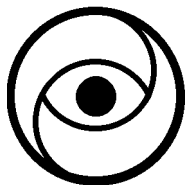


MS-5012

Control Communicator



Installation, Operation and Programming Manual



**Fire-Lite
Alarms Inc.**
12 Clintonville Road, Northford, CT 06472

Document#15465	F
5/2/97 Rev:	
P/N 15465-F	ECN 97-227

© 1997 Fire-Lite Alarms, Inc.

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

WARNING - Several different sources of power can be connected to the fire alarm control panel. 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 the unit is energized. Do not attempt to install, service, or operate this unit until this manual is read and understood.

CAUTION - *System Reacceptance Test after Software Changes:* To ensure proper system operation, this product must be tested in accordance with NFPA 72-1993 Chapter 7 after any programming operation or change in site-specific software. Reacceptance testing is required after any change, addition or deletion of system components, or after any modification, repair or adjustment to system hardware or wiring.

All components, circuits, system operations, or software functions known to be affected by a change must be 100% tested. In addition, to ensure that other operations are not inadvertently affected, at least 10% of initiating devices that are not directly affected by the change, up to a maximum of 50 devices, must also be tested and proper system operation verified.

This system meets NFPA requirements for operation at 0-49° C/32-120° F and at a relative humidity of 85% RH (non-condensing) at 30° C/86° F. However, the useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this system and its peripherals be installed in an environment with a nominal room temperature of 15-27° C/60-80° F.

Verify that wire sizes are adequate for all initiating and indicating device loops. Most devices cannot tolerate more than a 10% I.R. drop from the specified device voltage.

Like all solid state electronic devices, this system may operate erratically or can be damaged when subjected to lightning induced transients. Although no system is completely immune from lightning transients and interferences, proper grounding will reduce susceptibility. Overhead or outside aerial wiring is not recommended, due to an increased susceptibility to nearby lightning strikes. Consult with the Technical Services Department if any problems are anticipated or encountered.

Disconnect AC power and batteries prior to removing or inserting circuit boards. Failure to do so can damage circuits.

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.

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.

This system contains static-sensitive components. Always ground yourself with a proper wrist strap before handling any circuits so that static charges are removed from the body. Use static suppressive packaging to protect electronic assemblies removed from the unit.

Follow the instructions in the installation, operating, and programming manuals. These instructions must be followed to avoid damage to the control panel and associated equipment. FACP operation and reliability depend upon proper installation.

Fire Alarm System Limitations

While installing a fire alarm system may make lower insurance rates possible, it is not a substitute for fire insurance!

An automatic fire alarm system - typically made up of smoke detectors, heat detectors, manual pull stations, audible warning devices, and a fire alarm control with remote notification capability can provide early warning of a developing fire. Such a system, however, does not assure protection against property damage or loss of life resulting from a fire.

Any fire alarm system may fail for a variety of reasons:

Smoke detectors may not sense fire where smoke cannot reach the detectors such as in chimneys, in walls, or roofs, or on the other side of closed doors. Smoke detectors also may not sense a fire on another level or floor of a building. A second floor detector, for example, may not sense a first floor or basement fire. Furthermore, all types of smoke detectors - both ionization and photoelectric types, have sensing limitations. No type of smoke detector can sense every kind of fire caused by carelessness and safety hazards like smoking in bed, violent explosions, escaping gas, improper storage of flammable materials, overloaded electrical circuits, children playing with matches, or arson.

IMPORTANT! *Smoke detectors must be installed in the same room as the control panel and in rooms used by the system for the connection of alarm transmission wiring, communications, signaling, and/or power.* If detectors are not so located, a developing fire may damage the alarm system, crippling its ability to report a fire.

Audible warning devices such as bells may not alert people if these devices are located on the other side of closed or partly open doors or are located on another floor of a building.

A fire alarm system will not operate without any electrical power. If AC power fails, the system will operate from standby batteries only for a specified time.

Rate-of-Rise heat detectors may be subject to reduced sensitivity over time. For this reason, the rate-of-rise feature of each detector should be tested at least once per year by a qualified fire protection specialist.

Equipment used in the system may not be technically compatible with the control. It is essential to use only equipment listed for service with your control panel.

Telephone lines needed to transmit alarm signals from a premise to a central monitoring station may be out of service or temporarily disabled.

The most common cause of fire alarm malfunctions, however, is inadequate maintenance. All devices and system wiring should be tested and maintained by professional fire alarm installers following written procedures supplied with each device. System inspection and testing should be scheduled monthly or as required by National and/or local fire codes. Adequate written records of all inspections should be kept.

FCC Warning

WARNING: This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for class A computing device pursuant to Subpart B of Part 15 of FCC Rules, which is designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user will be required to correct the interference at his own expense.

Canadian Requirements

This digital apparatus does not exceed the Class A limits for radiation noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la classe A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

Table of Contents

	NFPA Standards, UL Documents	4
1.0	Product Description	7
1.1	Product Features	7
1.2	Circuits	8
1.3	Front Panel Switches	8
1.4	Displays	8
1.5	Digital Communicator	9
1.6	Optional Boards	10
1.7	Remote Annunciator	10
1.8	Specifications	11
2.0	Control Panel Operation	14
2.1	Switches	14
2.2	Displays	15
2.3	Operation	17
2.4	Digital Communicator	20
	Table 2.4-1: Format Selection Addresses	21
	Table 2.4-2: Compatible UL Listed Receivers	24
3.0	Installation	25
3.1	Cabinet	25
	Figure 3.1-1: The MS-5012	25
3.2	Input Circuits	25
	Figure 3.2-1: Cabinet Dimensions	26
	Figure 3.2-1: Initiating Device Circuits	27
3.3	Output Circuits	28
	Figure 3.3-1: Output Circuits	28
	Figure 3.3-2: Relays	29
3.4	UL Power-limited Wiring Requirements	30
	Figure 3.4-1: Typical Wiring for UL Power-limiting	30
3.5	Digital Communicator	31
	Figure 3.5-1: Wiring RJ31X	31
3.6	Operating Power	32
	Figure 3.6-1: Power Connections	32
	Figure 3.6-2: Optional AC Terminal Block Installation	33
3.7	Optional Modules	34
	Figure 3.7-1: Installing the Annunciator	35
	Figure 3.7-2: Wiring the RZA-5F/ADM-12	35
4.0	Programming Instructions	36
4.1	Entering Programming	36
4.2	Switch Functions	37
4.3	Programming	37
5.0	Servicing	48
5.1	Walk Test Mode	48
5.2	History Mode	48
5.3	Troubleshooting Mode	51
	Figure 5.3-1: Handset Connection	52
5.4	Lamp Test	52
	Programming Reference Sheet	53
	Factory Default Settings	54
6.0	Slave Communicator Configuration	57
	Figure 6.0-1: Slave Communicator Connections	58
Appendix A	Power Calculations	59
	Index	62

This control panel has been designed to comply with standards set forth by the following regulatory agencies:

- ✓ Underwriters Laboratories Standard UL 864
- ✓ NFPA Standard 72-1993 Local, Remote Station Fire Alarm Systems

Before proceeding, the installer should be familiar with the following documents.



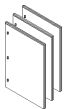
NFPA Standards, NFPA 72-1993 National Fire Alarm Code:

- Installation, Maintenance, and Use of Central Station Fire Alarm Systems
- Local Fire Alarm Systems
- Use of Proprietary Fire Alarm Systems
- Automatic Fire Detectors
- Installation, Maintenance, and Use of Notification Appliances for Fire Alarm Systems
- Testing Procedures for Fire Alarm Systems



Underwriters Laboratories Documents:

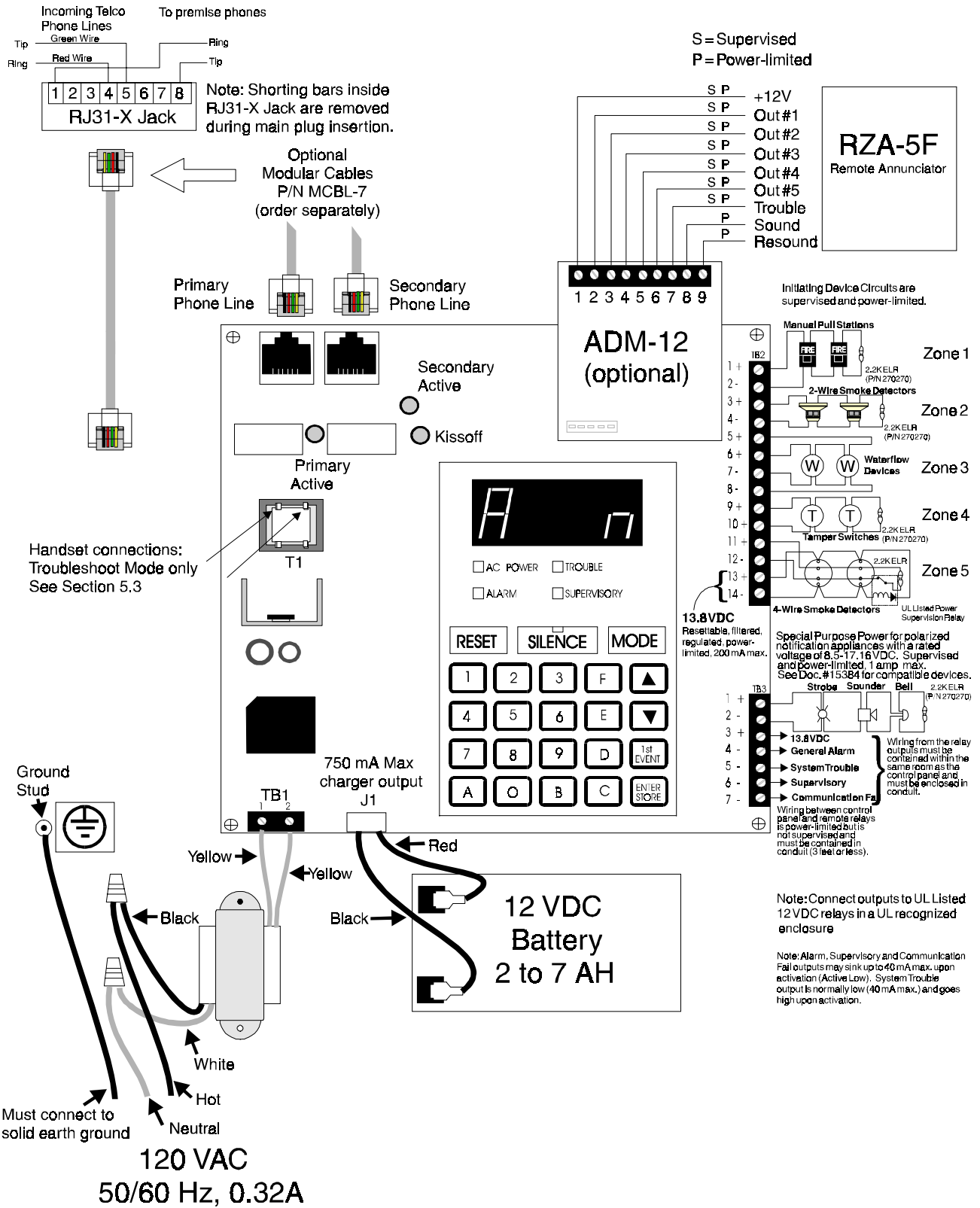
- UL 38 Manually Actuated Signaling Boxes
- UL 217 Smoke Detectors, Single and Multiple Station
- UL 228 Door Closers—Holders for Fire Protective Signaling Systems
- UL 268 Smoke Detectors for Fire Protective Signaling Systems
- UL 268A Smoke Detectors for Duct Applications
- UL 346 Waterflow Indicators for Fire Protective Signaling Systems
- UL 464 Audible Signaling Appliances
- UL 521 Heat Detectors for Fire Protective Signaling Systems
- UL 864 Standard for Control Units for Fire Protective Signaling Systems
- UL 1481 Power Supplies for Fire Protective Signaling Systems
- UL 1638 Visual Signaling Appliances
- UL 1971 Signaling Devices for Hearing Impaired



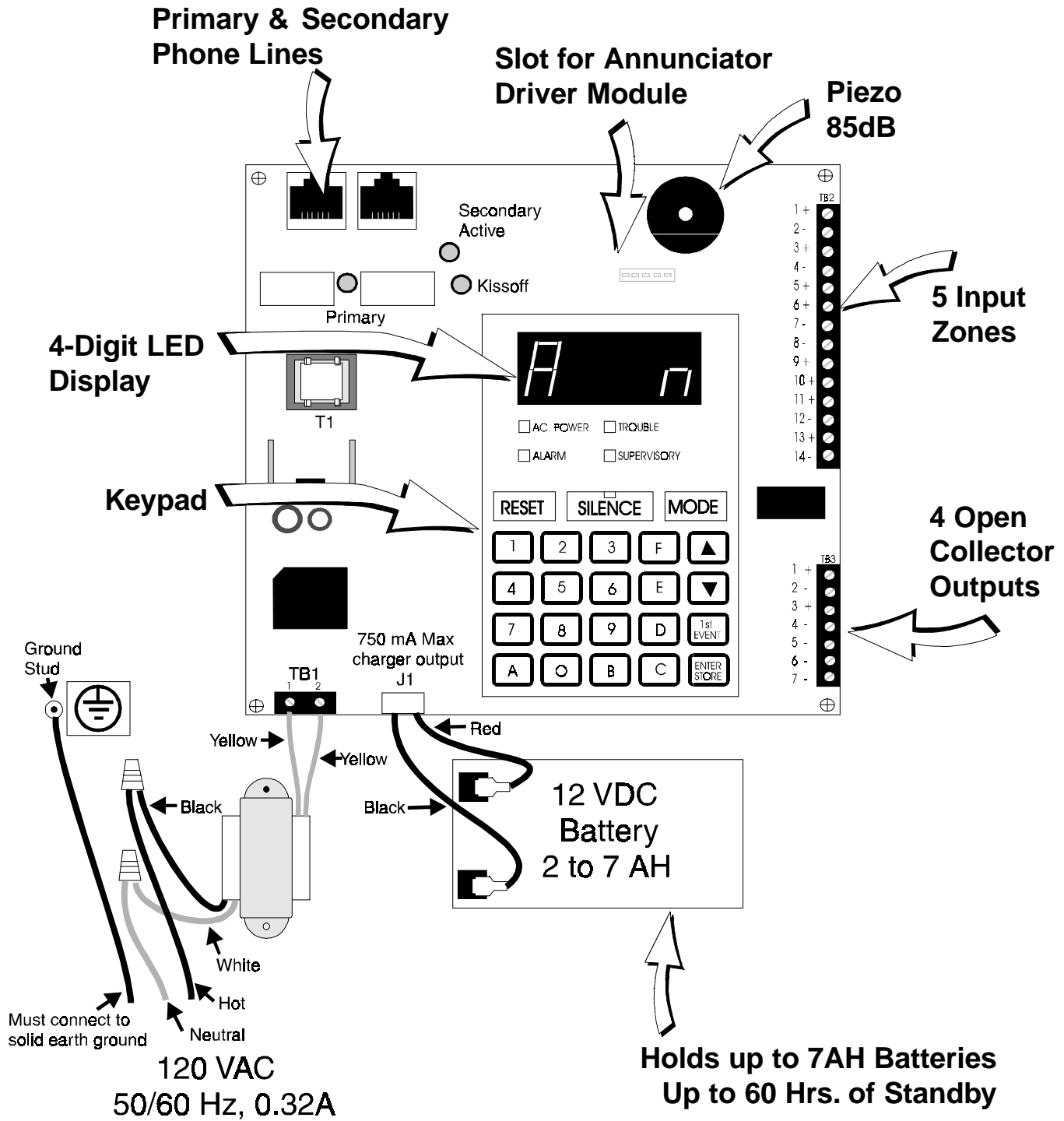
Other:

- NEC Article 300 Wiring Methods
- NEC Article 760 Fire Protective Signaling Systems
- ADA Americans with Disabilities Act

- ** Applicable Local and State Building Codes
- ** Requirements of the Local Authority Having Jurisdiction



The MS-5012 Panel



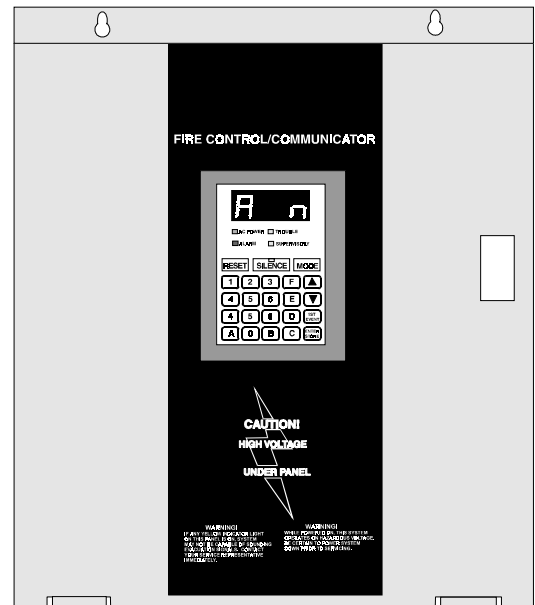
1.0 Product Description

The MS-5012 is a combination control panel and digital communicator all on one circuit board. It is a five-zone panel which uses conventional input devices. The panel accepts waterflow devices, two-wire smoke detectors, four-wire smoke detectors, pull stations and other normally open contact devices. Outputs include bell circuit, alarm, trouble, supervisory and communicator failure relay drivers.

The integral communicator transmits system status (alarms, troubles, AC loss, etc.) to a UL recognized Central Station via the public switched telephone network. The control panel has a built in programmer and may also serve as a slave communicator to a host panel. It also supervises all wiring, AC voltage, telephone line input voltage and battery level.

1.1 Product Features

- Fire Control Panel
- Slave Fire Communicator
- 12 Volt Operation
- Real Time Clock
- Telephone Line Active Indicators
- Trouble Reminder
- One Style D (Class A) Zone
- Four Style B (Class B) Zones
- Programmable Zone ID
- Alarm Verification
- RZA-5F Remote Annunciator
(requires ADM-12 Annunciator Driver Module)
- Annunciator Type (LEDs) or (RZA-5F)
- Small Size (14.5" x 12.5" x 2.875")
- Event History Storage
- Silence Inhibit
- Auto-Silence
- Programmable Event Codes (all formats)
- Touchtone/Rotary Dialing
- Programmable Make/Break Ratio
- Communication Confirmation (Kissoff) LED
- Fuseless
- AC loss report meets 1993 UL 864 req.
- Number of dial attempts (5 min, 10 max)
- Programmable Channel ID (slave)
- Programmable Zone Delay (waterflow only)
- Four Open Collector Outputs
- Disable report by event
- Low AC Voltage Sense
- Walk Test
- Built in Voltmeter
- Built-in Programmer
- One NFPA Style Y Notification Appliance (bell) Circuit
- Optional Dead Front cover available



Optional DP-5012 Dead Front dress panel

1.2 Circuits **Input Circuits**

Initiating Device Circuit 1 (Style B) N.O. contact devices *only*.

Initiating Device Circuit 2 (Style B) N.O. contact devices, 2-wire smoke detectors.

Initiating Device Circuit 3 (Style B/D) N.O. contact devices, 2-wire smoke detectors, waterflow devices. (2-wire detectors use Style B only)

Initiating Device Circuit 4 (Style B) N.O. contact devices *only*.

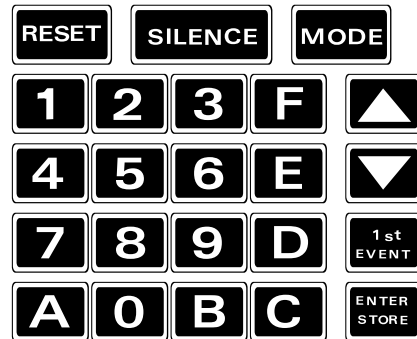
Initiating Device Circuit 5 (Style B) N.O. contact devices *only*.

Output Circuits

- Notification Appliance Circuit
- Resettable Power Circuit
- Non-Resettable Power Circuit
- Relay Driver Output - Alarm
- Relay Driver Output - Trouble
- Relay Driver Output - Supervisory
- Relay Driver Output - Communicator Failure
- Primary Telephone Line
- Secondary Telephone Line
- 12 Volt Battery Charger

1.3 Front Panel Switches

Reset	Digits 0-9
Silence	A
Mode	B
Up Arrow	C
Down Arrow	D
1st Event	E
Enter Store	F



1.4 Displays

- Alarm - red LED
- Trouble - yellow LED
- Supervisory - yellow LED
- AC Power - green LED
- Four, Seven Segment Displays - red
- Primary Phone Line Active - red LED
- Secondary Phone Line Active - red LED
- "Kissoff" Signal from Central Station - green LED
- Silence - yellow LED

1.5 Digital Communicator

Digital Communicator

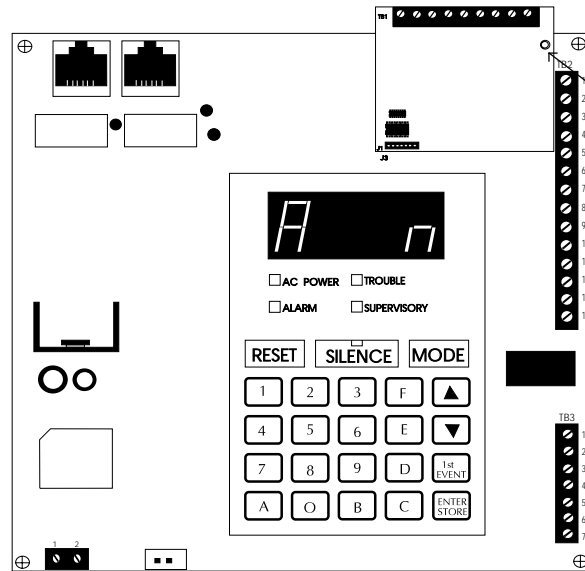
The integral digital communicator provides the following functions:

- Line Seizure - takes control of the phone lines disconnecting any premises phones.
- Off/On Hook - perform on and off-hook status to the phone lines.
- Listen for dial tone - 440 hertz tone typical in most networks.
- Dialing the Central Station(s) number - default is Touch-Tone®, programmable to rotary.
- Discern proper “Ack” and “Kiss-off” tone(s) - The frequency and time duration of the tone(s) varies with the transmission format. The control panel will adjust accordingly.
- Communicate in the following formats:
 - 12 Tone Burst Types: 20 pps
 - (3+1, 4+1, 4+2, 3+1 Exp., 4+1 Exp., 4+2 Exp.)

1.6 Optional Boards

ADM-12 Annunciator Driver Module

The ADM-12 Annunciator Driver Module supports the RZA-5F Remote Annunciator module. Annunciator wiring is supervised for open conditions by this module. The Annunciator Driver Module mounts to the main board, occupying one of the two option connectors.



Connect ADM-12 to main board at J3. Use nylon spacer here (supplied.)
Note: Make connections with system power off.

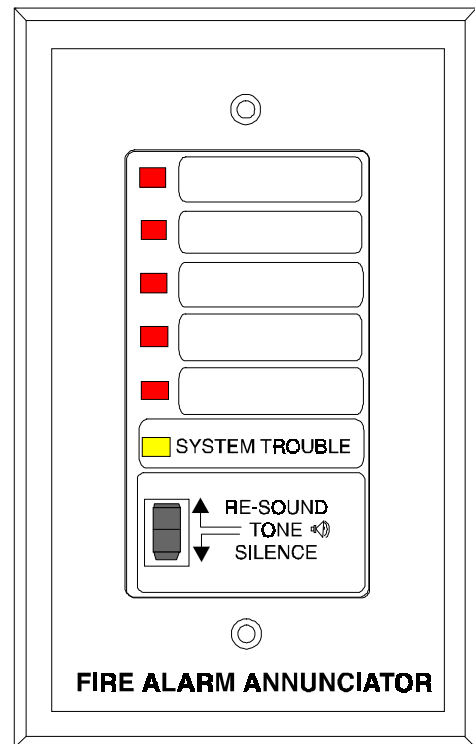
1.7 Remote Annunciator

The RZA-5F Remote Annunciator mounts on a standard single-gang box, and provides LED indication of the following:

- Alarm Zone 1 (red)
- Alarm Zone 2 (red)
- Alarm Zone 3 (red)
- Alarm Zone 4 (red)
- Alarm Zone 5 (red)
- System Trouble (yellow)

A Local Trouble Sounder and Tone Silence Switch are also provided. All LED wiring is supervised for open conditions. Any open condition will cause the System Trouble LED to illuminate. Slide in paper labels permit an easy change of zone information.

NOTE: The Remote Annunciator requires the use of the ADM-12 Annunciator Driver Module .



RZA-5F

1.8 Specifications

AC Power Primary TB1 Terminals 1-2

120VAC, 50/60 Hz, 0.32 A

15.0 VAC, 50/60 Hz, 2.0 amps, 25 VA

Battery (sealed lead acid only) Connector J1

Maximum Charging Capacity: 14.3V, 0.80A

Maximum Battery Capacity: 7AH

Initiating Device Circuits TB2 Terminals 1-2, 9-10, 11-12

N.O. Contact Zones 1, 4, 5

Power-Limited Circuitry

Operation: NFPA Style B

Normal Operating Voltage: 13.8VDC (ripple = 100mV max)

Short Circuit Current: 4.46 mA maximum

Maximum Loop Resistance: 100 ohms

End-of Line Resistor: 2.2K, 1/2-Watt (part # 27070 UL listed)

Standby Current: 2.66 mA

Initiating Device Circuits TB2 Terminals 3-4, 5-8

Detector Zones 2, 3

Power-Limited Circuitry

Operation: Zone 2 (NFPA Style B), Zone 3 (NFPA Style B, D)

Connecting 2-wire detectors on Zone 3 requires NFPA Style B only.

Normal Operating Voltage: 13.8VDC (ripple = 100mV max)

Alarm Current: 12 mA

Short Circuit Current: 24 mA maximum

Maximum Detector Current in Standby: 2 mA

Maximum Loop Resistance: 30 ohms

End-of-Line Resistor: 2.2K, 1/2-Watt (part # 27070 UL listed)

Detector Loop Current is sufficient to ensure operation of one alarmed detector per zone.

Standby Current: 5.17 mA (including ELR)

Notification Appliance Circuit TB3 Terminals 1-2

Power-Limited Circuitry

Operating Voltage Range: 8.5 to 17.16 VDC

Requires minimum of 300 mA load

Total current available to external devices: 1A

End-of-Line Resistor: 2.2K, 1/2-Watt (part # 27070 UL listed)

Auxiliary Outputs TB3 Terminals 4-7

Power-limited Circuitry

Type: Open Collector

Rating: 40 mA each.

TB3-4 Alarm Relay Driver. Normally high, Active low. Sinks up to 40 mA.

TB3-5 Trouble Relay Driver. Normally low, Active high. Sinks up to 40 mA.

TB3-6 Supervisory Relay Driver. Normally high, Active low. Sinks up to 40 mA.

TB3-7 Communicator Failure. Normally high, active low. Sinks up to 40 mA.

Four-wire Smoke Detector Power TB2 Terminals 13(+), 14(-)
Power-limited Circuitry
Up to 200 mA is available for powering 4-wire smoke detectors.
Maximum ripple voltage: 100 mV max.
Normal Operating Voltage = 13.8 VDC

Non-Resettable Power TB3 Terminal 3(+) and TB2 Terminal 14 (-)
Available Current: 185 mA. Power-limited Circuitry
Maximum ripple voltage: 100 mV max.
Normal Operating Voltage = 13.8 VDC

Telephone Circuitry:

Ringer Equivalence Number (REN) = 0.0B
AC Impedance 10.0 Mega Ohm
Complies with FCC Part 68
Mates with RJ-31X Male Connector
Supervision Threshold: less than 4.0 volts for 2 minutes

The REN is used to determine the quantity of devices which may be connected to the telephone line. Excessive REN's on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of the REN's should not exceed five (5.0). To be certain of the number of devices that may be connected to the line, as determined by the total REN's, contact the telephone company to determine the maximum REN for the calling area.

Digital Communicator:

Before connecting the control panel to the public switched telephone network, the installation of two RJ31X jacks is necessary. The following information is provided if required by the local telephone company :

Manufacturer : Fire-Lite Alarms Inc.
12 Clintonville Rd.
Northford, CT 06492

Product Model Number: MS-5012
FCC Registration Number: 1W6USA-74525-AL-E
Ringer Equivalence 0.0B

Piezo Sounder

An on-board piezo sounder will emit three distinctly different audible tones depending on system activity. Steady on for alarms, one second on, one second off, for trouble, and 1/2 second on, 1/2 second off for supervisory.

Bell Circuit Fault: The NFPA Style Y circuit configuration allows for connection of polarized bells, strobes and horns. The wiring to these notification appliances is monitored for opens and shorts.

Telephone Company Rights and Warnings:

The telephone company under certain circumstances may temporarily discontinue services and/or make changes in its facilities, services, equipment or procedures which may affect the operation of this control panel. However, the telephone company is required to give advance notice of such changes or interruptions.

If the control panel causes harm to the telephone network, the telephone company reserves the right to temporarily discontinue service. Advance notification will be provided except in cases when advance notice is not practical. In such cases, notification will be provided as soon as possible. The opportunity will be given to correct any problems and to file a complaint.

DO NOT CONNECT THIS PRODUCT TO COIN TELEPHONE, GROUND START, OR PARTY LINE SERVICES.

When the control panel activates, premise phones will be disconnected.

Two separate phone lines are required. Do not connect both telephone interfaces to the same telephone line.

The control panel must be connected to the public switched telephone network upstream of any private telephone system at the protected premises.

An FCC compliant telephone cord must be used with this equipment. This equipment is designed to be connected to the telephone network or premises wiring using a compatible RJ31X male modular plug which is Part 68 compliant.

2.0 Control Panel Operation



Normal Mode The MS-5012 has six Modes of operation; Normal, Program, Walk Test, Lamp Test, Troubleshoot, and History. *Upon initial power up, the system will be in Normal Mode. This section discusses operation of the control panel in the Normal Mode.* Programming is discussed in Section 4. Walk Test, History and Troubleshoot Modes are discussed in Section 5.

2.1 Switches Below is a description of the function switches in Normal Mode:



The Reset Switch resets the system and any smoke detectors. If the Reset Switch is pressed, the control panel will:

- ✓ Clear the display and status LEDs
- ✓ Turn off the Notification Appliance Circuit
- ✓ Reset all zones by temporarily removing power
- ✓ Silence the on board piezo sounder
- ✓ Store “reset” message in the History file (see Section 5.2)
- ✓ Clear all relay driver outputs
- ✓ Temporarily remove power from the resettable power output TB1 terminals 13 + 14.

Any alarm, supervisory or trouble condition that exists after a system reset, will resound the system, reactivating normal system activity.

Upon release of the reset switch, the display will read **RES** for six seconds.



If the Silence Switch is pressed:

- ✓ The bell circuit will be turned OFF.
- ✓ The silence LED will be turned ON.
- ✓ The piezo sounder will be shut OFF.
- ✓ “System Silenced” message will be stored in the History file.

Upon occurrence of a subsequent event (alarm or trouble), System Silence is overridden and the control panel will respond to the new event. *The System Silence switch will be ignored for waterflow type alarms.*



Pressing the Mode Switch followed by a valid 4-digit numerical code selects one of the five modes of operation.

➔ To enter normal mode from any other mode press then [ENTER/STORE]. spells NORM on a Touch-Tone® phone.



This switch along with the up arrow and down arrow, is used to display any **presently** active alarm and/or fault conditions present in the system. Press the 1st Event switch at any time to display the 1st event (alarm and/or trouble) that occurred.

▼ **Down arrow** - Use the down arrow switch to view other events (older) that have occurred and are active - not cleared yet.

▲ **Up arrow** - Use the up arrow switch to view other events (newer), that have occurred and are active - not cleared yet.



Enter/Store - Not used in Normal Mode.

2.2 Displays

Four 7-segment red LED characters provide visual annunciation of status, events and messages. A list of messages that may appear on the display in normal mode is shown below:

A 1	Alarm Zone 1	F E	Earth Fault
A 2	Alarm Zone 2	Lo b	Low Battery
A 3	Alarm Zone 3	no b	No Battery
A 4	Alarm Zone 4	PH 1	Primary Number Communication Fault
A 5	Alarm Zone 5	PH 2	Secondary Number Communication Fault
F 1	Trouble Zone 1	bELL	Bell Fault
F 2	Trouble Zone 2	no 1	Primary Phone Line Fault
F 3	Trouble Zone 3	no 2	Secondary Phone Line Fault
F 4	Trouble Zone 4	SUP4	Supervisory Alarm
F 5	Trouble Zone 5	AC	AC Power Loss
F A	Annunciator Fault	rES	Reset

Individual LEDs are provided for:

System Alarm—A red LED that lights when an alarm condition is detected.

System Trouble—This yellow LED indicates that a fault or abnormal condition exists and that the fire alarm system may be inoperative.

AC Power On—A green LED that remains on while the A.C. power supply is operating. If this indicator fails to light under normal conditions, service the system immediately.

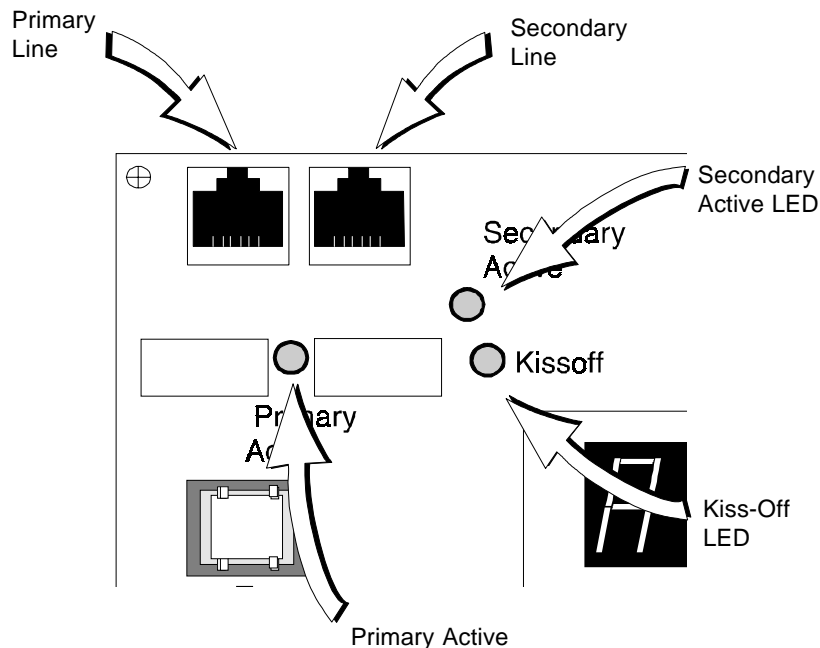
Supervisory—A yellow LED that indicates need for action in connection with the supervision or maintenance of sprinklers, extinguishing systems or other protective systems.

System Silence—A yellow LED that indicates an Alarm or Trouble is being silenced.

Primary Line Active—A red LED that indicates the primary phone line is active.

Secondary Line Active—A red LED that indicates the secondary phone line is active.

Kiss-Off—A green LED on the board that indicates the Central Station has acknowledged receipt of transmitted message.



2.3 Operation

Normal mode is the standard mode of operation. In this mode, the panel continuously monitors system status. When no alarm or fault conditions exist, the display will be blank and all LEDs will be off (except the AC Power LED). The Notification Appliance Circuit will be off, all relay drivers are deactivated and the on-board piezo sounder will be off. (The communicator is not active, primary and secondary active LEDs are off).

All alarm conditions and fault conditions are annunciated on the control panel's display. The control panel will maintain an "active event list"(as shown in the preceding table) This list will consist of all alarms, supervisory alarms and faults currently active, and not cleared, requiring immediate service. When the system is cleared and restored to normal, the display will be blank. All alarms and faults are stored in a history file and may be recalled at any time. (See History Mode, Section 5.2).

Higher priority events take precedence over lower priority events. Display of System Activity is done on a priority basis. Priorities are, from highest to lowest:

1. Alarms
2. Supervisory alarms
3. Faults (troubles)

The highest priority event will be communicated to the central station first. It also is displayed, overriding any other displayed event. (only one is displayed at a time) Whenever multiple events occur, an authorized user may view each event by operating the "up" and "down arrow" switches. At any time the user may press the "1st Event" switch to display the first event that occurred. (That is, the first event that occurred after the panel was last reset, cleared of all active events and placed into normal mode.)

If the events to be displayed are alarms only (no troubles), the control panel will scroll them on the display. Pressing the 1st Event key will stop the scrolling and cause display of the *First* alarm that occurred. Operation of the "up" and "down arrow" keys will display all remaining alarms in sequence.

Alarm Response

The MS-5012 will upon detection of an alarm condition:

- ✓ Turn the alarm LED on.
- ✓ Activate the alarm relay driver. (TB3-4)
- ✓ Display an alarm message as follows:

A	1	Alarm on zone 1
A	2	Alarm on zone 2
A	3	Alarm on zone 3
A	5	Alarm on zone 5

Note that when Zone 4 is programmed as a supervisory zone, it will not be processed in the same manner as a conventional alarm zone. *See System Supervisory Condition later in this section.*

- ✓ Communicate the alarm to the central station.
- ✓ Store the alarm in the History file.
- ✓ Turn the Notification Appliance Circuit on.
- ✓ Turn the Piezo Sounder on.

Alarm Restoral

The control panel only returns to normal after all alarms have been cleared and the Reset switch has been pressed (pull stations reset, smoke detectors reset and no smoke is present, waterflow has stopped). The control panel will perform the following upon restoral of all active alarms:

- ✓ Turn off the alarm LED.
- ✓ Deactivate the alarm relay driver. (TB3-4)
- ✓ Clear the 4-character display .
- ✓ Send all "Zone Restoral" messages to the central station.
- ✓ Turn off the Notification Appliance Circuit.
- ✓ Turn off the Piezo Sounder.

System Supervisory Condition

Zone 4 is factory programmed as a supervisory zone. This zone is primarily used in applications where a waterflow sensing device has been employed and the wiring to the waterflow valve and/or a tamper switch is monitored. If the wiring is cut, a trouble condition will occur. If the Normally Open tamper switch is activated, a supervisory condition will occur.

When a supervisory condition occurs, the control panel will:

- ✓ Turn on the supervisory LED.
- ✓ Activate the supervisory relay driver. (TB3-6)
- ✓ Display the following message: (SUP4).
- ✓ Communicate the supervisory condition to the central station.
- ✓ Store "supervisory" message in History file.
- ✓ Pulse the piezo sounder at 0.5 sec on 0.5 sec off rate.

When the supervisory condition has been cleared (condition is restored and the reset switch has been pressed) the MS-5012 will perform the following:

- ✓ Turn off the supervisory LED .
- ✓ Deactivate the supervisory relay driver. (TB3-6)
- ✓ Clear the display of the SUP4 message .
- ✓ Communicate the "supervisory restoral" message to the central station.
- ✓ Shut off the piezo sounder.

Trouble Conditions

The control panel will perform the following upon detection of a trouble condition:

- ✓ Turn on the trouble LED.
- ✓ Activate the trouble relay driver. (TB3-5)
- ✓ The appropriate trouble message will be displayed. Below are the trouble messages shown in priority fashion from the highest priority to the lowest:

AC	AC Loss (Must press up, down, or first event to view)
F 1	Trouble on zone 1
F 3	Trouble on zone 3
F 2	Trouble on zone 2
F 5	Trouble on zone 5
F 4	Trouble on zone 4
F E	Ground fault
L b	Low battery
no b	No battery
no 1	Primary Phone Line Fault
no 2	Secondary Phone Line Fault
BELL	Bell circuit fault
PH 1	Primary Number Communication Fault
PH 2	Secondary Number Communications Fault
F A	Annunciator Fault
RES	Reset

- ✓ Communicate the trouble condition to the central station.
- ✓ Store the trouble condition in the History file.
- ✓ Sound the piezo sounder one second on, one second off.

Note: When AC Brownout occurs the AC LED is off, and the Trouble LED is on. Should the brownout condition remain, it will be transmitted to the central station after a delay (see Program Address number 55 Section 4.3.)

Trouble Condition Restoral

The control panel performs the following upon restoral of a trouble condition:

- ✓ The trouble LED turns OFF.
- ✓ The trouble relay driver deactivates. (TB3-5)
- ✓ If the Trouble was loss of AC power, the control panel will turn on the AC LED upon restoral.
- ✓ Clear the display of the trouble message.
- ✓ Communicate the restored trouble condition to the central station.

OFF Normal Reporting

Removing the panel from Normal Mode and placing it into any other mode causes a transmission of an "off normal" fault message. Returning the panel to Normal Mode causes a transmission of a "return to normal" restoral message.

2.4 Digital Communicator

The MS-5012 transmits zone and system status reports to a Central Station via the public switched telephone network. Two supervised telephone line connections are made to interface the control panel to the telephone lines. Two optional 7-foot telephone cords are available for this purpose. See Figure 3.5-1 for proper wiring diagram.

The control panel supervises both telephone lines for proper voltage. A delay of two minutes will occur before a fault in either phone line connection is reported as a trouble. When a fault is detected, an audible trouble signal will sound, the yellow trouble LED will turn on, the 4 character display will show either no 1 or no 2 (depending upon which telephone line has the fault. no 1 = Primary Line, no 2 = Secondary Line) and the trouble condition will be reported to the Central Station over the remaining "good" phone line.

The control panel comes with line seizure capability provided to both the primary and secondary telephone line interfaces. Any time that the control panel needs to make a call to the Central Station, line seizure will disconnect any local premises phones sharing the same telephone line.

All transmission to the Central Station will be sent over the Primary phone line. In the event of noisy phone lines, transmissions will be sent over the backup Secondary phone line.

Two phone numbers must be programmed (see Section 4.0), the primary phone number and the secondary phone number. All system reports will be transmitted to the primary phone number. Reports will automatically be sent to the secondary phone number if attempts to transmit to the primary phone number are unsuccessful. If 10 attempts to communicate are unsuccessful, the Communicator Failure output will be turned on (TB3, terminal 7). Note that as an option, *all* reports may be sent to the secondary phone number.

The MS-5012 meets NFPA 72-1993 for Central Station Signaling Service and for Remote Station Protective Signaling Service reporting requirements for: (a) the type of signal (b) condition (c) location of the reporting premises. The general priority reporting structure is:

1. Zone Alarms and Restores
2. Zone Troubles and Restores
3. System Troubles and Restores
4. 24-hour test

The control panel is capable of reporting detailed messages depending upon the format in use. Tables 4.3-1 through 4.3-4 list these messages. The table below shows the reporting structure for all of the tone burst type formats.

Table 2.4-1: Format Selection Addresses (16+42)

	Format # 2, 4, 6, 8	Format # 3, 5, 7, 9	Format # A, C	Format # B, D
Report	3+1/4+1 Standard	3+1/4+1/ Expanded	4+2/Standard	4+2/Expanded
Alarm	SSS(S) A	SSS(S) A AAA(A) Z	SSSS AA2	SSSS AZ
Alarm Restore	SSS(S) RA	SSS(S) RA RARARA(RA) Z	SSSS RARA2	SSSS RAZ
Zone Trouble (Zone Open)	SSS(S) TZ	SSS(S) TZ	SSSS TZT2	SSSS TZZ
Zone Trouble Restore	SSS(S) RTZ	SSS(S) RTZ RTZRTZRTZ(RTZ)Z	SSSS RTZRT2	SSSSRTZZ
System Trouble	SSS(S) TS	SSS(S) TS TSTSTS(TS) Y	SSSS TSTS2	SSSS TSY
System Trouble Restore	SSS(S) RTS	SSS(S) RTS RTSRTSRTS(RTS) Y	SSSS RTSRTS2	SSSS RTSY
Low Battery	SSS(S) L	SSS(S) L	SSSS LL2	SSSS LL2
Low Battery Restore	SSS(S) RL	SS(S) RL	SSSS RLRL2	SSSS RLRL2
AC Loss	SSS(S) P	SSS(S) P	SSSS PP2	SSSS PP2
AC Loss Restore	SSS(S) RP	SSS(S) RP	SSSS RPRP2	SSSS RPRP2
Supervisory Condition	SSS(S) V	SSS(S) V VVV(V) Z	SSSS VV2	SSSS VV2
Supervisory Condition Restore	SSS(S) RV	SSS(S) RV RVRVRV(RV) Z	SSSS RVRV2	SSSS RVZ
Test Reprot	SSS(S) X	SSS(S) X	SSSS XX2	SSSS XX2

Where:

SSS Or

SSSS	= Subscriber ID
A	= Alarm (1st digit)
A2	= Alarm (2nd digit)
Z	= Zone Number
RA	= Alarm Restore (1st digit)
RA2	= Alarm Restore (2nd digit)
TZ	= Zone Trouble (1st digit)
TZ2	= Zone Trouble (2nd digit)
RTZ	= Zone Trouble Restore (1st digit)
RTZ2	= Zone Trouble Restore (2nd digit)
TS	= System Trouble (1st digit)
TS2	= System Trouble (2nd digit)
RTS	= System Trouble Restore (1st digit)
RTS2	= System Trouble Restore (2nd digit)
L	= Low Battery (1st digit)
L2	= Low Battery (2nd digit)
RL	= Low Battery Restore (1st digit)
RL2	= Low Battery Restore (2nd digit)
P	= AC Loss (1st digit)
P2	= AC Loss (2nd digit)
RP	= AC Loss Restore (1st digit)
RP2	= AC Loss Restore (2nd digit)
V	= Supervisory Condition (1st digit)
V2	= Supervisory Condition (2nd digit)
RV	= Supervisory Condition Restore (1st digit)
RV2	= Supervisory Condition Restore (2nd digit)
X	= Test Report (1st digit)
X2	= Test Report (2nd digit)
Y	= 6 = AC Loss
	= 7 = Ground Fault
	= 8 = Low Battery
	= 9 = No Battery
	= A = Telco Primary Line Fault
	= B = Telco Secondary Line Fault
	= C = Main Bell Fault, Annunciator Fault
	= D = Communication Fault to Primary Number
	= E = Communication Fault to Secondary Number
	= F = System Off Normal Fault/System Fault (Slave Operation, See Section 6.0)

Note: For Expanded Reporting, the control panel automatically adds the digit corresponding to the zone number, and the second digit corresponding to any system trouble condition. Only the first digit is programmable.

Transmittal Priorities

The integral communicator transmits highest priority events first. Events in terms of priority are listed below in descending order:

1: Alarms (Highest Priority Level)

- Pull Stations
- Waterflow
- Smoke Detector
- Other Alarm Types

2: Supervisory Zone

3: Faults

- AC Fail
- Zonal faults
- Earth fault
- Low battery/No battery
- Telephone line fault
- Bell circuit fault
- Communication Trouble
- Annunciator Trouble

4: Restoral

- AC
- Zones
- Earth
- Battery
- Telephone Line
- Bell
- Communication
- Annunciator Trouble

5: 24 Hour Test (Lowest Priority)

Red LEDs are provided on the control panel circuit board to identify which telephone line is activated. Also a green LED (labeled "Kissoff") will turn on whenever the control panel has successfully transmitted reports to the Central Station. The "Kissoff" LED may turn on several times during communications.

The chart below shows UL listed receivers compatible with the MS-5012:

Table 2.4-2: Compatible UL Listed Receivers

Format # (Addresses 16 & 42)		Ademco 685 (1)	Silent Knight 9000	ITI CS-4000 (3)	FBI CP220FB	Osborne Hoffman Models 1 & 2	Radionics 6000/6500 (5)	Sescoa 3000R (7)	Surguard MLR-2(8)
0	Not Used								
1	Not Used								
2	3+1/Standard/1800/2300	✓	✓ (2)	✓	✓ (4)	✓	✓(5,6)	✓	✓
3	3+1/Expanded/1800/2300	✓	✓ (2)	✓	✓ (4)	✓		✓	✓
4	3+1/Standard/1900/1400	✓	✓ (2)		✓ (4)	✓		✓	✓
5	3+1/Expanded/1900/1400	✓	✓ (2)		✓ (4)	✓		✓	✓
6	4+1/Standard/1800/2300	✓	✓ (2)	✓	✓ (4)	✓	✓ (5)	✓	✓
7	4+1/Expanded/1800/2300	✓	✓ (2)		✓ (4)	✓		✓	✓
8	4+1/Standard/1900/1400	✓	✓ (2)		✓ (4)	✓		✓	✓
9	4+1/Expanded/1900/1400	✓	✓ (2)		✓ (4)	✓		✓	✓
A	4+2/Standard/1800/2300	✓	✓ (2)	✓	✓ (4)	✓	✓ (5)	✓	✓
B	4+2/Expanded/1800/2300	✓	✓ (2)		✓ (4)	✓		✓	✓
C	4+2/Standard/1900/1400	✓	✓ (2)		✓ (4)	✓		✓	✓
D	4+2/Expanded/1900/1400	✓	✓ (2)		✓ (4)	✓		✓	✓
E	Not Used								
F	Not Used								

- (1) With 685-8 Line Card with Rev 4.4d software.
- (2) With 9002 Line Card Rev 9035 software or 9032 Line Card with 9326A software.
- (3) Rev. 4.0 software.
- (4) FBI CP220FB Rec-11 Line Card with Rev 2.6 software and a memory card with Rev 3.8 software.
- (5) Model 6500 with Rev 600 software.
- (6) Model 6000 with Rev 204 software.
- (7) With Rev B control card at rev. 1.4 software and Rev C line card at rev 1.5 software.
- (8) Version 1.62 software.

3.1 Cabinet

Mounting Options

The cabinet may be either semi-flush or surface mounted. The cover is removable during the installation period.

3.0 Installation



The cabinet mounts using two key slots and two additional 0.250" diameter holes located in the backbox. The key slots are located at the top of the backbox and the two securing holes at the bottom. Refer to Figure 3.2-1 for cabinet dimensions.

**Figure 3.1-1:
The MS-5012**

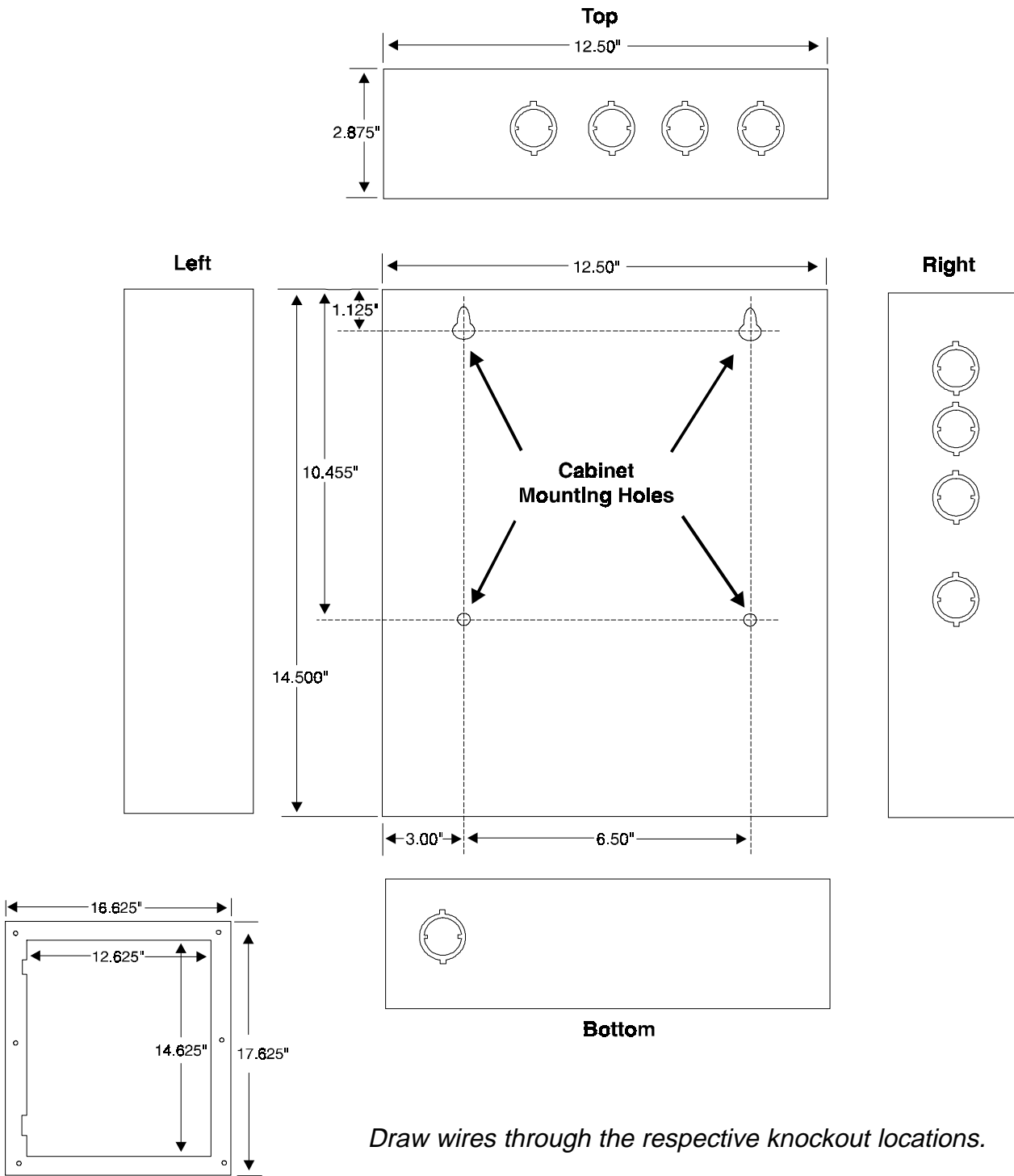
3.2 Input Circuits

The MS-5012 has five zone input circuits. The maximum loop resistance limit for each is 100 ohms. All field wiring of each zone is supervised for opens and ground faults. Both conditions are visually and audibly annunciated as well as communicated to a Central Station.

Zone 1 is a Style B Initiating Device Circuit (IDC) designed to accept any N.O. contact device on TB2, terminals 1-2. It is power limited to 2.66 mA (standby) and 4.46 mA in alarm. Factory Default is "Pull Station." Refer to Section 4.0: Programming.

Zone 2 is a Style B Initiating Device Circuit designed to accept any N.O. contact device and conventional 2-wire, 12-volt smoke detectors on TB2, terminals 3-4. It's power limited to 7.17 mA in standby and 24 mA in alarm. For a list of compatible 2-wire detectors refer to Fire-Lite Compatibility Document. Factory Default is "2-wire Detectors." Refer to Section 4.0 Programming.

Zone 3 is a Style D Initiating Device Circuit. It is designed to accept: N.O. contact devices, 2-wire smoke detectors and Waterflow sensing devices on TB2, terminals 5-8. It's power limited to 7.17 mA in standby and 24 mA in Alarm. A maximum of five waterflow devices may be used per NFPA 71. For a list of compatible 2-wire detectors refer to Fire-Lite Compatibility Document. Factory Default is "Waterflow." Refer to Section 4.0 Programming.



TR-3-R (MS-5012) Trim Ring

Dimensions:

The door is 14.714" high x 12.714" wide. The backbox is 14.5" high x 12.5" wide x 2.875" deep. Metal gauge is 18. The metal finish is Fire-Lite standard red. Knock-outs are provided on the top and sides, to provide ease of wire entry.

Figure 3.2-1: Cabinet Dimensions & Knockout Locations

Note: When zone 3 is programmed to accept 2-wire smoke detectors, it will only function as a NFPA Style-B initiating device circuit. See figure 3.2-1.

Zone four is a Style B circuit designed as a Supervisory zone or may accept any N.O. contact device on TB2, terminals 9-10. As a Supervisory zone, the circuit may or may not be able to detect a supervisory alarm condition after the occurrence of an open in the loop wiring. It's power limited to 2.66 mA in Standby and 4.46 mA in alarm. Factory Default is "Supervisory." Refer to Section 4.0 Programming.

Zone five is a Style B Initiating Device Circuit designed as a general purpose "initiating zone." It will accept any N.O. contact device on TB2, terminals 11-12. It's power limited to 2.66 mA in Standby and 4.46 mA in alarm. Factory Default is "4-wire Smoke Detector." Refer to Section 4.0 Programming.

Four wire smoke detectors may be connected to any zone. Resettable power is provided via terminals TB2, 13 and 14. See Figure 3.2-1 for proper connection of 4-wire detectors..

It is allowable to mix an assortment of device types on any zone, however it is not recommended. By not mixing device types on any zone, messages sent to the Central Station may be very specific and detailed.

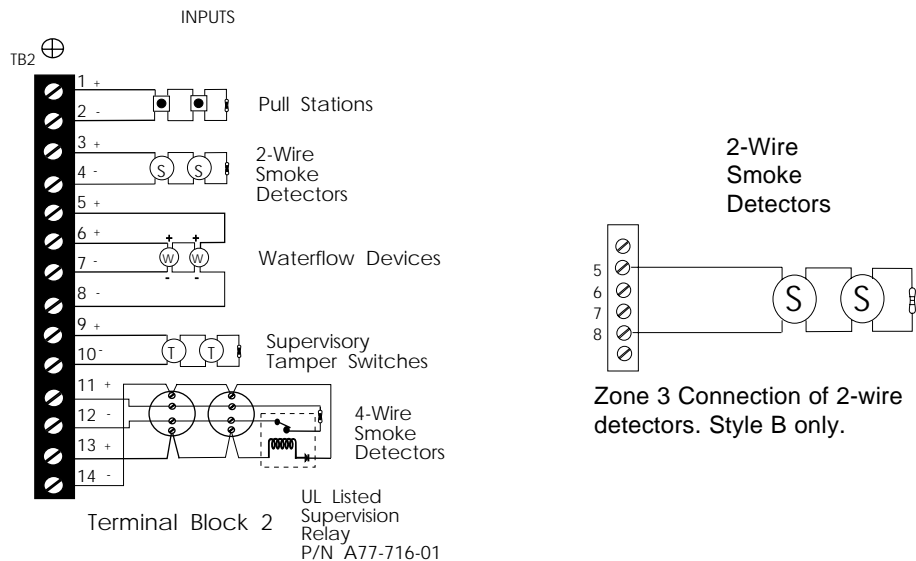


Figure 3.2-2 : Initiating Device Circuits

For example, default programming provides the following: when Zone 1 activates, it will be reported to the central station as "Manual Pull Station Alarm." For Zone 4 alarm, the report will be "Supervisory Alarm." For reporting formats that do not allow for detailed reports, the message will be: "Zone 1 alarm" or "Zone 4 alarm." Refer to Section 2.4 and 4.3.

3.3 Output Circuits

One Style Y Notification Appliance Circuit is provided. This supervised circuit allows for polarized bells, strobes and horns to be powered in an alarm condition. Deliverable power is up to one amp of special purpose power. See Figure 3.3-1. For a list of compatible devices refer to the Fire-Lite Compatibility Document. *A minimum 300mA load is required.*

Provision is available to interconnect to two independent telephone lines. Telephone line control/command is possible via double line seizure as well as usage of an RJ31X style interconnection. See Figure 3.5-1.

Relay driver outputs are available for: Alarm, Trouble, Supervisory, and Communicator Failure. These outputs can be used to drive UL-864 listed remote relays. See Figure 3.3-1.

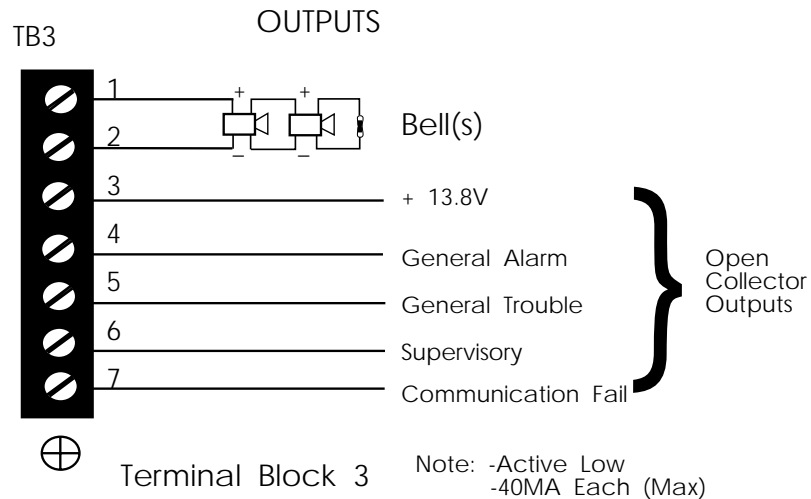
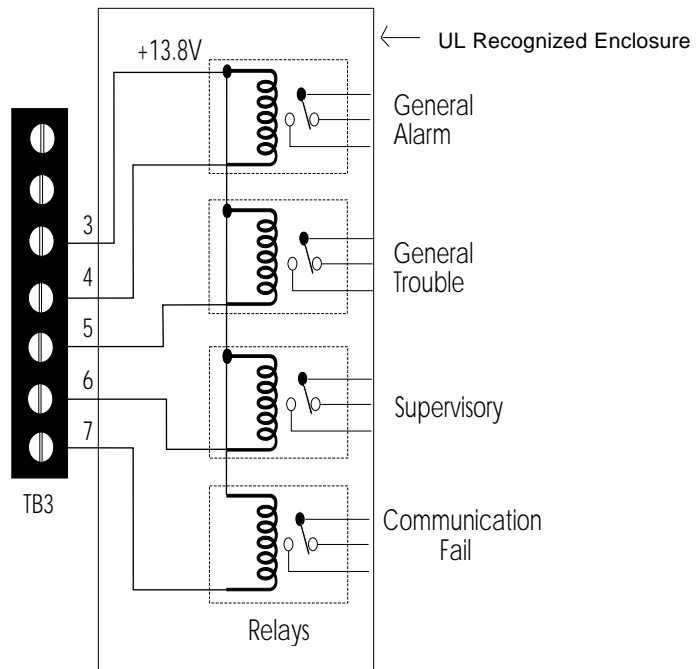


Figure 3.3-1 : Output Circuits



Note: Wiring from TB3 to Relays is power-limited but not supervised.

Figure 3.3-2: Driving Relays from Open Collector Outputs

The control panel's open collector outputs on Terminal TB3 can be used to activate UL-864 listed remote relays. Outputs are rated for 40 mA.

The normal condition for each output is as shown below:

TB3-4 Alarm	Off (de-energized)
TB3-5 Trouble	On (energized)
TB3-6 Supervisory	Off (de-energized)
TB3-7 Communications Failure	Off (de-energized)

Relays must be placed in a UL-864 recognized enclosure. Wiring from the control panel's terminals on TB3 to the relays must be less than 3 feet in length enclosed in conduit. Wiring from the relay outputs must remain in the same room as the location of the enclosure and be enclosed in conduit.

3.4 UL Power-limited Wiring Requirements

Power-limited and nonpower-limited circuit wiring must remain separated in the cabinet. All power-limited circuit wiring must remain at least 0.25" away from any nonpower-limited circuit wiring. Furthermore, all power-limited circuit wiring and nonpower-limited circuit wiring must enter and exit the cabinet through different knockouts and/or conduits. A typical wiring diagram for the MS-5012 is shown below.

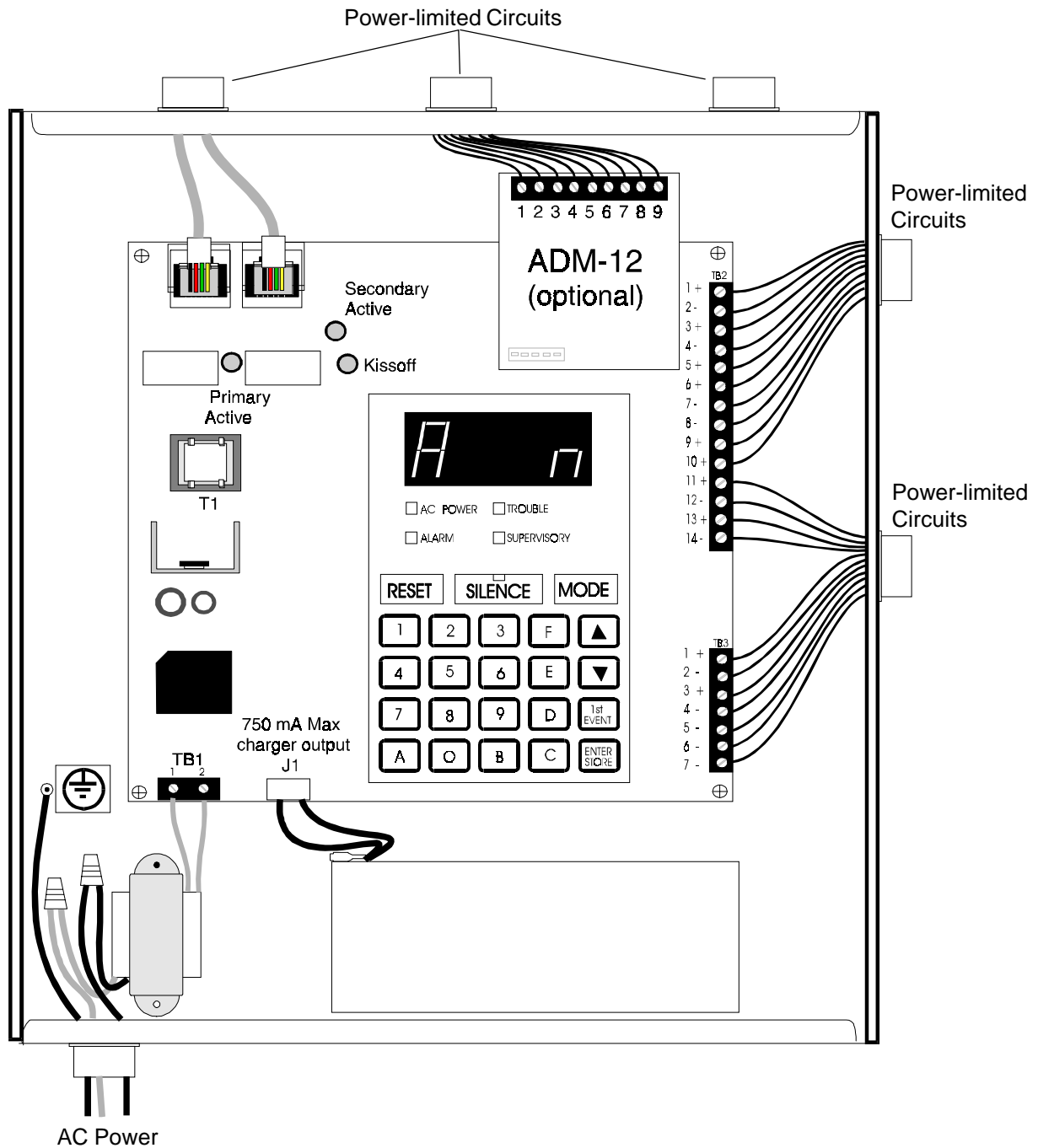


Figure 3.4-1: Typical Wiring Diagram for UL Power-limited Requirements

3.5 Digital Communicator

Two independent telephone lines can be connected to the MS-5012. Telephone line control/command is made possible via double line seizure as well as usage of an RJ31X style interconnection. *Note: It is critical that the panel's digital communicator be located as the first device on the incoming telephone circuit to properly function.*

The control panel's digital communicator is built right into the main board. All that is required to install the system is the connection and wiring of two phone lines as shown below:

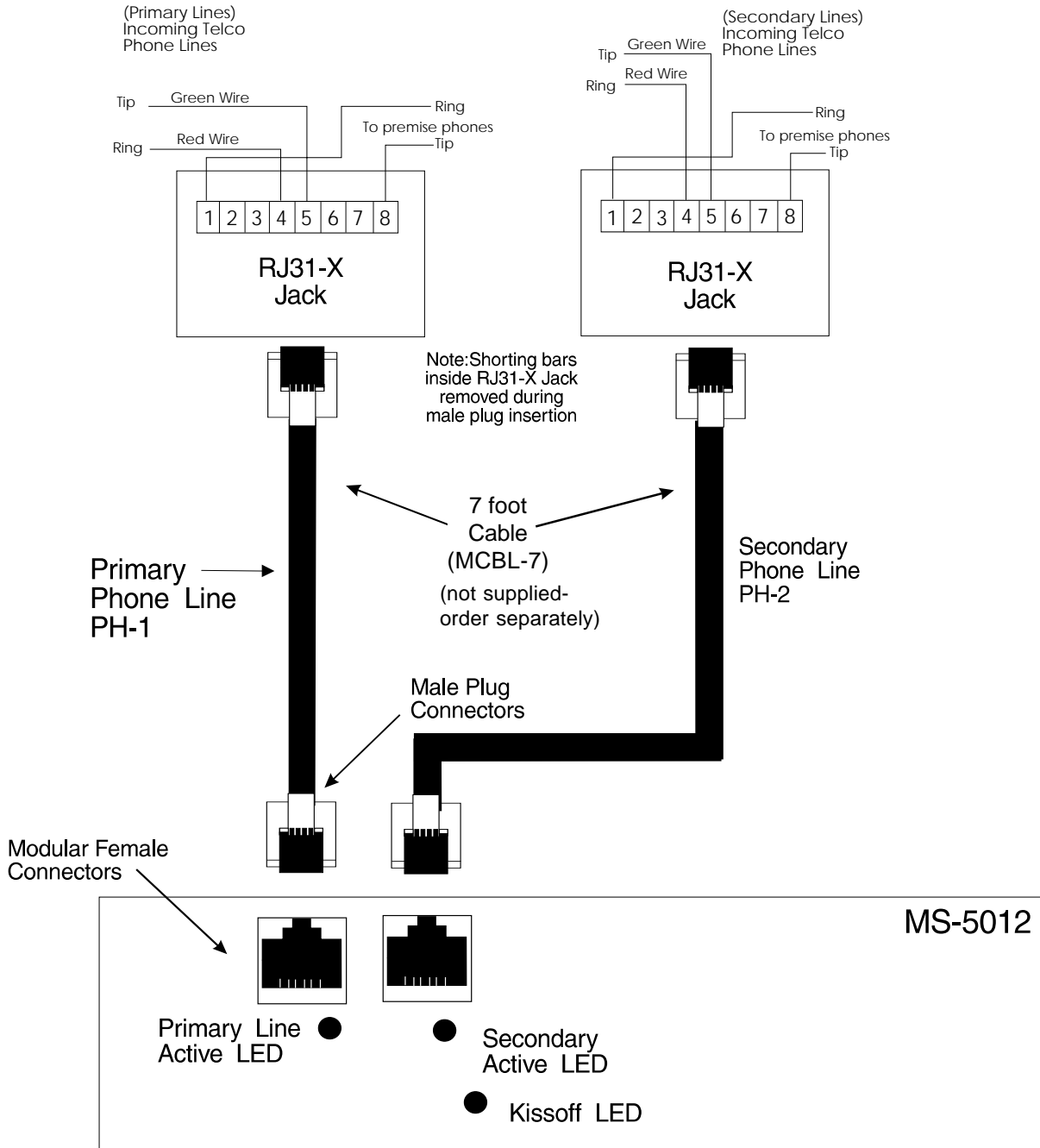


Figure 3.5-1 : Wiring Jacks

3.6 Operating Power

Primary Power Source (AC) and Earth Ground Connections

AC power connections are made inside the control panel cabinet. Primary power source is 120 VAC, 50/60 HZ, 0.32A. Run a pair of wires from the protected premises main breaker box to the black and white primary leads of the MS-5012 system transformer. As per the National Electric Code, use 14 AWG (1.6 mm O.D.) or heavier gauge wire with 600V insulation wiring. No other equipment may be connected to this circuit. In addition, this circuit must be provided with overcurrent protection and may not contain any power disconnect devices.

Connect the backbox ground stud to a solid earth ground (a metallic cold water pipe may be suitable in some installations). This connection is vital to maintaining the control panel's immunity to unwanted transients generated by lightning and electrostatic discharge.

Secondary Power Source (Batteries)

The battery charger is current limited and capable of recharging sealed lead acid type batteries. The charger shuts off when the system is in alarm.

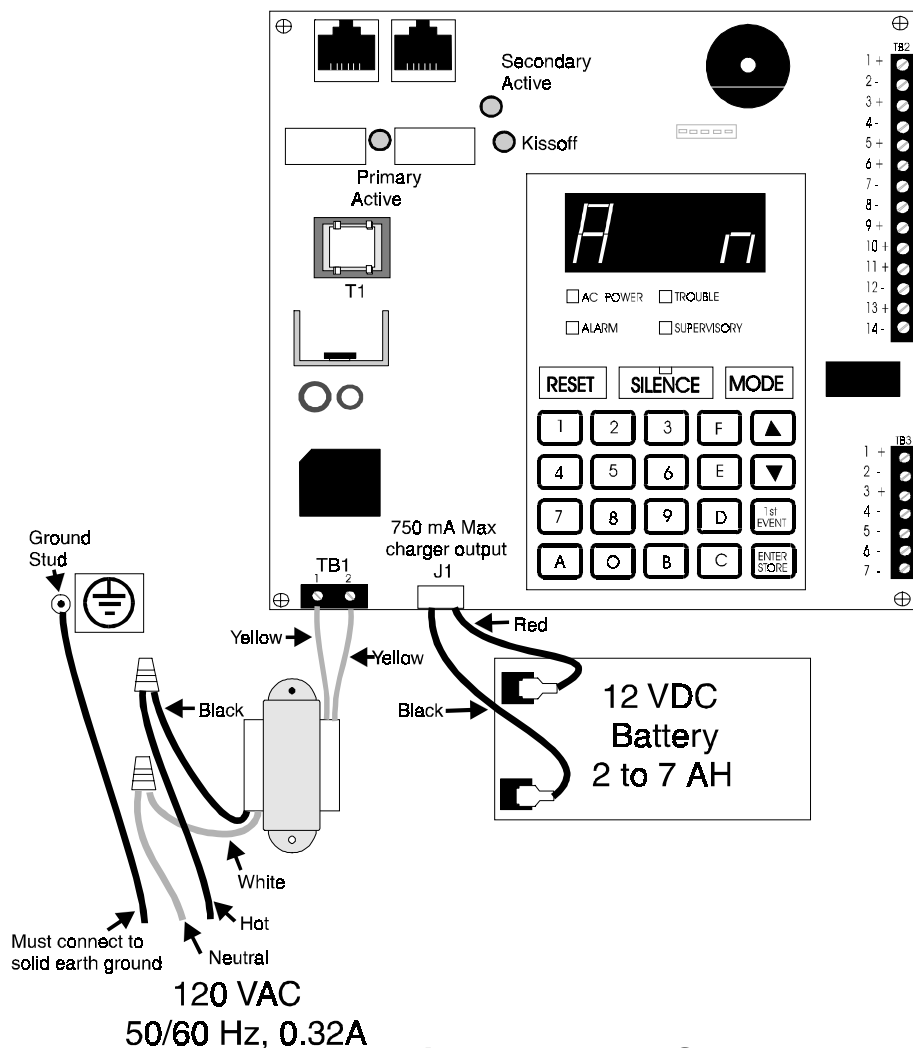


Figure 3.6-1: MS-5012 Power Connections

Optional AC Terminal Block

An optional AC terminal block is available for the MS-5012 Control Communicator. The terminal block can only be used on the newer, larger (14.5" x 12.5" x 2.875") backbox. It cannot be installed in the older, smaller (12.0" x 9.0" x 2.75") backbox.

CAUTION! Make certain all power (AC and battery) is removed before any connections are made.

1. Mount the optional AC terminal block to the lower left of the MS-5012 backbox using two supplied screws.
2. Connect AC power wiring to the optional terminal block as shown in Figure 3.6-2.
3. Connect the black and white wires (primary) from the MS-5012 system transformer to the optional terminal block as illustrated below. Make certain the black AC wire (Hot) is connected opposite the black transformer wire and the white AC wire (Neutral) is connected opposite the white transformer wire.
4. Make certain that the yellow wires (secondary) from the MS-5012 system transformer are connected to Terminal Block TB1 located in the lower left corner of the MS-5012 main circuit board.
5. Install a jumper between the terminal block and the backbox ground stud as illustrated below. This will be used to provide lightning protection to the panel. (Make certain the jumper is connected opposite the green AC ground wire on the terminal block).
6. Install a solid earth ground connection to the backbox ground stud as illustrated below. This will be used to provide lightning protection to the panel.
7. Press the AC terminal cover firmly into place.
8. Reapply AC and battery power to the MS-5012 Control Communicator.

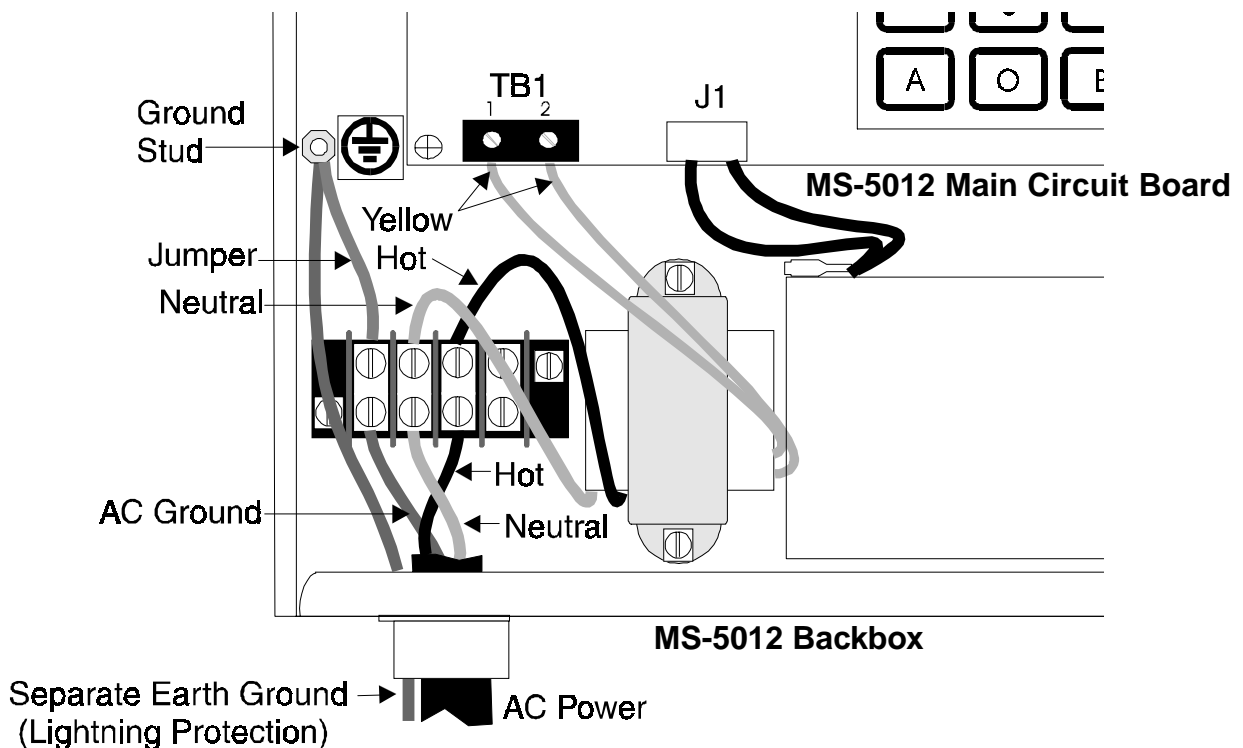
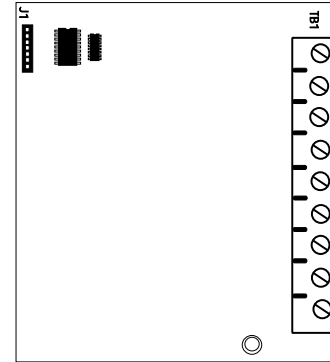


Figure 3.6-2: Optional AC Terminal Block Installation

3.7 Optional Boards

ADM-12 Annunciator Driver Module

The Annunciator Driver Module supports the RZA-5F Remote Annunciator module. Annunciator wiring is supervised for open conditions by this module. The Annunciator Driver Module mounts to the main board, occupying one of the two option connectors. (See Section 1.6)

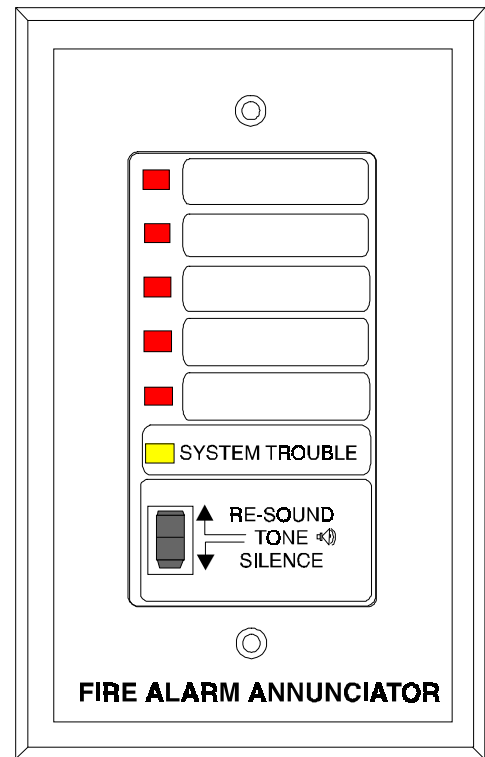


The **RZA-5F Remote Annunciator** mounts on a standard single-gang box, and provides LED indication of the following:

- Alarm Zone 1 (red)
- Alarm Zone 2 (red)
- Alarm Zone 3 (red)
- Alarm Zone 4 (red)
- Alarm Zone 5 (red)
- System Trouble (yellow)

The remote annunciator provides individual zone alarm LEDs, a system trouble LED, a piezo sounder and a remote sounder shut off switch.

A Local Trouble Sounder and Silence Switch are also provided. All LED wiring is supervised for open conditions. Any open condition will cause the System Trouble LED to illuminate.



NOTE: The Remote Annunciator requires the use of an ADM-12 Annunciator Driver Module.

Remote Annunciator

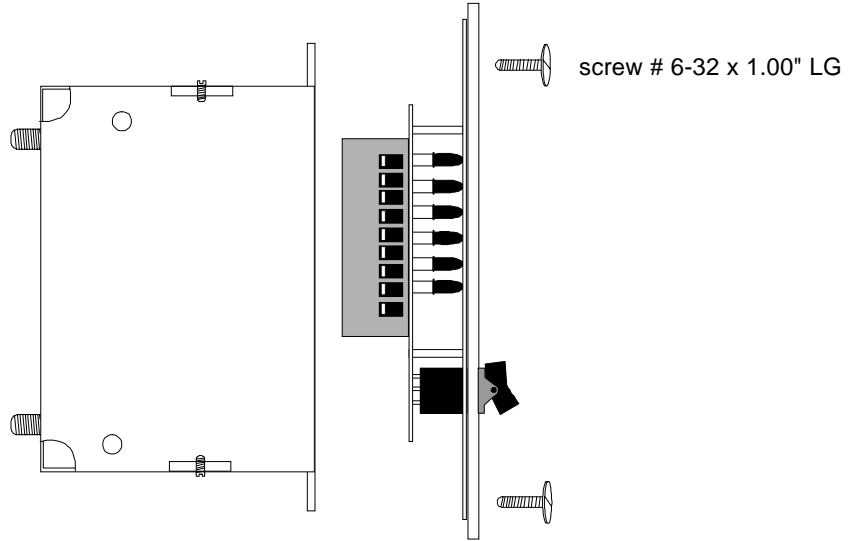


Figure 3.7-1: Installing the Annunciator in a Single Gang Box

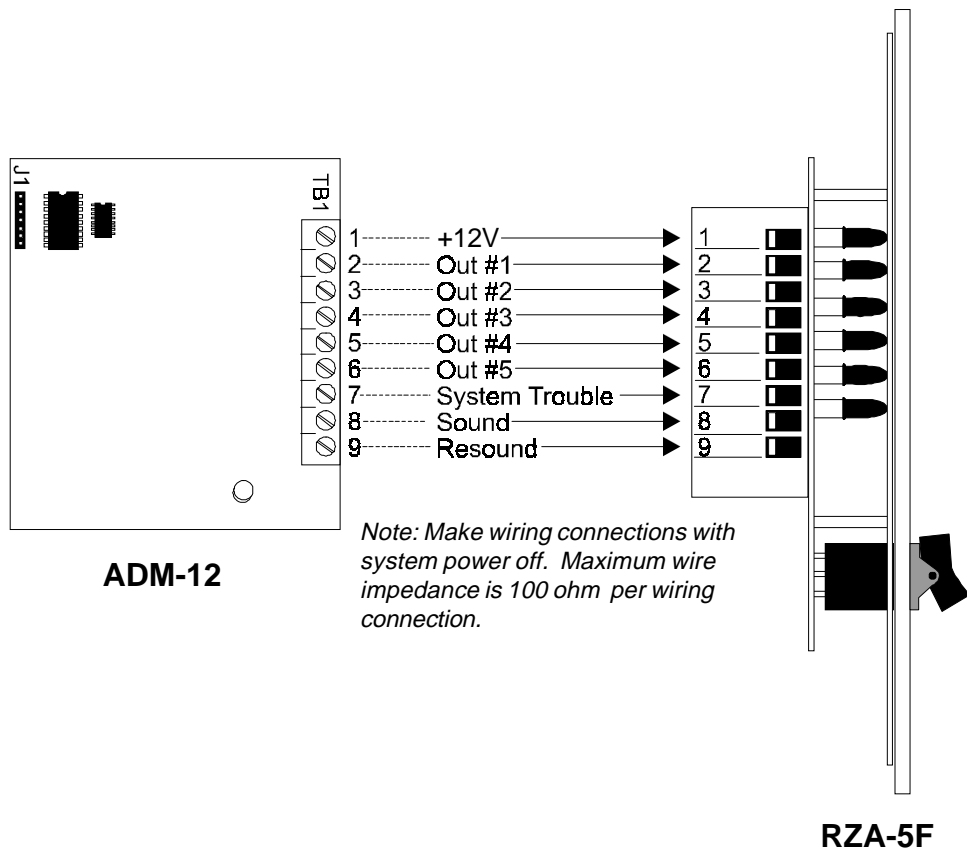


Figure 3.7-2: Wiring the RZA-5F/ADM-12

4.0 Programming Instructions

Programming Mode

Programming of the MS-5012 is possible at any time except when an alarm condition is present in the Normal Mode of operation.

The MS-5012 has been designed for many different types of applications. After examining your specific application, review the programming options and choose the entries best suited for your system.

The MS-5012 has a built-in programmer. All programming selections are stored in nonvolatile Electrically-Erasable Programmable Read-Only Memory (EEPROM). This ensures that the control panel will remember all entries made in programming mode even if both AC and battery power are removed.

The user **must** program the primary and secondary phone numbers, account numbers and 24 hour test report times for each Central Station account and the current time. The control panel comes with factory chosen options/features already programmed. Other options/features may be programmed if desired. If all factory default settings are acceptable, programming is complete.

4.1 Entering Program Mode

To enter the Program Mode, press the **MODE** key once, (the display will go blank) you then have ten seconds to start entering the code (**7 7 6 4**).
☞ **7 7 6 4** spells PROG on a Touch-Tone® phone

If an incorrect key is entered, just reenter the proper 4-digit code **before** hitting the **ENTER STORE** key

The diagram illustrates the scrolling of digits on a display. It shows four rows of digits: the first row has a single '7', the second row has '77', the third row has '776', and the fourth row has '7764'. This represents the sequential entry of the code 7764.

Note that as you enter information into the control panel, the digits will scroll across the display from right to left

You are allowed a pause of up to 10 seconds in between each number while entering the code. The control panel will then be in Program Mode and show the display **00 F**. You are allowed up to ten minutes of idle time at this point before starting your programming, otherwise the control panel will go back to Normal Mode. You also have a maximum of 10 minutes between any key stroke.

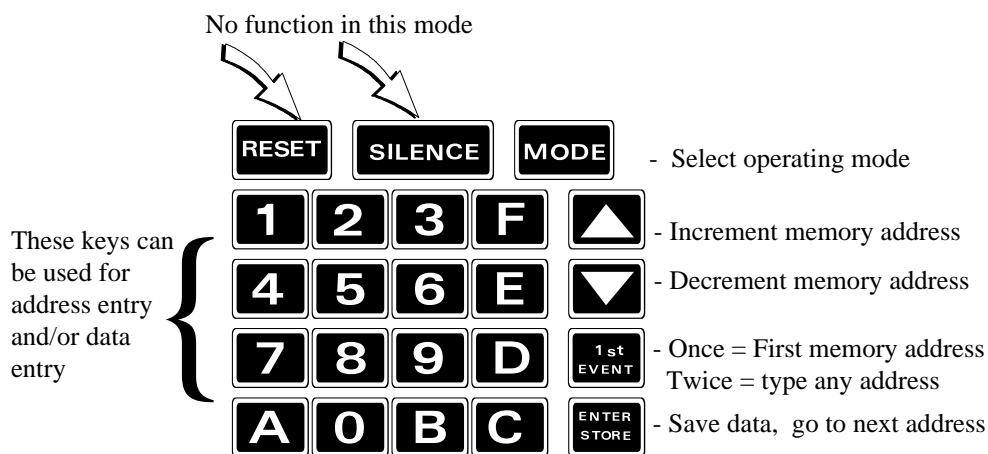
When in Programming Mode, the trouble light will be on, the trouble relay driver will be activated, but the communicator will not be activated to report this trouble. *Transmissions started before entering program mode will continue during programming.*

The first three locations from the left represent the memory address which can go from 00 up to 243 (Alpha characters are not used). The last location (farthest right) represents the contents of the memory address. The first address displayed is shown below:

00 F
address data

4.2 Switch Functions

The Function of each switch is shown below:



4.3 Programming


Programming the Primary phone number. (00-15)

Sixteen addresses are set aside with "F" being the factory default.

(from 00 F to 15 F).

If your phone # is 484-7161, type 4,

the display will read 00 4,

press  to save and bring you to

the next address 01 F.

Enter the remaining numbers in their respective addresses:

4847161FFFFFFF
00 01 02 03 04 05 06 07 08 09 10 11 12 13 14 15 .

Valid entries are 0 - F with the numeric digits as dialed numbers and hex digits indicating the following:

A= * on a Touchtone phone keypad

B= # on a Touchtone phone keypad

C= look for secondary dial tone for up to 2 seconds (then, dial anyway)

D= 3-second pause

E= 5-second pause

F= end of phone number

Programming Primary Number Communication Format. (16)

One location is needed to select the Communication Format to the primary phone number. Address 16 is used for this purpose. The default (factory setting) for this address is A **16 A**, which is 4+2 Standard, 1800 Hz "Carrier", 2300 Hz "ack." You may enter 2 through D in place of the default, then hit [ENTER/STORE]. Zero through F represents the following:

0: Not Used

1: Not Used

2: 3+1 Standard 1800 Hz Carrier, 2300 Hz ACK --- Table 4.3-1

3: 3+1 Expanded 1800 Hz Carrier, 2300 Hz ACK -- Table 4.3-1

4: 3+1 Standard 1900 Hz Carrier, 1400 Hz ACK --- Table 4.3-1

5: 3+1 Expanded 1900 Hz Carrier, 1400 Hz ACK--- Table 4.3-1

6: 4+1 Standard 1800 Hz Carrier, 2300 Hz ACK --- Table 4.3-1

7: 4+1 Expanded 1800 Hz Carrier, 2300 Hz ACK -- Table 4.3-1

8: 4+1 Standard 1900 Hz Carrier, 1400 Hz ACK --- Table 4.3-1

9: 4+1 Expanded 1900 Hz Carrier, 1400 Hz ACK - Table 4.3-1

A: 4+2 Standard 1800 Hz Carrier, 2300 Hz ACK -- Table 4.3-2

B: 4+2 Expanded 1800 Hz Carrier, 2300 Hz ACK - Table 4.3-1

C: 4+2 Standard 1900 Hz Carrier, 1400 Hz ACK -- Table 4.3-2

D: 4+2 Expanded 1900 Hz Carrier, 1400 Hz ACK - Table 4.3-1

E: Not Used

F: Not Used

Note: Consult your Central Station for proper selection or consult our factory representatives. For any format chosen, the MS-5012 automatically programs all of the event codes. See the following tables.

Table 4.3-1:**3+1 and 4+1 Standard and Expanded, 4+2 Expanded Formats**

If "2, 3, 4, 5, 6, 7, 8, 9, B or D" are entered for address 16, the following data is automatically programmed for the Primary phone number event codes.

Enter '0' for the Setting to disable the report.

<u>Address</u>	<u>Description</u>	<u>Factory Setting</u>
68	Primary # Zone 1 Alarm Code	1
69	Primary # Zone 2 Alarm Code	1
70	Primary # Zone 3 Alarm Code	1
71	Primary # Zone 4 Alarm Code	8
72	Primary # Zone 5 Alarm Code	1
73	Primary # AC Fault Code	F
74	Primary # Zone 1 Fault Code	F
75	Primary # Zone 2 Fault Code	F
76	Primary # Zone 3 Fault Code	F
77	Primary # Zone 4 Fault Code	F
78	Primary # Zone 5 Fault Code	F
79	Primary # Earth Ground Code	F
80	Primary # Low Battery Code	F
81	Primary # No Battery Code	F
82	Primary # Telco Prim. Line Fault Code	F
83	Primary # Telco Sec. Line Fault Code	F
84	Primary # Bell Fault Code	F
85	Primary # Comm Trouble Pri. #	F
86	Primary # Comm Trouble Sec. #	F
87	Primary # Annunciator Fault Code	F
88	Primary # System Off Normal Code	F
89	Primary # Zone 1 Alarm Restoral Code	E
90	Primary # Zone 2 Alarm Restoral Code	E
91	Primary # Zone 3 Alarm Restoral Code	E
92	Primary # Zone 4 Alarm Restoral Code	E
93	Primary # Zone 5 Alarm Restoral Code	E
94	Primary # AC Fault Restoral Code	E
95	Primary # Zone 1 Fault Restoral Code	E
96	Primary # Zone 2 Fault Restoral Code	E
97	Primary # Zone 3 Fault Restoral Code	E
98	Primary # Zone 4 Fault Restoral Code	E
99	Primary # Zone 5 Fault Restoral Code	E
100	Primary # Earth Ground Restoral Code	E
101	Primary # Low Battery Restoral Code	E
102	Primary # No Battery Restoral Code	E
103	Primary # Telco Pri. Line Fault Restoral	E
104	Primary # Telco Sec. Line Fault Restoral	E
105	Primary # Bell Fault Restoral Code	E
106	Primary # Comm Trouble Rest. Pri. #	E
107	Primary # Comm Trouble Rest. Sec. #	E
108	Primary # Annunciator Fault Restoral	E
109	Primary # System Return to Normal Code	E
110	Primary # 24 Hour Test Code	9
111	Primary # System Abnormal Test Report	F

**Table 4.3-2:
4+2 Standard Format**

If "A or C" are entered for address 16, the following data is automatically programmed for the Primary phone number event codes. Enter '00' for the Setting to disable the report.

<u>Address</u>	<u>Description</u>	<u>Settings</u>
68-69	Primary # Zone 1 Alarm Code	1 1
70-71	Primary # Zone 2 Alarm Code	1 2
72-73	Primary # Zone 3 Alarm Code	1 3
74-75	Primary # Zone 4 Alarm Code	8 4
76-77	Primary # Zone 5 Alarm Code	1 5
78-79	Primary # AC Fault Code	F 6
80-81	Primary # Zone 1 Fault Code	F 1
82-83	Primary # Zone 2 Fault Code	F 2
84-85	Primary # Zone 3 Fault Code	F 3
86-87	Primary # Zone 4 Fault Code	F 4
88-89	Primary # Zone 5 Fault Code	F 5
90-91	Primary # Earth Ground Code	F 7
92-93	Primary # Low Battery Code	F 8
94-95	Primary # No Battery Code	F 9
96-97	Primary # Telco Pri. Line Fault Code	F A
98-99	Primary # Telco Sec. Line Fault Code	F B
100-101	Primary # Bell Fault Code	F C
102-103	Primary # Comm Trouble Pri. #	F D
104-105	Primary # Comm Trouble Sec. #	F E
106-107	Primary # Annunciator Fault Code	F C
108-109	Primary # System Off Normal Code	F F
110-111	Primary # Zone 1 Alarm Restoral Code	E 1
112-113	Primary # Zone 2 Alarm Restoral Code	E 2
114-115	Primary # Zone 3 Alarm Restoral Code	E 3
116-117	Primary # Zone 4 Alarm Restoral Code	E 4
118-119	Primary # Zone 5 Alarm Restoral Code	E 5
120-121	Primary # AC Fault Restoral Code	E 6
122-123	Primary # Zone 1 Fault Restoral Code	E 1
124-125	Primary # Zone 2 Fault Restoral Code	E 2
126-127	Primary # Zone 3 Fault Restoral Code	E 3
128-129	Primary # Zone 4 Fault Restoral Code	E 4
130-131	Primary # Zone 5 Fault Restoral Code	E 5
132-133	Primary # Earth Ground Restoral Code	E 7
134-135	Primary # Low Battery Restoral Code	E 8
136-137	Primary # No Battery Restoral Code	E 9
138-139	Primary # Telco Primary Line Fault Restoral	E A
140-141	Primary # Telco Secondary Line Fault Restoral	E B
142-143	Primary # Bell Fault Restoral Code	E C
144-145	Primary # Comm Trouble Rest. Pri. #	E D
146-147	Primary # Comm Trouble Rest. Sec. #	E E
148-149	Primary # Annunciator Fault Restoral	E C
150-151	Primary # System Return to Normal Code	E F
152-153	Primary # 24 Hour Test Code	9 9
154-155	Primary # System Abnormal Test Report	9 1

Programming the Primary Number Account Code (17-20) takes up four locations at addresses 17-20. The defaults are all "0"s. **17 0**
 Valid entries are (0-9 and A-F). The number of digits entered must match the format selection. If programming "2, 3, 4, or 5" into address 16, enter 3 digits. (location 20 is ignored) If programming "6, 7, 8, 9, A, B, C, or D" into address 16, enter 4 digits.

Programming the Primary Number 24 Hour Test Time (21-24).
 Use military time when entering the 24 hour "test" time. The 24 hour test time over phone number 1 to the central station takes up four locations, from addresses 21-24. The default is 00:00 (12:00 midnight). The limits for each location are as follows: 21: enter 0, 1, 2; 22: enter 0-9; 23 : enter 0-5; 24: enter 0-9. Note: Do not use A-F.

Programming Primary Number 24/12 Hour Test Time (25). The test message sent to the Primary phone number may be sent every 12 or 24 hours. If the message is to be sent every 24 hours, leave the factory default entry of zero. If 12 hour test reports are needed, enter a "1" into this address.

Programming the Secondary Phone Number (26-41) is similar to the primary phone number located in addresses 00 - 15. The defaults are also all "F"s.

4 8 4 7 1 6 1 F F F F F F F F F F
 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 .

Programming Secondary Number Communication Format (42) is programmed the same way as the primary number's Comm Format in address 16. Default entry is "A" 4+2 Standard. Choose one entry from the list below:

- 0: Not Used
- 1: Not Used
- 2: 3+1 Standard 1800 Hz Carrier, 2300 Hz ACK --- Table 4.3-3
- 3: 3+1 Expanded 1800 Hz Carrier, 2300 Hz ACK -- Table 4.3-3
- 4: 3+1 Standard 1900 Hz Carrier, 1400 Hz ACK --- Table 4.3-3
- 5: 3+1 Expanded 1900 Hz Carrier, 1400 Hz ACK--- Table 4.3-3
- 6: 4+1 Standard 1800 Hz Carrier, 2300 Hz ACK --- Table 4.3-3
- 7: 4+1 Expanded 1800 Hz Carrier, 2300 Hz ACK -- Table 4.3-3
- 8: 4+1 Standard 1900 Hz Carrier, 1400 Hz ACK --- Table 4.3-3
- 9: 4+1 Expanded 1900 Hz Carrier, 1400 Hz ACK - Table 4.3-3
- A: 4+2 Standard 1800 Hz Carrier, 2300 Hz ACK -- Table 4.3-4
- B: 4+2 Expanded 1800 Hz Carrier, 2300 Hz ACK - Table 4.3-3
- C: 4+2 Standard 1900 Hz Carrier, 1400 Hz ACK -- Table 4.3-4
- D: 4+2 Expanded 1900 Hz Carrier, 1400 Hz ACK - Table 4.3-3
- E: Not Used
- F: Not Used

**Table 4.3-3:
3+1 and 4+1 Standard and Expanded, 4+2 Expanded**

If "2, 3, 4, 5, 6, 7, 8, 9, B or D" are entered for address 42, the following is automatically programmed for the Secondary phone number event codes. Enter '0' for the Setting to disable the report.

<u>Address</u>	<u>Description</u>	<u>Factory Setting</u>
156	Secondary # Zone 1 Alarm Code	1
157	Secondary # Zone 2 Alarm Code	1
158	Secondary # Zone 3 Alarm Code	1
159	Secondary # Zone 4 Alarm Code	8
160	Secondary # Zone 5 Alarm Code	1
161	Secondary # AC Fault Code	F
162	Secondary # Zone 1 Fault Code	F
163	Secondary # Zone 2 Fault Code	F
164	Secondary # Zone 3 Fault Code	F
165	Secondary # Zone 4 Fault Code	F
166	Secondary # Zone 5 Fault Code	F
167	Secondary # Earth Ground Code	F
168	Secondary # Low Battery Code	F
169	Secondary # No Battery Code	F
170	Secondary # Telco Pri. Line Fault Code	F
171	Secondary # Telco Sec.Line Fault Code	F
172	Secondary # Bell Fault Code	F
173	Secondary # Comm Trouble Pri. #	F
174	Secondary # Comm Trouble Sec. #	F
175	Secondary # Annunciator Fault Code	F
176	Secondary # System Off Normal Code	F
177	Secondary # Zone 1 Alarm Restoral Code	E
178	Secondary # Zone 2 Alarm Restoral Code	E
179	Secondary # Zone 3 Alarm Restoral Code	E
180	Secondary # Zone 4 Alarm Restoral Code	E
181	Secondary # Zone 5 Alarm Restoral Code	E
182	Secondary # AC Fault Restoral Code	E
183	Secondary # Zone 1 Fault Restoral Code	E
184	Secondary # Zone 2 Fault Restoral Code	E
185	Secondary # Zone 3 Fault Restoral Code	E
186	Secondary # Zone 4 Fault Restoral Code	E
187	Secondary # Zone 5 Fault Restoral Code	E
188	Secondary # Earth Ground Restoral Code	E
189	Secondary # Low Battery Restoral Code	E
190	Secondary # No Battery Restoral Code	E
191	Secondary # Telco Line 1 Fault Restoral	E
192	Secondary # Telco Line 2 Fault Restoral	E
193	Secondary # Bell Fault Restoral Code	E
194	Secondary # Comm Trouble Rest. Pri. #	E
195	Secondary # Comm Trouble Rest. Sec. #	E
196	Secondary # Annunciator Fault Restoral	E
197	Secondary # System Return to Normal Code	E
198	Secondary # 24 Hour Test Code	9
199	Secondary # System Abnormal Test Report	F

**Table 4.3-4:
4+2 Standard Format**

If "A or C" are entered for address 42, the following is automatically programmed for the Secondary phone number event codes. Enter '00' for the Setting to disable the report.

<u>Address</u>	<u>Description</u>	<u>Factory Setting</u>
156-157	Secondary # Zone 1 Alarm Code	1 1
158-159	Secondary # Zone 2 Alarm Code	1 2
160-161	Secondary # Zone 3 Alarm Code	1 3
162-163	Secondary # Zone 4 Alarm Code	8 4
164-165	Secondary # Zone 5 Alarm Code	1 5
166-167	Secondary # AC Fault Code	F 6
168-169	Secondary # Zone 1 Fault Code	F 1
170-171	Secondary # Zone 2 Fault Code	F 2
172-173	Secondary # Zone 3 Fault Code	F 3
174-175	Secondary # Zone 4 Fault Code	F 4
176-177	Secondary # Zone 5 Fault Code	F 5
178-179	Secondary # Earth Ground Code	F 7
180-181	Secondary # Low Battery Code	F 8
182-183	Secondary # No Battery Code	F 9
184-185	Secondary # Telco Prim. Line Fault Code	F A
186-187	Secondary # Telco Sec. Line Fault Code	F B
188-189	Secondary # Bell Fault Code	F C
190-191	Secondary # Comm Trouble Pri. #	F D
192-193	Secondary # Comm Trouble Sec. #	F E
194-195	Secondary # Annunciator Fault Code	F C
196-197	Secondary # System Off Normal Code	F F
198-199	Secondary # Zone 1 Alarm Restoral Code	E 1
200-201	Secondary # Zone 2 Alarm Restoral Code	E 2
202-203	Secondary # Zone 3 Alarm Restoral Code	E 3
204-205	Secondary # Zone 4 Alarm Restoral Code	E 4
206-207	Secondary # Zone 5 Alarm Restoral Code	E 5
208-209	Secondary # AC Fault Restoral Code	E 6
210-211	Secondary # Zone 1 Fault Restoral Code	E 1
212-213	Secondary # Zone 2 Fault Restoral Code	E 2
214-215	Secondary # Zone 3 Fault Restoral Code	E 3
216-217	Secondary # Zone 4 Fault Restoral Code	E 4
218-219	Secondary # Zone 5 Fault Restoral Code	E 5
220-221	Secondary # Earth Ground Restoral Code	E 7
222-223	Secondary # Low Battery Restoral Code	E 8
224-225	Secondary # No Battery Restoral Code	E 9
226-227	Secondary # Telco Prim.Line Fault Restoral	E A
228-229	Secondary # Telco Sec. Line Fault Restoral	E B
230-231	Secondary # Bell Fault Restoral Code	E C
232-233	Secondary # Comm Trouble Rest. Pri. #	E D
234-235	Secondary # Comm Trouble Rest. Sec. #	E E
236-237	Secondary # Annunciator Fault Restoral	E C
238-239	Secondary # System Return to Normal Mode	E F
240-241	Secondary # 24 Hour Test Code	9 9
242-243	Secondary # System Abnormal Test Report	9 1

Secondary Number Account Code (43-46) is programmed in addresses 43 - 46 in the same manner as the primary phone number Account Code. Default entries are all "0's."

Secondary Number 24-Hour Test Time (47-50) is programmed in addresses 47-50 in the same manner as the primary number 24-Hour Test Time. Default is 00:00 (12:00 midnight).

Secondary Number 24/12 Hour Test Time (51) The test message sent to the Secondary phone number may be sent every 12 or 24 hours. If the message is to be sent every 24 hours, leave the factory default entry of zero. If 12 hour test reports are needed, enter a "1" into this address.

Programming Zone 3 Functionality (52)

The following entries may be selected: 0 = non silenceable Waterflow Zone, 1 = N.O. contact device zone or silenceable Waterflow zone, 2 = 2-Wire detector device zone. If "0" is entered, address 53-54 must be programmed if a delay is needed. Selecting a "1" entry allows any Normally Open contact device to be connected on this zone. Selecting a "2" entry allows for 2-wire detectors to be connected on this zone. (Style B only) Factory setting is "0," non silenceable Waterflow zone.

Programming Waterflow Retard Timer (53-54) This field allows you to select a delay of up to 89 seconds for declaring a "Waterflow Alarm." Factory default is one second. The default for addresses 53 and 54 are "00" (no additional delay). Valid keys for 53 are 0-8, and 0-9 for 54. Program an entry into this address only if selecting a "0" in address 52 above. *Be careful to include any built in delays of the waterflow device.*

Programming AC Loss Reporting Delay (55) Enter a digit of 1, 2, 3, 4, 5, or 6 corresponding to the number of hours to be delayed in reporting loss of AC power. Factory default is 6-hour delay. 0=6 hours, 1=7 hours, 2=8 hours, 3=9, 4=10, 5=11, and 6=12.

Slave Communicator/Fire Panel Selection (56)

Leaving address 56 at "0" means the MS-5012 is operating as a fire *panel only*. Selecting "1" will make it operate as a *slave communicator only*. See Section 6, Slave Communicator Configuration. Selecting "2" will make it operate as a *Fire panel/communicator*.

For Addresses 57 - 67 leave the location programmed at "0" to accept the factory default, or set the location to "1" to change it.

Secondary Phone Number (57) Leaving address 57 at "0" means that reports will be transmitted to the secondary number only if calls to the primary number are unsuccessful. Programming a "1" causes all reports to be transmitted to the secondary number.

Alarm Verification on Detector Zones 2 and 3 (58) Factory Default setting for this address is "0" which means no alarm verification. Entering a "1" enables verification for zone 2 and zone 3. Consult local Authority Having Jurisdiction (AHJ) prior to altering this address.

Alarm verification works only on zones programmed as 2-wire detector zones. After detecting an alarm, the panel removes power from all zones for 6 seconds, resetting all 2-wire smoke detectors. Power is reapplied and a 12 second retard period allows detectors to stabilize. During the retard/reset period of 18 seconds, subsequent alarms by the same initiating zone are ignored. An alarm detected on any other 2-wire detector zone during the retard period will cause immediate verified alarms. A subsequent alarm on the initiating zone occurring within the confirmation time will cause a verified alarm. *Note: Mixing devices on zones designated as 2-wire smoke zones is not recommended.*

During the alarm verification period, access to other modes of operation is prevented.

Note: Consult local Authority Having Jurisdiction (AHJ) prior to altering addresses 59, 60, 61 and 62.

Silence Inhibit (59) The factory default "0" disables the silence inhibit feature. A "1" selects the following function: *Silencing of the Notification Appliance Circuit and piezo is prohibited for 1 minute.*

Auto Silence (60) For address 60, you may leave the default at "0" to allow the Notification Appliance Circuit to remain on until it's reset, or select "1" to *automatically silence the Notification Appliance Circuit after 10 minutes.*

Trouble Reminder (61) Factory default "0" disables the trouble reminder feature. Selecting "1" will cause a reminding "beep" every 15 seconds during an alarm (after the silence switch is pressed) and "beep" every two minutes during a trouble condition. The "beeps" from the on board sounder will occur until the alarm or fault is cleared.

Bell Disable (62) For location 62, choosing default "0" means the Notification Appliance Circuit is enabled. Setting the address to "1," causes the bell to be disabled during an alarm. Entering a "1" causes the Trouble LED to remain on and bell fault message sent to the Central Station(s).

Annunciator Present (63) Factory default is "0", no annunciator present. Changing address 63 to a "1" means that an annunciator is in use.

Zone 4 Function Select (64) Zone 4 is factory set at "0" to be a Supervisory Zone. (Accepts N.O. Supervisory devices) Changing address 64 to "1" allows Zone 4 to accept any N.O. contact device. *Note: When Address 64 is changed to "1", the messages transmitted to the Central Stations must be changed to reflect the new setting. If using 3+1, 4+1 or 4+2 Expanded Formats, Address 71 must be changed to "1" and Address 159 must be changed to "1". If using 4+2 Standard Formats, Address 74 must be changed to "1" and Address 162 must be changed to "1."*

Address (65) Not used.

Touchtone/Rotary Select (66) A "0" programmed in this address by the factory triggers Touchtone dialing over both phone lines. Select "1" for rotary dialing.

Make Break Ratio (67) Use the address only if you have chosen "1" for address 66. The make/break ratio is factory set to "0" which is 67/33, but may be changed to "1" which is a 62/38 ratio.


Programming Event Codes (68-243)

Tables 4.3-1 to 4.3-4 list messages or "event codes" that are sent to the Central Station. The selections made for the Primary Number Communication Format (address 16) and the Secondary Number Communication Format (address 42) automatically program addresses 68-243 with factory default selections.

Any of the event codes may be changed. *Consult your Central Station prior to altering the event codes.* Entering a code of "zero" will cause the communicator to NOT transmit the message. For the 3+1, 4+1 formats or the 4+2 expanded format enter a single zero. For the 4+2 standard format enter two zeros.

Be certain to disable the reports in pairs. The pair should include both the activation of the event and the restoral of the event. For example to disable Zone 1 Fault Code from being transmitted, enter a '0' or '00' for the Fault Code plus a '0' or '00' for the Zone 1 Fault Restoral Code. The exception to this is for the 24 Hour Test Reports and the Abnormal Test Reports.

End Programming

Exit Programming Mode by pressing , followed by the 4-digit code corresponding to an alternate mode of operation, then hit enter/store. During Program Mode, if no key is pressed within 10 minutes, the panel will revert to normal mode.

Programming the Real-Time Clock

Entering an address greater than 243 will cause a display of the current time. On initial power up, the clock will start running from the factory setting of 00:00 (military time). The far left digit will be flashing, indicating that this will be the first digit to be programmed. Simply enter the correct digits of the current time, followed by enter/store.

5.0 Servicing

5.1 Walk Test Mode

The MS-5012 provides the capability to perform a one-man walk test of the system without triggering the communicator or the alarm output relay driver. Walk Test allows for testing of the five zones (initiating circuits). The first initiating device activated on a zone will cause the Notification Appliance (bell) Circuit to turn on for four seconds. Subsequent device activations on the same zone will cause the NAC to turn on for one second. Any smoke detectors that are activated will be reset. Zonal faults (open circuits) will cause the NAC to remain steadily on. Prior to entering Walk Test Mode, check to be certain that all system faults have been cleared. *Note: The trouble relay will be activated while the control panel is in this mode. Placing the control panel into walk test mode will only be possible if the system has no active alarms.*

Pressing the Mode key followed by the 4-digit code **9 2 5 5** [ENTER/STORE] will place the control panel into Walk Test Mode.

☛ **9 2 5 5** spells "WALK" on a Touch-Tone® phone.

Once in Walk Test Mode, the MS-5012 will immediately:

- ✓ Turn on the trouble LED.
- ✓ Activate/energize the trouble relay driver.
- ✓ Turn on the Notification Appliance Circuit output for four seconds for the first alarm event on a zone. Subsequent alarms will sound for one second. Troubles cause the IAC to remain on.
- ✓ Disable the alarm relay.
- ✓ Display all alarm, conditions as they occur.
- ✓ Display ground faults as they occur.
- ✓ Continue to communicate any events not yet acknowledged at the Central Station.

During Walk Test Mode, zonal activity is displayed in real time as it occurs. At the end of Walk Testing the system, the display will show the last event that occurred. To view all events stored during Walk Test, use the up arrow, down arrow and 1st Event keys. The down arrow key moves the Walk Test list to show older - previous events. The up arrow key moves the Walk Test list to show newer - most recent events. Pressing the 1st Event key at any time will cause the display of the first event stored upon initial entry into Walk Test Mode. While in Walk Test Mode, the control panel will store up to 128 events in the Walk Test File for later recall and display.

To return the MS-5012 to normal mode, press the mode key, the numbers **6 6 7 6** and the ENTER/STORE key. Any delay between key entries greater than 10 seconds causes the control panel to remain in Walk Test Mode.

The control panel will automatically revert back to Normal Mode if no system activity has occurred for 60 minutes. This would include pressing any keys or activity on any zone. Exiting Walk Test mode erases the Walk Test file from memory.

5.2 History Mode

All Normal Mode events are stored in a History File list for future recall. Recall is possible via the 4-character display. See the following page for a list and description of each event displayed.

The History File list is a first-in first-out (FIFO). In this manner, only the most recent events may be called up from memory. Old events will be overwritten i.e., “pushed out” of the FIFO.

The number of stored events is 16. The History File is kept in E2 memory. Complete power loss will not erase the list.

Pressing the **MODE** key followed by **4 4 7 8** [ENTER/STORE] places the control panel into History Mode. *This will not occur if there are any active alarm conditions present.* The event displayed, is the most recent event.

← **4 4 7 8** spells "HIST" on a Touch-Tone® phone.

Once in History Mode, the control panel will:

- ✓ Turn on the trouble LED.
- ✓ Energize/activate the trouble relay driver.
- ✓ Disable the Notification Appliance Circuit output.
- ✓ Disable the alarm relay driver.
- ✓ Display all events as they occurred since the last time the History File list was cleared. The most recent event will be displayed first.
- ✓ Ignore all other keys other than those mentioned in this section.
- ✓ Continue to communicate any events not yet acknowledged at the Central Station.

The down arrow key moves the History File to show older-previous events. The up arrow key moves the History file to show newer-most recent events.

Shown below is the list of messages as they will appear on the display:

DISPLAY	EVENT
A 1	Zone 1 Alarm
A 2	Zone 2 Alarm
A 3	Zone 3 Alarm
A 4	Zone 4 Alarm
A 5	Zone 5 Alarm
SUP4	Supervisory Alarm
AC	AC Loss
F 1	Zone 1 Fault
F 2	Zone 2 Fault
F 3	Zone 3 Fault
F 4	Zone 4 Fault
F 5	Zone 5 Fault
bELL	Bell Fault (open or short)
F E	Earth Fault
F A	Annunciator Fault
no 1	Primary Phone Line Fault
no 2	Secondary Phone Line Fault
rES	Reset Switch pressed
PH 1	Primary Number Communication Fault
PH 2	Secondary Number Communication Fault
no b	No Battery
Lo b	Low Battery
S ILE	Silence Switch pressed

To erase the list, press the Silence key twice before exiting the History Mode. A lack of keyboard activity for a period of 10 minutes will cause the control panel to return to normal mode.

5.3 Troubleshoot Mode

In this mode, the voltage of the input zones, AC voltage and battery voltage will be displayed on the 4-character display. The internal voltmeter reads the voltage present at: (1) the zone inputs, (2) the AC power input and (3) the battery terminal leads. A lack of keyboard activity for a period of 20 minutes will cause the control panel to return to normal mode.

To get into the Troubleshoot Mode, press **MODE** **8768** and ENTER/STORE. **8768** spells "TROU" on a Touch-Tone® phone.

Once in this mode, the MS-5012 will:

- ✓ Turn on the trouble LED.
- ✓ Energize/activate the trouble relay driver.
- ✓ Disable the Notification Appliance Circuit output.
- ✓ Disable the alarm relay driver.
- ✓ Continue to communicate any events not yet acknowledged at the Central Station.

Pressing **A** [ENTER/STORE] displays the AC input voltage. Pressing **B** [ENTER STORE] will display the Battery Voltage. Pressing **1** through **5** followed by [ENTER/STORE] displays the zone voltage of the selected zone. The **▲**, **▼** and **1st EVENT** keys do not function in this mode.

Below is listed the “nominal threshold voltages” for each zone:

Zone #	Normal w/E.O.L.	Shorted	Open CKT.
1	5.15V	0.15V	12.9V
2	11.75V	8.7V	12.9V
3	11.75V	8.7V	12.9V
4	5.15V	.15V	12.9V
5	5.15V	.15V	12.9V

Readings will vary proportionately depending upon system load and AC line voltage. Listed below is the AC line voltage range. The AC ON indicator will turn off when the AC line voltage drops below the Low Line “threshold,” and the trouble LED will turn on.

	Low Line	Normal	High Line
AC Line Voltage:	102VAC	115VAC	132VAC

Below is shown the critical battery threshold conditions:

	Normal	Low Battery
Battery Voltage:	13.7V	10.2V

Note: Make measurements after allowing 48 hours to charge a depleted battery. If battery does not show normal reading, replace it.

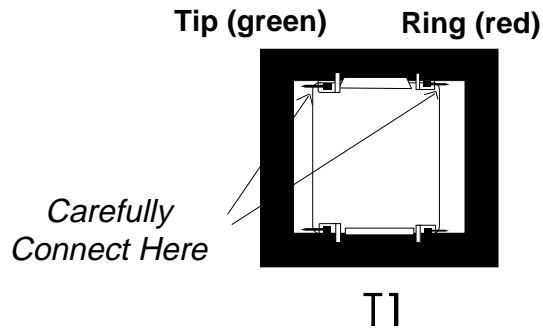
Pressing **C** [ENTER/STORE] causes seizure of the Primary line and the red LED signifying Primary line active turns on. After a delay of three seconds, the control panel goes off hook to acquire a dial tone. Connecting a telephone handset across the telephone transformer allows number dialing. See figure 5.3-1. Pressing **C** [ENTER/STORE] a second time hangs up the call. Repeated entries of **C** places the phone on and off hook.

5.4 Lamp Test

To perform a Lamp Test, press Mode then **5 2 6 7** followed by [ENTER/STORE]. This will test all system LEDs except the Primary Active LED and Secondary Active LED. The LEDs will stay on for five seconds, then the control panel will return to normal mode.

☞ **5 2 6 7** spells "LAMP" on a Touch-Tone® phone.

Figure 5.3-1: Handset Connection



Programming Reference Sheet

--- To enter Programming, press Mode: 7 7 6 4, Enter

₀₀ ₀₁ ₀₂ ₀₃ ₀₄ ₀₅ ₀₆ ₀₇ ₀₈ ₀₉ ₁₀ ₁₁ ₁₂ ₁₃ ₁₄ ₁₅

Addresses 00 to 15 store the Primary Phone Number. Enter "F" to represent the end of the number.

₁₆ Primary Comm Format: Enter 0 - F.

₁₇ ₁₈ ₁₉ ₂₀ Primary Account Code: Valid keys are 0-F.

₂₁ ₂₂ ₂₃ ₂₄ Primary 24-Hour Test Time. Enter military time (i.e. 1400 for 2 PM)

₂₅ Primary 24/12 Hour Test Time. Enter "1" for 12 hour; "0" for 24 hour.

₂₆ ₂₇ ₂₈ ₂₉ ₃₀ ₃₁ ₃₂ ₃₃ ₃₄ ₃₅ ₃₆ ₃₇ ₃₈ ₃₉ ₄₀ ₄₁

Addresses 26-41 store the Secondary Phone Number. Enter "F" to represent the end of the number.

₄₂ Secondary Comm Format: Enter 0-F.

₄₃ ₄₄ ₄₅ ₄₆ Secondary Account Code: Valid keys are 0-F.

₄₇ ₄₈ ₄₉ ₅₀ Secondary 24-Hour Test Time. Enter military time (i.e. 1400 for 2 pm)

₅₁ Secondary 24/12 Hour Test Time. Enter "1" for 12 hour; "0" for 24 hour.

₅₂ Zone 3 Function Select (0 = Waterflow, 1 = N.O. contact devices, 2 = 2-Wire detectors)

₅₃ ₅₄ Waterflow Reporting Delays. Valid keys for field 53 are 0-8, and 0-9 for field 54.

₅₅ AC Loss. Enter number of hours to delay reporting of AC loss. (0=6 hours, 1=7 hours ...6=12 hours)

₅₆ Slave Comm Selection. "0" for panel only; set to "1" for slave operation; "2" for fire control/comm operation

₅₇ Secondary Phone Number. Enter "0" for secondary as a backup; "1" to transmit always.

₅₈ Alarm Verify. Enter "0" for no verification; "1" for verification.

₅₉ Silence Inhibit. Enter "0" to disable silence inhibit; "1" to enable.

₆₀ Auto Silence. Enter "1" to silence notification appliances 10 minutes after activation.

₆₁ Trouble Reminder. Enter "1" to enable reminder beep (alarm-every 15 seconds; trouble-every 2 minutes.)

₆₂ Bell Disable. Enter "1" to disable the panels Notification Appliance Circuit.

₆₃ Annunciator Present. Enter "1" if an annunciator is wired to the system.

₆₄ Zone 4 Function Select. Enter "0" for supervisory service; "1" for N.O. contact devices.

₆₅ Not used.

₆₆ Touchtone Rotary Select. Enter "0" for touchtone dialing, "1" for rotary.

₆₇ Make Break Ratio. Enter "0" for 67/33 make/break ratio; "1" for 62/138.

Programming Reference Sheet

68	69	70	71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90	91	92	93
94	95	96	97	98	99	100	101	102	103	104	105	106
107	108	109	110	111	112	113	114	115	116	117	118	119
120	121	122	123	124	125	126	127	128	129	130	131	132
133	134	135	136	137	138	139	140	141	142	143	144	145
146	147	148	149	150	151	152	153	154	155	156	157	158
159	160	161	162	163	164	165	166	167	168	169	170	171
172	173	174	175	176	177	178	179	180	181	182	183	184
185	186	187	188	189	190	191	192	193	194	195	196	197
198	199	200	201	202	203	204	205	206	207	208	209	210
211	212	213	214	215	216	217	218	219	220	221	222	223
224	225	226	227	228	229	230	231	232	233	234	235	236
237	238	239	240	241	242	243						

Programming Reference Sheet Factory Default Settings

--- To enter Programming, press Mode: 7 7 6 4, Enter.

₀₀ ₀₁ ₀₂ ₀₃ ₀₄ ₀₅ ₀₆ ₀₇ ₀₈ ₀₉ ₁₀ ₁₁ ₁₂ ₁₃ ₁₄ ₁₅

Addresses 00 to 15 store the Primary Phone Number. Enter "F" to represent the end of the number.

₁₆ Primary Comm Format:(4+2 Standard 1800/2300)

₁₇ ₁₈ ₁₉ ₂₀ Primary Account Code.

₂₁ ₂₂ ₂₃ ₂₄ Primary 24-Hour Test Time. 0000=12:00 midnight.

₂₅ Primary 24/12 Hour Test Time. "0" for 24 hour.

₂₆ ₂₇ ₂₈ ₂₉ ₃₀ ₃₁ ₃₂ ₃₃ ₃₄ ₃₅ ₃₆ ₃₇ ₃₈ ₃₉ ₄₀ ₄₁

Addresses 26-41 store the Secondary Phone Number. Enter "F" to represent the end of the number.

₄₂ Secondary Comm Format (4+2 Standard 1800/2300)

₄₃ ₄₄ ₄₅ ₄₆ Secondary Account Code

₄₇ ₄₈ ₄₉ ₅₀ Secondary 24-Hour Test Time

₅₁ Secondary 24/12 Hour Test Time. "0" for 24 hours.

₅₂ Zone 3 Function Select. 0 = Waterflow

₅₃ ₅₄ Waterflow Reporting Delays. No delay.

₅₅ AC Loss. 6 hours.

₅₆ Slave Comm Selection. "0" for panel only operation.

₅₇ Secondary Phone Number. "0" secondary as a backup.

₅₈ Alarm Verify. "0" no verification.

₅₉ Silence Inhibit. "0" disable silence inhibit.

₆₀ Auto Silence. "0" disable auto silence.

₆₁ Trouble Reminder. "0" disable trouble reminder.

₆₂ Bell Disable. "0" Bell enabled.

₆₃ Annunciator Present. "0" no annunciator.

₆₄ Zone 4 Function Select. "0" supervisory service.

₆₅ Not used.

₆₆ Touchtone Rotary Select. "0" touchtone dialing.

₆₇ Make Break Ratio.

Programming Reference Sheet (Factory Default Settings)

1 ₆₈	1 ₆₉	1 ₇₀	2 ₇₁	1 ₇₂	3 ₇₃	8 ₇₄	4 ₇₅	1 ₇₆	5 ₇₇	F ₇₈	6 ₇₉	F ₈₀
1 ₈₁	F ₈₂	2 ₈₃	F ₈₄	3 ₈₅	F ₈₆	4 ₈₇	F ₈₈	5 ₈₉	F ₉₀	7 ₉₁	F ₉₂	8 ₉₃
F ₉₄	9 ₉₅	F ₉₆	A ₉₇	F ₉₈	B ₉₉	F ₁₀₀	C ₁₀₁	F ₁₀₂	D ₁₀₃	F ₁₀₄	E ₁₀₅	F ₁₀₆
C ₁₀₇	F ₁₀₈	F ₁₀₉	E ₁₁₀	1 ₁₁₁	E ₁₁₂	2 ₁₁₃	E ₁₁₄	3 ₁₁₅	E ₁₁₆	4 ₁₁₇	E ₁₁₈	5 ₁₁₉
E ₁₂₀	6 ₁₂₁	E ₁₂₂	1 ₁₂₃	E ₁₂₄	2 ₁₂₅	E ₁₂₆	3 ₁₂₇	E ₁₂₈	4 ₁₂₉	E ₁₃₀	5 ₁₃₁	E ₁₃₂
7 ₁₃₃	E ₁₃₄	8 ₁₃₅	E ₁₃₆	9 ₁₃₇	E ₁₃₈	A ₁₃₉	E ₁₄₀	B ₁₄₁	E ₁₄₂	C ₁₄₃	E ₁₄₄	D ₁₄₅
E ₁₄₆	E ₁₄₇	E ₁₄₈	C ₁₄₉	E ₁₅₀	F ₁₅₁	9 ₁₅₂	9 ₁₅₃	9 ₁₅₄	1 ₁₅₅	1 ₁₅₆	1 ₁₅₇	1 ₁₅₈
2 ₁₅₉	1 ₁₆₀	3 ₁₆₁	8 ₁₆₂	4 ₁₆₃	1 ₁₆₄	5 ₁₆₅	F ₁₆₆	6 ₁₆₇	F ₁₆₈	1 ₁₆₉	F ₁₇₀	2 ₁₇₁
F ₁₇₂	3 ₁₇₃	F ₁₇₄	4 ₁₇₅	F ₁₇₆	5 ₁₇₇	F ₁₇₈	7 ₁₇₉	F ₁₈₀	8 ₁₈₁	F ₁₈₂	9 ₁₈₃	F ₁₈₄
A ₁₈₅	F ₁₈₆	B ₁₈₇	F ₁₈₈	C ₁₈₉	F ₁₉₀	D ₁₉₁	F ₁₉₂	E ₁₉₃	F ₁₉₄	C ₁₉₅	F ₁₉₆	F ₁₉₇
E ₁₉₈	1 ₁₉₉	E ₂₀₀	2 ₂₀₁	E ₂₀₂	3 ₂₀₃	E ₂₀₄	4 ₂₀₅	E ₂₀₆	5 ₂₀₇	E ₂₀₈	6 ₂₀₉	E ₂₁₀
1 ₂₁₁	E ₂₁₂	2 ₂₁₃	E ₂₁₄	3 ₂₁₅	E ₂₁₆	4 ₂₁₇	E ₂₁₈	5 ₂₁₉	E ₂₂₀	7 ₂₂₁	E ₂₂₂	8 ₂₂₃
E ₂₂₄	9 ₂₂₅	E ₂₂₆	A ₂₂₇	E ₂₂₈	B ₂₂₉	E ₂₃₀	C ₂₃₁	E ₂₃₂	D ₂₃₃	E ₂₃₄	E ₂₃₅	E ₂₃₆
C ₂₃₇	E ₂₃₈	F ₂₃₉	9 ₂₄₀	9 ₂₄₁	9 ₂₄₂	1 ₂₄₃						

6.0 Slave Communicator Configuration

The MS-5012 may be used as a slave communicator to a host or "Master" fire alarm control panel (FACP). Figure 6.0-1 shows a typical connection.

All wiring between the Master and the MS-5012 is supervised. 2.2K End-Of-Line resistors should be connected as shown in Figure 6.0-1.

In slave configuration, the five zones become five channels that may be triggered by the relay outputs of any host FACP. Zone 1/Channel 1 is used for general alarm, Zone 2/Channel 2 is used for general trouble and Zone 4/Channel 4 is used for supervisory. Zones/Channels 3 and 5 may be programmed to match the FACP relay function.

The factory settings for Zone 2/Channel 2 activation and restoral are altered as follows: If 2, 3, 4, 5, 6, 7, 8, 9, B or D is entered for address 16 or 42, the report code for Zone 2 Alarm Code (address 69, 157) = F, Zone 2 Restoral Code (address 90, 178) = E. If "A or C" are entered for address 16 or 42, the report code for Zone 2 Alarm Code (addresses 70-71, 158-159) = FF, Zone 2 restoral code (addresses 112-113, 200-201) = EF.

It is important to note that activation of Zone 2 in Slave Communicator Configuration will cause the yellow trouble LED to flash and the trouble sounder to pulse, however, *the red alarm LED will not activate and the notification appliances will not sound.*

Location 56 must be programmed to a '1' to enable the control panel as a slave communicator. When programming the MS-5012 as a slave communicator (address 56=1), first program the communication formats (addresses 16 and 42) followed by the slave communicator selection at address 56. This sequence allows the MS-5012 to automatically program the proper report codes. Do not program location 56 first and then alter the format selections at addresses 16 and 42.

If any of the report codes are to be altered from the factory defaults, follow the steps above and exit program mode. Next reenter program mode and alter any event codes.

After programming is complete, the enter/store key or the up, down arrow keys may be used to view programmed entries. However, do not use the enter key to view location 56 since it will reprogram the factory default event codes.

Be certain to connect the MS-5012 primary AC power to the same branch circuit as the host FACP.

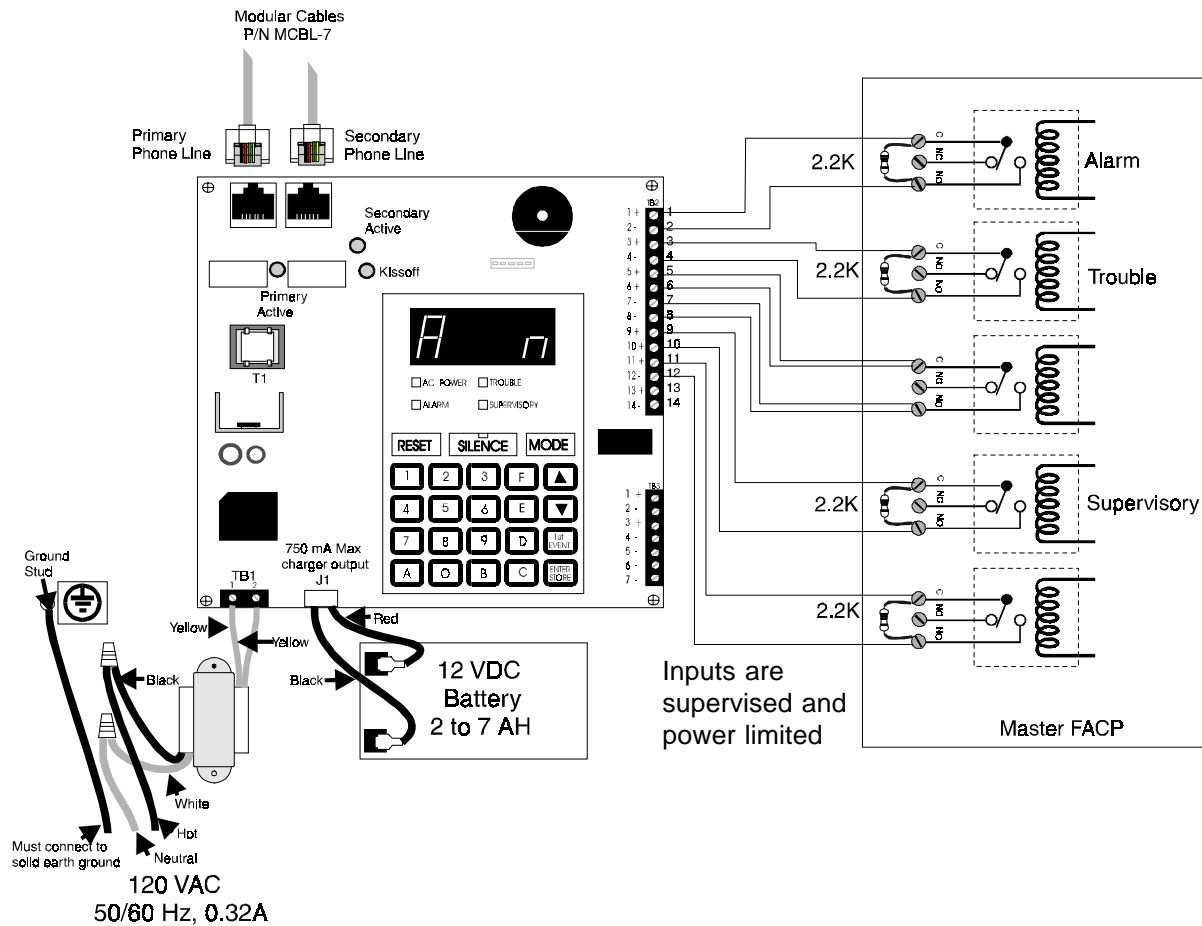
Battery Connection

The MS-5012 contains a battery disconnect relay which has multiple purposes. The primary purpose is to disconnect the battery when the battery voltage is less than 7.0 volts during an AC loss condition. This prevents the MS-5012 from transmitting erroneous data to a Central Station under unsafe operating power. Also, with AC power applied, the disconnect relay allows for battery voltage measurements in the normal and troubleshoot modes.

Due to the presence of the disconnect relay, it is not possible to initially (out of the box) power up an MS-5012 from the battery. AC power must first be applied for 6 seconds. Once AC power is applied, do not connect a low capacity battery (less than 7.0 volts) to the system.

When replacing a bad battery, turn off AC power before connecting the new battery.

6.0-1: Slave Communicator Connections



Relays in the Master FACP activate various input circuits on the MS-5012. Messages (event codes) programmed for a particular input circuit (channel) will be transmitted to the central station upon relay activation.

Appendix A: Power Calculations

Use the Total Standby and Alarm Load Currents calculated in Tables A-1 and A-2 for the following battery calculation.

Standby Load Current (Amps) []	X	Required Standby Time in Hours (24 or 60 Hours) []	=	_____
Alarm Load Current (Amps) []	X	Required Alarm Time in Hours (i.e. 5 min. = 0.084 hours) []	=	_____
Add Standby and Alarm Load for Required Ampere Hour Battery			=	_____
Multiply by the Derating Factor of 1.2			=	_____
Total Ampere Hours (AH) Required			=	_____

Select a battery with a greater amp/hour rating.

- Notes:** * NFPA 72-1993 Central Station, Local and Proprietary Protected Premises systems require 24 hours of standby.
 * NFPA 72-1993 Auxiliary and Remote Station systems require 60 hours of standby.

The MS-5012 provides regulated power for operating the fire alarm control panel, operating external devices, and operating the standby battery. The power for operating external devices is limited. Use Table A-1 (standby or nonalarm) and Table A-2 (alarm) to determine if external loading is within the capabilities of the power supply.

Table A-1: Regulated Load in Standby @12 VDC

Device Type	# of Devices		Current (Amps)	=	Total Current (Amps)	
Main Circuit Board	1	X	0.074	=	0.074	
ADM-12	(1 max.)	X	0.012	=		
RZA-5F	(1 max.)	X	0.012	=		
2-wire Detector Heads	[]	X	[]	=		
4-wire Detector Heads	[]	X	[]	=		
Power Supervision ² Relays	[]	X	0.025	=		
Auxiliary Outputs:		
TB3-4 Alarm	(1 max.)	X	0	=		
TB3-5 Trouble	(1 max.)	X	0.040 ¹	=		
TB3-6 Supervisory	(1 max.)	X	0	=		
TB3-7 Comm. Fail	(1 max.)	X	0	=		
Additional Current Draw from TB-3 (non alarm)				=		
Sum Column for Standby Load					=	Amps

Note:

1. Current draw only if End-of-Line relay is installed between TB3-3 and TB3-5. Current shown is maximum available from TB3 Terminal 5.
2. Use compatible listed power supervision relay only.
3. Refer to Device Compatibility Document for 2-wire smoke detector standby current.

Table A-2: Regulated Load in Alarm @12 VDC

Device Type	# of Devices		Current (Amps)	=	Total Current (Amps)	
Main Circuit Board	1	X	0.170	=	0.170	
ADM-12	(1 max.)	X	0.032 ¹	=		
RZA-5F	(1 max.)	X	0.030 ¹	=		
4-wire Smoke Detector	[]	X	[]	=		
Power Supervision ² Relay	[]	X	0.025	=		
Auxiliary Outputs:		
TB3-4 Alarm	(1 max.)	X	0.040	=		
TB3-5 Trouble	(1 max.)	X	0.040	=		
TB3-6 Supervisory	(1 max.)	X	0	=		
TB3-7 Comm. Fail	(1 max.)	X	0	=		
Notification Appliances	[]	X	_____	=		
Notification Appliances	[]	X	_____	=		
Additional Current Draw from TB-3 (alarm current)				=		
Sum Column for Alarm Load					=	Amps

Note:

1. Current shown is with all LEDs illuminated.
2. Use compatible listed power supervision relay only.

Index

A

ADM-12 Annunciator Driver Module 10, 33, 34

C

Circuits 8, 11

Clock 45

D

Digital Communicator 9, 20, 31

Displays 8, 15, 35

F

Factory Default Settings 54, 55

Features 7

H

History Mode 48

I

Initiating Device Circuits 27

K

Kissoff 24

L

Lamp Test 51

M

Messages 49

Mounting Options 25

O

Optional Boards 10

P

Power Calculations 58

Primary Phone number 36

Programming Mode 35

R

Relays 29

Remote Annunciator 10, 33, 34

S

Secondary Phone Number 40, 43

Slave Communicator Configuration 56

Switches 8, 14, 36

1st Event 15

Enter/Store 15

Mode Switch 15

Silence Switch 15

T

Troubleshoot Mode 50

W

Walk Test Mode 47

Wiring Jacks 31

Limited Warranty

Fire-Lite® warrants its products to be free from defects in materials and workmanship for eighteen (18) months from the date of manufacture, under normal use and service. Products are date stamped at time of manufacture. The sole and exclusive obligation of **Fire-Lite®** is to repair or replace, at its option, free of charge for parts and labor, any part which is defective in materials or workmanship under normal use and service. For products not under **Fire-Lite®** manufacturing date-stamp control, the warranty is eighteen (18) months from date of original purchase by **Fire-Lite®**'s distributor unless the installation instructions or catalog sets forth a shorter period, in which case the shorter period shall apply. This warranty is void if the product is altered, repaired or serviced by anyone other than **Fire-Lite®** or its authorized distributors or if there is a failure to maintain the products and systems in which they operate in a proper and workable manner. In case of defect, secure a Return Material Authorization form from our customer service department. Return product, transportation prepaid, to **Fire-Lite®**, 12 Clintonville Road, Northford, Connecticut 06472-1653.

This writing constitutes the only warranty made by **Fire-Lite®** with respect to its products. **Fire-Lite®** does not represent that its products will prevent any loss by fire or otherwise, or that its products will in all cases provide the protection for which they are installed or intended. Buyer acknowledges that **Fire-Lite®** is not an insurer and assumes no risk for loss or damages or the cost of any inconvenience, transportation, damage, misuse, abuse, accident or similar incident.

Fire-Lite® GIVES NO WARRANTY, EXPRESSED OR IMPLIED, OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR OTHERWISE WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. UNDER NO CIRCUMSTANCES SHALL **Fire-Lite®** BE LIABLE FOR ANY LOSS OF OR DAMAGE TO PROPERTY, DIRECT, INCIDENTAL OR CONSEQUENTIAL, ARISING OUT OF THE USE OF, OR INABILITY TO USE **Fire-Lite®** PRODUCTS. FURTHERMORE, **Fire-Lite®** SHALL NOT BE LIABLE FOR ANY PERSONAL INJURY OR DEATH WHICH MAY ARISE IN THE COURSE OF, OR AS A RESULT OF, PERSONAL, COMMERCIAL OR INDUSTRIAL USE OF ITS PRODUCTS.

This warranty replaces all previous warranties and is the only warranty made by **Fire-Lite®**. No increase or alteration, written or verbal, of the obligation of this warranty is authorized.

"**Fire-Lite**" is a registered trademark.



Fire-Lite® Alarms
INCORPORATED

12 Clintonville Road, Northford, CT 06472
Phone: (203) 484-7161
FAX: (203) 484-7118