



FIRE-LITE ALARMS INCORPORATED

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MINISCAN 424 INSTRUCTION MANUAL

WARNING

SEVERAL DIFFERENT SOURCES OF POWER CAN BE CONNECTED TO THE FIRE ALARM CONTROL UNIT. DISCONNECT ALL SOURCES OF POWER BEFORE SERVICING, CONTROL UNIT AND ASSOCIATED EQUIPMENT MAY BE DAMAGED BY REMOVING AND/OR INSERTING CARDS, MODULES, OR INTERCONNECTING CABLES WHILE UNIT IS ENERGIZED. DO NOT ATTEMPT TO INSTALL, SERVICE OR OPERATE THIS EQUIPMENT UNTIL MANUAL(S) ARE READ AND UNDERSTOOD.

MS 424/8012
REV FEB. 1984



MEETS:
NFPA 72A, B, C, D
CALIFORNIA STATE
FIRE MARSHAL



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MINISCAN 424 (MS-424) is a four zone fire alarm control panel. It is designed to meet Underwriters Laboratories, Inc. standard for safety number UL864 and function in accordance with NFPA standard 72A-Local, 72B-Auxiliary, 72C-Remote station, 72D-Proprietary.

Activation of a compatible two wire detector or any normally open fire alarm initiation device will annunciate a fire zone and sound audible devices. Also, an alarm signal will be transmitted to Municipal Box and Remote station if transmitter module is connected.

Standard Features:

- Waterflow alarm.
- Supervised Class B detector loops.
- Dual Class A and/or Class B audible/visual circuits.
- Compatible with two wire detectors.
- Individual zone disable switch.
- Zone trouble & remote alarm lamp supervision.
- Adjustable March time coder.
- Positive and negative ground fault indication.
- Float charge power for sealed batteries.
- Battery supervision.
- Overload protection.
- Dry Trouble Contact.
- Mode of transmission: Municipal box and Remote station. (Reverse Polarity.)

MS-424 consists of:

- MCB-104 : Master control board accepts 2 DZC-2, BCM-2, INC-9, and optional (fig. 1) modules.
- DZC-2 : Double zone card provides alarm (Red LED) and trouble (Yellow (fig. 2) LED) indication plus zone disable switch. Off-Normal position of the switch will be indicated as zone trouble.
- INC-9 : Indicator card has eight function switches and nine LEDs for visual (fig. 4) indication of system status.
- BCM-2 : Bell circuit module provides 1) Two supervised class A and/or (fig. 5) class B outputs for polarized audible/visual devices.
2) Trouble output - Dry Form A or Form B contact rated 2 Amps 28VDC. Features such as March time codes, Bell disconnectable or nondisconnectable can be introduced by cutting J1, J2, or J3 resp.
- PSB-24 : System Power supply and Battery charger. Provides 1) Filtered (fig. 6) DC, 3/4 amp maximum for system regulator.
2) Two Rectified, unfiltered, unregulated 24VDC for Bell circuits. Total output current is 2.25 amps.

Float type charger with current limiting feature is set at 27.6VDC to charge 5AH to 9AH battery. Overload Protection provided by means of Circuit Breaker rated 1.2 amps at AC input.

Bell CKT Power: Two Fuses, Type 3AG, each 2.0 amps SLO - BLO.

Battery circuit: 3.0 amp Fuse, Type 3AG

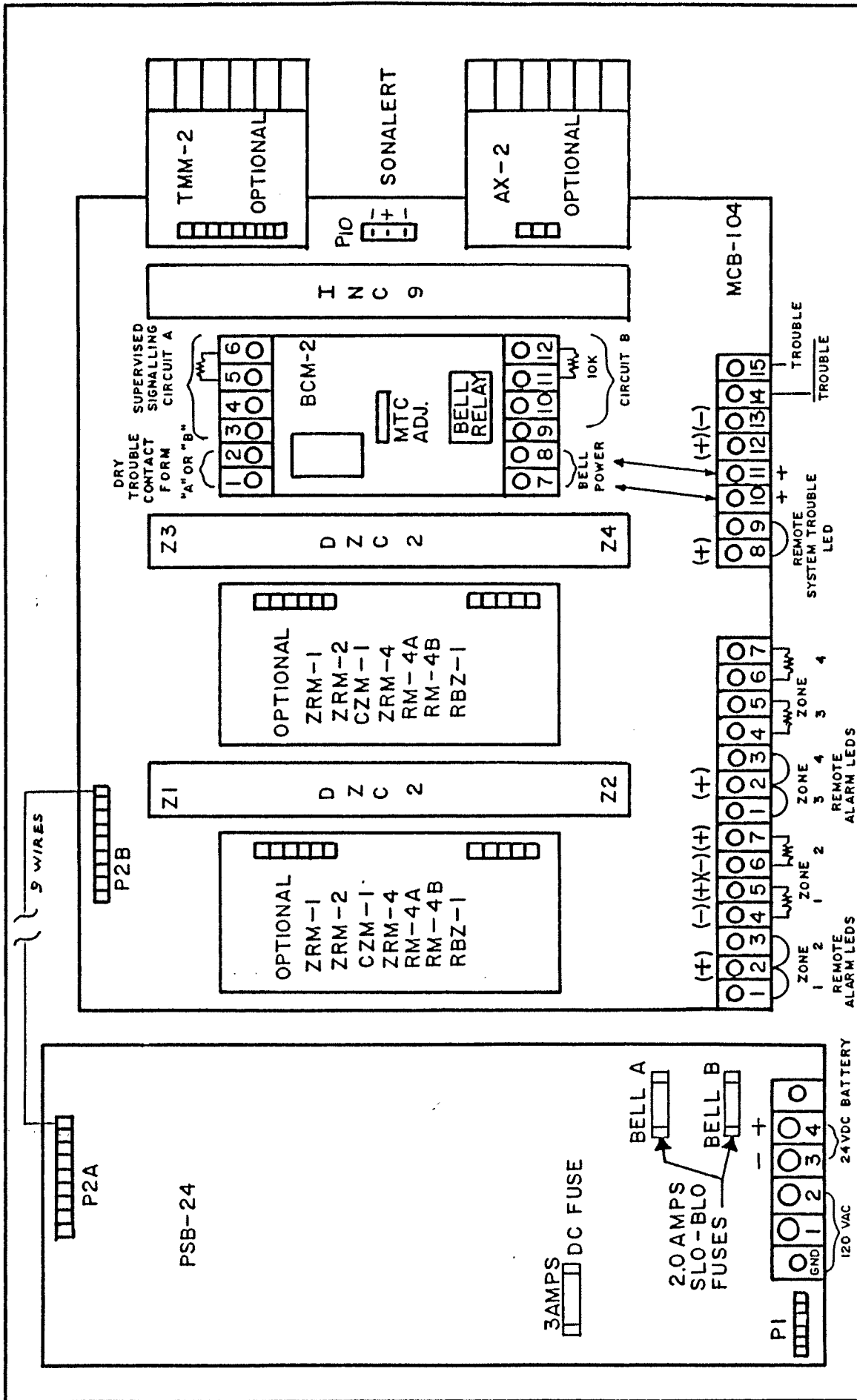
Optional Modules

- TMM-2 (Fig. 7) : Transmitter Module with two modes of transmission. Remote Station (Reverse polarity) and Local Energy type (or Municipal Box.)
- AX-2 (Fig. 8) : Auxiliary Module with two dry Form C supplementary alarm contacts rated 10A, 28VDC.
- ZRM-1 (Fig. 9) : Provides a single Form C supplementary alarm 28VDC/115 VAC.
- ZRM-2 (Fig. 9) : Provides two Form C supplementary contacts rated 10A resistive, 28VDC/115VAC.
- ZRM-4 (Fig. 9) : Provides a dry form C contact and a latch contact. This relay module, if activated with the latch connected, will lock in the activated position. When locked, the zone disable switch will have no effect on the relay. Contacts are rated 5A resistive, 28VDC/115VAC. This module may be used to control releasing devices and fan motors.
- RM-4 (Fig. 10) : These modules may be used to perform numerous special functions since their relay coils can be connected to a variety of 24VDC drive signals. Each relay coil has a polarizing diode, suppression diode, and a latching contact.
Contact type: 3 form C for RM-4A and 1 form C for RM-4B
Contact rating: 5A resistive 28VDC/120VAC
Coil resistance: 1800 ohms for RM-4A and 3600 ohms for RM-4B.
- RBZ-1 (Fig. 11) : Ring-By Zone module provides two either Class "A" or "B" signal circuits. This module also provides auxiliary dry contacts, either normally open (Form "A") or normally closed (Form "B").
- RZA-4 (Fig. 12) : Remote zone annunciator provides visual indication of alarmed zone; audible and visual indication of system trouble.
- CZM-1 (Fig. 18) : Cross Zone module consists of releasing ckt., Signaling ckt and Delay ckt.
An alarm in either zone produces a steady signal.
An alarm in both zones will produce pulsed signal
indicating releasing device will be energized as soon as delay circuit times out.

Installation Instructions:

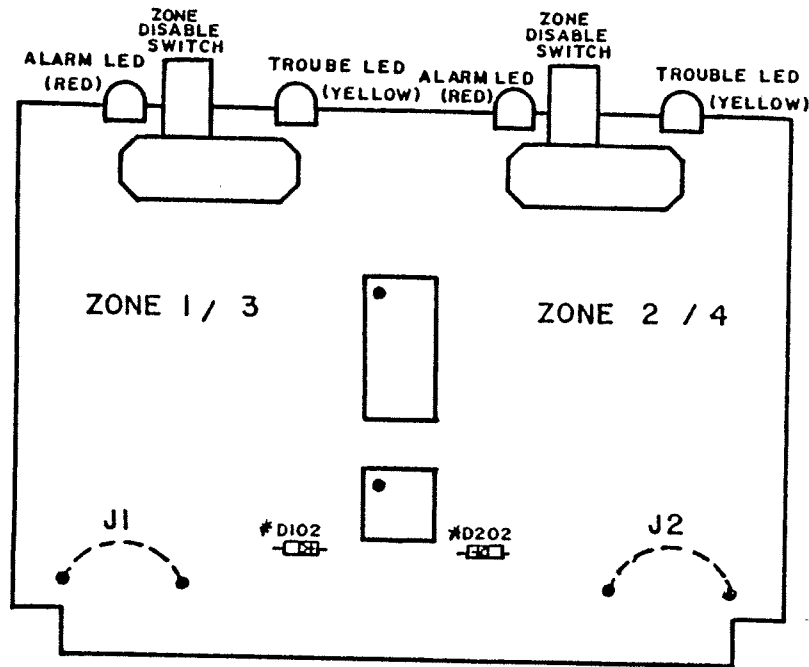
1. Remove enclosure from packaging and inspect for the possibility of damage in transportation. Mount the box in a clean, dry, vibration-free area, in which extreme temperatures are not encountered.
2. If not premounted, mount MCB-104 and PSB-24 to the mounting rails using 6-32 x 1/4" self threading screws for masterboard and 6-23 x 5/8 " screw. #6 washer for power supply board.
 - Install BCM-2 module.
 - Install optional modules if required.
3. Determine the number of conductors required for the devices to be employed. Pull required conductors from the devices into the box through the knockouts provided.
 - AC power lines should come from separate circuit protection.
 - All wiring should be in accordance with National and/or Local codes for fire alarm systems.
4. All alarm initiating devices including manual stations, heat detectors, two-wire smoke & ionization detectors are connected to terminal 4(-) and 5 (+), 6(-) and 7(+) for zone 1 & zone 2 respectively.
5. Remove both jumpers in DZC-2 card(s) if optional zone module(s) or CZM is employed.
6. Plug DZC-2 cards in first two card holders.
7. Plug INC-9 card in last card holder on right hand side.
8. Connect Sonalert plug (in any direction) to 3 pin plug "P10" of MCB-104.
9. Mount plate with Sonalert over INC-9 card and secure the plate with two #4-40 screws provided.
10. **WARNING:** Never connect battery until you apply AC power and check system operation.
(Battery Trouble Signal will be present until battery is connected)
11. Connect battery.
12. **Inspection and Maintenance**
To insure proper and reliable operation, it is recommended that system inspection and maintenance be scheduled monthly.

FIGURE 1 - COMPONENT LAYOUT



DOUBLE ZONE CARD (DZC-2)

FIGURE 2



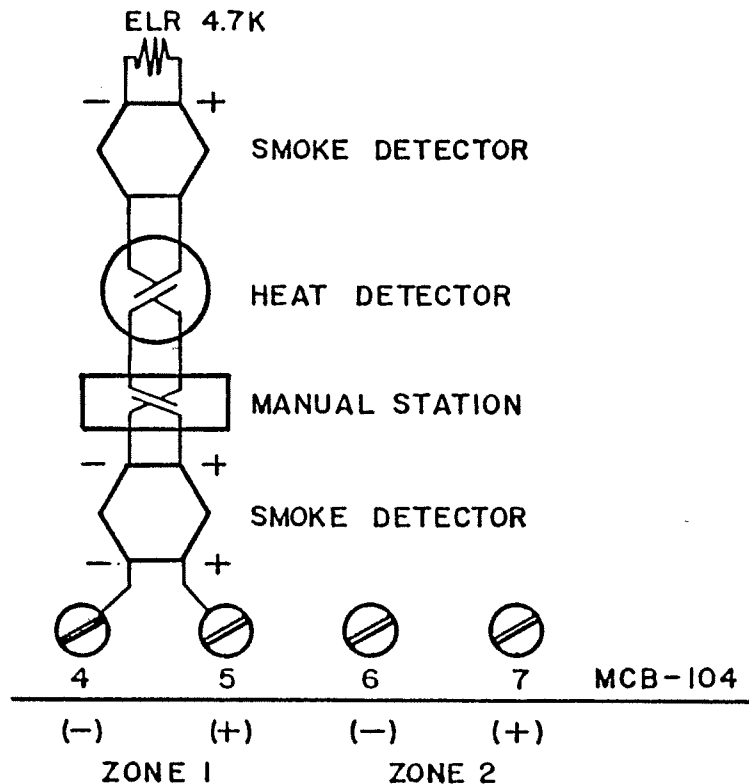
- Double zone card provides alarm & trouble LEDs, zone disable switches for two zones.
- It supervises the detection loop, trouble LEDs, local and remote LEDs against open. Open in any loop will initiate zone & system trouble.
- The system will allow the mixing of smoke and combustion products detectors, heat detectors, flow switches and other initiating devices on the same zone without the use of limiting resistors.

- Note:
- 1) Remove both jumpers J1, J2 if optional ZRM, CZM module(s) employed.
 - 2) Inhibit latching circuit by removing diode marked with a * from zone card if coded manual stations are connected.

INITIATING DEVICE CONNECTION (TYPICAL)

FIGURE 3

SUPERVISED CLASS B OPERATION

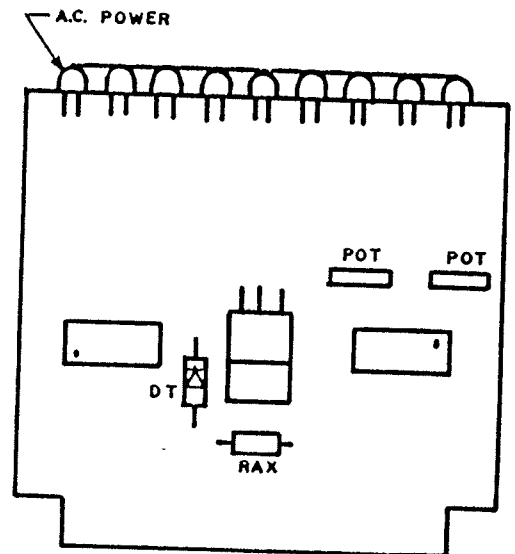
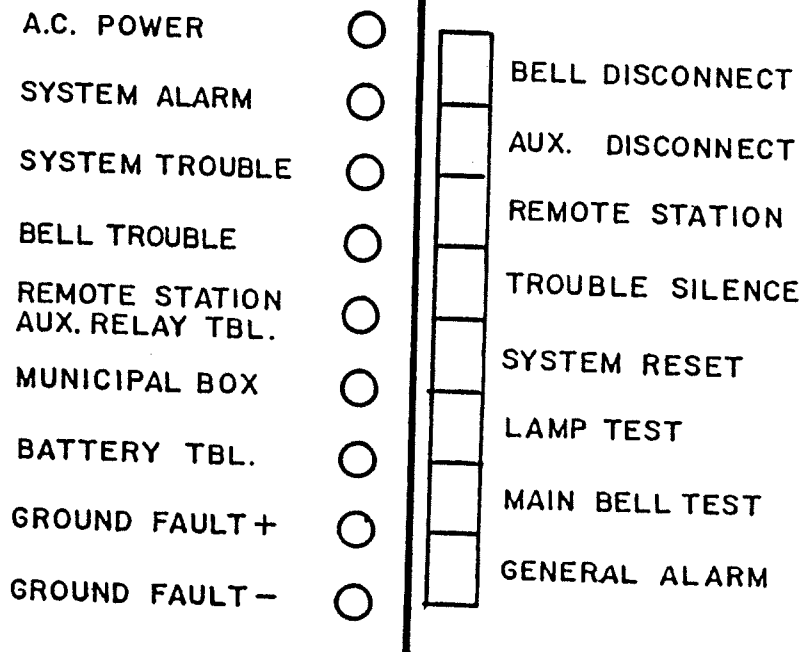


- Notes:
- 1) Detection loop specifications
 Operation: Class B
 Voltage standby: 23VDC
 Alarm current: 15mA minimum.
 Short circuit current: .35MA±10ma.
 Supervision current: 5mA
 End of line resistor: 4.7k, 5%
 Maximum loop resistance: 200 ohms
 Maximum detector current: 2.0mA./Zone
 - 2) Smoke and ionization detectors requiring separate 24VDC can be powered from MCB-104 terminal 12(+) & 13(-). Use end of line relay (SDLR-B) to supervise power circuit wiring.
 - 3) Detector loop current is sufficient to ensure operation of one detector per zone.
 - 4) Compatible, U.L. listed, 2 wire detector available from Fire-Lite.
 - 5) Initiating devices include: Manual station, heat detectors, smoke detectors, ionization detectors, waterflow alarm devices, coded manual stations.
 - 6) Use mechanical water motor gong if waterflow alarm devices are connected to the zone.
 - 7) Inhibit latching circuit by removing diode marked with a * from DZC-2 card if coded manual stations are connected.
 - 8) Compatible, U.L. listed, 2 wire detector available from Fire-Lite, include the following series:

CP101	SD12T
CP204	SD32T
CP311	
CP711	
CP751	

INC-9 INDICATOR CARD

FIGURE 4



- Bell Disconnect : This switch in the depressed position will silence signalling devices connected to BCM-2 output and indicate "Bell" and "System Trouble" after a short delay.
- Aux. Disconnect : This switch disconnects auxiliary relay and indicates "Aux relay" plus "System Trouble".
- Remote Station : This switch in the depressed position will prevent operation of both the Polarity Reversal Remote station and the Municipal Box. Also remote station and system trouble LED turns on.
- Trouble Silence : Depressing this switch during trouble condition will silence Sonalert. It will resound when trouble is corrected.
- System Reset : Function of this switch is to reset the system and the detectors provided alarm condition has been cleared.
- Lamp Test : Used to test all local and remote LED's.
- Bell Test : Depressing this switch will activate the main bell ckts.
- General Alarm : This switch will activate all alarm devices.

"A.C. POWER" - A green LED indicator that lights when the main power supply is operating from the AC power source. If AC power indicator fails to light under normal conditions, service system immediately.

"SYSTEM ALARM" - A red LED indicator that lights when an alarm condition has been detected.

"SYSTEM TROUBLE" - Visual and audible indicators that are activated by a fault or abnormal operating condition. A system trouble indicates that the fire alarm system may be inoperative.

"BELL TROUBLE" - A yellow LED indicator that lights when a fault or abnormal condition exists in the main audible bell circuits, including open or shorted field wiring, a non-polarized bell, improperly polarized bell (reverse connected), an off-normal bell disconnect switch, failure to connect bell power to BCM-2 module,

"REMOTE STATION/AUX RELAY TROUBLE" - A yellow LED indicator that lights when a fault or abnormal condition exists in the remote signaling circuit including an open circuit to the local energy municipal box or an improperly tripped municipal box, "remote station" switch in off-normal position, or when Aux relay module is not seated properly.

"MUNICIPAL BOX" - A yellow LED indicator that lights when the municipal box has been tripped.

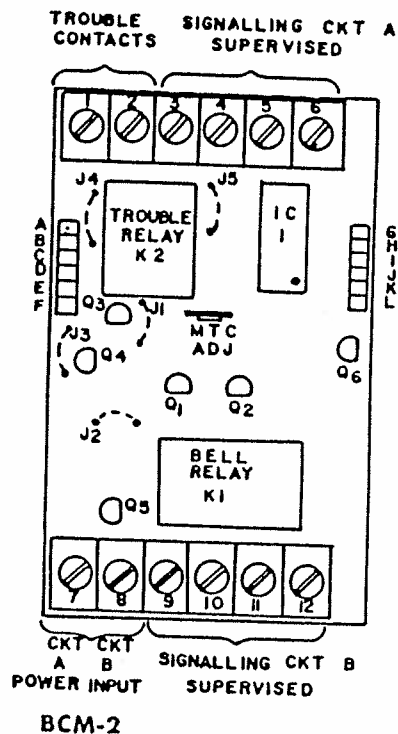
"BATTERY TBL" - A yellow LED that lights to indicate low battery voltage.

"GROUND FAULT +" - A yellow LED indicator that lights when a positive ground fault exists.

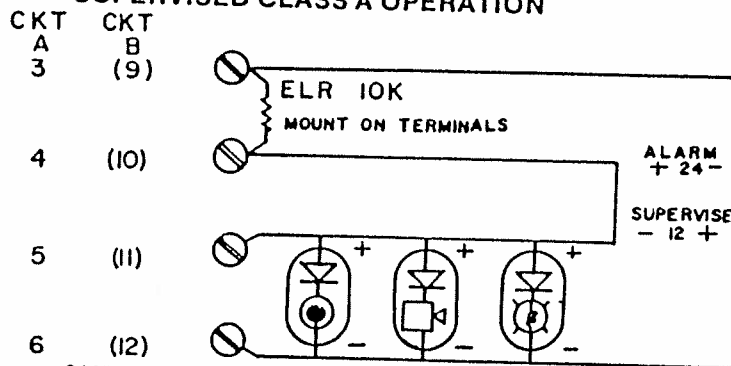
"GROUND FAULT-" - A yellow LED indicator that lights when a negative ground fault exists.

BCM-2 BELL CIRCUIT

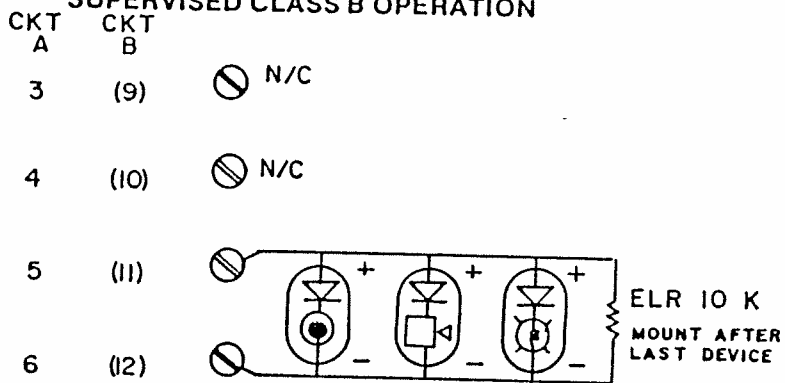
FIGURE 5



SUPERVISED CLASS A OPERATION



SUPERVISED CLASS B OPERATION

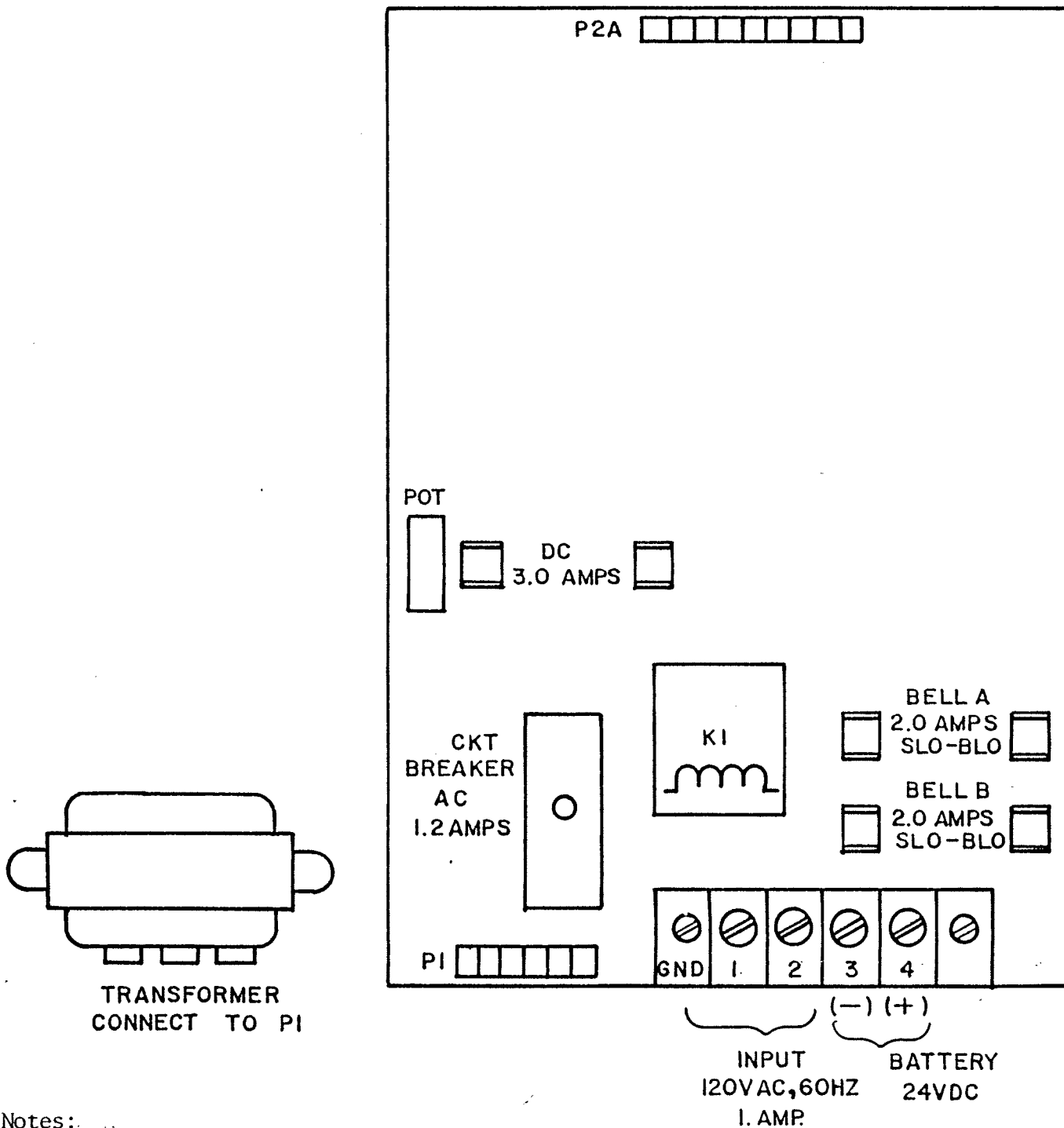


Notes:

1. Modes of operation
 - A) For non-disconnectable bells remove jumper "J3" but leave jumper "J2".
 - B) For disconnectable bells remove jumper "J2" but leave jumper "J3".
 - C) For MTC bell signal, remove jumper "J1".
 - D) Select normally open or normally closed trouble contact by removing J4 or J5 respectively. Trouble contact is provided at terminals 1 and 2. It is rated 2 AMPS, 28 VDC.
2.
 - A) Connect signalling circuit as shown.
 - B) Size wire for a maximum voltage drop of 2 VDC.
 - C) Use polarized, U.L. listed, signalling devices with a minimum rated voltage range of 18 to 30 VDC.
3. For bell power connect terminal 7 (positive input CKT A), terminal 8 (positive input CKT B) of BCM-2 to terminal 10 & 11 of MCB-104 respectively. Maximum bell load is 1.1 AMPS per CKT.

PSB-24 POWER SUPPLY BOARD

FIGURE 6



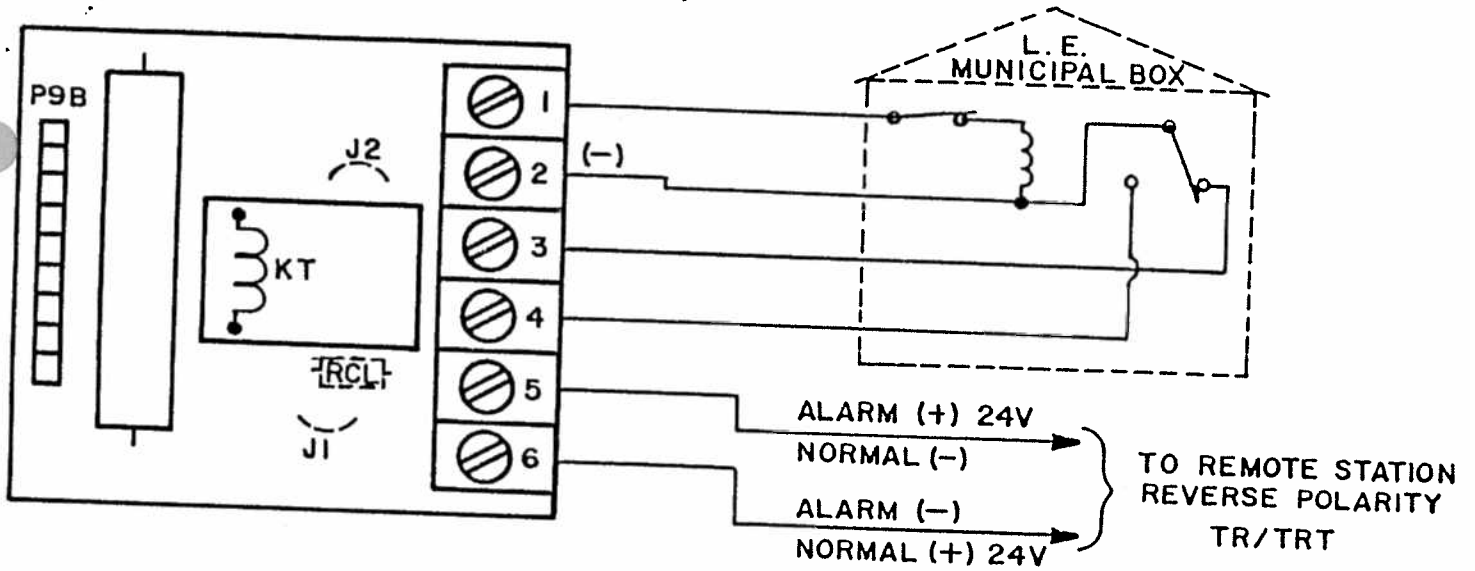
Notes:

- 1) PSB-24 mounts to left of MCB-104.
- 2) Connect plug of transformer to P1.
- 3) A 9 wire cable connected to P2A of power supply board & P2B of MCB 104.
- 4) AC power connects to terminal 1 & 2.
- 5) 24v standby battery connects to terminal 3 (negative) and terminal 4 (positive).
Charger has a typical current limit of 0.5 AMP.

CAUTION : 1) Do not make battery connection before applying AC Power to the system.
2) Check polarity before connecting battery.

TMM-2 TRANSMITTER MODULE (OPTIONAL)

FIGURE 7

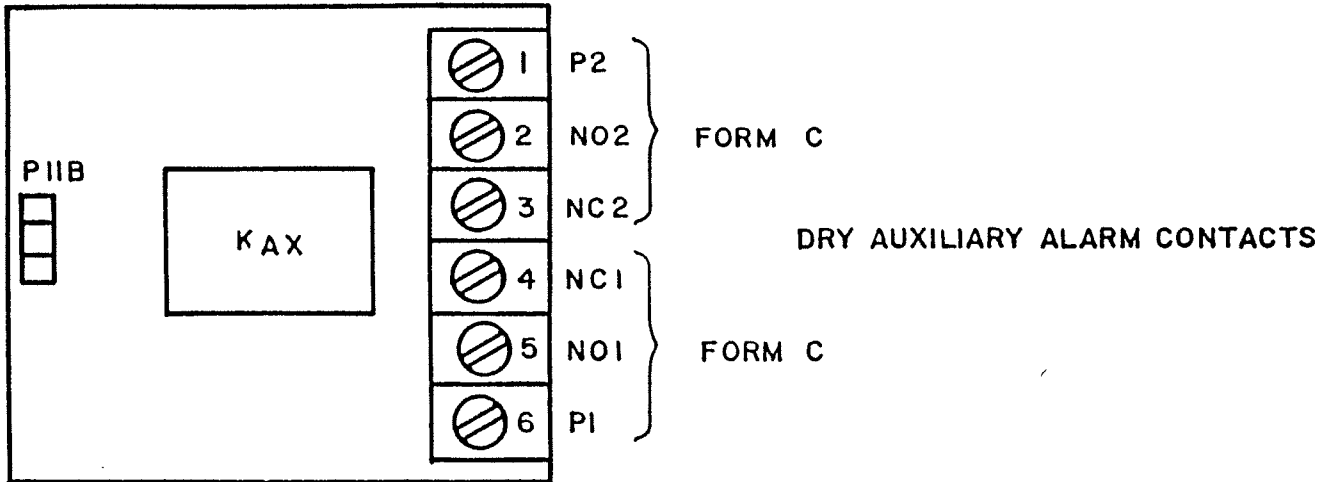


Notes:

1.
 - A) Cut diode (DT) in "INC-9" card if TMM-2 is employed.
 - B) Cut J1 when Local Energy type municipal box is connected.
 - C) If the box is equipped with a reset supervisory switch, remove jumpers between terminals 2 & 3.
 Coil Voltage = 3.65 VDC
 Trip Current = 0.25 AMP
 Coil Resistance = 14.6 OHMS
 - D) Limit the total wire resistance between panel and trip coil to 5 OHMS.
 - E) Wiring must comply with N.F.P.A. 72B-Auxiliary.

2. Remote station connection (non-supervised)
 - A) Cut jumper J2 unless local regulations specifically prohibits the transmission of a trouble signal.
 - B) Connect phone lines to TMM-2 terminals 5 & 6.
 Terminal 5 is positive in alarm.
 Terminal 6 is positive in Normal.
 In trouble mode, output is 0 VDC if J2 is cut.

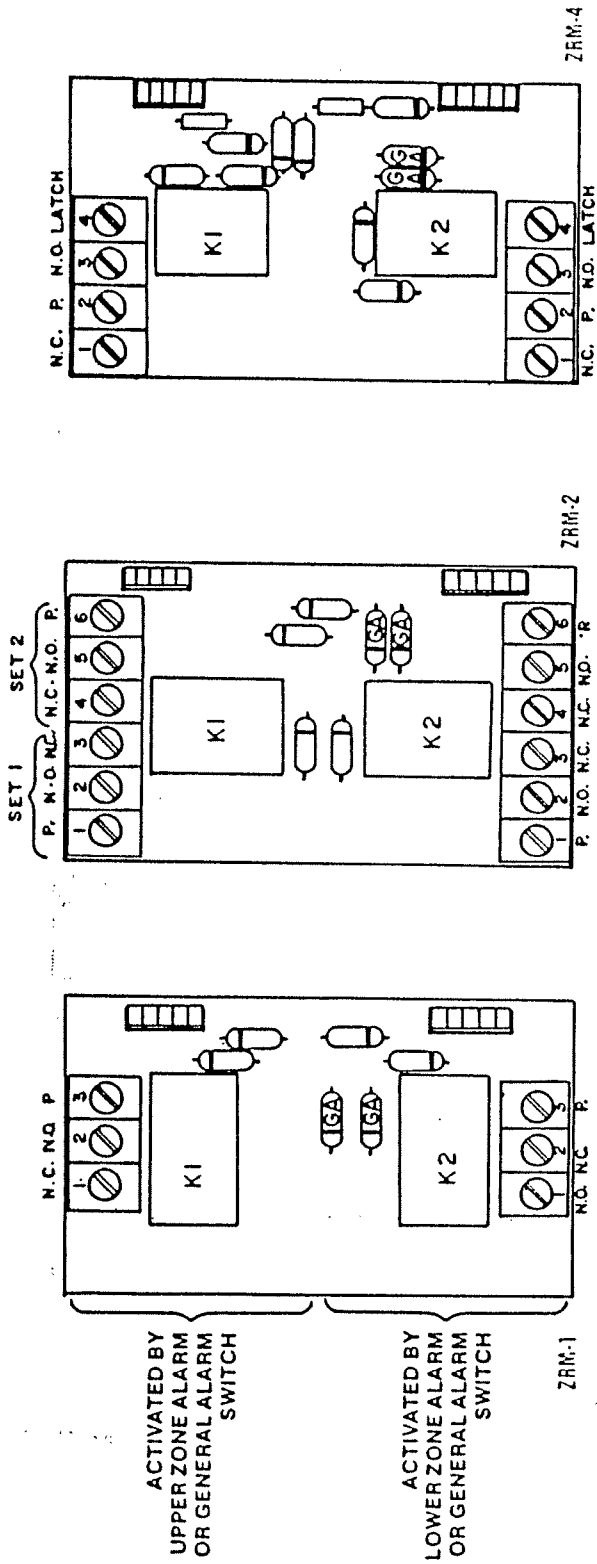
AX-2 AUXILIARY (OPTIONAL)
FIGURE 8



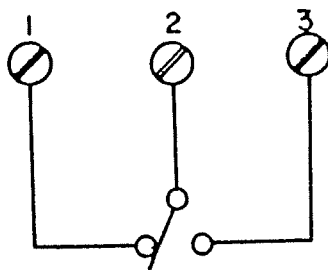
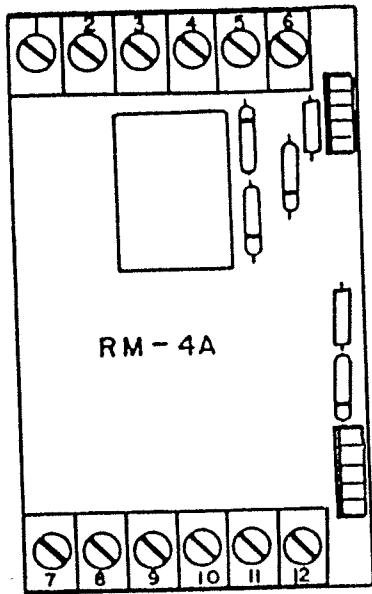
Supplementary alarm contacts (non-supervised)

- A) Two sets of Form C contacts are provided at terminals 1 to 3 and 4 to 6.
- B) Contacts are rated at 10 AMPS, 28 VDC/115 VAC resistive.
- C) Remove resistor RAX in INC-9 card if AX-2 is employed. (See INC-9 information page)

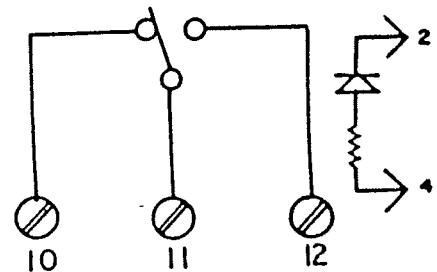
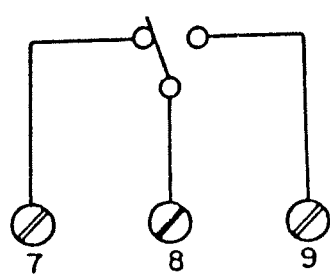
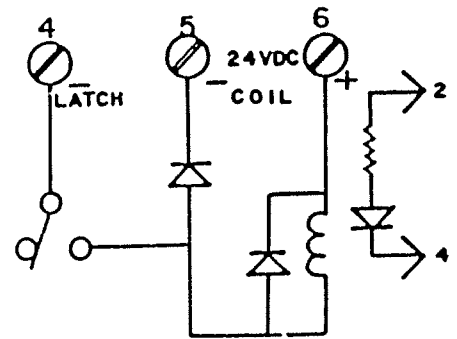
FIGURE 9
DUAL ZONE RELAY MODULES



MODEL	ZRM-1	ZRM-2	ZRM-4
CONTACTS: Rating	5A RESISTIVE	10A RESISTIVE	5A RESISTIVE
Poles	1	2	1
Form	C	C	C
Notes:	Supplementary Contacts	Supplementary Contacts	For latching operation connect terminal 4 to Master Control Board Terminal 13
GENERAL INFORMATION:	1. All contacts rated 28VDC/115VAC 2. Remove diodes marked "GA" to prevent operation by "General Alarm" switch		



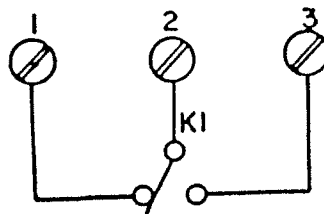
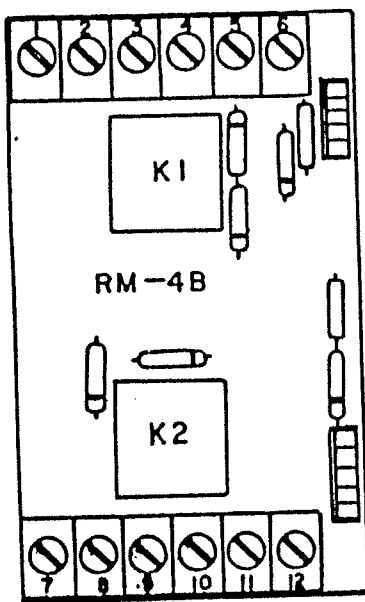
RM-4 A



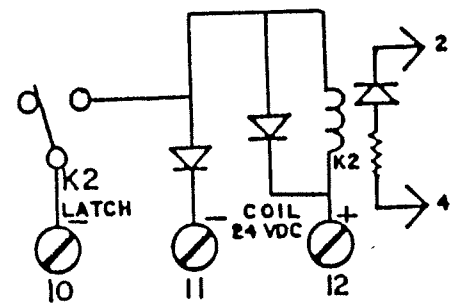
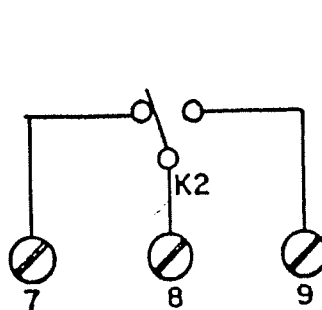
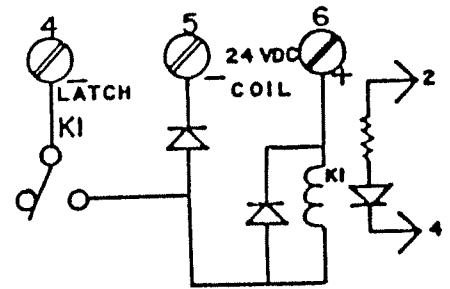
NOTES:

1. General Information

These non-supervised relay modules may be used to perform numerous special functions, since their relay coil (s) can be connected to a variety of 24VDC drive signals. The internal polarizing diode simplifies connection to polarity reversing drive signals such as the bell or remote station drive signal. A suppression diode protects solid state drivers while a latching contact adds flexibility.



RM-4B



2. Coil drive requirements

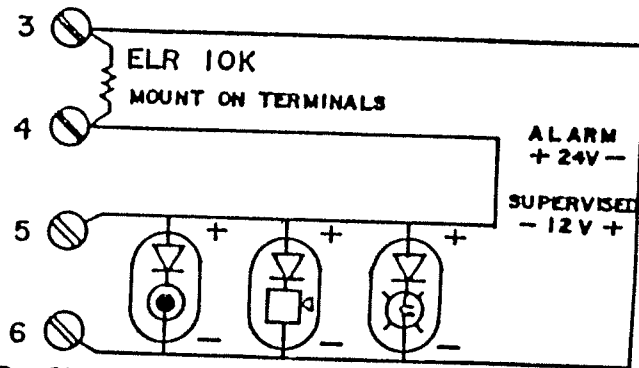
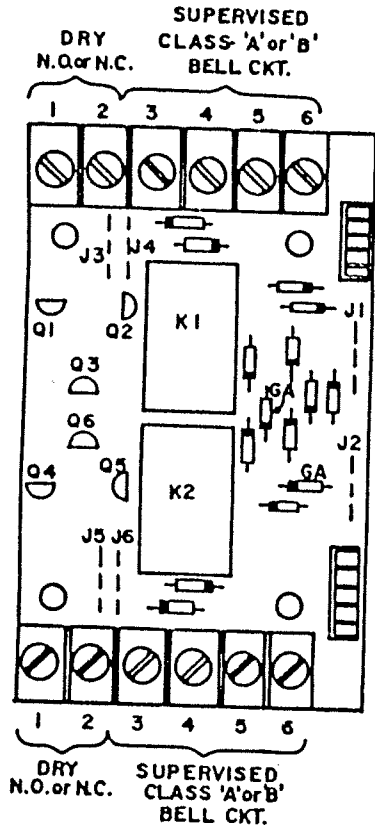
- A. Nominal drive voltage: 24VDC
- B. Nominal drive current: 13.4mA for RM-4A and 7.5mA for RM-4B
- C. Minimum drive voltage: 19VDC

3. Contacts:

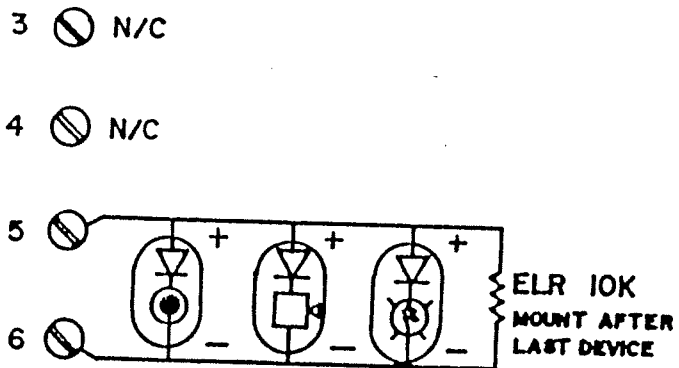
- RM-4A: 3 Form C rated 5A, 28VDC/120VAC resistive
- RM-4B: 1 Form C rated 5A, 28VDC/120VAC resistive

FIGURE 11

SUPERVISED CLASS A OPERATION



SUPERVISED CLASS B OPERATION

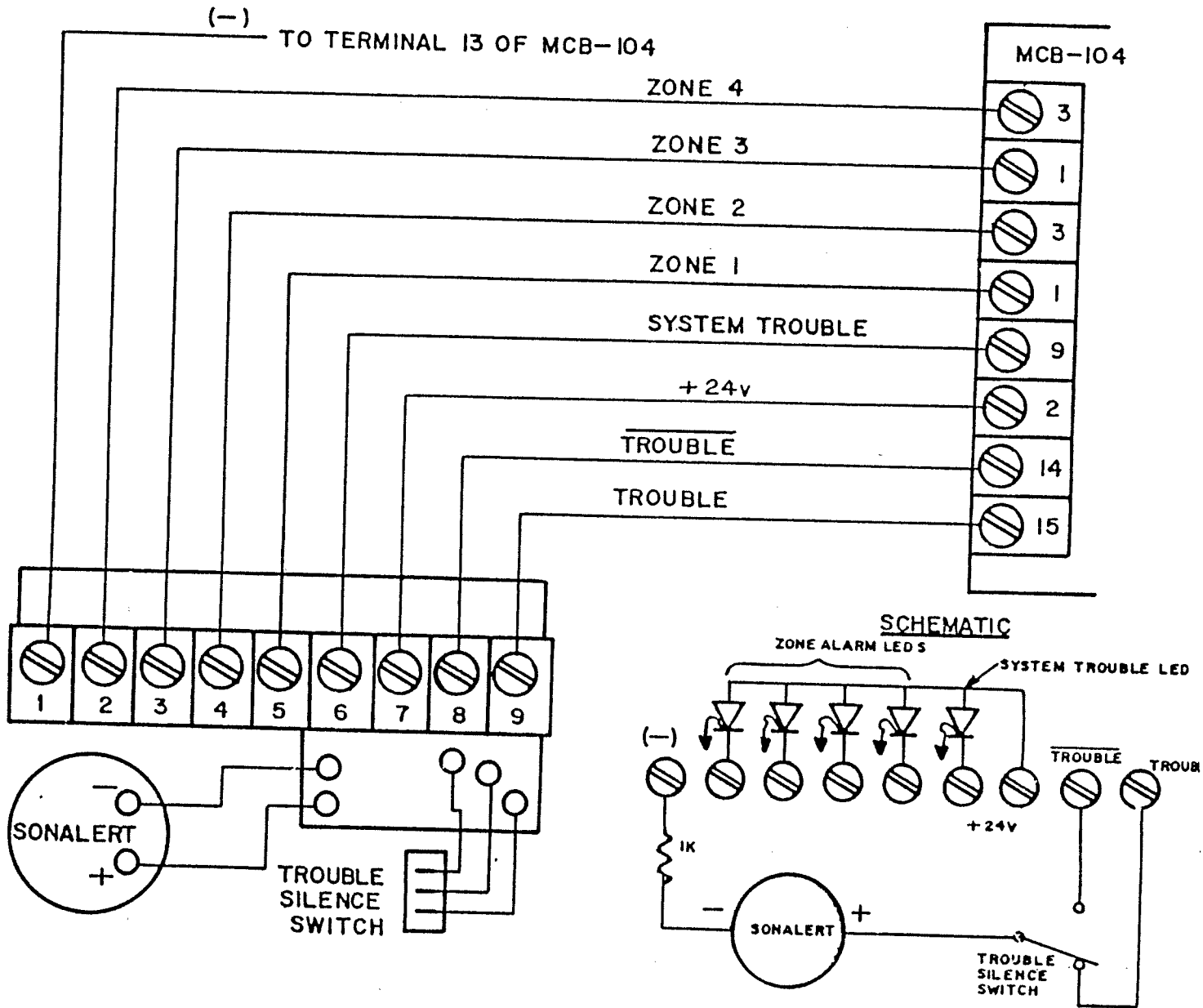


NOTES:

1. Mode of operation: Remove jumpers J1 and J2 for Ring-By-Zone operation. The signalling circuit and supplementary contacts operate in the same mode. Remove diodes marked "GA" to prevent operation by "General Alarm" switch.
2. Supplementary contacts (non-supervised): Remove jumper J3 and J5 for normally open alarm contacts. Remove jumper J4 and J6 for normally closed alarm contacts.
3. Signalling Circuits (supervised): A) Connect signalling circuits as shown. B) Size wire for a maximum voltage drop of 2VDC. C) Use polarized. U.L. listed, signalling devices with a minimum rated voltage range of 18 to 30VDC. D) Maximum signalling current per output is 1 ampere.

RZA REMOTE ZONE ANNUNCIATOR

FIGURE 12 CONNECTION DIAGRAM



- Notes:
- 1) All* field connections are supervised for opens except sonalert.
 * To check normally open connection flip Trouble silence switch to its off-normal (downward) position. Sonalert should sound. If not check connection between MCB terminal 14 & terminal 8 of RZA.
 - 2) Maximum wire resistance is 100 ohms for all connections except connection to terminal 7 should not exceed 5 ohms.
 - 3) Silenced audible device will resound when trouble condition is corrected.

DEVICE	Number of Devices	Current Per Device (Amperes)	Total Device Current (Amperes)
1. MCB 104, PSB-24, BCM-2, INC-9, DZC-2 (Both zones are in alarm)		.168	=
or		or	
2. MCB 104, PSB-24, BCM-2, INC-9, Two DZC-2 (All four zones are in alarm)		.290	=
3. ZRM-1*		x .010	=
4. ZRM-2*		x .070	=
5. CZM-1*		x .090	=
6. TMM-2 in Alarm		.0135	=
7. AX-2 in Alarm		.035	=
8. Two wire detector head - standby current (SD-12, SD-32, CP-700 series)		x .0001	=
9. Four wire detector head (SD14BW, standby)		x .00015	=
10. Four wire detector head (SD34-24VDC)		x .025	=
11. End of line relay		x .025	=
12. ZRM-4, RM-4A, RM-4B		x .014	=

Alarm current Load on Regulator (Add last column)
 Alarm current should not exceed 0.75 amp.

Rectified, Unfiltered, unregulated bell power = 2.2 amps Total.
 * Remove both jumpers in DZC-2 card(s) if optional module(s) employed.

STANDBY BATTERY REQUIREMENTS

DEVICE	Number of Devices	Current per Device (Amperes)	Total Device Current (Amperes)
1. MCB 104, PSB-24, INC-9, BCM-2, DZC-2 (Note: AC power off, Visual & Audible trouble signal)		.059 =	
or			or
2. Line 1 with both zone cards (Two DZC-2)		.070 =	
3. ZRM-1*			.000
4. ZRM-2*			.000
5. CZM-1*		.025 =	
6. TMM-2 (Remove Diode 'DT' if TMM-2 employed)		.0026 =	
7. AX-2 (Remove Resistor 'RAX' if AX-2 employed)			
8. Two wire detector heads (Maximum allowable detector current is .002 amp (2mA) per zone. SD-12, SD-32, CP-700 series)	x	.0001 =	
9. Four wire detector head (SD14 BW)	x	.00015 =	
10. Four wire detector head (SD-34 24VDC)	x	.005 =	
11. End of line relay (SDLR-B)	x	.025 =	
12. RZA-4 (for Sonalert)			.0075
13. Remote station loading. Enter only if trouble transmission inhibited			=
14. Remote trouble signalling device,			=
15. ZRM-4, RM-4A, RM-4B			.000
16. Battery standby current (Add last column)			

* Remove both jumpers in DZC-2 card(s) if optional module(s) to be employed.

1. Battery standby current. (line 16 of Part 2)		
2. Standby time in hours (generally 24 or 60 hrs)*		
3. Multiply line 1 by 2		
4. Alarm load in amperes	3.0 amps (max.)	
5. Alarm time in hours (generally 5 minutes = .084 hr.)		
6. Alarm ampere - hours, multiply line 4 by 5		
7. Total ampere - hours. Add line 3 & 6		

Select battery from Part 4 with amp-hr. rating larger than line 7 of Part 3.

Part 4

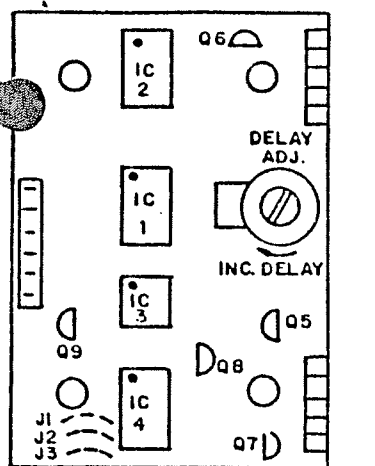
BATTERY SELECTION

Ampere - Hour Rating	Battery
5	Two (2) Gates 630
6	Two (2) Yuasa (NP6-12)
6	Four (4) Globe (GC-660)
8	Four (4) Eagle Picher (GC-680)
9	Four (4) Globe Union (GC-690)

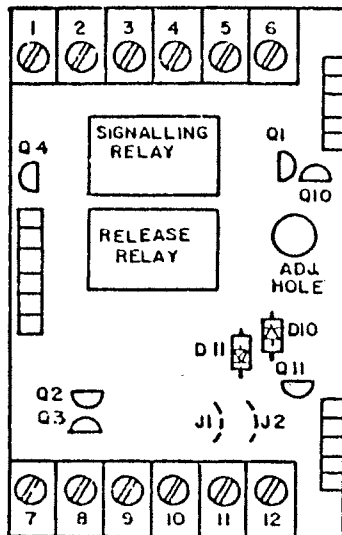
Do not use 24VDC regulated supply for Inductive loads.

*NFPA 72A, 72D, 74 required 24 hours standby.
 NFPA 72B and 72C required 60 hours standby.

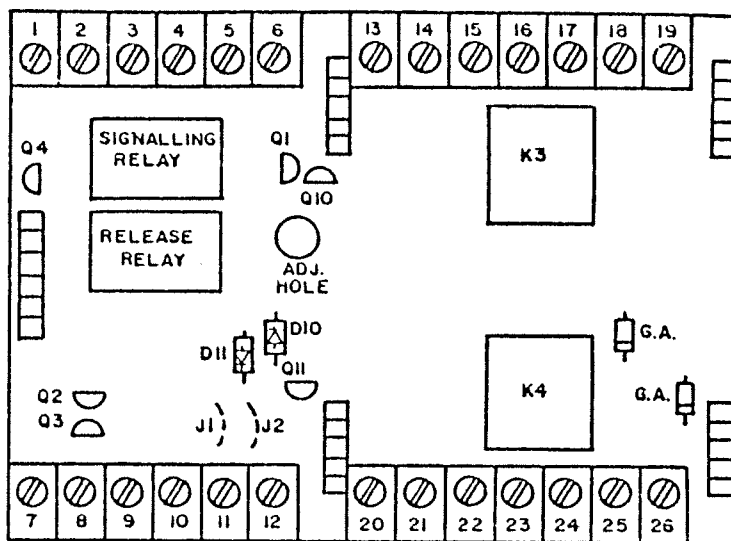
FIGURE 10 CROSS ZONE DELAY RELEASE MODULE (CZM)



LOWER BOARD
(SAME FOR CZM-1 AND CZM-3)



CZM-1, UPPER BOARD



CZM-3, UPPER BOARD

CZM MODULE SPECIFICATIONS:

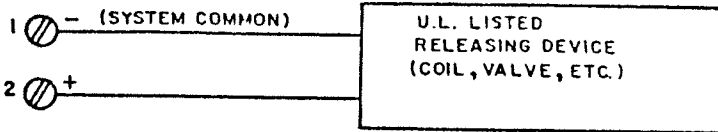
1. Releasing Circuit
 - A. Class B operation of a U.L. listed releasing coil or valve, etc. rated for 18 to 30VDC operation.
 - B. Maximum current is 1 ampere continuous, 2 amperes momentary. See power requirements Item B.
 - C. Circuit supervised for opens and ground faults.
 - D. Typical supervision current through releasing device is 1.2 ma.
2. Signaling Circuit
 - A. Class A or B operation of external bells, horns, and/or lights. use U.L. listed, polarized signaling devices rated for 18 to 30VDC.
 - B. Maximum signaling current is 1 ampere. See Power Requirements, Item B.
 - C. Field wiring is supervised for opens, shorts, and ground faults.
 - D. Typical supervision current through 10K ELR is 1.2 ma.
 - E. Alarm Signals
 1. An alarm in either zone produces a steady signal. (When desirable, this signal can be prevented. See Installation Note 3B.)
 2. An alarm in both zones will produce a non-adjusting MTC (pulsed) signal.
3. Delay Circuit
 - A. The Time Delay Circuit is activated by removing jumper J3 located on the lower CZM board, See note 1, regarding U.L. requirements before activating delay.
 - B. Typical adjustment range 10 to 50 seconds. Removal of jumper(s) will multiply delay by 2 or 4. (See Installation Note 3A)
 - C. Release relay controlled by solid state timer.
 - D. External "Manual Release Switch" will override delay.
4. Trouble Signal

Audible/visual system trouble plus alternate flashing of associate zone trouble LED.
5. Abort Circuit
 - A. External non-momentary or self-restoring normally open switch circuit with 10K ELR.
 - B. Audible/visual signaling is steady in abort mode.
 - C. Abort mode produces trouble signal.
 - D. Remove of abort command restarts releasing sequence unless control unit is reset.
 - E. Field wiring supervised for open, short and ground fault.
 - F. Manual Release Switch overrides abort.
6. Manual Release Circuit
 - A. External normally open pull station with latching action.
 - B. Manual Release overrides delay and abort.
 - C. Field wiring supervised for opens and ground faults, 10K ELR required.
7. Dry Contact

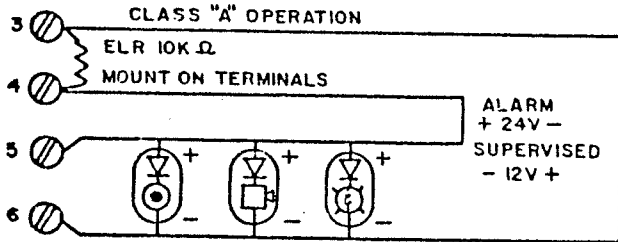
Dry normally open or normally closed supplementary release indicating contact. Rated at 5A, 28VDC/115VAC resistive.
8. Power Requirements
 - A. Regulated 24VDC: Standby-25ma, include in battery calculation Table 3; Alarm-90ma, include in power supply loading Table.
 - B. Unregulated 24VDC: The signaling and releasing devices are powered from the unregulated signaling supply (supplies) and are subject to the signaling current limitation given in Sensiscan 1000 Instruction Manual Figure 16, or Miniscan 424 Instruction Manual.
9. Zone Alarm Contacts (CZM-3 ONLY) Rated at 10 Amps resistive, 28VDC/115VAC
10. Mounting
 - A. CZM-1 is used in conjunction with Sensiscan 1000 or Miniscan 424. It requires one zone module position.
 - B. CZM-3 can be used with Sensiscan 1000 only. It requires two zone module positions.

CROSS ZONE DELAY RELEASE MODULE (CZM) INSTALLATION NOTES

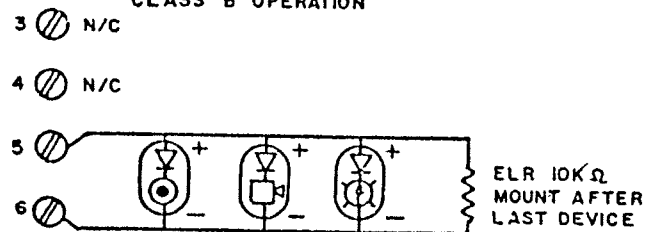
RELEASE CIRCUIT (SUPERVISED)



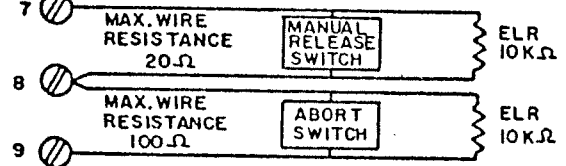
SIGNALLING CIRCUIT (SUPERVISED)



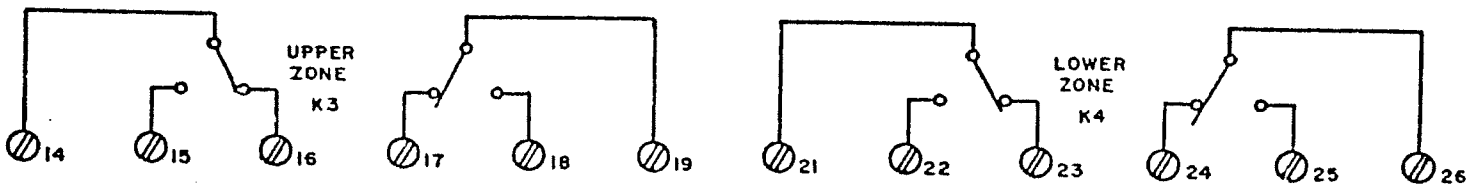
CLASS "B" OPERATION



MANUAL CONTROL SWITCHES (SUPERVISED)



ZONE ALARM CONTACTS (CZM-3 ONLY)



1. Underwriters Laboratories requirements call for an immediate release when non-simultaneous alarm initiating signals are received by a cross zone releasing system. Per U.L. requirements, activation of the time delay circuit in the CZM module is not permitted. The local authority having jurisdiction must approve any discharge delay.
2. Prior to installation: a) Refer to Control Unit instruction manual for general system specification and installation instruction. b) Check local fire code requirements.
3. The CZM module may be customized to meet specific application requirements as follows: a) Extended Delay: The typical delay adjustment range of 10 to 50 seconds may be extended by removing jumper(s) from the lower board. Removing J1 will extend the delay time by a factor of two, while removing both J1 and J2 extends the delay time by a factor of four. b) Modified Alarm Signal: The steady alarm signal produced by a single release zone alarm can be prevented by removing diodes D10 and D11. c) Dry Contact Selection: A dry normally open or normally closed supplementary contact is selected by removing a jumper from the upper board. If J1 is removed the contact will close upon release command. Removal of J2 result in an open contact upon release command.
4. Mounting: Install both CZM boards to the left side of its corresponding dual zone card position. Install the lower board first, pushing completely down to the master boards. Install upper board, pushing downward until contact is made with mounting posts. Check that all connector pins properly mate with their receptacle contacts. Fasten the upper board using the four screws and lockwasher provided. **NOTE:** Before installing module, in Sensiscan 1000, remove the jumper that bridges the associated active zone card connector. Do not remove jumper across unused card connector under center of CZM-3 module. See Sensiscan 1000 Instruction Manual Figure 3.
5. Release Device: Connect a U.L. listed releasing device (coil, release valve, etc.) to terminal 1 and 2 as shown.
6. Signaling Devices: Connect signaling device(s) to terminals 3 through 6 as shown. Size wire for a maximum voltage drop of 2VDC.
7. Manual Release Station: A U.L. listed, normally open, manually actuated pull box may be connected to terminals 7 and 8 for immediate release. Box should be labeled "Manual Release Switch".
8. Abort Station: A momentary or self restoring, normally open, U.L. listed (in accordance with U.L. 38) switch may be employed as an abort station, mount "ABORT" switch next to the manual release. An abort switch is considered a supplementary device.
9. Bell Test: When it is desirable to have the CZM signaling circuit activated by the "Main Bell Test" switch, connect CZM terminal 10 to master board terminal 26.
10. Dry Contact: A dry supplementary release indicating contact is available at CZM terminals 11 and 12. See Note 3C.
11. Recommendation: Operate system without extinguishing agent for several days to eliminate all possible sources of false alarms.
12. It is recommended that the CZM module be tested monthly as follows: a) notify fire department and/or central alarm receiving station if alarm condition is transmitted; b) notify facility personnel of test; c) replace release device with 24V lamp; d) activate an initiating sound device in a release zone; e) alarm should sound; f) activate an initiating device in the other release zone; g) CZM signaling devices should pulse; h) momentarily activate "ABORT" if employed, signaling should become steady while in abort; i) check that the lamp lights after the delay time is expired; j) reset system; k) activate manual release switch, alarm should sound and lamp should light; l) reset system according to operating instructions and instruction manual.
13. Zone Alarm Contacts (CZM-3 only): a) Dry Zone alarm contacts are available at CZM-3 terminals 14 thru 19 and 21 thru 26.
 - b) To latch K3, jumper CZM terminals 13 and 14, connect CZM terminal 15 to MCB-108 terminal 24
 - c) To latch K4, jumper CZM terminal 20 and 21, connect CZM terminal 22 to MCB-108 terminal 24
 - d) Remove diodes marked "GA" to prevent operation of contacts by "GENERAL ALARM" switch.