Unimode 400 Multi-Net

Analog Fire Panel

Operations Manual

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 present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la classe A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

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5. Voice Alarm Systems

1. Introduction

Overview

The Unimode 400 is a modular, intelligent Fire Alarm Control Panel (FACP) with an extensive list of powerful features. The CPU module, power supply module, and cabinet combine to create a complete fire control system for most applications. Optional modules mount to the chassis to provide additional output circuits.

Operating Features

- Alarm Verification selection per point, with tally.

- Positive Alarm Sequence (PAS) and Presignal per NFPA 72 1993.

- Silence Inhibit timer and Auto Silence timer.

- March time/temporal code for Notification Appliance Circuits (NACs).

- Zone coding for NACs if using an optional ADT-UZC-256.

- Alarm Silence/System Reset/Alarm Activate functions through M500M monitor modules.

- Automatic time-of-day and day-of-week control functions, with holiday option.

- User-defined password and key-protected nonvolatile memory.

- AWACS (Advanced Warning Addressable Combustion Sensing) with nine field-adjustable Pre-Alarm levels with programmable Control-by-Event (CBE)

- Operate automatic smoke or heat detector sounder base on action Pre-Alarm level, with general evacuation on alarm level.

- Security alarm point option with separate audible signal code.

- Centralized voice paging and audible alarm signaling options.

- Programmable Control-by-Event control of outputs from individual alarm or supervisory addressable devices.

Components

Figure 1 shows components that affect operation of the control panel:
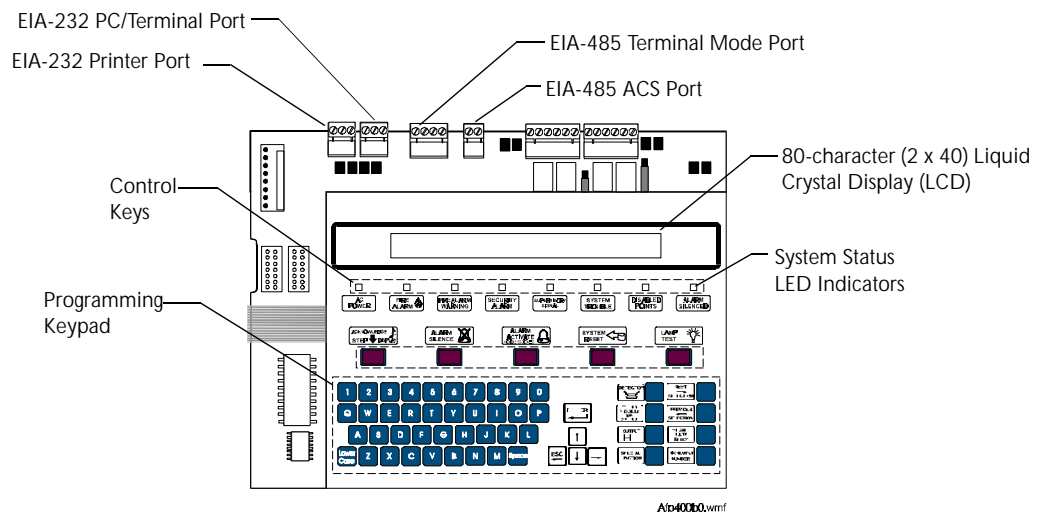
Figure 1 Control Panel Components

Notes

2. Using the Control Panel

Overview

Table 1 lists the controls and indicators and where to find information on their use:

Controls/Indicators	Covered in...
Eight System Status Indicator LEDs	System Status Indicator LEDs on page 3.
Five control keys	Control Keys on page 4.
A panel sounder with a piezo that provides unique sounds for alarm, trouble and supervisory/security conditions	Section 3. Operating Modes on page 5.

Table 1 Control and Indicators

System Status Indicator LEDs

The control panel contains eight LED indicators with labels as shown in Figure 2:

Figure 2 System Status Indicator LEDs

Table 2 contains descriptions of the System Status Indicator LEDs:

Indicator	Color	When Active...	To Turn Off...
AC Power	Green	Lights when the proper primary AC power is applied.	Turn off AC power.
Fire Alarm	Red	Flashes when a non-acknowledged Fire Alarm exists. Lights steadily after you acknowledge the alarm.	Clear the alarm condition and reset the system.
Pre-Alarm Warning	Yellow	Flashes when a non-acknowledged Pre-Alarm exists. Lights steadily after you acknowledge the Pre-Alarm.	Clear the alarm condition. (Action Pre-Alarm requires a system reset.)
Security Alarm	Blue	Flashes when a non-acknowledged Security Alarm exists. Lights steadily after you acknowledge the alarm.	Clear the Security Alarm condition and reset the system.
Supervisory Signal	Yellow	Flashes when a non-acknowledged Supervisory Alarm exists. Lights steadily after you acknowledge the alarm.	Clear the signal. (Tamper inputs require a system reset.)
System Trouble	Yellow	Flashes when a non-acknowledged System Trouble exists. Lights steadily after you acknowledge the trouble.	Clear the trouble condition.
Disabled Points	Yellow	Lights when one or more system devices are disabled.	Enable or remove the disabled device.
Alarm Silenced	Yellow	Lights after an alarm condition occurs and after pressing <Alarm Silence>.	Press <Alarm Activate> or <System Reset>.

Table 2 Descriptions of System Status Indicator LEDs

Control Keys

The control panel provides five control keys, Acknowledge/Step, Alarm Silence, Alarm Activate, System Reset, and Lamp Test.
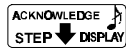
Acknowledge Step Use the <Acknowledge/Step> key to respond to new alarm or trouble signals. Pressing <Acknowledge/Step> causes the control panel to do the following:

- silence the control panel sounder;

- change all indicators from flashing to steady;

- send an Acknowledge message to the history file, an optional printer, and an optional ADT-LCD-80; and

- send a signal to silence the sounder on the ADT-LCD-80 and ACS annunciators.

You can also press the <Acknowledge/Step> key to display multiple alarms or troubles. If more than one alarm or trouble exists, the control panel displays the next alarm or trouble for 3 seconds (or until you press <Acknowledge/Step>), then displays the next alarm or trouble.

Alarm Silence   Use the <Alarm Silence> key to silence the control panel sounder as well as sounders connected to Notification Appliance Circuits. Pressing <Alarm Silence> causes the control panel to do the following:

- turn off the control panel sounder;

- turn off all silenceable output circuits;

- light the Alarm Silenced LED; and

- send an Alarm Silenced message to the history file, optional printer, and an optional ADT-LCD-80.

Alarm Activate   Use the <Alarm Activate> key to test notification appliances. Press and hold the Alarm Activate switch for 2 seconds (to prevent accidental activation). The control panel does the following:

- turns on all silenceable NACs;

- turns off the Alarm Silenced LED; and

- sends a Manual Evacuate message to the history file, optional printer, and an optional ADT-LCD-80.
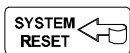
System Reset Use the <System Reset> key to reset the control panel. Press <System Reset> and the control panel does the following:

- turns off all alarm-activated M500CH modules and NAC circuits;

- breaks resettable power to four-wire detectors; and

- sends an All Systems Normal message to the history file, optional printer, and an optional ADT-LCD-80.

Any alarm or trouble that exists after a System Reset reactivates NACs, control outputs, and panel audio and visual indicators.
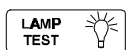
Lamp Test Use the <Lamp Test> key to test the control panel LEDs and sounder. Press and hold <Lamp Test> and the control panel does the following:

- lights all control panel LEDs;

- turns on the control panel sounder; and

- lights all segments of the LCD display.

3. Operating Modes

Normal Operation

The system operates in Normal mode when no alarms or troubles exist. In Normal mode, the control panel displays a system message as follows:

```
┌─────────────────────────────────────────┐
│ YOUR CUSTOM FORTY CHARACTER MESSAGE HERE │
│ ALL SYSTEMS NORMAL 11:30A  TUE  02/11/97 │
└─────────────────────────────────────────┘
```

Figure 3 All Systems Normal Message

In Normal mode, the control panel does the following functions at regular intervals:

- Polls all Signaling Line Circuit (SLC) devices and the four NACs to check for valid replies, alarms, troubles, circuit integrity, and so on.

- Checks power supply troubles and batteries every 10 seconds.

- Sends a supervisory query on the ADT-LCD-80 and verifies proper response.

- Refreshes the LCD and the optional ADT-LCD-80 display and updates time.

- Scans the keypad for a System Reset or an Enter key press.

- Performs a detector automatic test operation.

- Tests system memory.

Trouble Operation

The system goes into Trouble mode when the control panel detects an electrical or mechanical fault. With no alarms, a control panel in Trouble mode does the following:

- Produces a pulsed audible tone;

- The System Trouble LED flashes;

- The trouble relay activates (MPS-400, TB5); and

- Sends a message to the LCD display, an optional ADT-LCD-80, an optional printer, and the history file.

Figure 4 shows a typical Trouble message:
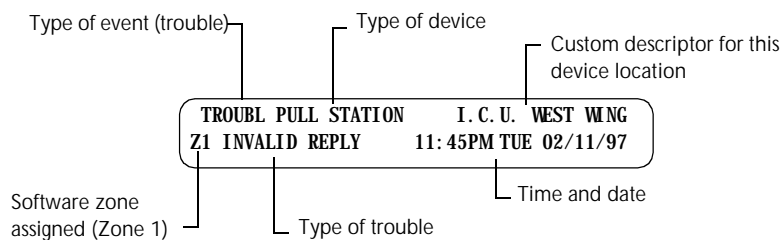
Figure 4 Trouble Message

Note: M500CH modules report both open and short circuit messages.

1. Press <Acknowledge/Step> to silence the panel sounder and switch the System Trouble LED from flashing to steady—regardless of the number of troubles, alarms, and supervisory signals.

2. Pressing <Acknowledge/Step> while at least one new alarm or trouble exists, causes the control panel to send an Acknowledge message to the history file and an optional printer.

If the trouble clears (before or after pressing <Acknowledge/Step>), the control panel sends a Clear Trouble message to the printer.   Figure 5 shows a sample Trouble Message:

```
TROUBL CONTROL        MODULE ADDRESS  21 Z00 OPEN CIRCUIT  08:10A 08/20/95 M21
TROUBL CONTROL        MODULE ADDRESS  22 Z00 OPEN CIRCUIT  08:12A 08/20/95 M22
```

Figure 5 Sample Trouble Message

If all troubles clear and no supervisory or fire conditions exist, the control panel does the following:

• Returns to Normal mode;

• Sends an "All Systems Normal" message to the LCD display, the history file, an optional ADT-LCD-80, an optional printer; and

• Restores troubles automatically even if troubles are not acknowledged.

Pressing <Alarm Silence> when only troubles exist, gives the same result as pressing <Acknowledge/Step>. The Alarm Silenced LED does not light unless an alarm exists in the system.

If multiple trouble conditions exist in the system, the LCD and optional ADT-LCD-80 displays automatically step through each trouble event every 3 seconds in the following order:

1. Alarms, in order of address;

2. Supervisory, in order of address; or

3. Troubles, in order of address.

Press <Acknowledge/Step> and the display stops on the current trouble event for 1 minute. Press <Acknowledge/Step> to continue.

Fire Alarm

The system goes into Fire Alarm mode when the control panel detects a fire alarm. During Fire Alarm mode, the control panel does the following:

• Produces a steady audible tone;

• Activates the System Alarm relay (MPS-400, TB3) and flashes the System Alarm LED;

• Displays Alarm in the status banner on the LCD display;

• Latches alarms so they cannot clear until the alarm initiating device returns to its normal condition and the operator resets the control panel;

• Initiates any Control-by-Event actions;

• Starts timers (such as Silence Inhibit, Auto Silence); and

• Activates the general alarm zone (Z00).

```
                                     ┌─ Status banner ALARM

          ┌─────────────────────────────────────────┐
          │ ALARM PULL STATION  I.C.U. WEST WING     │
          │ VISITORS LOUNGE         11:55PM TUE 02/11/97 │
          └─────────────────────────────────────────┘
```
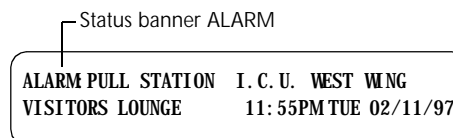
Figure 6 Fire Alarm Display

Supervisory Signal

Note: You can program Supervisory signals as Tracking or Latching.

Supervisory signals cause the control panel to do the following:

- Produce a warbling audible tone;

- Turn on the Supervisory relay (MPS-400, TB4) and flash the Supervisory LED;

- Display "Active" in the status banner on the control panel; and

- Turn off the panel sounder for all Silenced alarms.

Status banner ACTIVE

```
ACTIVE TAMPER       I.C.U. WEST WING
VISITORS LOUNGE        11:55PM TUE 02/11/97
```
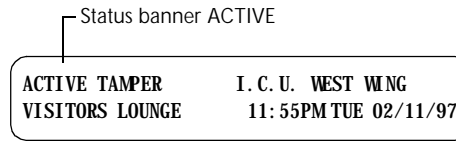
Figure 7 Typical Supervisory Signal Display

Non-Alarm Point Operation

Non-Alarm points are M500M addressable modules that activate Control-by-Event. These points do not activate the System Alarm LED or the panel sounder. Non-Alarm points use three type codes: Non-Fire, Hazard Alert, and Fire Control.

Type Code	Does this...	Used for...
Non-fire (Tracking)	Activates Control-by-Event only.	Energy management or other non-fire situations.
Hazard Alert (Latched)	Sends a message to the LCD display, history file, printer, and ADT-LCD-80 (status – Active), and overrides code selection for NACs, regardless of the zone F8 coding selection.	Monitoring critical processes or other hazardous situations, such as a tornado.
Fire Control (Tracking)	Sends messages to the LCD, history file, printer and ADT-LCD-80.	Air handler shutdown, intended to override automatic fire functions.

Table 3 Non-Alarm Points

Trouble Monitor Point Operation

Trouble Monitor-type M500M modules monitor remote power supplies or other external equipment. These types of M500M modules operate like troubles—but with the following differences:

- The LCD display status banner displays "Active";

- The type code is "Trouble Mon";

- The modules latch—until the troubles are returned to normal condition and an operator resets the control panel; and

- M500M modules can have Control-by-Event.

Notification Appliance Circuit (NAC) Operation

The four NACs (TB7-TB10 on the MPS-400) have Control-by-Event and trouble functions like M500CH addressable modules on the SLC loop. NAC circuits differ from M500CH modules in the following ways:

- Addresses (last three characters in LCD field) are B01, B02, B03, or B04;

- The default type code field is "Bell Circuit"; and

- Control panel NACs, except those controlled with M500CH modules, can be used for coded functions (March Time, California Code, Temporal, and Two-stage).

Control-By-Event Operation

Note: Zones F0-F9 are reserved for special functions such as cross-zoning (refer to the Unimode 400 Programming Manual).

Control-by-event (CBE) control is done through 99 software zones. Each input point (detector, M500M) and output point (M500CH, NAC) can be programmed to list up to five software zones. Non-Alarm or Supervisory points do not activate software zone Z00 (general alarm). You can list zone Z00 for output points, but you do not need to list Z00 for input points.

Input and output devices with listed software zones work as follows:

- Inputs – When an input device (detector or M500M) activates, so do all software zones listed to the input device.

- Outputs – When a software zone activates, the output device turns on.

CBE Example Detector D102 lists zone Z05. B01 lists zone Z05 and zone Z07.

1. Detector D102 activates.

2. Zone Z05 activates.

3. B01 activates.

Releasing Functions

Note: Refer to Appendix A for more information about releasing functions.

Overview Zones R0-R9 are reserved for releasing zones—providing up to ten independent releasing operations. Each releasing zone includes the following options:

Option	Description
Cross-zoning	Select one of three types of cross-zoning. Refer to Table 5.
Delay Timer	Select a 0–60 second delay before activating a zone.
Abort	An abort switch-type code used to abort activation of a zone.
Manual Release	Allows immediate zone activation by overriding the abort function, cross-zone function, and delay timer.
Man. Rel. Delay	Same as Manual Release, except releasing occurs 10 seconds after "Man. Rel. Delay" is activated.
Soak Timer	Automatically shuts off the releasing device. Select 0001-9999 seconds for a Soak Timer or 0000 seconds for no Soak Timer.
Second Shot	Reactivates release output after the Soak Timer times out.

Table 4 Cross Zoning Options

Using Cross Zoning Options Cross Zoning lets you program the control panel to activate a releasing zone after two initiating devices are tripped. (If not using Cross Zoning, set CROSS= to N.) Table 5 contains a summary of the types of cross zoning and the conditions for activating a releasing zone.

Type	Activates when...
Y	Two or more detectors, all mapped to one of the ten releasing zones (R0-R9), are tripped.
Z	Two or more detectors, mapped to two different software zones and one of the ten releasing zones (R0-R9), are tripped.
H	At least one smoke detector and at least one heat detector, all mapped to one of the ten releasing zones (R0-R9), are tripped.

Table 5 Cross Zoning Types

Note: Only the first non-special zone listed in the zone map is used to determine Cross=Z.

Cross Zoning Example Table 6 lists examples of devices mapped to releasing zones (ZR1 stands for Releasing Zone 1).

Device Address	Device Type	Zone Mapping
D101	Detector Smoke	ZR1 Z01
D102	Detector Smoke	ZR1 Z01
D103	Detector Smoke	ZR1 Z02
D104	Detector Heat	ZR1 Z02
B01	Output Circuit (Rel Ckt)	ZR1

Table 6 Devices Mapped to Releasing Zones

The following explanations apply to the examples listed in Table 6:

- **Cross=N** An alarm from any detector activates the releasing circuit.

- **Cross=Y** An alarm from any two detectors activates the releasing circuit.

- **Cross=Z** Release requires the activation of two detectors mapped to different zones: D101 and D102 cannot activate the releasing circuit because both detectors are mapped to Z01; D101 and D103 can activate the releasing circuit because they are mapped to different zones.

- **Cross=H** Release requires activation of heat detector D104 and one smoke detector (D101, D102, or D103).

Intelligent Detector Functions

Table 7 contains descriptions for intelligent detector functions used with the control panel.

Function	Description
Analog Display	The control panel reads and displays analog information from the 198 analog detectors. The display shows the percent of the alarm threshold for each detector.
Sensitivity Adjust	Nine selections for manually setting intelligent detector alarm levels within the UL range. *If using Ionization detectors in duct applications, set Sensitivity Adjust to Level 1.*
Day/Night Sensitivity Operation	You can program the system to automatically force smoke detectors to minimum sensitivity during the day. Refer to "Time Control Zones" on page 19.
Maintenance Alert	When compensation reaches the limit of the amount of drift compensation that can be safely applied, the control panel reports a special trouble condition, per national fire code standards. This condition also activates if the detector remains at very high or very low measured air levels for an extended time.
Automatic Test Operation	The control panel performs an automatic test of each detector every 256 minutes. Failure to meet the test limits causes an AUTO TEST Fail trouble.
Type Code Supervision	The control panel monitors hardware device type codes (500 Series detectors, 200 Series detectors, 3251 detectors, M500M, and M500CH) for each installed device at regular intervals (an interval can take up to 30 minutes for full capacity system). If a mismatch of type compared to the program occurs, the control panel generates a point trouble labelled Invalid Type.
LED Control Operation	A global program selection to prevent detector LEDs from blinking during normal operation. A typical application is a sleeping area where a blinking light can distract people. As a standard function, the control panel allows all LEDs to turn on in alarm.
Alarm Verification and Counter Operation	The control panel performs alarm verification on programmed 500 Series, 200 Series, and 3251 intelligent smoke detectors. The verification time is a global program selection of 0–30 seconds. Each detector includes a verification counter, which displays the number of times that a detector entered verification but did not time-out to alarm. The counter increments to 99 and holds.

Table 7 Intelligent Detector Functions

Pre-Alarm Operation (AWACS)

If an 1251/2251 or 1551/2551 detector exceeds the programmed Pre-Alarm level, a Pre-Alarm condition occurs: the panel sounder and zone F9 activate; and the Pre-Alarm LED lights. Figure 8 shows a sample Pre-Alarm message—sent to the LCD display, optional ADT-LCD-80, optional printer, and history file—for a control panel programmed for an Alert Pre-Alarm.

```
PREALARM SMOKE (PHOTO) I.C.U WEST WING
ALERT 105%/5              12:01A 02/01/97 D101
```

Shows the detector programmed for ALERT Pre-Alarm level.

Detector programmed for a Pre-Alarm level of 5.

Shows the detector has reached 105% of the programmed Pre-Alarm level. The 105% is a real-time display and tracks smoke levels.
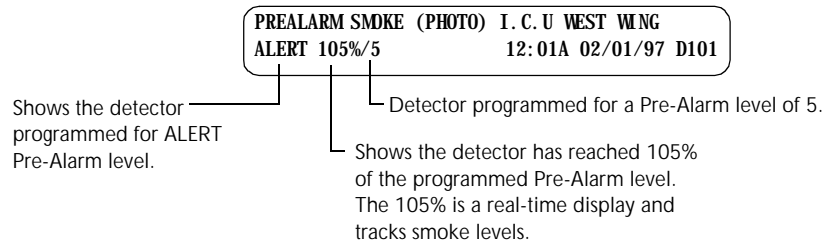
Figure 8 Alert Pre-Alarm Message

Note: ALERT Pre-Alarms automatically restore.

If programming a control panel for an ACTION Pre-Alarm, the display remains the same, but the word "Action" replaces "Alert". The control panel latches for ACTION Pre-Alarms and applies the programmed control functions.

Time Functions

Overview

The control panel includes a real-time clock that provides time-of-day, date, and day-of-week. The clock includes a lithium battery backup. Time normally displays in a 12-hour time format with month/day/year. Table 8 contains descriptions and typical uses for time functions.

Time Function	Description	Typical Uses
Time Control Command	Zones F5 and F6 are reserved for control-by-time special functions, intended for ancillary (non-fire) applications (such as lighting control, setting a thermostat, and so forth).	For example, program zones F5 and F6 to activate at one time of day and deactivate at another time, on certain days of the week. You can turn a non-fire control point on and off, by using zone F5 or F6.
Day/Night Sensitivity Adjust	If a 1551/2551, 1251/2251, or 3251 detector CBE lists zone F5 or F6, the control panel sets the detector sensitivity to the minimum (low) setting when zone F5 or F6 is activated by the programmed date/time in its CBE. When zone F5 or F6 deactivates, the detector sensitivity returns to the programmed setting.	For day/night sensitivity use, consider zones F5 and F6 as Day zones.
Holiday	The control panel reserves zone F7 for setting holiday dates (up to 9 days). When the current date matches any of the nine holiday dates, the control panel activates zone F7.	Other uses for zone F7 include: a special day-of-year control; or an 8th day in programming zones F5 and F6.

Table 8 Control Time Functions

Operating Coding Functions

Zone F8—reserved for NAC coding functions—is only used by panel NAC circuits listing zone F8. You can select one of the four code types listed in Table 9:

Code	Signal
March Time (default)	120 PPM (Pulses Per Minute)
Two-Stage	Alert signal – 20 PPM; General alarm signal: Steady on
California	10 sec. on, 5 sec. off, repeats
Temporal	0.5 on, 0.5 off, 0.5 on, 0.5 off, 0.5 on, 1.5 off, repeats

Table 9 Zone F8 Type Codes

Notes on using coding functions:

M500CH modules Zone F8 does not work if listed in the CBE of M500CH modules.

Two-Stage When an alarm occurs, an NAC programmed for two-stage, and not activated by another zone, pulses at 20 PPM. After 5 minutes, the NAC changes to steady on unless you press <Acknowledge/Step>. Pressing <Alarm Activate> on the control panel changes the NAC pulse to steady. ICM-4/ICE-4 modules do not support Two-Stage and turn on steady.

ICM-4/ICE-4 modules To enable California Code, cut D35 on the ICM-4 modules. If D35 is not cut, ICM-4/ICE-4 modules turn on steady.

Presignal/Positive Alarm Sequence (PAS) Operation

Zone F0 is reserved for Presignal functions. Zone F0 can be used to delay control points until an operator verifies an active control point. If including zone F0 in an M500CH or NAC CBE list, zone F0 overrides all other CBE actions. Detectors and monitor modules must list zone F0 in the CBE to be included in the Presignal/PAS operation.

If...	And/or...	Zone F0
an alarm occurs	and there is no PAS inhibit type M500M	activates
a second alarm activates	or you press the alarm activate key,	goes false
you select PAS	and you do not press ACKNOWLEDGE within 15 seconds	goes false

Table 10 Presignal Operation

At the first alarm, a programmable 0–180 second timer starts. If a Signal Silence occurs, the timer stops. If the delay timer expires, manual activation will activate outputs mapped to zone F0. The System Alarm relay, the 4XTM Polarity Reversal Alarm Output, and the 4XTM Municipal Box Output delay if PAS is selected, but do not delay for Presignal operations

Special System Timers   The control panel can operate with special system timers: Silence Inhibit, Auto Silence, and Alarm Verification. Table 11 contains descriptions of how each timer works.

Timer	Duration	If selected...
Silence Inhibit	0-300 seconds	Starts at first alarm and restarts with each new alarm. Disables the Alarm Silence switch.
Auto Silence	600-900 seconds(0=no timer selected)	Automatically shuts off outputs selected as silenceable after the programmed time elapses. To restart the timer, press <Alarm Activate>.
Alarm Verification	0-30 seconds	The control panel ignores 1551/2551, 1251/ 2251, or 3251 smoke detectors for the Alarm Verification time. If another point alarm occurs during the Alarm Verification time, the control panel dumps the timer and activates the alarm. If a time-out and an alarm exist, the initiating device CBE executes all standard functions. If at time-out an alarm no longer exists in the alarm initiating devices, the control panel increments a verification counter (1-99) for the device and returns to normal operation.

Table 11 Special System Timers

Waterflow Circuits Operation   If an alarm originates from a monitor point with a waterflow type code, the control panel disables the Alarm Silence switch. Refer to the Unimode 400 Installation Manual for information on Waterflow Circuits.

Disable/Enable Operation   Disabled input points do not cause an alarm or any Control-by-Event activity. The control panel does the following:

- holds all disabled output points in the off-state; and

- handles all disabled points as troubles, but displays DISABL in the status banner.

⚠ **Caution:** Disabling a zone disables all input and output devices associated with the zone.

Style 6 Operation   The control panel will detect a trouble in an SLC wired and programmed for Style 6 or Style 7 and drive both ends of the line to maintain communication over the loop. The trouble latches and displays on the panel as a Style 6 trouble type until you press <System Reset>. Style 7 requires use of M500X modules.

Notes

4. Read Status

Overview

Read Status functions do not require a password. The control panel will continue to provide fire protection while in Read Status. You can enter Read Status while in Fire Alarm or Trouble mode. If a new alarm or trouble occurs during these functions, the control panel automatically exits Read Status.

How to Enter Read Status

Press <Enter>. The control panel displays the following screen:

```
1=PROGRAMMING           2=READ STATUS ENTRY
  (ESCAPE TO ABORT)
```
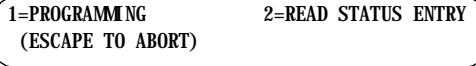
Figure 9 Programming Entry Screen

Note: Refer to the Unimode 400 Programming Manual for information on Alarm and Pre-Alarm sensitivity.

From the Programming Entry Screen, press <2>. The control panel displays the following screen:

```
READ POINT=0 HIST=2 ALARM HIST=4 <ENTER>
PRNT POINT=1 HIST=3 ALARM HIST=5 <ENTER>
```
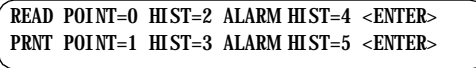
Figure 10 Read Status Screen

Read Status Options

Note: If attempting to read a point that is not installed, the control panel displays NOT INSTALLED.

To do a Read Status, follow the instructions in Table 12:

To...	Do this...
Read Point	1. Press **O C** 2. Press **H J I** or **Z** 3. Enter the device or zone address.
Print Points	Press **1 C**
Read History	Press **2 C**
Print History	Press **3 C**
Read Alarm History	Press **4 C**
Print Alarm History	Press **5 C**

Table 12 Read Status Options

During all Read Status operations (except print operations) the control panel starts a 2-minute timer each time you press a key. If the control panel does not detect a key press for 2 minutes, the panel leaves the current operation and returns to the previous display.

• Press <Esc> to delete the previous entry.

• Press <System Reset> to abort Read Status.

Read Status for Points and Zones

Read Point options let you display point and zone status on the display, but the information is not sent to the serial ports or the history file. To read the status of points and zones, press <0> then <Enter> from the Read Status screen. The control panel displays the Read Point screen (Figure 11):

```
ZONE=Z, AA, E              DETECTORS=*, AAA, E
MODULE=#, AAA, E           OUTPUT CKT=&, A-A, E
```

Figure 11 Read Point Screen

- To read a detector, press **H** then enter the detector address.

- To read a module, press **I** then enter the module address.

- To read an output circuit, press **J** then enter the output circuit address.

Read Status for a Detector, Module, or Output

From the Read Status screen, press **O**; then press <Enter>. You can then read the status of a detector, module, or output. For example, to read the status of a detector at D101, press **H** , enter the address (D101), then press <Enter>. The control panel displays information about the detector as shown in Figure 12:
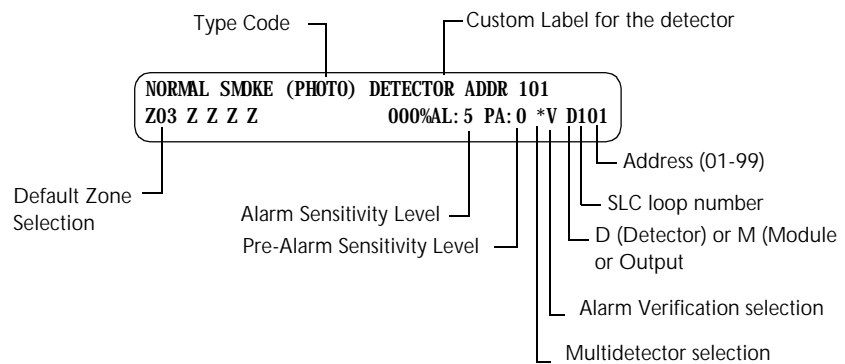
Figure 12 Detector Read Status Sample Screen

Table 13 contains descriptions of the fields shown in Figure 12:

Field	Description
SMOKE (PHOTO)	Type code of the detector.
DETECTOR ADDR 101	Default custom label: 101 (1=loop 1; 01=address 01).
Z03	Default zone selection: Zone 01 (Heat detectors) Zone 02 (Ion detectors) Zone 03 (Photo detectors) Zone 05 (Multi detectors) You can change zones as well as add four more zones for each detector's CBE.
AL:5	The Alarm sensitivity level, with 9 the least sensitive Alarm level and 1 the most sensitive Alarm level.
PA:0	Shows the Pre-Alarm level setting—a number between 0 and **9**—as follows: **0** – no Pre-Alarm. **1** – most sensitive Pre-Alarm level. **9** – least sensitive Pre-Alarm level.
*V	***** The asterisk (*) indicates the cooperative multidetector mode: *A* combines the detector's alarm decision with the next address above. *B* combines the detector's alarm decision with the next address below. *C* combines the detector's alarm decision with the next address above and the next address below. **V** – indicates Alarm Verification (V=on, *=off).

Table 13 Default Read Status Values for a Detector

Read Status for a Zone Address

Note: Press **L** to read a point or zone with next highest address; or press **M** to read a point or zone with next lowest address.

From the Read Point screen, press **Z**, then enter the zone address (01-99) Figure 13 shows the default Read Status display for a zone:

Zone status (ON or OFF)

```
OFF   SOFTWARE ZONE    FLOOR 5    MAIN BLDG
                                         Z04
```

Zone number
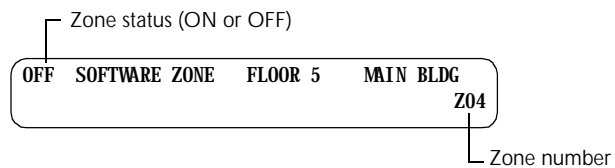
Figure 13 Read Status Display for a Zone Address

Read History   The control panel maintains a history file of the last 800 events, each with a time and date stamp. History events include the following:

- All alarms, troubles and operator actions, such as: Acknowledge, Reset, Signal Silence, Alarm Activate, and Walk Test.

- Programming entries, along with a number (0-9) indicating the programming submenu (for example, 0=Clear).
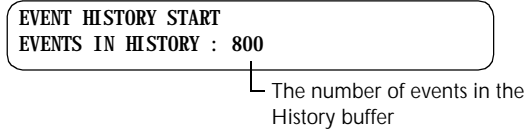
The control panel contains two event buffers: a History buffer that can store up to 800 events (all types); and an Alarm buffer that can store up to 200 alarm events.

View Event History From the Read Status screen, press <2>; then, press <Enter> to display the Event History screen. Figure 14 shows a sample Event History screen:

```
EVENT HISTORY START
EVENTS IN HISTORY : 800
```
                                                    └─ The number of events in the
                                                       History buffer

Figure 14 Event History Screen

View Alarm History   From the Read Status screen, press <4>; then, press <Enter> to display the Event History screen. Figure 15 shows a sample Event History screen:

```
ALARM HISTORY START  (ESCAPE TO ABORT)
ALARMS IN HIST : 200
```
                                            └─ The number of events in the
                                               Alarm buffer
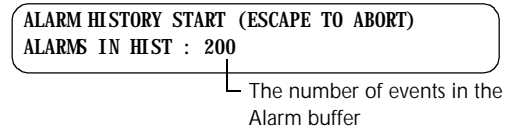
Figure 15 Alarm History Screen

View or Print Hidden History   If you clear History, events remain in a shadow file—known as a Hidden History file. To display or print a Hidden History file, follow the instructions in Table 14. To clear the history file, refer to the instructions in the Unimode 400 Programming Manual.

To...	Press...
Read Hidden Alarm history	6 C
Print Hidden Alarm history	7 C
Read Hidden Normal history	8 C
Print Hidden Normal history	9 C

Table 14 Hidden History Selections

Viewing and printing Hidden History is similar to Read Point. Once you read a Hidden History, you can do the following:

- Press **L** to view the next event in sequence; or

- Press **M** to view the previous event in sequence.

Presignal Delay   Figure 16 shows a typical format for displaying software zone F0 (Presignal Delay):

```
┌─────────────────────────────────────────────────┐
│ OFF PRESIGNAL FUNCT      PRESIGNAL DELAY         │
│ DELAY=180                PAS=NO             F00   │
└─────────────────────────────────────────────────┘
```

Figure 16 Presignal Delay Screen

- DELAY=180 shows the programmed Presignal delay of 180 seconds.

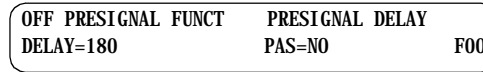- PAS=Yes shows that Positive Alarm Sequence (PAS) operation is selected in the program; PAS=No shows that PAS operation is not selected in the program.

Releasing Zones   Figure 17 shows the typical format for displaying Releasing Zones R0-R9:
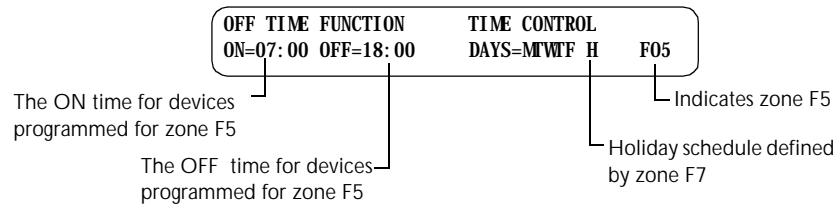
```
┌─────────────────────────────────────────────────┐
│ OFF SOFTWARE ZONE        RELEASE CONTROL         │
│ DELAY=30 ABORT=ULI       CROSS=Y SOAK=000 R0     │
└─────────────────────────────────────────────────┘
```

Figure 17 Releasing Zone Screen

Note: Refer to the Unimode 400 Programming Manual for information on Releasing Zones and the Soak Timer.

- DELAY=30 shows the programmed delay time, in seconds.

- ABORT=ULI shows the abort function (ULI, IRI, NYC, or AHJ, if an abort switch is mapped to this zone.

- CROSS=Y indicates that cross zoning is used (requires two or more detectors programmed to this zone in alarm to activate the zone).

- SOAK specifies the Soak Timer (automatic shut off of device) value (0000-9999 seconds; 0000 = no Soak Timer).

Time Control Zones   Figure 18 shows the typical format for displaying time control zones F5 and F6:

```
┌─────────────────────────────────────────────────┐
│ OFF TIME FUNCTION        TIME CONTROL            │
│ ON=07:00 OFF=18:00       DAYS=MTWTF H    F05     │
└─────────────────────────────────────────────────┘
```

The ON time for devices programmed for zone F5

The OFF time for devices programmed for zone F5

Indicates zone F5

Holiday schedule defined by zone F7

Figure 18 Time Control Screen

Note: Refer to the Unimode 400 Programming Manual for information on detector sensitivity settings.

The Time Control screen provides the following information:

- **ON=7:00 OFF=18:00** shows the programmed times—in 24-hour (military) format—when zone F5 automatically turns on and off each day.

- **DAYS= MTWTF H** shows the programmed days-of-week when the On/Off times are effective. H is a holiday schedule defined by the program for zone F7.

You can also select zone F5 or F6 for detector day/night sensitivity. For example, you can do the following:

1. List zone F5 in the CBE of an initiating device, such as a smoke detector.

2. Set the On time for F5 to 07:00 and the Off time for F5 to 19:00.

3. When zone F5 is active at 07:00, the control panel forces the detector sensitivity of any initiating device listed for zone F5 to the least sensitive setting. When zone F5 goes off at 19:00, the detector sensitivity returns to it's original setting.

Holiday Zones

Figure 19 shows the typical format for displaying software zone F7 (Holiday zone):

A Day/Month program selection for "Holiday" days of the month.

```
OFF HOLIDAY FUNCT      01/01 03/38 05/26
06/03  07/04 09/04     11/23 11/24 12/25
```
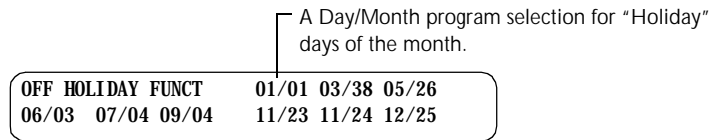
Figure 19 Holiday Zone Screen

NAC Coding Zone

Figure 20 shows the typical format for displaying NAC coding using software zone F8:

```
OFF CODING FUNCTION CODE TYPE
MARCH TIME                          F08
```

Indicates the NAC coding selection Refer to "Operating Coding Functions" on page 12.

Indicates NAC coding zone F8
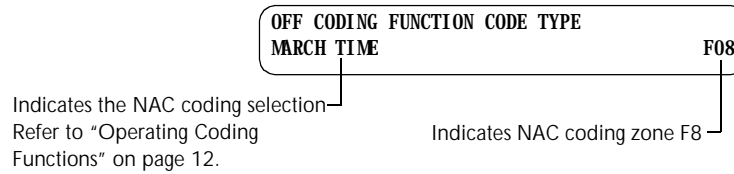
Figure 20 NAC Coding Zone Screen

The NAC coding selection indicates the type of coding applied to each of the four panel Notification Appliance Circuits that list zone F8 in their CBE. Zone F8 does not affect addressable control modules. NAC coding selections include the following:

• March Time (default) – 120 PPM (Pulses Per Minute)

• Alert signal – 20 PPM; General alarm signal: Steady on

• California – 10 sec. on, 5 sec. off, repeats

• Temporal – 0.5 on, 0.5 off, 0.5 on, 0.5 off, 0.5 on, 1.5 off, repeats

Pre-Alarm Zone

Figure 21 shows the typical format for displaying software zone F9 (Pre-Alarm):

```
OFF  PRE-ALARM FUNCT             ALERT
                                  F09
```
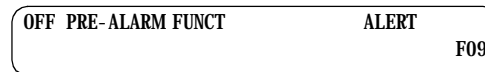
Figure 21 Pre-Alarm Zone Screen

Note: Refer to the Unimode 400 Programming Manual for more information on Pre-Alarm settings.

You can list zone F9 in the CBE of any control point. The Pre-Alarm zone turns on if any detector reaches a Pre-Alarm threshold. Zone F9 indicates the beginning of an alarm, or when the detector needs maintenance.

System Parameters

To read System Parameters, follow these steps.

1. Select Read Point from the Read Status screen to display the Read Point screen (Figure 11):

2. Press <Z>, <S0>, <Enter> to display the System Parameters screen, which typically displays as shown in Figure 22:

```
SIL INH=060 AUTO=600 VERIFY=30 USA TIME
TERM SUPERV=NO LocT BLINK=Y ST=4 ACS=N
```

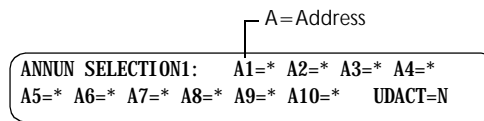**Figure 22 System Parameters Screen 0**

Table 15 contains descriptions of the items shown on System Parameter Screen (Figure 22):

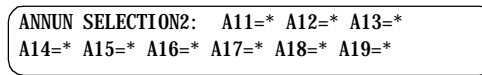| Parameter	Description	Set to...
SIL INH=060	Silence Inhibit timer in seconds. Required in Canada and some areas of the USA.	0 – no timer; or the timer duration in seconds.
AUTO=600	Automatic Silence timer in seconds.	0 – no timer; or the timer duration in seconds.
VERIFY=30	Alarm Verification timer	0 – no timer; or the timer duration in seconds.
USA TIME	Time/date display format	USA TIME or EUR TIME
TERM_SUPERV=YES	Terminal supervision	YES – To supervise the wiring of a terminal mode ADT-LCD-80. NO – No Terminal mode and no ADT-LCD-80 supervision.
LocT	One of three operating modes of a PC or terminal connected to the control panel (through TB2 PC/ Terminal). For a complete list of functions, refer to the Unimode 400 Installation Manual.	LocT – terminal connected to control panel and located in the same room as the control panel. LocM – terminal connected to control panel but requires password for operation. RemT – terminal connected through a modem for Read Status operations only.
BLINK=Y	Blink LEDs on intelligent devices during polling (for certain applications).	Y – blink LED; or N – do not blink LED.
ST=4	NFPA wiring style operation for the SLC loop	4 – Style 4 SLC loop; or 6 – both Style 6 and Style 7 SLC loop.
ACS=N	Use ACS Selection Groups (refer to the Unimode 400 Installation Manual for details).	N – No annunciator selected; or Y – Select and display ACS Selection Groups.

Table 15 System Parameters

Annunciator Display Selections

Press <Z>, <S1>, <Enter> to display Annunciator Selection 1 Screen which typically displays as shown in Figure 23:

```
                               ┌─ A=Address
┌──────────────────────────────────────────────────┐
│ ANNUN SELECTION1:    A1=* A2=* A3=* A4=*           │
│ A5=* A6=* A7=* A8=* A9=* A10=*    UDACT=N          │
└──────────────────────────────────────────────────┘
```

Figure 23 Annunciator Selection 1 Screen

Note: Refer to Appendix A, Annunciators in the Unimode 400 Installation Manual for detailed instructions on using an AMG-1 in ACS mode. For programming instructions, refer to the Unimode 400 Programming Manual.
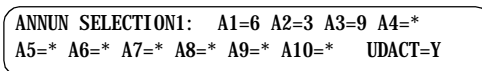
If UDACT=N, the control panel displays the Annunciator Selection 2 Screen, addresses A11–A19, as shown in Figure 24:

```
┌──────────────────────────────────────────────────┐
│ ANNUN SELECTION2:   A11=* A12=* A13=*              │
│ A14=* A15=* A16=* A17=* A18=* A19=*               │
└──────────────────────────────────────────────────┘
```

Figure 24 Annunciator Selection 2 Screen

Use the Annunciator Selection screen to select information that will display on the ACS annunciators. Table 16 contains the ACS display selections.

ACS Selection Group	Annunciator Display
1	CPU status and zones 1-56
2	Zones 57 to 99, NAC circuits 1-4 and 16 special zones
3	Intelligent modules 101 to 164
4	Intelligent modules 201 to 264
5	Intelligent modules 165 to 196 and 265 to 296
6	Detectors 101 to 164 on SLC 1
7	Detectors 201 to 264 on SLC 2
8	Detectors 165 to 196 and 265 to 296
9	NAC/panel output circuit modules (64 points)
* or 0	Annunciator not installed at address

Table 16 ACS Selection Groups

Example of Annunciator Display Selections

Figure 25 shows an example of ACS selections in Annunciator Selection Screen 1:

```
┌──────────────────────────────────────────────────┐
│ ANNUN SELECTION1:   A1=6 A2=3 A3=9 A4=*           │
│ A5=* A6=* A7=* A8=* A9=* A10=*    UDACT=Y          │
└──────────────────────────────────────────────────┘
```

Figure 25 Annunciator Selection Screen 1 Example

Figure 25 shows annunciator selections for addresses A1-A3 (addresses A4-A10 are not selected).

- Annunciators set to Address 1 display the status of detectors 1-64 on SLC 1 (ACS Selection Group 6);

- Annunciators set to Address 2 display the status intelligent modules 101-164 (ACS Selection Group 3); and

- Annunciators set to Address 3 display the status of the panel modules (ACS Selection Group 9).

5. Voice Alarm Systems

Overview

The Voice Alarm System (VAS) provides a voice evacuation subsystem for the Unimode 400 Fire Alarm Control Panel. Operating features include automatic evacuation messages, local and fire fighter control of paging, and two-way communications in an emergency situation. A paging microphone, a master telephone handset and control unit, coupled with a fully electronic emergency message recorder, ACS annunciator for speaker and fire phone control, and easy-to-use operator controls provide the Unimode 400 with a state-of-the-art emergency communications subsystem.

Operating Features

All field circuits—speaker circuits or telephone circuits—are fully supervised and power limited by the control panel. The Fire Fighters Command Center is fully field programmable, and does not require special tools or equipment. Operating features include the following:

- Prerecorded evacuation message

- Page-by-phone from anywhere in a building

- Dual channel option

- Style Y or Z speaker circuit operation

- Audio Amplifiers with switch-mode power supplies

- All Call voice paging switch

- Field configurable and programmable modules

In this Section

This section contains operating instructions for using audio features through the control panel and covers the following topics:

Topic	Refer to page...
Automatic Message Generators (AMG-1, AMG-E)	25
Automatic Tone Generators (ATG-2)	31
Fire Fighter's Telephone (FFT-7, FFT-7S)	34
Audio Amplifiers (AA-30, AA-100, and AA-120)	35
Voice Message Options	39

Table 17 Voice Alarm System Topics

Before you Begin

Before operating the VAS, make sure the system is fully installed according to the instructions in the Unimode 400 Installation manual. For more information about audio system components, configurations, connections, and programming, refer to the following manuals:

For information on the following...	Refer to...
Installing Voice Alarm System components, including speaker/ telephone circuits, amplifiers, and modules.	Unimode 400 Installation Manual
Programming speaker and telephone circuits	Unimode 400 Programming Manual
VROM (Voice ROM) Series Messages	Document 15945

Table 18 Additional Sources of Information

AMG-1/AMG-E Audio Message Generator

AMG-1/AMG-E Overview

An AMG-1/AMG-E produces tones and messages. You can set up an AMG to automatically activate programmed tones or messages through an EIA-485 communications circuit loop or manually select tones and messages. Operating the AMG involves viewing the LEDs for status information and operating the microphone and switches.

Each AMG-1 contains one output channel. To set up a secondary channel for dual channel operation, install an additional AMG-1 or AMG-E. Each AMG can directly drive up to fifty audio amplifiers.

An AMG can store and use up to four digitally-recorded voice messages. Each voice message can be up to 24 seconds long. Table 19 contains details of the two types of digital messages available:

Type of Message	Hardware Requirements	How to Create
Factory	VROM memory chips	Pre-recorded, factory-supplied.
Field Programmable	VRAM-1 memory chips	Record directly into the AMG via the built-in microphone; or record on a standard audio cassette recorder and load into the AMG.

Table 19 Types of AMG-1/AMG-E Messages

AMG-1/AMG-E Operating Features

Figure 26 shows the AMG-1 System Status Indicator LEDs:
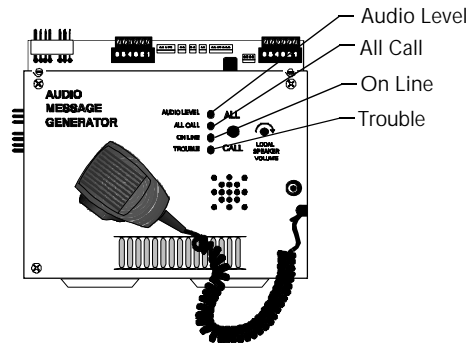
Figure 26 AMG-1 LEDs

Table 20 lists descriptions of the AMG-1 LEDs:

LED	Lights...
AUDIO LEVEL	When the audio level is correct.
ALL CALL	Toggles on or off each time you press the All Call switch.
ON LINE	To show communication between the control panel and the AMG-1 over the EIA-485 communications circuit.
TROUBLE	To show a trouble signal in local audio subsystem equipment (AMG-1, AA-30/AA-100/AA-120, FFT-7/FFT-7S).

Table 20 Description of AMG-1 LEDs

Operating the AMG-1   Figure 27 shows the AMG-1 operating controls:
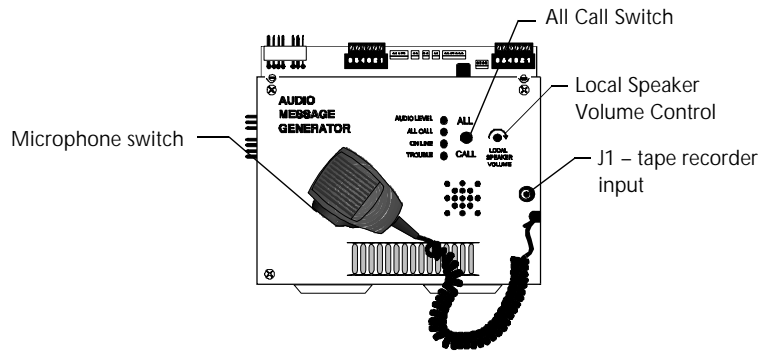
Figure 27 AMG-1 Operating Components

Table 21 contains instructions for operating the AMG-1.

To	Do this...	Comments
Turn on speakers	Toggle the ALL CALL switch until the ALL CALL LED goes on.	The ALL CALL switch activates all speaker circuits (that are not switch inhibited) or a specific programmed group of speakers. For dual-channel applications, press either ALL CALL switch.
Turn off speakers	Toggle the ALL CALL switch until the ALL CALL LED goes off.	If an alarm exists, speaker circuits remain on until you turn them off or reset the system.
Adjust the volume of the AMG-1 speaker	Turn the Local Speaker Volume Control knob.	If necessary, turn the volume down to prevent feedback during paging.
Page through the system	1. Press the ALL CALL switch. 2. Press the switch on the side of microphone. 3. Speak into the microphone.	Talk loudly enough to cause the green Audio Level LED to light.If the AUDIO LEVEL LED remains off for 15 seconds, a system trouble can result.
Select the speaker circuit for paging	Select the control switches on the respective VCM-4 module connected to the AMG-1.	Refer to the Unimode 400 Installation and Programming Manuals for instructions.

Table 21 AMG-1 Operating Instructions

Selecting AMG Group Functions

Selecting Factory-Programmed Messages (VROM) Operation of tones and messages available in a voice alarm application depends on the following:

- The type and number of VROM chips installed; and

- The functional groups selected by AMG-1 DIP switch settings.

Note: If a digitally-stored voice message fails, the AMG-1 automatically switches to the primary evacuation tone, and generates a trouble signal.

Installing one or two optional VROMs lets you select a factory-programmed message by setting rocker switches 6, 7, and 8 on the AMG-1. (Refer to Selecting AMG Tones and Messages.) For example, Figure 28 on page 27 shows the text of factory-recorded VROM-101 message in a male voice:

> "MAY I HAVE YOUR ATTENTION PLEASE. MAY I HAVE YOUR ATTENTION PLEASE. THERE HAS BEEN A FIRE REPORTED ON YOUR FLOOR. THERE HAS BEEN A FIRE REPORTED ON YOUR FLOOR. PLEASE PROCEED TO THE STAIRWAYS AND EXIT THE BUILDING. DO NOT USE THE ELEVATORS."

**Figure 28 Sample VROM-101 Message**

Refer to Document 15945 for a complete description of all VROM Series messages.

Note: A VRAM message can be up to 24 seconds long.

Recording Custom Messages (VRAM option) You can record custom messages through the AMG-1 microphone or load a message recorded on an audio cassette recorder. To do so, you must install at least one VRAM chip in U12 (VRAM-A) or U13 (VRAM-B) on the AMG-1 (Figure 29). For example, if the AMG-1 contains a VRAM-A chip in U12, record a message as follows:

1. If loading a message from a tape recorder, connect the tape recorder to J1 on the AMG-1. (Figure 29)

2. Set the Voice RAM Enable rocker switch 4 (VRAM-A) or 5 (VRAM-B) on the AMG DIP Switch (SW2) to the ON position. The AMG-1 starts to record input to VRAM-A or VRAM-B from a tape recorder or from the AMG-1 microphone.

3. Record a message through the AMG-1 microphone or load a message from a tape recorder connected to J1.

4. When finished recording or loading the message, set the Voice RAM Enable switch to the OFF position.

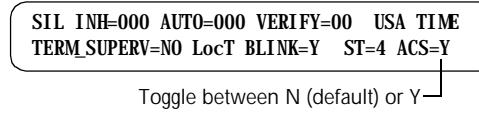Figure 29 shows the location of connectors and chips on the AMG-1:
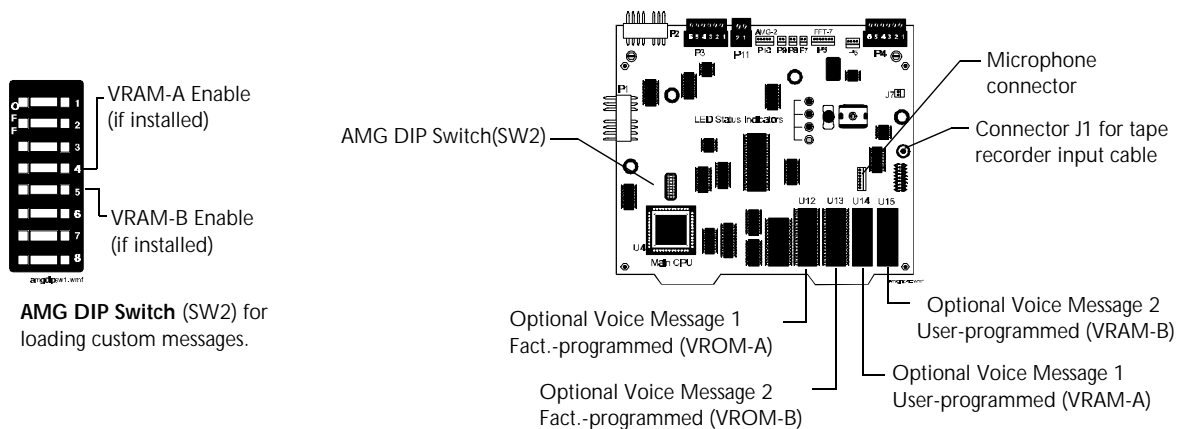
AMG DIP Switch (SW2) for loading custom messages.

Figure 29 AMG-1 PC Board

Selecting AMG Tones and Messages

Overview You can select AMG tones and messages by setting AMG DIP switches. An AMG appears as an annunciator to the system and operates on annunciator address 01. Operating an AMG, therefore, affects control panel programming and annunciator switch settings.

1. Select ACS=Y in the System Function screen (Figure 30):

```
SIL INH=000 AUTO=000 VERIFY=00  USA TIME
TERM SUPERV=NO LocT BLINK=Y   ST=4 ACS=Y
```

Toggle between N (default) or Y ⎯⏋

Figure 30 System Function Screen

2. Enter Annunciator Selection Group 1 for Annunciator Address 1(Figure 31):

Annunciator Address 1 ⎯⏋ ⎡⎯ Annunciator Selection Group 1

```
ANNUN SELECTION1:    A1=1 A2=* A3=* A4=*
A5=* A6=* A7=* A8=* A9=* A10=*    UDACT=Y
```
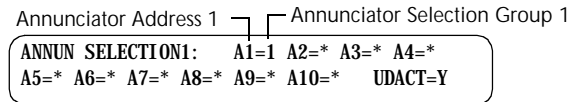
Figure 31 Annunciator Selection Screen

Setting the AMG DIP Switch (SW2) Set the rocker switches on the AMG DIP Switch (SW2) as follows:

• To set a switch on, push the rocker switch to On.

• To set Message Select switches, refer to Table 23 or Table 24. For example, if you set switch 2 to Off, refer to the settings in Table 23 for setting switches 6-8.

Switch Number	On	Off
1 – Low level Audio	Four-wire supervision of Low Level Audio.	Disabled
2 – Tone/Message select	Refer to Table 23 for setting switches 6-8	Refer to Table 24 for setting switches 6-8
3 – Receive Only	Disables the AMG All Call function.	Disabled
4 – Voice RAM Enable A	Record a message in VRAM-A	Disabled
5 – Voice RAM Enable B	Record a message in VRAM-B	Disabled
6 – Message Select	See Table 23 or Table 24 for settings.	
7 – Message Select	See Table 23 or Table 24 for settings.	
8 – Message Select	See Table 23 or Table 24 for settings.	

Table 22 AMG DIP SW2 Rocker Switch Settings

AMG-1 and AMG-E Tone/Message Selections (AMG-1 SW2=Off) Table 23 lists the tone and message selections available when SW2 rocker switch 2 (Tone/Message Switch) is Off.

AMG-1 SW2 Rocker Switches			System Status	NAC 1 (B01) Condition	Audio Tone or Message
S6	**S7**	**S8**			
X	X	X	No Alarm	Off	Standby
Off	Off	Off	No Alarm	On	1000 Hz 0.5 sec on, 0.5 sec off
Off	Off	Off	Alarm	X	Slow whoop
Off	Off	On	No Alarm	On	Horn
Off	Off	On	Alarm	X	120 ppm (March Time)
Off	On	Off	No Alarm	On	Horn
Off	On	Off	Alarm	X	Yelp
Off	On	On	No Alarm	On	Yelp
Off	On	On	Alarm	X	Wail
On	Off	Off	No Alarm	On	3 slow whoops, VRAM-B plays
On	Off	Off	Alarm	X	3 slow whoops, VRAM-A plays
On	Off	O	No Alarm	On	VROM-B message plays VROM-A
On	Off	On	Alarm	X	message plays
On	On	Off	No Alarm	On	20 ppm (Two-Stage) VROM-A and
On	On	Off	Alarm	X	VROM-B play
On	On	On	No Alarm	On	Horn
On	On	On	Alarm	X	NFPA Uniform Code 3
					Temporal pattern fast whoop
X = Indicates that switch or control point can be On or Off.					

Table 23 Setting AMG Tones and Messages (AMG-1 SW2=Off)

1. MPS-400 Notification Appliance Circuit 1 (NAC1) can be manually selected with an ADT-ACM 16AT to produce a desired tone or can be activated through Control-by-Event by a non-alarm input.

2. If selecting a VROM or VRAM, and a VROM or VRAM chip is not installed, a trouble indication appears at the AMG-1 when the message is due to begin and the AMG-1 generates the 1 kHz default tone.

AMG-1 and AMG-E Tone/Message Selections (AMG-1 SW2=On) Table 24 lists
the tone and message selections available when SW2 rocker switch 2 (Tone/Message
Switch) is On.

AMG-1 SW2 Rocker Switches			System Status	NAC 1 (B01) Condition	Audio Tone or Message
S6	S7	S8			
X	X	X	No Alarm	Off	Standby
Off	Off	Off	No Alarm	On	Horn1000 Hz 1/2 sec on, 1/2 sec off for
Off	Off	Off	Alarm	Off	5 min. then slow whoop
Off	Off	On	No Alarm	On	Horn
Off	Off	On	Alarm	Off	20 ppm for 5 min., then 120 ppm
Off	Off	On	Alarm	On	120 ppm (March Time)
Off	On	Off	No Alarm	On	VROM-B
Off	On	Off	Alarm	Off	444, pause, VROM-A
Off	On	Off	Alarm	On	Boston Code
Off	On	On	No Alarm	On	VROM-B
Off	On	On	Alarm	Off	Fast whoop
Off	On	On	Alarm	On	3 fast whoops, pause, VROM-A
On	Off	Off	No Alarm	On	Beep
On	Off	Off	Alarm	Off	Fast whoop
On	Off	Off	Alarm	On	3 fast whoops, pause, VROM-A and VROM-B
On	Off	On	No Alarm	On	Beep
On	Off	On	Alarm	Off	3 slow whoops, pause, VROM-A
On	Off	On	Alarm	On	3 slow whoops, pause, VROM-A and VROM-B
On	On	Off	No Alarm	On	Wail
On	On	Off	Alarm	Off	3 hi-low tones, pause, VROM-A
On	On	Off	Alarm	On	3 hi-low, pause, VROM-A and VROM-B
On	On	On	No Alarm	On	Hi-low
On	On	On	Alarm	Off	20 ppm (Two-Stage)
On	On	On	Alarm	On	3 Slow whoops, pause, VROM-A
X = Indicates that Switch or Control Point can be On or Off.					

Table 24 Setting AMG Tones and Messages (AMG-1 SW2=On)

1. You can manually select MPS-400 Notification Appliance Circuit 1 (NAC1) with an
   ADT-ACM-16AT to produce a desired tone or it can be activated through Control-
   by-Event by a non-alarm input.

2. If selecting a VROM or VRAM that is not installed, a trouble will be generated at
   the AMG-1 and the AMG-1 generates the 1 kHz default tone.

3. Boston Code (order VROM-109, which must be installed in VROM-B position) –
   900 Hz alert tone pulsed to produce one round of code 4 at approximately one
   second intervals, followed by female voice message:

*"Attention please. The signal tone you have just heard indicates a report of an emergency in this
building. If your floor evacuation signal sounds after this message, walk to the nearest stairway and leave
the floor. While the report is being verified, occupants on other floors should await further instructions."*

This message repeats. The evacuation signal is a slow-whoop tone—an ascending
tone that starts at approximately 600 Hz and ends at approximately1100 Hz—with
a duration of approximately 3.5 seconds and an interruption between tones of
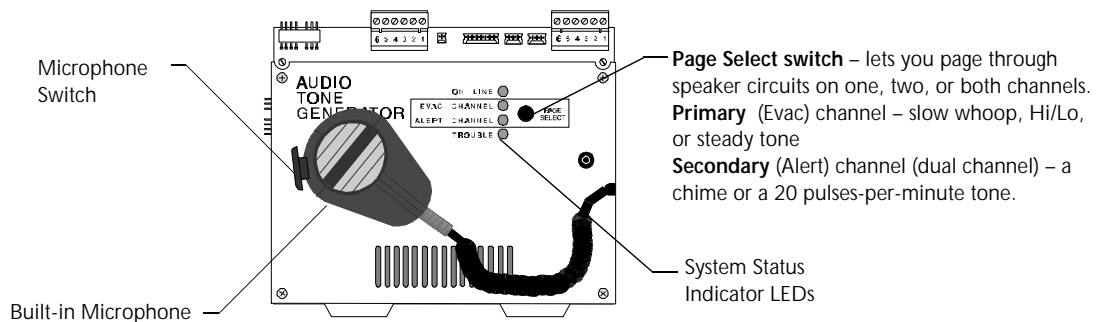approximately 0.5 second.

ATG-2 Audio Tone Generator

ATG-2 Overview   The ATG-2 provides user-selected tones for single or dual channel output. The ATG-2 provides several ways to page.

- Direct paging – The ATG-2 microphone with a button switch lets you page through primary and secondary speaker circuits channels. If used with an optional FFT-7, the ATG-2 also lets you page through the system from telephones installed throughout the installation.

Note: For more information on ATG-2 configuration, refer to the Voice Modules Section of the Unimode 400 Installation Manual.

- Remote paging microphone – You can also set up the ATG-2 to pass-through an audio message (or tone) received from an AMG-1 or another ATG-2. In this configuration, the ATG-2 serves as an alternate (remote) paging location for the AMG-1 or main ATG-2. The ATG-2 provides override paging capabilities from the ATG-2 microphone.   All communications go through NAC 1 using ACS mode (Refer to the Unimode 400 Installation Manual for instructions.) connected to the control panel—unless set up for remote paging microphone operation.

Figure 32 shows the operating features of the ATG-2:

Microphone Switch

Built-in Microphone
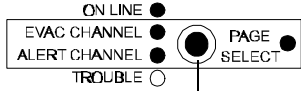
Page Select switch – lets you page through speaker circuits on one, two, or both channels.
Primary (Evac) channel – slow whoop, Hi/Lo, or steady tone
Secondary (Alert) channel (dual channel) – a chime or a 20 pulses-per-minute tone.

System Status Indicator LEDs

Figure 32 Operating Features of the ATG-2

Table 25 contains descriptions of the four System Status Indicator LEDs:

| LED	Color	Lights to show...
ON LINE LED	green	Control panel communication with the ATG-2.
EVAC CHANNEL	green	Paging will take place over the Primary (Evac) channel.
ALERT CHANNEL	green	Paging will take place over the Secondary (Alert) channel.
TROUBLE LED	yellow	A trouble in local audio subsystem equipment (AMG-1, AA-30, FFT-7).

Table 25 ATG-2 LEDs

How to Operate the ATG-2

Table 26 contains instructions for operating the ATG-2.

| To...	Do this...
Select the paging channel	Press the Evac Channel switch to select the Evacuation (Primary) channel; or press the Alert Channel switch to select the Alert (Secondary) channel. Page Select Switch – Push until the LED on the selected channel lights
Verify the active channel	Check the Evac Channel and Alert Channel LEDs.
Page	Press the microphone switch and speak into the microphone (loudly enough to light the green On Line LED).

Table 26 Operating the ATG-2

Selecting Tones for the ATG-2

The ATG-2 DIP switch—S1 located on the ATG-2 board shown in Figure 33—provides rocker switches for selecting output tones and setting operations. When finished setting rocker switches, check the ATG-2 for proper operation. Figure 33 shows the ATG-2 board layout and identifies DIP S1:
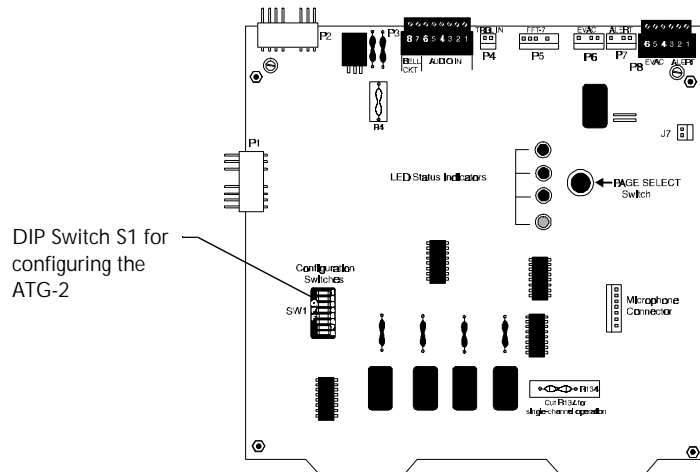
Figure 33 ATG-2 Board Components

Figure 34 shows the functions of the ATG-2 DIP switch pins:
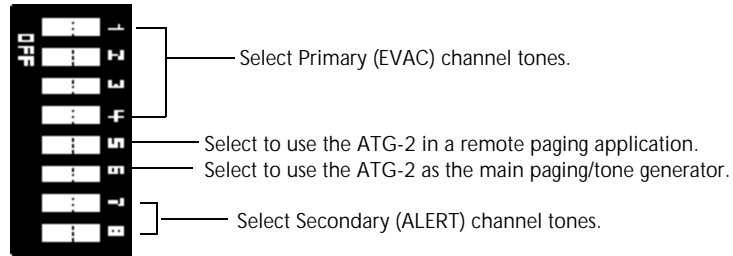
Figure 34 ATG-2 DIP Switch S1

Selecting a Primary (Evac) Channel Tone

Switch S1 rocker switches 1–4 are used to select one of the following tones: slow whoop, Hi/Lo, or steady tone. Select a tone by setting rocker switches as shown in Table 27:

DIP Switch	Whoop	Hi/Lo	Steady
1	Off	On	On
2	On	Off	Off
3	On	On	Off
4	Off	On	Off

Table 27 Evacuation Tone Settings

Selecting a Secondary (Alert) Channel Tone

The ATG-2 can produce a chime or a 20 pulses-per-minute tone on the secondary (Alert) channel. To select tones for the secondary channel, set S1 rocker switches 7 and 8 in one of the combinations shown in Table 28:

DIP Switch	Chime	20 PPM
1	Off	On
2	On	Off

Table 28 Secondary (Alert) Tone Settings

Select Operating Mode

You can set the ATG-2 for one of two modes of operation: 1) remote paging only; or 2) tone generation and paging capability. Set S1 rocker switches 5 and 6 as shown in Table 29. After setting rocker switches, test the ATG-2 for proper operation.

DIP Switch	Remote Paging Only	Paging and Tone Generate
5	On	Off
6	Off	On

**Table 29 Operation Mode Settings**

Fire Fighter's Telephones (FFT-7/FFT-7S)

Overview

A Fire Fighter's Telephone provides the Voice Alarm System with fire-fighter control of paging, and two-way communications in an emergency situation. Connect the FFT-7 to an Audio Message Generator (AMG-1) or Audio Tone Generator (ATG-2). Up to seven telephones can converse at the same time. Fire Fighter's Telephones come in two models:

FFT-7 – provides full capability including paging.

FFT-7S – provides same features as the FFT-7, without paging capabilities.
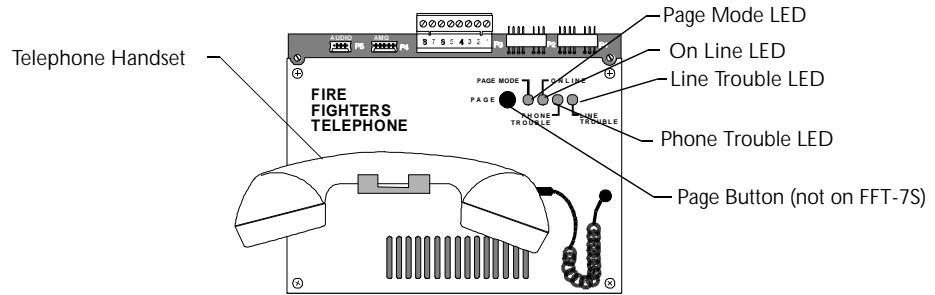
Figure 35 FFT-7 Telephone Operating Components

FFT-7 Operating Components

Table 30 contains descriptions of the FFT-7 LED indicators and Page button:

Component	Function
Page Mode LED	Toggles on or off when you press the Page button.
On Line LED	Lights continuously to indicate the FFT-7 is receiving power.
Page Button	Press the Page button to initiate a page (FFT-7 only).
Line Trouble LED	Lights to indicate a trouble exists on another device with trouble contacts wired to the FFT-7 trouble input connector.
Phone Trouble LED	Lights to indicate a trouble exists on the FFT-7.

Table 30 Description of FFT-7 Operating Components

How to Operate the FFT-7

Note: An FFT-7 will not operate unless:

• power is connected to the FFT-7;

• the AMG-1/FFT-7 control harness is connected between the AMG-1 and the FFT-7; and

• the AMG-1 is set up for EIA-485 communication through the CPU ACS port (TB4).

Refer to the Unimode 400 Installation Manual for instructions on making these connections.

Paging Operation

To page over the FFT-7, follow these instructions:

1. Make sure the On Line green LED is on; then, pick up the telephone handset.

2. Press the Page button (the Page Mode green LED goes on) and speak into the telephone handset.

When finished paging, press the Page button (the Page Mode green LED goes out) and hang up the telephone handset.

Two-Way Conversation

To answer a call with an FFT-7, follow these instructions:

1. When the VCM-4 sounder produces a steady tone and the telephone circuit green LED goes on, pick up the telephone handset and speak into the telephone headset.

2. When finished with the conversation, hang up the telephone handset.

Audio Amplifiers

Overview

Audio Amplifiers provide audio power for the Voice Audio System. The control panel supports three models of audio amplifiers as listed in Table 31:

Amplifier	Audio Power	Speaker Circuits
AA-30 See Figure 36 on page 36	30 watts – compatible with 25 Vrms speakers.	up to 30 watts each.
AA-100 See Figure 37 on page 37	100 watts of 70.7 Vrms audio.	up to 100 watts each.
AA-120 See Figure 37 on page 37	120 watts of 25 Vrms audio.	up to 120 watts each.

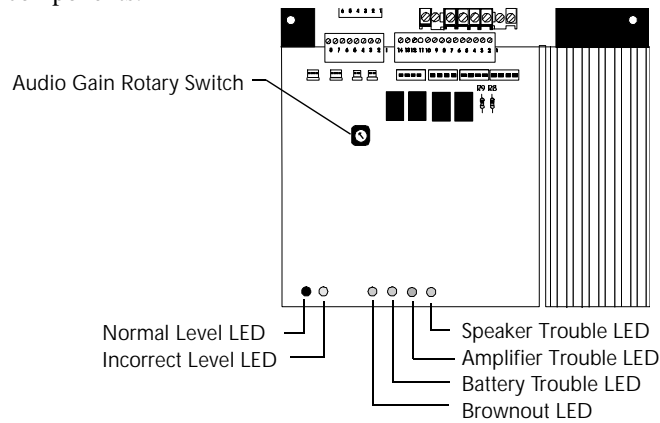**Table 31 Audio Amplifier Models**

Audio Amplifier Features

Audio amplifiers provide the following features:

- **Built-in Supervision** Each audio amplifier contains a set of normally-open trouble contacts that close to light an LED showing the type of trouble. Types of trouble include: brownout, loss of low-level supervision tone at the input, battery failure, audio output wiring failure (if set for four-wire output), and amplifier failure. During total loss of primary AC power, all LEDs extinguish to conserve battery power.

- **Backup** You can set up an audio amplifier as a backup amplifier for multiple amplifiers. If an amplifier fails, the control panel automatically switches to the backup amplifier.

- **Speaker zone selection** Set by control-by-event or set manually using control switches on the VCM-4, DCM-4, or ADT-ACM-16AT modules.

AA-30 Audio Amplifiers

Note: For instructions on setting the Audio Gain Rotary Switch, refer to "Adjusting the Audio Gain Level (AA-30, AA-100/AA-120)" on page 38.

Figure 36 shows the layout of the AA-30 circuit board and identifies AA-30 components:

Audio Gain Rotary Switch

Normal Level LED
Incorrect Level LED

Speaker Trouble LED
Amplifier Trouble LED
Battery Trouble LED
Brownout LED

Figure 36   AA-30 Circuit Board

Table 32 lists the conditions that cause each AA-30 System Status Indicator LED to light:

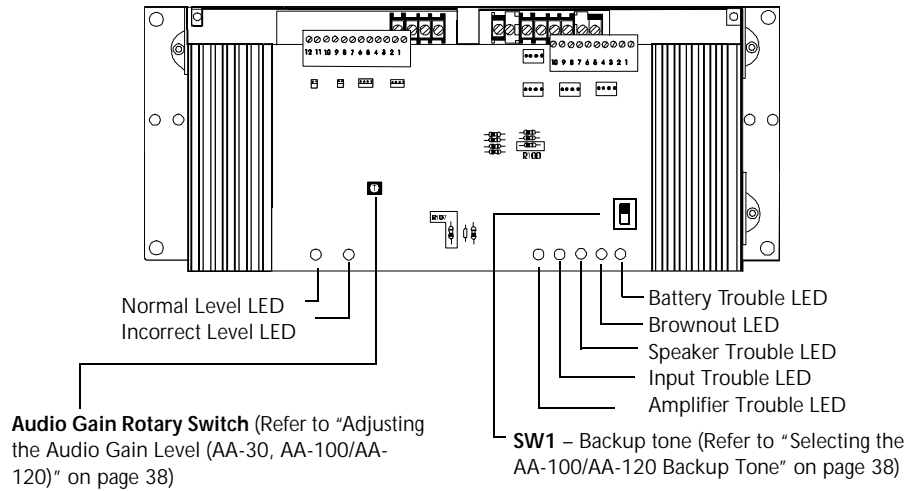| LED	Lights when...
Normal Level	The audio amplifier is adjusted properly and operating correctly during normal (non-alarm) conditions.
Incorrect Level	The audio amplifier is out of adjustment during normal (non-alarm) conditions.
Speaker Trouble	An open circuit condition occurs in the four-wire, high-level output.
Amplifier Trouble	A loss of the low-level audio input signal, or an amplifier failure.
Battery Trouble	The battery voltage is below a sufficient level.
Brownout	The AC power source is below a sufficient level. During a complete loss of AC power, no LEDs will light on the AA-30.

Table 32 AA-30 Components

Notes:

1. The amplifier does not indicate a trouble condition until 40 seconds after these faults occur.

2. To calibrate audio amplifiers, install a 470-ohm resistor at the end of the low-level audio circuit. If the low-level audio circuit is configured as four wire circuit, install a 470-ohm resistor at the point furthest from the AMG-1 or ATG-2.

AA-100/AA-120 Audio Amplifiers

Figure 37 shows the AA-100/AA-120 circuit board and identifies key components:

Normal Level LED
Incorrect Level LED

Battery Trouble LED
Brownout LED
Speaker Trouble LED
Input Trouble LED
Amplifier Trouble LED

Audio Gain Rotary Switch (Refer to "Adjusting the Audio Gain Level (AA-30, AA-100/AA-120)" on page 38)

SW1 – Backup tone (Refer to "Selecting the AA-100/AA-120 Backup Tone" on page 38)

Figure 37   AA-100/AA-120 Circuit Board

LED	Lights when...
Normal Level	The audio amplifier is adjusted properly and operating correctly during normal (non-alarm) conditions.
Incorrect Level	The audio amplifier is out of adjustment during normal (non-alarm) conditions.
Battery Trouble	The battery voltage is below a sufficient level.
Brownout	The AC power source is below a sufficient level. During a complete loss of AC power, no LEDs will light on the AA-100/AA-120.
Speaker Trouble	An open circuit condition occurs in the four-wire, high-level output.
Input Trouble	A loss of the low-level audio input signal, or an amplifier failure. (see note below)
Amplifier Trouble	A loss of the low-level audio input signal, or an amplifier failure. (see note 3 below)

Table 33 AA-100/AA-120 Indicators

Notes:

1. During complete loss of primary (AC) power, the AA-100/AA-120 operates on secondary (battery) power. To conserve secondary power, no LEDs light on the AA-100/AA-120 while operating on batteries.

2. An audio amplifier does not indicate a trouble condition until 40 seconds after a fault occurs.

3. To calibrate audio amplifiers, install a 470-ohm resistor at the end of the low-level audio circuit. If the low-level audio circuit is configured as four wire circuit, install a 470-ohm resistor at the point furthest from the AMG-1 or ATG-2.

Adjusting the Audio Gain Level (AA-30, AA-100/AA-120)

An audio amplifier contains a multi-position rotary switch that lets you adjust the gain of the audio output signal. This adjustment compensates for audio line losses. After correct adjustment, an audio amplifier can produce its maximum rated output power of 25 Vrms (AA-30, AA-120) or 70.7 Vrms (AA-100). Refer to Figure 37 on page 37 for the location of the Audio Gain Rotary Switch.

When finished installing all amplifiers and associated circuitry, adjust the audio gain as follows:

1. Locate the Audio Gain Rotary Switch on the AA-30 (Figure 36) or the AA-100/ AA-120 (Figure 37).

2. Use a small slotted screwdriver to turn the Audio Gain Rotary Switch until the Normal Level LED and Incorrect Level LED are properly adjusted as shown in Table 34:

Audio Gain Rotary Switch
(See Figure 37 on page 37 for location of switch.)

Caution: Remove AC power at the main service circuit breaker (not the circuit breaker on the main power supply).

Audio Level	Normal Level LED	Incorrect Level LED
Properly adjusted	★	☆
Adjusted too low	☆	★
Adjusted too high	★	★
	★ LED on ☆ LED off	

Table 34 Adjusting the AA-30/AA-100/AA-120 Audio Level

Selecting the AA-100/AA-120 Backup Tone

An audio amplifier automatically produces a backup tone when the low-level audio input is lost. You can select the backup tone by following these steps.

1. Locate SW1 in the lower right-hand corner of the AA-100/AA-120 circuit board (See Figure 37 on page 37).

2. Set SW1 to Hi/Lo or Slow Whoop as the default backup tone (Figure 38).

Hi/Lo   Slow Whoop
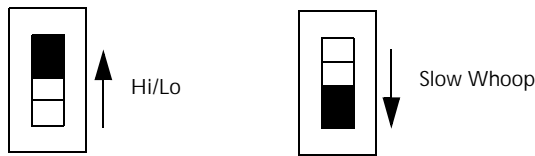
Figure 38 LSW1 Backup Tone Switch (AA-100/AA-120 only)

AMG Voice Message Options

Overview   You can install two types of non-memory message chips into an AMG:

VROM (Voice ROM) A nonvolatile memory chip that contains a factory-programmed message. (An AMG can hold two VROMs: VROM-A and VROM-B.) A VROM provides one evacuation message (up to 24 seconds long), chosen from many standard messages available. Refer to Document 15945 for a list of available VROMs.

VRAM-1 (Voice RAM) A nonvolatile memory chip for a field-programmed memory message. A VRAM-1 provides one field-programmable evacuation message (up to 24 seconds long), programmed from microphone or cassette tape. An AMG can hold up to two VRAM-1 chips.

Installation   To install a VROM or VRAM, follow these steps:

1. Remove battery power, then remove AC power from the control panel.

2. Remove the four screws that hold the AMG dress plate to the component board.

3. Remove the dress plate and disconnect the microphone connector.

4. Install the VROM or VRAM chips in their respective sockets as shown below.

5. Connect the microphone cable and install the AMG dress panel.

When finished installing VROM or VRAM chips, assemble the AMG by following these instructions in reverse. Figure 39 shows the location of the VROM and VRAM chips on the AMG-1:
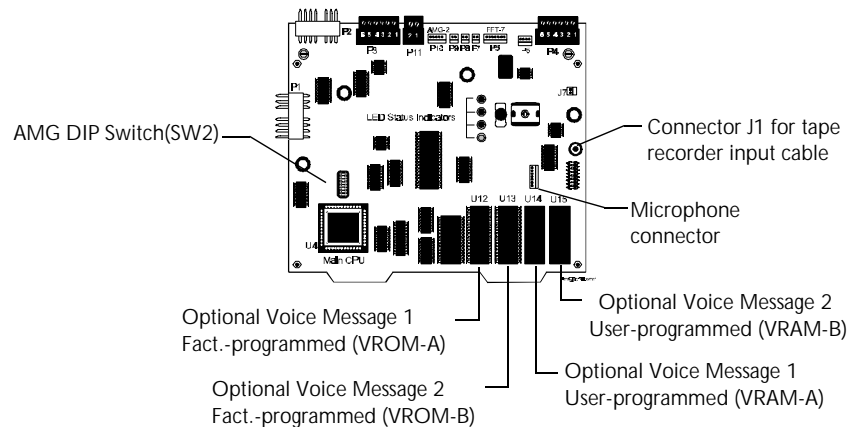
Figure 39 Location of VROM and VRAM on the AMG-1

Notes