



## **FIRE-LITE Alarms Incorporated**

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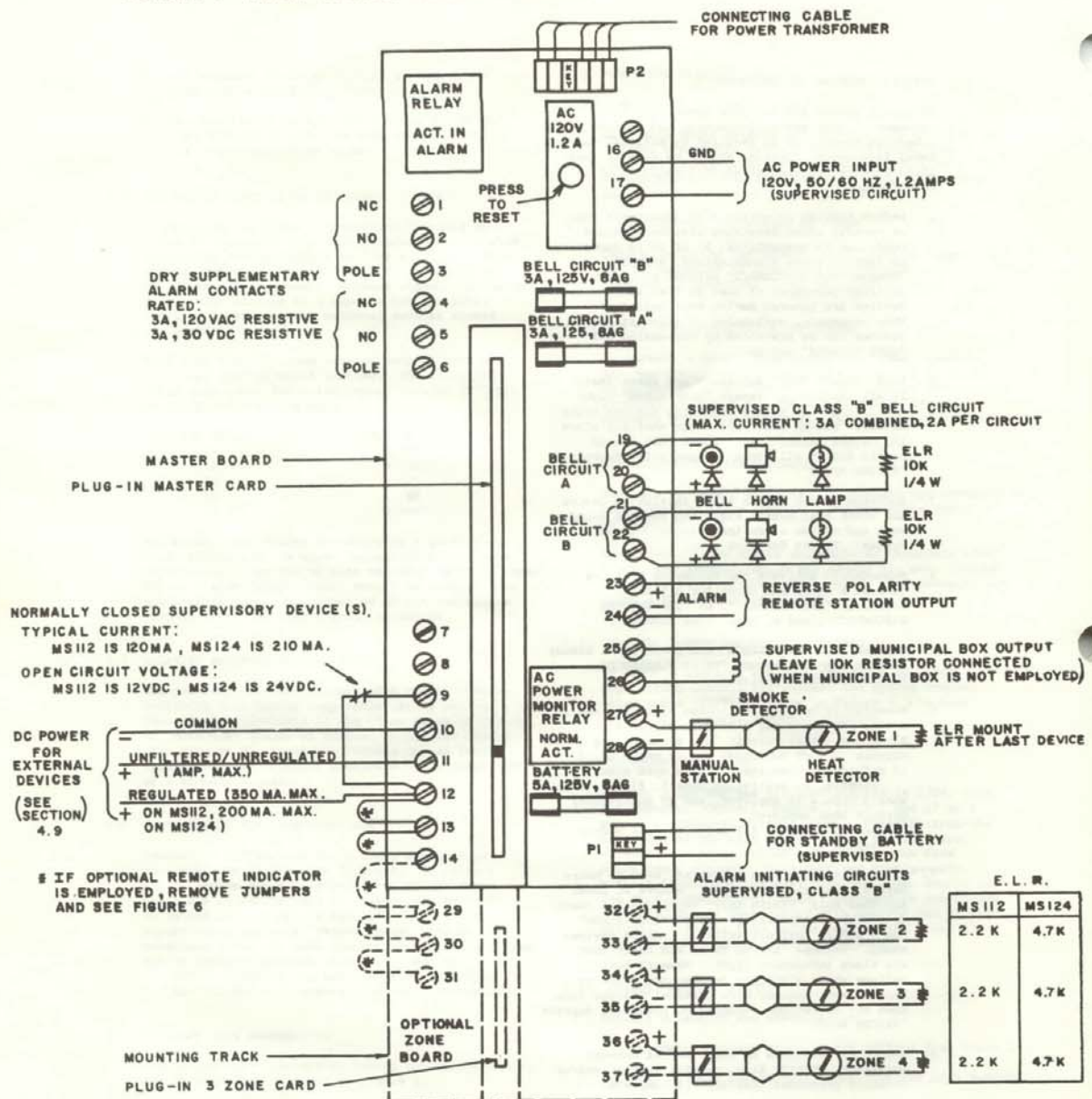
# **MINISCAN 112 / 124 INSTRUCTION MANUAL**

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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.

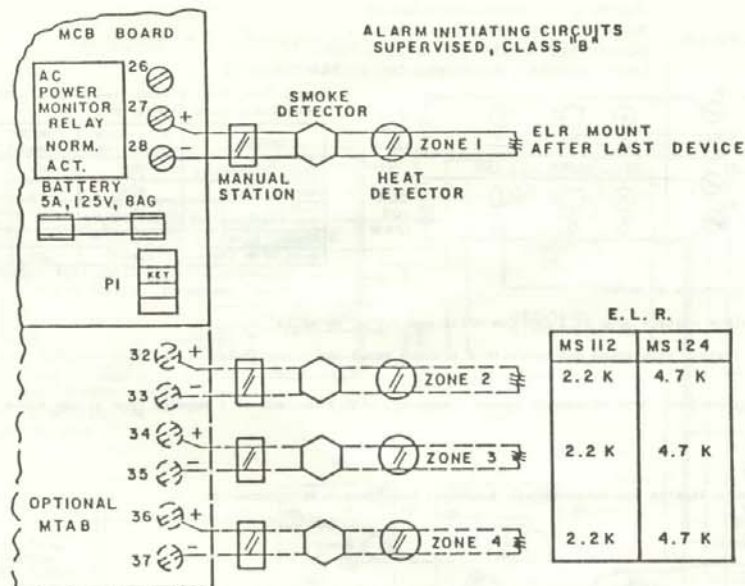
FIGURE 1 - BASIC SYSTEM WIRING DIAGRAM



E. L. R.	
MS112	MS124
2.2 K	4.7 K
2.2 K	4.7 K
2.2 K	4.7 K

FIGURE 2-INITIATING DEVICE CONNECTIONS (TYPICAL)

Refer to Manual Sections 4.2, 4.3 and 5.3



NOTES:

- Detection loop specifications  
Operation: Class B  
Standby Voltage: MS112-11VDC, MS124-23VDC  
Current required to ensure alarm: 15ma minimum  
Short circuit current: 35ma  $\pm$  10ma
- Initiating Devices include: Manual station, heat detectors, smoke detectors, ionization detectors, waterflow alarm devices, coded manual stations.
- If coded manual stations are connected to any zone, see Figure 8.
- Use mechanical water motor gong if waterflow alarm devices are connected to an MS112/MS124.
- Smoke and ionization detectors requiring separate power can be powered from master control board Terminal 10 (-) and Terminal 12 (+). See section 4.9.1 for current limitations. Use end of line relay (SDLR-A on MS112, SDLR-B on MS124). See device data sheets for complete connection information.
- Caution is advised when using 2 wire detector containing supplementary relays or indicators since their operation cannot be ensured. Example: activation of a manual station, heat detector, or other shorting type detector will shunt operating current from the 2 wire detector(s) on the same zone thereby preventing their operation.
- Detector loop current is sufficient to ensure operation of one detector per zone.
- Detector loop is a power limited circuit, which may be connected to limited energy cable.
- Compatible, U.L. listed, 2 wire detector available from Fire-Lite, include the following series:

Maximum standby head current: 2ma peak per zone  
Supervision current: 5ma  
End of line resistor: MS112-2.2K, MS124-4.7K  
Maximum resistance per side: 100 Ohms  
Maximum total zone resistance: 200 Ohms

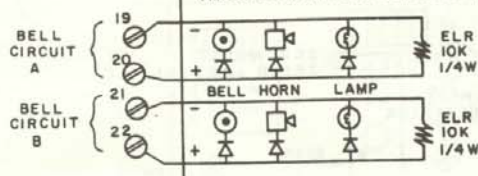
DETECTOR SERIES	IONIZATION TYPE			PHOTOELECTRIC TYPE			
	CP71	CP1800	CP851	SD71	SD800	SD851	224
COMPATIBLE PANELS	MS124	MS124	MS124	MS124	MS124	MS124	MS124
		MS112	MS112		MS112	MS112	
MAX. STANDBY CURRENT	.065ma	.100ma	.100ma	.085ma	.100ma	.100ma	.100ma
MAX. DETECTORS PER ZONE	30	20	20	23	20	20	20

Notes:

- CP71/SD71 - Use with CP001, CP002, CP003, CP004 base or DH-23 Duct Housing.  
CP851/SD851 - Use B101 base with MS112 and B101 or B107 base with MS124. Duct Detector versions DH18D/DH28D are compatible with MS124 only, AR 10 Relay is not compatible with 2 wire operation.  
SD800 - Model SD800T has a integral fixed temperature thermal.  
224 - Compatible options: Integral thermal (T), Isolated thermal (H), Aux. Relay (R), Integral Horn (P), and Controlled Horn (CP).



FIGURE 3 - SIGNALLING CIRCUITS  
Refer to Manual Sections 4.4 and 5.4  
SUPERVISED CLASS "B" BELL CIRCUIT  
(MAX. CURRENT: 3A COMBINED, 2A PER CIRCUIT)



Compatible, U.L. listed, signalling devices available from Fire-Lite.

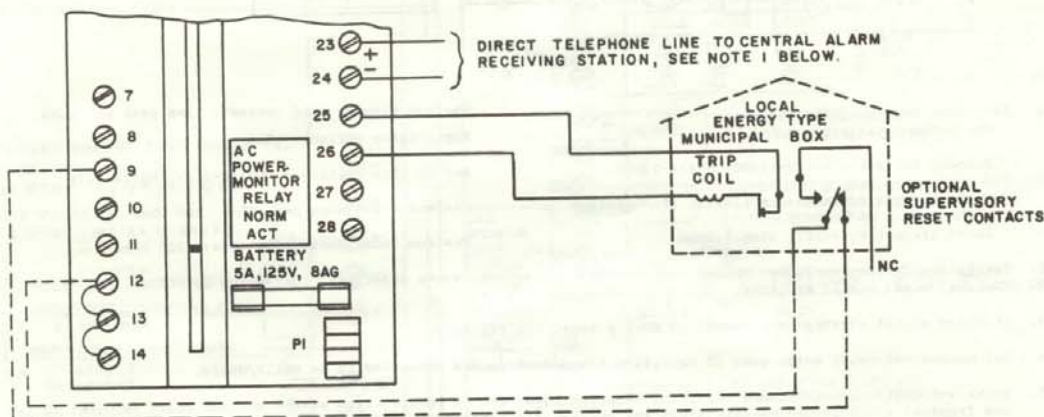
DEVICE	Fire-Lite SERIES (1)	CURRENT (AMP) 12VDC 24VDC
Bell, Vibrating	BDP	.180 .110
Horn	HDP	.125 .063
Light, Non-Flashing (2)	FL32N, FL33N	.150 (3) .100 (3)
Light, Flashing	FL32F, FL33F	.150 (3) .100 (3)
Horn, With Strobe	STH-72	.125 .063

1) Specify Voltage, 2) Requires 1N4004 polarizing diode, 3) Light only.

NOTES:

1. Connect signalling circuits as shown.
2. Size wire for a maximum voltage drop of 1.0VDC on MS112 and 2.0VDC on MS124.
3. Use polarized U.L. listed, signalling devices with a minimum rated operating voltage range of 9 to 15VDC on MS112 and 18 to 30VDC on MS124.
4. Total current to all external devices cannot exceed 3 amperes, with a maximum of 2 amperes from either signalling circuit.

Figure 4 - Remote Station and Local Energy Municipal Box Connection Information

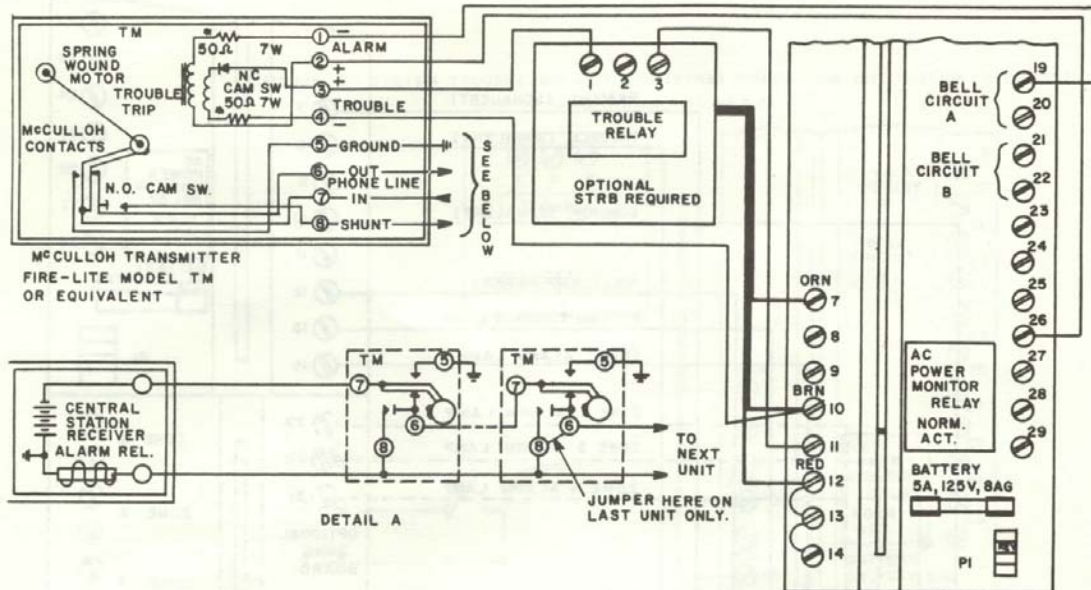


NOTES:

1. Remote Station Connection (Non-Supervised)
  - A. Remove jumper J1 unless local regulations specifically prohibits the transmission of a trouble signal.
  - B. A U.L. Listed polarity sensitive remote station receiving unit having compatible ratings may be connected to terminals 23 and 24
  - C. Nominal remote station output levels:
    1. Alarm: 12VDC on MS112, 24VDC on MS124 with terminal 23 positive.
    2. Normal: 12VDC on MS112, 24VDC on MS124 with terminal 24 positive.
    3. Trouble: 0 VDC if jumper J1 has been removed. Trouble is not transmitted if jumper J1 is installed.
    4. If a remote station is not employed leave terminals 23 and 24 open
2. Local Energy Municipal Box (Supervised Circuit)
  - A. When a local energy municipal box is to be employed, remove the 10K, 1/4W resistor from terminals 25 and 26. If the box is equipped with a reset supervisory switch, remove the jumper between terminals 9 and 12.
  - B. Connect the auxiliary trip coil to terminals 25 and 26.
  - C. Nominal Trip coil characteristics should be:
    1. Trip current=0.25 Amperes
    2. Coil voltage=3.65VDC
    3. Coil resistance=14.60OHMS
  - D. Limit the total interconnecting wire resistance between panel and trip coil to 3 OHMS.
  - E. Connect the reset supervisory switch as follows:
    1. Switch common to Terminal 12
    2. Normally closed contact to Terminal 9
  - F. Wiring must comply with N.F.P.A. 72B-Auxiliary

FIGURE 5: CONNECTION OF McCULLOH TYPE TRANSMITTER

Refer to Manual Sections 4.7 and 5.7



NOTES:

1. McCulloh Transmitter is mounted in separate cabinet.
2. Mount STRB Board on left side of Miniscan cabinet and connect harness' (red to 12, brown to 16, Orange to 7)
3. Remove 10K resistor from terminals 25 and 26.
4. Connect transmitter (TM term. 1 to MS term 19, TM term 2 to MS term 26, TM term 3 to STRB term 1, STRB term 3 to MS term. 11, TM term. 4 to MS term. 10) as shown.
5. Connect TM output as shown in detail A.
6. Derate signalling (BELL) circuit A by TM coil alarm current.
7. TM alarm coil is fused by signalling (BELL) circuit A.
8. Miniscan will not supervise municipal box and McCulloh transmitters simultaneously.
9. \*Denote resistor used in 24 volt transmitters only.

McCULLOH TRANSMITTER OPERATION

**Alarm:** An alarm signal initiated by a detector on the main control will actuate the TM coder and cause four rounds of coded signal.

To restore system to normal after cause of alarm has been corrected, press the SYSTEM RESET button on the control panel. One additional round of coded signal will follow and the cam follower will return to its normal position. Re-wind mechanism.

The coder cannot be reset if a trouble condition exists.

**TROUBLE:** Loss of primary power or break in detector or other supervised circuits will cause control panel to go into trouble condition. This will actuate the TM and cause one round of coded signal.

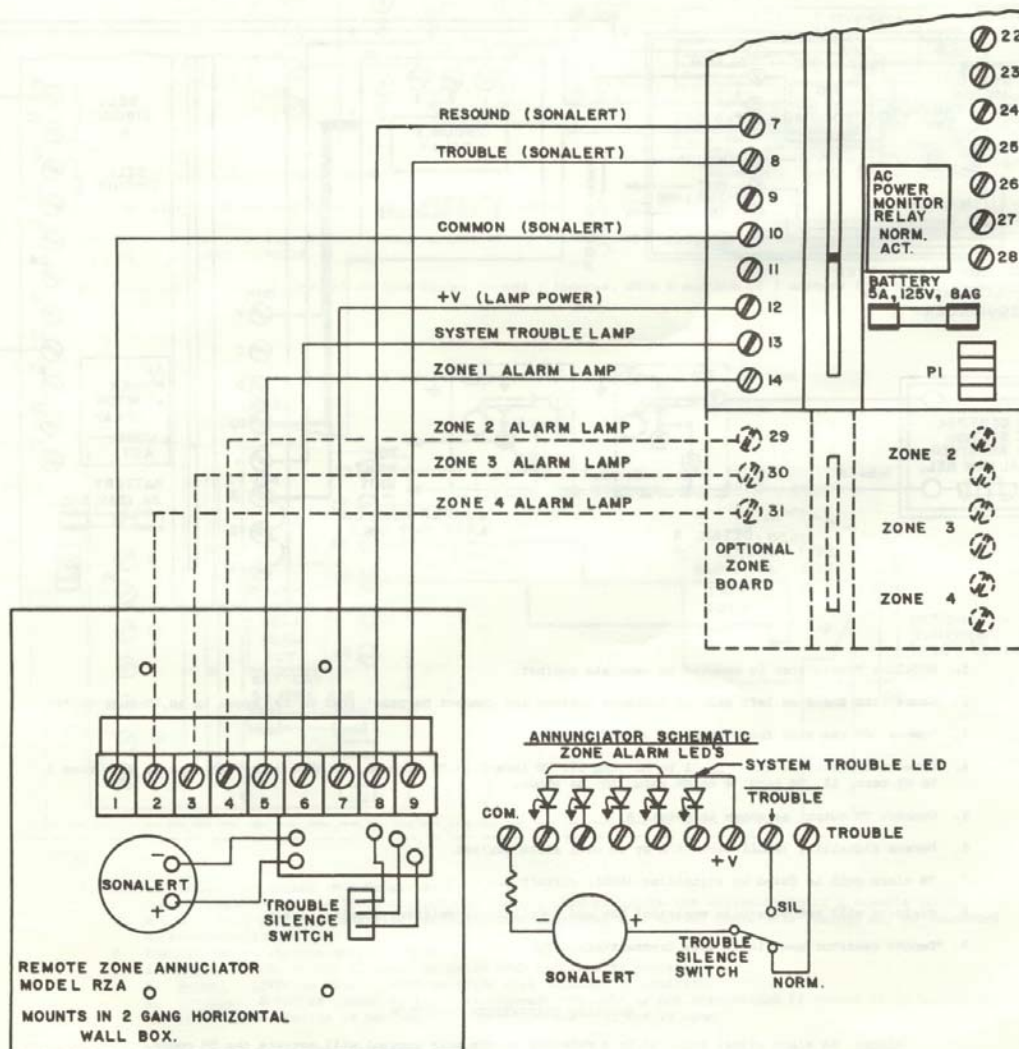
To restore system to normal after cause of trouble has been corrected, first press the SYSTEM TEST button and then press SYSTEM RESET on Miniscan control panel. Four rounds of coded signal will follow and the cam follower will return to its normal position. Rewind mechanism.

If an alarm condition occurs at the same time or during a trouble condition, a three round coded signal for alarm will follow the one round for trouble.

**NOTE:** Normal position is when cam follower is next to the green dot on cam. After one round of code (trouble) the cam follower will stop next to the blue dot. After the coded alarm signal the cam follower will stop next to the red dot.

**FIGURE 6—REMOTE ZONE ANNUNCIATOR (OPTIONAL)**

Refer to Manual Sections 4.11 and 5.10

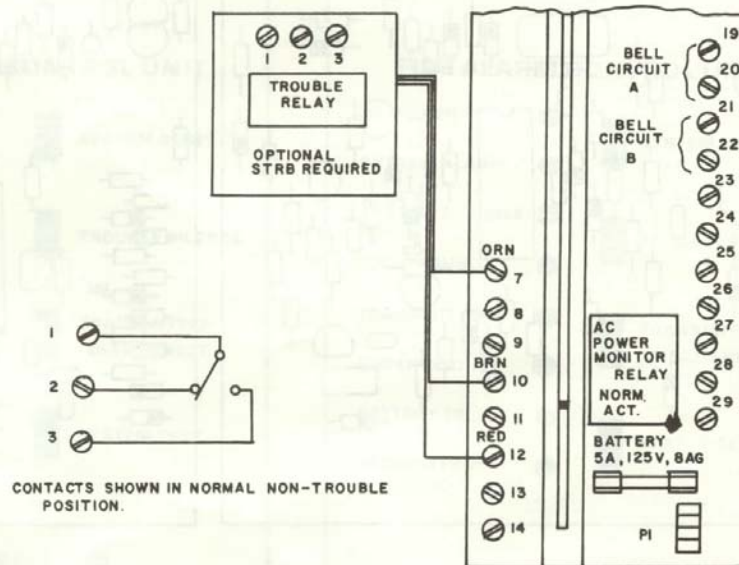


**NOTES**

1. Remove jumper connecting terminals 12 to 13, 13 to 14, 14 to 29, 29 to 30, and 30 to 31 before connecting Annunciator.
2. Miniscan can power and supervise one annunciator only.
3. All wiring except audible trouble supervised for open and ground fault condition.
4. Remote Indicator circuitry is power limited and may be connected to limited energy cable.



FIGURE 7 - SYSTEM TROUBLE RELAY BOARD (STRB) CONNECTION INFORMATION (OPTIONAL)  
Refer to Manual Section 4.13 and 5.12

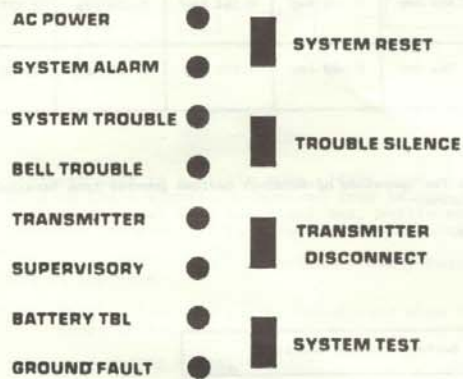


**NOTES:**

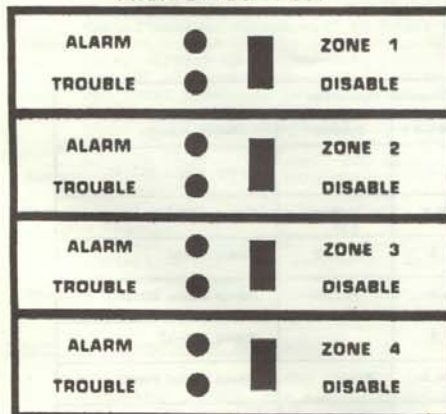
1. Mount the system trouble Relay Board on the left side of the Miniscan cabinet using the two number 4 screw and lockwasher provided.
2. Connect harness to Master Board (red to terminal 12, brown to terminal 10, and orange to terminal 7)
3. Connect output contacts as required.
4. Contacts rated 3A, 28VDC, resistive.
5. Relay coil will be energized in normal non-trouble state.

**FIGURE 9 - CONTROLS AND INDICATORS**  
Refer to Manual Section 2 and 3

**FIRE ALARM CONTROL UNIT**

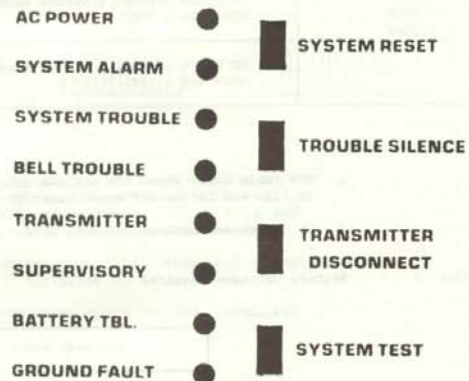


**ANNUNCIATOR**

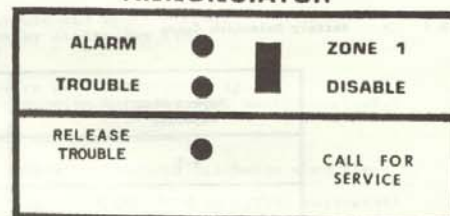


Fire•Lite Alarms, Inc.

**FIRE ALARM CONTROL UNIT**



**ANNUNCIATOR**



**CAUTION**

MISUSE OF THIS SYSTEM CAN CAUSE  
ACCIDENTAL RELEASE OF EXTINGUISHING  
AGENT. SEE MANUAL.

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FIGURE 10 - BATTERY SELECTION TABLES

TABLE 1 - Maximum Current Available for Various Battery-System Combinations

System Size	Standby Requirements	Maximum Current Available for External Devices				
		4.5Amp-hr Battery	5 Amp-hr Battery	6 Amp-hr Battery	8 Amp-hr Battery	9 Amp-hr Battery
SINGLE ZONE	24 hour Standby, 5 Minute Alarm, NFPA 72A & 72D	0.128 Amp	0.147 Amp	0.187 Amp	0.259 Amp	0.297 Amp
	60 hour Standby, 5 Minute Alarm, NFPA 72B & 72C	0.033 Amp	0.040 Amp	0.055 Amp	0.085 Amp	0.100 Amp
FOUR ZONE	24 hours Standby, 5 Minute Alarm, NFPA 72A & 72D	0.108 Amp	0.125 Amp	0.164 Amp	0.239 Amp	0.277 Amp
	60 hours Standby, 5 Minute Alarm, NFPA 72B & 72C	0.013 Amp	0.028 Amp	0.035 Amp	0.065 Amp	0.080 Amp

## NOTES:

1. The Table below shows the maximum current available for operation of external devices powered from Terminals 10, 11, and 12 for different capacity standby batteries.
2. Do not exceed maximum currents given in section 4.9.

TABLE 2 - Battery Voltages Required for MS112/124

Miniscan Model	Battery Voltage Required
MS112	12VDC
MS124	24VDC

TABLE 3 - Battery Selection Guide

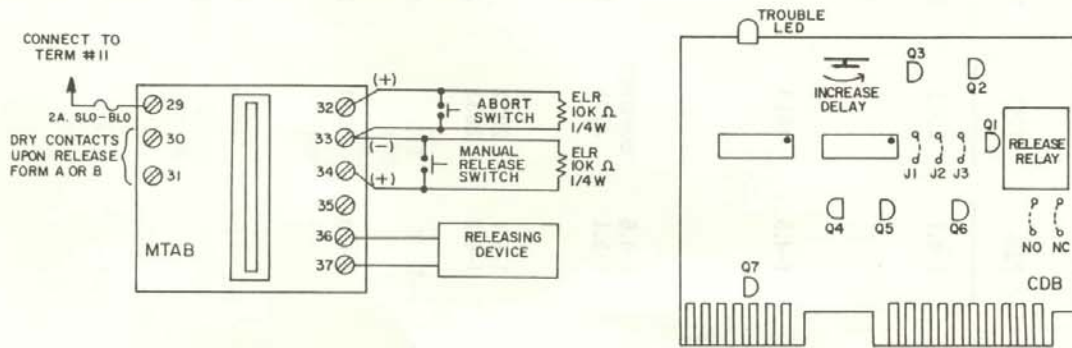
Ampere-Hour Capacity	Recommend Batteries			Manufacture and Model Number
	Quantity MS112	Req. MS124	Fire-Lite Number	
4.5	1	2		Power Sonic PS1245
5	1	N.A.	Ademco 630	Gates 12V-5.0 AH
6	2	4	GC-660	Globe GC660
6	1	2	PS1260	Power Sonic PS1260
6	1	2		Yuasa NP6-12
8	2	N.A.	PS680	Power Sonic PS682
8	2	N.A.		Eagle-Picher CP6V8

N.A. - Not Applicable

## NOTE:

Batteries are float charged during normal standby operation. A discharged battery will charge at 3/4 amperes (typically) and obtain its float voltage within 48 hours.

FIGURE -11 MS-124 WITH SINGLE ZONE RELEASING MODULE



Miniscan 124R is a single zone, 24VDC fire alarm control panel with the releasing module. When an alarm signal is received from initiating device, the control panel will sound audible devices, trip municipal box, notify remote station, annunciate a fire zone and energize releasing circuit for immediate discharge of an extinguishing agent.

The releasing card called Chemical Deluge Board (CDB) simply plugs into standard master-boards MCB-24 and MTAB\*.

\*This is the same master board used with triple annunciator board except terminals are redesignated.

#### Releasing Module Specifications:

**Releasing Circuit** - Supervised output for class B operation of UL listed releasing coil or valve etc., rated 18 to 30 VDC at maximum of one ampere. Ansul #32097 or equivalent. Connect releasing device across terminals 36 and 37. When non-latching type device is used, remove jumper marked N.C. on Chemical Deluge Board and connect terminal 30 to terminal 33 and terminal 31 to terminal 34.

**Manual Release Circuit** - Supervised output for normally open pull station with latching action.

- . Maximum line resistance: 200 Ohms.
- . Manual release switch will override the delay circuit and abort circuit.

**Delay Circuit** - This circuit will energize releasing relay at the set time.

- . Delay circuit is activated by removing jumper J3.
- . Typical adjustment range is 10 to 50 seconds.

**NOTE:** The local authority having jurisdiction must approve any discharge delay.

**Abort Circuit** - Supervised external momentary or self restoring Normally Open switch circuit.

- . Abort mode produces trouble signal.
- . Connect UL listed abort switch across terminals 32 and 33 as shown.

. Maximum line resistance: 200 Ohms.

**Automatic Abort Circuit** - This circuit is activated to prevent undesired discharge when the "SYSTEM TEST" switch is depressed.

**Dry Contact** - Normally Open or Normally Closed contact (rated 5A at 28VDC or 115VAC resistive) upon release.

- . Maintain jumper marked N.O. for Normally Open contact and N.C. for Normally Closed contact on CDB. But remove the opposite jumper.

. Release indicating contact is available at terminal 30 and 31.

**Trouble Signal** - Loss of power for the releasing device and open in field wiring will activate audible/visual trouble devices.

#### Power Requirements for Releasing Module:

- A. Regulated 24VDC: Standby Current is 13 MA. Alarm Current is 30 MA.
- B. Unregulated 24VDC: The signaling and releasing devices are powered from the same supply. See Section 4.9.

**Mounting** - Snap Master Triple Annunciator board into mounting track as shown in Figure 1.

- . Jumper terminal 29 to 11. (Unfiltered 24VDC).

. Then plug in Chemical Deluge Board.

**Recommendation** - Operate system without extinguishing agent for several days to eliminate possible source(s) of false alarms.

- . Run detection loop and the bell loop in separate conduct.
- . Test the control panel monthly for proper operation.

For information on the basic panel, refer to Miniscan 112/124 Instruction Manual.

## FIRE-LITE INSTALLATION RECOMMENDATIONS

Adherence to the following will aid in problem free installation with long term reliability:

1. Locate system in an area where the temperature is within 32° to 120° fahrenheit and free of condensation, moisture, dust, ect.
2. Verify that wire sizes are adequate for all signaling and detector loops. Most devices cannot tolerate more than a 10% I.R. drop from the specified device voltage.
3. This system, like all solid state electronic devices, may operate erratically or can be damaged when subjected to lightning induced transients. Although no systems are completely immune from lightning transients and interferences, proper grounding will reduce susceptibility. Consult with Fire-Lite Applications Engineering Department if any problems are anticipated or encountered.
4. Fire-Lite systems contain static sensitive components. Always ground yourself before handling any circuits so that static charges are removed from the body. Use static suppressive packaging to protect electronic assemblies removed from unit.
5. Remove all electronic assemblies prior to any drilling, filing, reaming or punching of the enclosure. When possible, make all cable entries from the sides or rear. Before making modifications, verify that they will not interfere with battery, transformer and printed circuit board location(s).
6. Do not tighten screw terminals more than 9 in. - lbs. Over tightening may damage threads, resulting in reduced terminal contact pressure and difficulty with screw terminal removal.
7. Disconnect AC power and batteries prior to removing or inserting circuit boards. Failure to do so can damage circuits.