst Read	Func. Code 3	Nr. Regs. 11
	Write	Func. Code 6	Nr. Regs. 1
BAUD Rate (Fixed)	9600		
Data Format (Fixed)	8 Data bits No Parity 1 Stopbit		
Node Address Range	Node Address = Port 1 Node Address		

Figure 11 – Comm2 Specifications

### 4.2.3 CC02A Registers

This table shows the CC02A registers as they appear at the CC02A Modbus Node Address.

A value of 1 stored in the Node Address Enable Registers 40258 - 40505 (Modbus Node Addresses 1 - 247) instructs the CC02A to map the Zero Two Series Module with the corresponding (Zero Two) Node Address onto Modbus.

The Zero Two Module, with its registers, will appear as a Modbus Node with Modbus Node Address = Zero Two Node Address. This includes CC02A Modules configured as Slave.

Registers 40001 - 40006, 40113 and 40115 are the CC02A Status and Control Registers.

Registers 40241 - 40244 instruct the CC02A to issue system commands.

Modbus Register	Function	Data	R/W	Func. Code	No. Regs.	Access via CC02A Port	
						Master	Slave
40258 – 40505	Node Address Enable 1-247	0 = Disable 1 = Enable	R/W	3/6	1	1,2	1,2
40001	Status	0 = ACCEPT (W)	R/W	3/6	1	1,2	1,2,3
40002	Modbus Node Address	1-247	R/W	3/6	1	1,2	1,2,3
40003	Modbus BAUD Rate	0 = 19200 1 = 9600 2 = 4800 3 = 2400 4 = 38400	R/W	3/6	1	1,2	1,2,3
40004	Modbus Data Format	1 = P, Even, 1 Stop 2 = P, Odd, 1 Stop 3 = P, None, 1 Stop 4 = P, None, 2 Stop	R/W	3/6	1	1,2	1,2,3
40005	Zero Two Slave Node Address	1 – 247	R/W	3/6	1	1,2	1,2,3
40006	Zero Two Master	0 = Slave 1 = Master	R/W	3/6	1	1,2	1,2,3
40113	CC02A ACCEPT	1 = Activate	W	6	1		3
40115	CC02A LED TEST	1 = Activate	W	6	1		3
40241	Broadcast ACCEPT	1 = Activate	W	6	1	1,2	
40242	Broadcast RESET	1 = Activate	W	6	1	1,2	
40243	Broadcast LED TEST	1 = Activate	W	6	1	1,2	
40244	Broadcast CARD TEST	1 = Activate	W	6	1	1,2	

Figure 12 – CC02A Command Register Locations

**NOTE** – Port 1 and Port 2 access at the CC02A Modbus Node Address.

Port 3 is the Zero Two Series System communications bus. This port is transparent to the user, as each Zero Two Module, including a CC02A configured as Slave, appears by its Zero Two System Node Address, mapped onto Modbus, at Port1 and/or Port2 of the CC02A Master used for that system.

#### 4.2.4 Zero Two Module Registers

This table shows the Zero Two Module registers as they appear at Modbus Node Address corresponding to the Module's Zero Two Node Address.

Modbus Register	Function	Data	R/W	Func. Code	No. Regs.	Access via CC02A Port	
						Master	Slave
40001 – 40112	Operating and Setup Data		R/W	3/6	1	1,2	
40128	Operating and Setup Data Burst		R	3	11	1,2	
40113	Individual ACCEPT	1 = Activate	W	6	1	1,2	
40114	Individual RESET	1 = Activate	W	6	1	1,2	
40115	Individual LED TEST	1 = Activate	W	6	1	1,2	
40116	Individual CARD TEST	1 = Activate	W	6	1	1,2	
40117 – 40127	Reserved						

Figure 13 – Zero Two Module Command Register Locations

**NOTE** - A read of register 40128 (Burst Read) returns the contents of registers 40001 - 40011 in a single Modbus response.

#### 4.2.5 CC02A Status Register

This table shows the CC02A Status Register. A binary value of 1 denotes the active state, a binary value of 0 the in-active state.

Modbus Register	Bit 7 (L)	Bit 6 (L)	Bit 5 (L)	Bit 4 (NL)	Bit 3	Bit 2	Bit 1	Bit 0
40001	Eprom Checksum Error	Ram Checksum Error	Eeprom Checksum Error	Power Low	Master	Fault Unaccept (FUA)	Fault	Ready

Figure 14 – CC02A Status Register

**NOTE** - Bits marked (L) are latching, bits marked (NL) are non-latching.

#### 4.2.6 CC02A Control Registers Factory Default

This table shows the CC02A Control Registers Factory Default settings. If the CC02A parameters are unknown or have been corrupted, the Module may be returned to its factory default setting by powering up with the front panel switch activated. The switch needs to be held for a minimum of one second.

Modbus Register	Function	Data
40258 – 40505	Node Address Enable 1-247	Unaffected
40002	Modbus Node Address	247
40003	Modbus BAUD Address	0 = 19200
40004	Modbus Data Format	3 = P, None, 1 Stop
40005	Zero Two Slave Node Address	1
40006	Zero Two Master	1 = Master

Figure 15 – CC02A Factory Default Control Registers

#### 4.2.7 Error Codes

This table shows the Error or Exception Codes used by the CC02A and Zero Two Modules.

Error Code	Function
1	Illegal Function
2	Illegal Register Address
3	Illegal Data Value
4	Slave Device Failure
6	Slave Device Busy

Figure 16 – Error Codes



### 4.3 Zero Two Module Register Specifications

The following sections specify the register assignments by Zero Two Series Module.

**NOTE** - Should the Zero Two Slave Node Address of any module be unknown or corrupted, it may be defaulted to 1 by powering up the module with the front panel switch activated. The switch needs to be held for a minimum of one second. For Model IN042 use the Zone 4 Reset (RST) switch and for Model ZN002A activate the CARDtest Input during power up.

#### 4.3.1 Model CC02A

Modbus Register	Function – Bit Allocation - Data	R / W	Scaling
40001	0 LSB	1 (0) (Not)Ready	R/W Binary  <b>Note</b> - Write 0 to Accept
	1	1 (0) (No)Fault	
	2	1 (0) (No)Fault Unaccept	
	3	1 (0) (Slave)Master	
	4	1 (0) (No)Power Low	
	5	1 (0) (No)Eeprom Checksum Error	
	6	1 (0) (No)Ram Checksum Error	
	7 MSB	1 (0) (No)Eprom Checksum Error	
40002	Modbus Node Address 1 – 247	R / W	None
40003	Modbus BAUD Rate 0 = 19200, 1 = 9600, 2 = 4800, 3 = 2400, 4 = 38400	R / W	None
40004	Modbus Data Format 1 = P. Even/1 Stop, 2 = P. Odd/1 Stop, 3 = P. none/1 Stop 4 = P. None/2 Stop	R / W	None
40005	Zero Two Slave Node Address 1 – 247	R / W	None
40006	Zero Two Master 0 = Slave, 1 = Master	R / W	None
40128	Burst Read. This register returns the contents of registers 40001 to 40011 in the response message. Registers 40007 – 40011 always read 0.	R	Refer to above
40113	ACCEPT (1 = Activate)	W	None
40115	LED TEST (1 = Activate)	W	None

Figure 17 – Model CC02A Register Specifications

**4.3.2 Model TA102A**

Modbus Register	Function – Bit Allocation - Data		R / W	Scaling	
40001	Analog Output		R	0 – 220 = 0 – 22.0mA	
40002	0 LSB	4 - Bit Fault Code	R	Binary	
	1				
	2				
	3				
	4				1(0) Alarm 1 (Not)Active
	5				1(0) Alarm 2 (Not)Active
	6				1(0) Unaccept (Not)Active
	7 MSB	1(0) Operate Mode (Not)Active			
40003	Alarm 1 Setpoint		R / W	None	
40004	Alarm 2 Setpoint		R / W	None	
40005	0 LSB	1(0) 3(10)sec Card Test Ramp Time	R / W	Binary	
	1	1(0) Alarm (Not)Active in Card Test			
	2	1(0) (No)Fault during Inhibit			
	3	1(0) Alarm 1 Relay (De)Energized			
	4	1(0) Alarm 1 Relay (Non)Latching			
	5	1(0) Alarm 2 Relay (De)Energized			
	6	1(0) Alarm 2 Relay (Non)Latching			
	7 MSB	1(0) Not Used, always reads 0			
40006	Not Used, always reads 0		R	None	
40007	Operating Status 0=Normal, 1=Card Test, 2=Setup, 3=Setup Check, 4=Cal, 5=Cal. Check, 6=Inhibit, 7=Startup, 8=LED Test, 9=Beam Block Write Values supported 0 and 6 only (Normal and Inhibit)		R / W	None	
40008	Not Used, always reads 0		R	None	
40009	0 LSB	7 – Bit Password	R / W	Binary	
	1				
	2				
	3				
	4				
	5				
	6				
	7 MSB	1(0) Password En(Dis)abled			
40010	Device ID Code, always reads 1		R	None	
40011	Zero Two Node Address		R / W	None	
40128	Burst Read. This register returns the contents of registers 40001 to 40011 in the response message.		R	Refer to above	
40113	ACCEPT (1 = Activate)		W	None	
40114	RESET (1 = Activate)		W	None	
40115	LED TEST (1 = Activate)		W	None	
40116	CARD TEST (1 = Activate)		W	None	

**Figure 18 – Model TA102A Register Specifications**

**4.3.3 Model TA202A**

Modbus Register	Function – Bit Allocation - Data		R / W	Scaling	
40001	Analog Output		R	0 – 220 = 0 – 22.0mA	
40002	0 LSB	4 – Bit Fault Code	R	Binary	
	1				
	2				
	3				
	4				1(0) Alarm 1 (Not)Active
	5				1(0) Alarm 2 (Not)Active
	6				1(0) Unaccept (Not)Active
	7 MSB	1(0) Operate Mode (Not)Active			
40003	Alarm 1 Setpoint		R / W	None	
40004	Alarm 2 Setpoint		R / W	None	
40005	0 LSB	1(0) 3(10) sec Card Test Ramp Time	R / W	Binary	
	1	1(0) Alarm (Not)Active in Card Test			
	2	1(0) (No)Fault during Inhibit			
	3	1(0) Alarm 1 Relay (De)Energized			
	4	1(0) Alarm 1 Relay (Non)Latching			
	5	1(0) Alarm 2 Relay (De)Energized			
	6	1(0) Alarm 2 Relay (Non)Latching			
	7 MSB	Not Used, always reads 0			
40006	Range 100ppm, 50ppm, 20ppm 150mgm, 75mgm, 30mgm		R / W	None	
40007	Operating Status 0=Normal, 1=Card Test, 2=Setup, 3=Setup Check, 4=Cal, 5=Cal. Check, 6=Inhibit, 7=Startup, 8=LED Test Write Values supported 0 and 6 only (Normal and Inhibit)		R / W	None	
40008	Not Used, always reads 0		R	None	
40009	0 LSB	7 – Bit Password	R / W		
	1				
	2				
	3				
	4				
	5				
	6				
	7 MSB	1(0) Password En(Dis)abled			
40010	Device ID Code, always reads 2		R	None	
40011	Zero Two Node Address		R / W	None	
40128	Burst Read. This register returns the contents of registers 40001 To 40011 in the response message.		R	Refer to above	
40113	ACCEPT (1 = Activate)		W	None	
40114	RESET (1 = Activate)		W	None	
40115	LED TEST (1 = Activate)		W	None	
40116	CARD TEST (1 = Activate)		W	None	

**Figure 19 – Model TA202A Register Specifications**

4.3.4 Model TA402A

Modbus Register	Function – Bit Allocation - Data	R / W	Scaling	
40001	Analog Output	R	0 – 220 = 0 – 22.0mA	
40002	0 LSB	R	Binary	
	1			
	2			
	3			
	4			1(0) Alarm 1 (Not)Active
	5			1(0) Alarm 2 (Not)Active
	6			1(0) Unaccept (Not)Active
	7 MSB	1(0) Operate Mode (Not)Active		
40003	Not Used, always reads 0	R / W	None	
40004	Alarm 2 Delay 1=1sec, 2=2sec, 4=4sec, 8=8sec	R / W	None	
40005	0 LSB	R / W	Binary	
	1			Not Used, always reads 0
	2			1(0) Alarm (Not)Active in Card Test
	3			1(0) (No)Fault during Inhibit
	4			1(0) Alarm 1 Relay (De)Energized
	5			1(0) Alarm 1 Relay (Non)Latching
	6			1(0) Alarm 2 Relay (De)Energized
	7 MSB	1(0) Alarm 2 Relay (Non)Latching		
40006	Not Used, always reads 0	R / W	None	
40007	Operating Status 0=Normal, 1=Card Test, 2=Setup, 3=Setup Check, 4=Cal, 5=Cal. Check, 6=Inhibit, 7=Startup, 8=LED Test, 9=COPM Fault Write Values supported 0 and 6 only (Normal and Inhibit)	R / W	None	
40008	Not Used, always reads 0	R	None	
40009	0 LSB	R / W	7 – Bit Password	
	1			
	2			
	3			
	4			
	5			
	6			
	7 MSB	1(0) Password En(Dis)abled		
40010	Device ID Code, always reads 4	R	None	
40011	Zero Two Node Address	R / W	None	
40128	Burst Read. This register returns the contents of registers 40001 To 40011 in the response message.	R	Refer to above	
40113	ACCEPT (1 = Activate)	W	None	
40114	RESET (1 = Activate)	W	None	
40115	LED TEST (1 = Activate)	W	None	
40116	CARD TEST (1 = Activate)	W	None	

Figure 20 – Model TA402A Register Specifications

**4.3.5 Model TA502A**

Modbus Register	Function – Bit Allocation - Data		R / W	Scaling	
40001	Analog Output		R	0 – 220 = 0 – 22.0mA	
40002	0 LSB	4 – Bit Fault Code	R	Binary	
	1				
	2				
	3				
	4				1(0) Alarm 1 (Not)Active
	5				1(0) Alarm 2 (Not)Active
	6				1(0) Unaccept (Not)Active
	7 MSB	1(0) Operate Mode (Not)Active			
40003	Alarm 1 Setpoint		R / W	None	
40004	Alarm 2 Setpoint		R / W	None	
40005	0 LSB	1(0) 3(10)sec Card Test Ramp Time	R / W	Binary	
	1	1(0) Alarm (Not)Active in Card Test			
	2	1(0) (No)Fault during Inhibit			
	3	1(0) Alarm 1 Relay (De)Energized			
	4	1(0) Alarm 1 Relay (Non)Latching			
	5	1(0) Alarm 2 Relay (De)Energized			
	6	1(0) Alarm 2 Relay (Non)Latching			
	7 MSB	1(0) 1(3 or 10) sec Card Test Ramp Time			
40006	Range 5 – 100 in steps of 5		R / W	None	
40007	Operating Status 0=Normal, 1=Card Test, 2=Setup, 3=Setup Check, 4=Cal, 5=Cal. Check, 6=Inhibit, 7=Startup, 8=LED Test, 9=Beam Block Write Values supported 0 and 6 only (Normal and Inhibit)		R / W	None	
40008	Display Multiplier 1=1x, 2=10x, 3=100x		R / W	None	
40009	0 LSB	7 – Bit Password	R / W		
	1				
	2				
	3				
	4				
	5				
	6				
	7 MSB	1(0) Password En(Dis)abled			
40010	Device ID Code, always reads 5		R	None	
40011	Zero Two Node Address		R / W	None	
40128	Burst Read. This register returns the contents of registers 40001 To 40011 in the response message.		R	Refer to above	
40113	ACCEPT (1 = Activate)		W	None	
40114	RESET (1 = Activate)		W	None	
40115	LED TEST (1 = Activate)		W	None	
40116	CARD TEST (1 = Activate)		W	None	

**Figure 21 – Model TA502A Register Specifications**

4.3.6 Model 4802A

Modbus Register	Function – Bit Allocation – Data		R / W	Scaling	
40001	Analog Output		R	0 – 220 = 0 – 22.0mA	
40002	0 LSB	4 – Bit Fault Code	R	Binary	
	1				
	2				
	3				
	4				1(0) Alarm 1 (Not)Active
	5				1(0) Alarm 2 (Not)Active
	6				1(0) Unaccept (Not)Active
	7 MSB	1(0) Operate Mode (Not)Active			
40003	Alarm 1 Setpoint		R / W	None	
40004	Alarm 2 Setpoint		R / W	None	
40005	0 LSB	1(0) 3(10)sec Card Test Ramp Time	R / W	Binary	
	1	1(0) Alarm (Not)Active in Card Test			
	2	1(0) (No)Fault during Inhibit			
	3	1(0) Alarm 1 Relay (De)Energized			
	4	1(0) Alarm 1 Relay (Non)Latching			
	5	1(0) Alarm 2 Relay (De)Energized			
	6	1(0) Alarm 2 Relay (Non)Latching			
	7 MSB	Not Used, always reads 0			
40006	Not Used, always reads 0		R / W	None	
40007	Operating Status 0=Normal, 1=Card Test, 2=Setup, 3=Setup Check, 4=Cal, 5=Cal. Check, 6=Inhibit, 7=Startup, 8=LED Test, Write Values supported 0 and 6 only (Normal and Inhibit)		R / W	None	
40008	Not Used, always reads 0		R	None	
40009	0 LSB	7 – Bit Password	R / W		
	1				
	2				
	3				
	4				
	5				
	6				
	7 MSB	1(0) Password En(Dis)abled			
40010	Device ID Code, always reads 48		R	None	
40011	Zero Two Node Address		R / W	None	
40128	Burst Read. This register returns the contents of registers 40001 To 40011 in the response message.		R	Refer to above	
40113	ACCEPT (1 = Activate)		W	None	
40114	RESET (1 = Activate)		W	None	
40115	LED TEST (1 = Activate)		W	None	
40116	CARD TEST (1 = Activate)		W	None	

Figure 22 – Model 4802A Register Specifications

4.3.7 Model 2602A

Modbus Register	Function – Bit Allocation – Data		R / W	Scaling	
40001	Analog Output		R	0 – 220 = 0 – 22.0mA	
40002	0 LSB	4 – Bit Fault Code	R	Binary	
	1				
	2				
	3				
	4				1(0) Alarm 1 (Not)Active
	5				1(0) Alarm 2 (Not)Active
	6				1(0) Unaccept (Not)Active
	7 MSB	1(0) Operate Mode (Not)Active			
40003	Alarm 1 Setpoint		R / W	None	
40004	Alarm 2 Setpoint		R / W	None	
40005	0 LSB	1(0) 3(10)sec Card Test Ramp Time	R / W	Binary	
	1	1(0) Alarm (Not)Active in Card Test			
	2	1(0) (No)Fault during Inhibit			
	3	1(0) Alarm 1 Relay (De)Energized			
	4	1(0) Alarm 1 Relay (Non)Latching			
	5	1(0) Alarm 2 Relay (De)Energized			
	6	1(0) Alarm 2 Relay (Non)Latching			
	7 MSB	Not Used, always reads 0			
40006	Range 100ppm, 50ppm, 20ppm 150mgm, 75mgm, 30mgm		R	None	
40007	Operating Status 0=Normal, 1=Card Test, 2=Setup, 3=Setup Check, 4=Cal, 5=Cal. Check, 6=Inhibit, 7=Startup, 8=LED Test, Write Values supported 0 and 6 only (Normal and Inhibit)		R / W	None	
40008	Not Used, always reads 0		R	None	
40009	0 LSB	7 – Bit Password	R / W		
	1				
	2				
	3				
	4				
	5				
	6				
	7 MSB	1(0) Password En(Dis)abled			
40010	Device ID Code, always reads 26		R	None	
40011	Zero Two Node Address		R / W	None	
40128	Burst Read. This register returns the contents of registers 40001 To 40011 in the response message.		R	Refer to above	
40113	ACCEPT (1 = Activate)		W	None	
40114	RESET (1 = Activate)		W	None	
40115	LED TEST (1 = Activate)		W	None	
40116	CARD TEST (1 = Activate)		W	None	

Figure 23 – Model 2602A Register Specifications

4.3.8 Model IN042

Modbus Register	Function – Bit Allocation – Data		R / W	Scaling
40001	0 LSB	1(0) Zone 1 Alarm (Not)Active	R	Binary
	1	1(0) Zone 2 Alarm (Not)Active		
	2	1(0) Zone 3 Alarm (Not)Active		
	3	1(0) Zone 4 Alarm (Not)Active		
	4	1(0) Zone 1 Alarm Unaccept (Not)Active		
	5	1(0) Zone 2 Alarm Unaccept (Not)Active		
	6	1(0) Zone 3 Alarm Unaccept (Not)Active		
	7 MSB	1(0) Zone 4 Alarm Unaccept (Not)Active		
40002	0 LSB	1(0) Zone 1 Fault (Not)Active	R	Binary
	1	1(0) Zone 2 Fault (Not)Active		
	2	1(0) Zone 3 Fault (Not)Active		
	3	1(0) Zone 4 Fault (Not)Active		
	4	1(0) Zone 1 Fault Unaccept (Not)Active		
	5	1(0) Zone 2 Fault Unaccept (Not)Active		
	6	1(0) Zone 3 Fault Unaccept (Not)Active		
	7 MSB	1(0) zone 4 Fault Unaccept (Not)Active		
40003	0 LSB	1(0) (Un)Inhibit Zone 1	R / W	Binary <b>Note</b> – Bits 4 - 7 always read 0
	1	1(0) (Un)Inhibit Zone 2		
	2	1(0) (Un)Inhibit Zone 3		
	3	1(0) (Un)Inhibit Zone 4		
	4	ZONE 1 RESET (1=Activate)		
	5	ZONE 2 RESET (1=Activate)		
	6	ZONE 3 RESET (1=Activate)		
	7 MSB	ZONE 4 RESET (1=Activate)		
40004	Operating Status 0=Normal, 1=Card Test, 8=LED Test, 9=Power Fail		R	None
40005	0 LSB	1(0) Zone 1 2 sec(No)Delay	R	Binary
	1	1(0) Zone 2 2 sec(No)Delay		
	2	1(0) Zone 3 2 sec(No)Delay		
	3	1(0) Zone 4 2 sec(No)Delay		
	4	1(0) Zone 1 Latching (Non Latching) Alarm		
	5	1(0) Zone 2 Latching (Non Latching) Alarm		
	6	1(0) Zone 3 Latching (Non Latching) Alarm		
	7 MSB	1(0) Zone 3 Latching (Non Latching) Alarm		
40006	0 LSB	1(0) Zone 1 A1-OC Normally (De)Energized	R	Binary
	1	1(0) Zone 2 A1-OC Normally (De)Energized		
	2	1(0) Zone 3 A1-OC Normally (De)Energized		
	3	1(0) Zone 4 A1-OC Normally (De)Energized		
	4	1(0) Zone 1 Callpoint NC(Det/Callpoint NO)		
	5	1(0) Zone 2 Callpoint NC(Det/Callpoint NO)		
	6	1(0) Zone 3 Callpoint NC(Det/Callpoint NO)		
	7 MSB	1(0) Zone 4 Callpoint NC(Det/Callpoint NO)		
40007	4	1(0) NonLatching (Latching) Fault Outputs	R	Binary <b>Note</b> – Bits 0 – 3 always read 0
	5	1(0) Alarms on A2(A1)BUS		
	6	1(0) Common(Discrete)Fault Output(s)		
	7 MSB	1(0) Card Test Alarms Enabled(Disabled)		
40008	Not Used, always reads 0		R	None
40009	Not Used, always reads 0		R	None
40010	Device ID Code, always reads 42		R	None
40011	Zero Two Node Address		R / W	None
40128	Burst Read. This register returns the contents of registers 40001 To 40011 in the response message.		R	Refer to above
40113	ACCEPT (1 = Activate)		W	None
40114	RESET (1 = Activate)		W	None
40115	LED TEST (1 = Activate)		W	None
40116	CARD TEST (1 = Activate)		W	None

Figure 24 – Model IN042 Register Specifications



4.3.9 Model ZN002A

Modbus Register	Function – Bit Allocation – Data		R / W	Scaling
40001	0 LSB	1(0) Zone 1 A1 (Not)Active	R	Binary
	1	1(0) Zone 1 A2 (Not)Active		
	2	1(0) Zone 2 A1 (Not)Active		
	3	1(0) Zone 2 A2 (Not)Active		
	4	1(0) Zone 3 A1 (Not)Active		
	5	1(0) Zone 3 A2 (Not)Active		
	6	1(0) Alarm Unaccept (Not)Active		
	7 MSB	1(0) Fault (Not)Active		
40002	Operating Status 0=Normal, 1=Card Test, 8=LED Test		R	None
40003	0 LSB – 7 MSB	1(0) Zone 1 Input 1 – 8 (Not)Active (1 bit per Input)	R	Binary
40004	0 LSB – 7 MSB	1(0) Zone 2 Input 1 – 8 (Not)Active (1 bit per Input)	R	Binary
40005	0 LSB – 7 MSB	1(0) Zone 3 Input 1 – 8 (Not)Active (1 bit per Input)	R	Binary
40006	0 LSB – 7 MSB	1(0) Zone 1 Channel 1 – 8 Inverted(Normal) Input (1 bit per Channel)	R	Binary
40007	0 LSB – 7 MSB	1(0) Zone 2 Channel 1 – 8 Inverted(Normal) Input (1 bit per Channel)	R	Binary
40008	0 LSB – 7 MSB	1(0) Zone 3 Channel 1 – 8 Inverted(Normal) Input (1 bit per Channel)	R	Binary
40009	0 LSB	1(0) Zone 1 A1 Output Inverted(Normal)	R	Binary
	1	1(0) Zone 1 A2 Output Inverted(Normal)		
	2	1(0) Zone 2 A1 Output Inverted(Normal)		
	3	1(0) Zone 2 A2 Output Inverted(Normal)		
	4	1(0) Zone 3 A1 Output Inverted(Normal)		
	5	1(0) Zone 3 A2 Output Inverted(Normal)		
	6	1(0) A2 Outputs Non-Latching(Latching)		
	7 MSB	1(0) A1 Outputs Non-Latching(Latching)		
40010	Device ID Code, always reads 100		R	None
40011	Zero Two Node Address		R / W	None
40128	Burst Read. This register returns the contents of registers 40001 To 40011 in the response message.		R	Refer to above
40113	ACCEPT	(1 = Activate)	W	None
40114	RESET	(1 = Activate)	W	None
40115	LED TEST	(1 = Activate)	W	None
40116	CARD TEST	(1 = Activate)	W	None

Figure 25 – Model ZN002A Register Specifications

4.3.10 Model MD002

Modbus Register	Function – Bit Allocation – Data	R / W	Scaling	
40001	0 LSB	1(0) Output driver 1 (Not)Active	R	Binary
	1	1(0) Output driver 2 (Not)Active		
	2	1(0) Output driver 3 (Not)Active		
	3	1(0) Output driver 4 (Not)Active		
	4 – 5	Not used, always read 0		
	6	1(0) Fault Unaccept (Not)Active		
	7 MSB	1(0) Fault (Not)Active		
40002	0 LSB – 3	4 Bit Fault Code	R	Binary
	4 – 7 MSB	1(0) Output Driver 1 – 4 fault (Not)Active (1 bit per Output Driver)		
	Operating Status 0=Normal, 1=Card Test, 2=Setup, 3=Setup Check, 6=Inhibit, 8=LED Test Write Values supported 0 and 6 only (Normal and inhibit)			
40003	0 LSB – 3	Abort Output Driver 1 – 4 (1 = Activate) (1 bit per Output Driver)	R	Binary
	4 – 7 MSB	Release Output Driver 1 – 4 (1 = Activate) (1 bit per Output Driver)		
40004	0 LSB	1(0) Output driver 1 Manual Abort (Not)Active	R / W	Binary
	1	1(0) Output driver 2 Manual Abort (Not)Active		
	2	1(0) Output driver 3 Manual Abort (Not)Active		
	3	1(0) Output driver 4 Manual Abort (Not)Active		
	4	1(0) Output driver 1 (Non)Latching		
	5	1(0) Output driver 2 (Non)Latching		
	7 MSB	1(0) Output driver 4 (Non)Latching		
40005	0 LSB	1(0) OUTPUT Drivers (Not)Active during Card Test	R / W	Binary
	1	1(0) Fault Outputs (Not)Active during Inhibit		
	2 – 3	Not Used, always reads 0		
	4	1(0) Alarm Input Driver 1 Active High(Low)		
	5	1(0) Alarm Input Driver 2 Active High(Low)		
	6	1(0) Alarm Input Driver 3 Active High(Low)		
40006	0 LSB – 3	Select Time Delay Register for Output Driver 1, 2, 3 or 4 (Set bit to select output Driver.)	R / W	Binary
	4	1(0) Output Driver 1 (Not)In Use		
	5	1(0) Output Driver 2 (Not)In Use		
	6	1(0) Output Driver 3 (Not)In Use		
	7 MSB	1(0) Output Driver 4 (Not)In Use		
40007	Time Delay Register for output Driver as selected by register 40007 bits 0-3		R / W	None
40008	0 LSB	7 - Bit Password	R / W	Binary
	1			
	2			
	3			
	4			
	5			
	6			
7 MSB	1(0) Password En(Dis)abled			
40009	Device ID Code, always reads 200		R	None
40010	Zero Two Node Address		R / W	None
40128	Burst Read. This register returns the contents of registers 40001 To 40011 in the response message.		R	Refer to above
40113	ACCEPT (1 = Activate)		W	None
40114	RESET (1 = Activate)		W	None
40115	LED TEST (1 = Activate)		W	None
40116	CARD TEST (1 = Activate)		W	None

Figure 26 – Model MD002 Register Specifications

## 5.0 Customer Support

### 5.1 General Monitors Offices

<u>Area</u>	<u>Phone/Fax/Email</u>
<b>UNITED STATES</b>	
Corporate Office: 26776 Simpatica Circle Lake Forest, CA 92630	Phone: +1-949-581-4464 Fax: +1-949-581-1151 Email: <a href="mailto:sales@generalmonitors.com">sales@generalmonitors.com</a>
9776 Whithorn Drive Houston, TX 77095	Phone: +1-281-855-6000 Fax: +1-281-855-3290 Email: <a href="mailto:gmhou@generalmonitors.com">gmhou@generalmonitors.com</a>
<b>UNITED KINGDOM</b>	
Heather Close Lyme Green Business Park Macclesfield, Cheshire, United Kingdom, SK11 0LR	Phone: +44-1625-619583 Fax: +44-1625-619098 Email: <a href="mailto:info@generalmonitors.co.uk">info@generalmonitors.co.uk</a>
<b>IRELAND</b>	
Ballybrit Business Park Galway, Republic of Ireland	Phone: +353-91-751175 Fax: +353-91-751317 Email: <a href="mailto:service@gmil.ie">service@gmil.ie</a>
<b>SINGAPORE</b>	
No. 2 Kallang Pudding Rd. #09-16 Mactech Building Singapore 349307	Phone: +65-748-3488 Fax: +65-748-1911 Email: <a href="mailto:genmon@singnet.com.sg">genmon@singnet.com.sg</a>
<b>MIDDLE EAST</b>	
LOB12, #G20 P.O. Box 61209 Jebel Ali, Dubai United Arab Emirates	Phone: +971-4-8815751 Fax: +971-4-8817927 Email: <a href="mailto:gmme@emirates.net.ae">gmme@emirates.net.ae</a>

## 6.0 Specifications

### 6.1 System Specifications

#### 6.1.1 Application

Zero Two System monitoring and control

#### 6.1.2 Communications Port 1

Protocol: Modbus RTU RS485  
Baud rate: 2400 to 38400 BAUD  
Data format: 8 data, 1 or 2 stop bits  
Parity: Odd, Even or None  
Address range: 1 to 247

#### 6.1.3 Communications Port 2

Protocol: Modbus RTU RS232  
Baud rate: 9600 BAUD fixed  
Data format: 8 data, 1 stop bit fixed  
Parity: None fixed  
Address range: Address as set for Port 1

#### 6.1.4 Zero Two System Commands

Individual: ACCEPT  
RESET  
LEDtest  
CARDtest

Broadcast: ACCEPT  
RESET  
LEDtest  
CARDtest

#### 6.1.5 Approvals

CE Mark

#### 6.1.6 Warranty

Two Years

### 6.2 Mechanical Specifications

Weight:	11.2 oz	318 grams
Length:	9.9"	251mm
Height:	6.825"	173mm
Width:	1"	25mm

## 6.3 Electrical Specifications

### 6.3.1 Input Power Requirements

20 to 35VDC (24VDC @ 80mA 2W nom.)  
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.

### 6.3.2 Electrical Classification

The Model CC02A is designed for use in non-hazardous environments.

### 6.3.3 Relay Contact Rating

SPDT, 4A @ 30VRMS/42.4Vpk,  
3A @ 30VDC resistive.

## 6.4 Environmental Specifications

### 6.4.1 Operating Temperature Range

0°F to 150°F (-18°C to 66°C)

### 6.4.2 Storage Temperature Range

-40°F to 150°F (-40°C to 66°C)

### 6.4.3 Humidity Range

5 to 100% RH, non-condensing

### 6.4.4 EMC Susceptibility

10V/m max.

### 6.4.5 Zero Two System

Each system utilizes modules capable of monitoring gas sensing elements or a 0 to 21.7mA analogue signal from gas or fire detection transmitters. The system chassis is available in 4, 8 or 16 channels. Each chassis contains a buss for the following independent signals: A1 Alarm, A2 Alarm, Fault, Master Reset, Master Accept, Unaccept, CAL, COM, +24VDC and System Common. Module signals are capable of being bussed from one chassis to another (16 channel chassis only), so that up to 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 System component modules as manufactured by General Monitors, Lake Forrest, California, U.S.A. or General Monitors, Galway, Ireland.

### 6.4.6 CC02A Communications Module

The communications module interfaces between other Zero Two System modules and one or two host computers. It performs all necessary protocol and speed conversions between modules and host. The communications module has an interface panel providing an RJ45 connector and the following indicators: 2 communications status indicators, a fault or malfunction indicator, and a ready indicator. User options are software selectable. A front panel LED test can be performed without interrupting normal services. The communications module is capable of insertion and removal during power-on conditions without damage to any component module in the system.

## 6.5 Zero Two Series Modules

### 6.5.1 Model 2602A

Zero Two Series Control Module for Hydrogen Sulfide Gas Applications

### 6.5.2 Model 4802A

Zero Two Series Control Module for Combustible Gas Applications

### 6.5.3 Model TA102A

Zero Two Series Trip Amplifier for Combustible Gas Applications

### 6.5.4 Model TA202A

Zero Two Series Trip Amplifier Module for Hydrogen Sulfide Gas Applications

### 6.5.5 Model TA402A

Zero Two Series Trip Amplifier Module for Flame Detection Applications

### 6.5.6 Model FM002A

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

### 6.5.7 Model RL002

Zero Two Series Relay Module Provides Extra Output Capacity for Zero Two Systems

### 6.5.8 Model ZN002A

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

### 6.5.9 Model MD002

Zero Two Series Monitored Driver Card for Monitoring / Driving High Current Output Devices

### 6.5.10 Model IN042

Zero Two Series Four Input Zone Card for Callpoints, Smoke & Thermal Detection Applications

### 6.5.11 \*\* Model PS002 \*\*

Zero Two Series Power Supply Module for Zero Two Systems

**\*\* = The Model PS002 is designed for use in Non-EU countries only.**