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The System 5000 Operating 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.

Fire Alarm System Limitations

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.

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.

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

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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Section 1 The System 5000 Automatic Fire Alarm System

1.1 Central Processor Unit Module (CPU-5000)

The CPU-5000 is a controller-based module that communicates with all system modules and directs all system operation. Key components of the CPU-5000 include:

- two supervised indicating circuits that usually control notification appliances, such as bells, chimes, horns, and strobes
- an alarm relay that can be connected to control external devices including elevators, doors, and air handling equipment
- a Remote Signaling-Municipal Tie output that can connect to a municipal fire department, central station, or a remote monitoring station
- CPU-5000 controls and indicators (described in Section 2.2)

1.2 Initiating Zone Module (IZM-8)

Each Initiating Zone Module (IZM-8) can monitor up to eight initiating zones (groups of initiating devices such as smoke detectors, pull stations, heat detectors, etc.) for alarm activation. The IZM-8 also checks the integrity of wiring connections to the CPU and the status of initiating devices. The IZM-8 module transmits the status of wiring and the initiating zones to the CPU module. When directed by the CPU-5000, the IZM-8 lights LED indicators to display alarm and trouble (such as broken wire, inactive circuit, etc.) conditions.

The IZM-8 module includes an alarm indicator (red LED), a trouble indicator (yellow LED), and a control switch for each zone (described in Section 2.3).

1.3 Indicating Circuit Module (ICM-4)

Each Indicating Circuit Module (ICM-4) controls and monitors up to four Notification Appliance Circuits (expandable to eight with the ICE-4) with notification appliances such as bells, chimes, horns, or strobes. The ICM-4 module transmits the status of the NACs and wiring to the CPU. When directed by the CPU-5000, the ICM-4 lights LEDs to display activation and trouble (broken wire, inactive circuit, etc.) conditions.

Notification Appliance Circuits activate automatically during an alarm condition according to programmed instructions stored in CPU memory. The NACs can also be activated manually. The ICM-4 module includes an activation indicator (green LED), a trouble indicator (yellow LED), and a control switch for each circuit (described in Section 2.4).

1.4 Control Relay Module (CRM-4)

Each CRM-4 can control up to four relays (expandable to eight with the CRE-4), which control external devices including elevators, doors, and air handling equipment. Control relays activate automatically during an alarm according to programmed instructions stored in CPU memory. A control relay can be manually activated using a CRM-4 control switch. A CRM-4 module includes an activation indicator (green LED), a trouble indicator (yellow LED), and a control switch for each relay (described in Section 2.5).

1.5 Audio Message Generator (AMG-1)

The AMG-1, which is the heart of a System 5000 Voice Alarm System, provides digitally-recorded messages, a variety of tones, and paging capability.

Digitally-recorded messages and/or tones activate automatically during an alarm according to programmed instructions stored in CPU memory. Live voice paging can override recorded messages and tones.

1.6 Audio Amplifier (AA-30/AA-100/AA-120)

An AA-30/AA-100/AA-120 amplifies AMG-1 messages and tones before they are switched to speaker circuits. Refer to Sections 2.8 and 2.9 for LED and switch function descriptions.

1.7 Voice Control Module (VCM-4) and Voice Control Expander (VCE-4)

Each VCM-4 can control and monitor up to four speaker or telephone circuits (expandable to eight with the VCE-4). These modules transmit the status of each speaker or telephone circuit and the wiring to the CPU. VCM-4/VCE-4 modules light LEDs to display activation and trouble (broken wire, inactive circuit, etc.) conditions, as directed by the CPU. Speaker or telephone circuits activate automatically during an alarm according to programmed instructions stored in CPU memory. These circuits can be activated manually.

The VCM-4 and VCE-4 modules include an activation indicator (green LED), a trouble indicator (yellow LED), and a control switch for each circuit. LED and switch functions are described in Section 2.6.

1.8 Dual Channel Module (DCM-4)

The DCM-4 gives the System 5000 the capability of delivering different messages, to different areas, at the same time. For example, the System 5000 can deliver an evacuation message to the fire area and a warning message to the non-fire areas at the same time.

Channel selection occurs automatically during an alarm condition according to programmed instructions stored in CPU memory. Channel selection can also be made manually. The DCM-4 includes a channel indicator (green LED), and a control switch for each circuit. LED and switch functions are described in Section 2.7.

1.9 Fire Fighter's Telephone (FFT-7)

The FFT-7 provides the System 5000 with fire fighter's telephone capabilities. Refer to Section 2.11 for LED and switch function descriptions.

1.10 Basic Operation

Activation of a compatible detector or a normally open fire alarm initiating device will cause the following: 1) activation of alarm, indicating, control, and signaling outputs, as programmed

- 2) flash the red System Alarm LED and corresponding initiating zone alarm LEDs
- 3) sound a steady audible tone. Alarm indicating, control, and signaling outputs remain active until the alarm is reset or silenced (refer to Section 2)

Alarm LEDs flash and a continuous audible tone sounds until the alarm is silenced or acknowledged. Silencing or acknowledging an alarm turns the audible tone off and switches LED operation from flashing to steady. Subsequent alarms will resound the audible tone and flash their indicating LEDs. Alarm signals latch until the control is reset.

1.11 Typical System 5000 Installation

The System 5000 requires a CPU-5000 module (top left position), and one IZM-8 module. Additional modules are optional. Figure 1.1 illustrates a typical System 5000 installation in a four-row cabinet (CAB D) with optional modules:



* Optional module.

Figure 1.1 Typical System 5000 Installation

Note: The System 5000 is available in four cabinet sizes:

- CAB A (one row)
- CAB B (two rows)
- CAB C (three rows)
- CAB D (four rows).

Section 2 Operating Instructions

2.1 General System Operating Instructions

Normal Standby Operation - green AC Power LED on, all red alarm LEDs off, and all yellow trouble LEDs off. **Alarm condition** - When an alarm occurs, the control panel does the following:

- lights the red System Alarm LED and associated initiating zone alarm LEDs. Alarm LEDs flash until the alarm is acknowledged or silenced.
- sounds a steady audible tone until the alarm is acknowledged or silenced (see table below).
- activates alarm indicating, control, and signaling output circuits as programmed.

Trouble condition - A trouble signal under normal operation indicates a condition that requires immediate correction. Carefully note which yellow LEDs light; then contact your local service representative. When a trouble occurs, the control panel does the following:

- lights the yellow System Trouble LED and the yellow LED on the output circuits with a trouble. Trouble LEDs flash until someone acknowledges or silences the alarm.
- sounds a pulsed audible tone until the trouble is acknowledged or silenced.

A trouble LED lights until the trouble is corrected. Troubles are self-resetting and clear as soon as the trouble is corrected. If the Reminder feature is enabled, the trouble sounder pulses every 2 minutes for an acknowledged trouble. To silence a trouble, follow the instructions in the table below.

Operating the control panel - The following table contains instructions for operating the control panel:

То	Do this	Comments
Acknowledge an alarm or trouble	Press Acknowledge Silence Tone to turn the audible tone off and switch operation of active LED(s) from flashing to steady.	New alarms and/or troubles will resound the audible tone and flash the corresponding LEDs.
Silence an alarm Warning: Do not silence an alarm until making sure that building evacuation is not required.	Press Signal Silence to silence indicating devices.	 New alarms can reactivate alarm outputs. Alarm silencing may be totally or partially disabled or delayed in some systems. If the Reminder feature is enabled, the sounder pulses every 15 seconds for an acknowledged alarm.
Reset an alarm	Locate and correct the alarm condition; then press S ystem Reset to reset the control panel.	System will reset, but if any device is still in alarm or reactivates, the system will go back into alarm.
Disable or enable an output circuit* Warning: Disabling a circuit will reduce or eliminate fire protection.	Press and hold Disable/Enable ; then press a control switch on a module to toggle the selected circuit to be disabled or enabled.	 Only use this feature to temporarily bypass a malfunction or to remove a circuit while servicing the system. To disable a circuit: press and hold Disable/Enable; then press the control switch of the circuit. The yellow LED for the circuit lights to indicate a disabled circuit.
Manually activate an ouput circuit*	Press the module On/Off switch and the circuit LED (red or green) lights.	 Subsequent alarms can activate a deactivated output circuit. Manual activation of an output circuit can be disabled from the control panel.
* Output circuits include: indicating, speaker and telephone circuits, and control relay circuits		

2.2 CPU-5000 Module, Controls and Indicators (See Figure 2.1)

AC Power - A green LED that lights to indicate normal AC power and extinguishes when the AC line voltage is below normal.

System Alarm - A red LED (normally off) that lights to indicate an alarm condition. Alarms are indicated by flashing LEDs and a continuous audible tone until silenced or acknowledged. Silencing or acknowledging an alarm turns the audible tone off and switches LED operation from flashing to steady. Subsequent alarms will resound the audible tone and flash their indicating LEDs. Alarm signals latch until the control panel is reset.

Trouble Indicators - Trouble indicators (yellow LEDs) are normally off and light to indicate trouble conditions and/or disabled outputs. Troubles are indicated by flashing LEDs and a pulsed audible tone until the trouble is acknowledged or corrected. Ac-knowledging a trouble turns the audible tone off and switches LED operation from flashing to steady. A subsequent trouble will resound the audible tone and flash the LEDs. All trouble signals are normally self-resetting and clear as soon as the trouble condition is corrected.

System Trouble - Indicates a trouble condition in the system.

Module Failure - Indicates the failure of a system module.

AC/BATT/GND Fault - Indicates 1) a power supply is not working correctly, 2) AC line voltage is below normal, 3) improper battery voltage, or 4) a ground fault. Additional information displays on internal LEDs located on power supply assemblies. Refer to Sections 2.6 and 2.7.

Signal Silenced - Indicates that an output circuit is silenced. The LED remains on until the System Reset switch is pressed.

Disabled Circuits - Indicates that part of the system has been manually shut down.

Local Sounder (not shown) - Sounds a pulse tone for a trouble, a disabled output, and a supervisory; sounds a continuous tone for an alarm.



Figure 2.1 The CPU-5000 Central Processor Module

Acknowledge/Silence Tone - Pressing Acknowledge/Silence Tone switch turns the audible tone off and switches LED operation from flashing to steady. A subsequent trouble or alarm resounds the audible tone and flashes the indicating LEDs. While pressing and holding this switch, trouble LEDs do not indicate off-normal conditions. Acknowledge/Silence Tone also automatically acknowledges all annunciators in the system.

Signal Silence - Returns all silenceable outputs, which were automatically activated by the alarm condition, to their non-alarm state. A subsequent alarm can reactivate alarm outputs.

CPU-5000 Module, Controls and Indicators (See Figure 2.1)

System Reset - Resets the system, causing all outputs to return to normal. If an alarm or trouble still exists, the system will return to an alarm or trouble condition. Pressing and holding this switch sequentially lights all LEDs (lamp test).

Disable/Enable - Use this switch with the module switches to enable and disable control, initiating, and signaling circuits. To illuminate the LEDs of disabled circuits, press and hold the Disable/Enable switch.

Green LEDs (output circuits) - Normally off, LEDs light to indicate an activated output. A flashing LED indicates automatic activation until acknowledged. A steady LED indicates manual activation.

Yellow LEDs (output circuits) - Normally off, LEDs light to indicate trouble conditions or disabled outputs. A flashing LED and a pulsed audible tone indicates a new trouble until the trouble is silenced or corrected. Silencing a trouble turns the audible tone off and switches LED operation from flashing to steady. A subsequent trouble from a different circuit resounds the audible tone and flashes the LED. Trouble signals are normally self-resetting and clear as soon as the trouble conditions are corrected.

On/Off switches (output circuits) - Use to activate and deactivate outputs.

Notes:

- 1) The switch function may be disabled for selected outputs.
- 2) Subsequent alarms will reactivate deactivated outputs.
- *3) Pressing the On/Off switch while pressing and holding the Disable/Enable switch alternately enables and disables the output.*

2.3 IZM-8 Initiating Zone Module, Controls and Indicators (See Figure 2.2)

Red LEDs - Normally off, LEDs light to indicate alarm conditions. New alarms are indicated by a flashing LED and a steady audible tone until the alarm is acknowledged or silenced. Silencing an alarm turns the audible tone off and switches LED operation from flashing to steady.

Yellow LEDs - Normally off, LEDs light to indicate an initiating zone trouble or disabled zone. New troubles are indicated by a flashing LED and a pulsed audible tone until the troubles are silenced or corrected. Silencing a trouble turns the audible tone off and switches LED operation from flashing to steady. A subsequent trouble from a different initiating zone resounds the audible tone and flashes the LED. Trouble signals are normally self resetting and clear as soon as the trouble conditions are corrected. While pressing and holding the Acknowledge switch, trouble LEDs do not indicate disabled zones— only open initiating zones. While pressing and holding the Disable/Enable switch, yellow LEDs only indicate disabled initiating zones.

Display Program switches - Light the red zone alarm LED and the green LEDs on all outputs controlled by the initiating zone. Pressing the display program switch, while pressing and holding the Disable/Enable switch, alternately enables and disables the initiating zone.



The IZM-8 Initiating Zone Module

2.4 ICM-4 Indicating Circuit Module, Controls and Indicators (See Figure 2.3)

Green LEDs - Normally off, LEDs light to indicate an activated Notification Appliance Circuit.

Yellow LEDs - Normally off, LEDs light to indicate a Notification Appliance Circuit trouble or a disabled circuit. New troubles are indicated by a flashing LED and a pulsed audible tone until the troubles are silenced or corrected. Silencing a trouble turns the audible tone off and switches LED operation from flashing to steady. A subsequent trouble from a different circuit resounds the audible tone and flashes the corresponding trouble LED. Trouble signals are normally self-resetting and clear as soon as the trouble conditions are corrected. While pressing and holding the Disable/Enable switch, yellow LEDs only indicate disabled conditions.

On/Off switches Use to activate and deactivate Notification Appliance Circuits.

Notes:

- 1) The switch function may be disabled on selected indicating circuits.
- 2) Subsequent alarms will reactivate deactivated circuits. Pressing the On/Off switch while pressing and holding the Disable/Enable switch alternately enables and disables the corresponding indicating circuit.



Figure 2.3 The ICM-4 Indicating Circuit Module

2.5 CRM-4 Control Relay Module, Controls and Indicators (See Figure 2.4)

Green LEDs - Normally off, LEDs light to indicate that the control relay is activated.

Yellow LEDs - Normally off, LEDs light to indicate a disabled control relay output.

- **On/Off switches** Use to activate and deactivate control relays. *Notes:*
 - 1) The switch function may be disabled (from the CPU) for selected relays.
 - 2) Subsequent alarms will reactivate deactivated outputs. Pressing the On/Off switch while pressing and holding the Disable/ Enable switch alternately enables and disables a selected control relay.



Figure 2.4 The CRM-4 Control Relay Module

2.6 VCM-4 Voice Control Module, Controls and Indicators (See Figure 2.5)

Green LEDs - Normally off, LEDs light to indicate an activated speaker circuit.

Yellow LEDs - Normally off, LEDs light to indicate a speaker or telephone circuit trouble or a disabled circuit. New troubles are indicated by a flashing LED and a pulsed audible tone until the troubles are silenced or corrected. Silencing a trouble turns the audible tone off and switches LED operation from flashing to steady. A subsequent trouble, from a different circuit, resounds the audible tone and flashes the associated trouble LED. Trouble signals are normally self resetting and clear as soon as the trouble conditions are corrected. While pressing and holding the Disable/Enable switch, yellow LEDs only indicate disabled conditions.

On/Off switches Use to activate and deactivate speaker circuits. *Notes:*

- 1) The switch function may be disabled (from the CPU) on selected speaker circuits.
- 2) Subsequent alarms will reactivate deactivated circuits.
- 3) Pressing the On/Off switch while pressing and holding the Disable/ Enable switch alternately enables and disables the selected circuit.



Figure 2.5 The VCM-4 Voice Control Module

2.7 DCM-4 Dual Channel Module, Controls and Indicators (See Figure 2.6)

Green LEDs (left side) - Normally off, LEDs light to indicate selection of channel A (evacuate channel).

Yellow LEDs (left side) - Normally off.

On/Off switches (left side) - Used to select channel A or channel B.

Green LEDs (right side) - Normally off, LEDs light to indicate an activated speaker circuit.

Yellow LEDs (right side) - Normally off, LEDs light to indicate a speaker circuit trouble or a disabled speaker circuit. New troubles are indicated by a flashing LED and a pulsed audible tone until the troubles are silenced or corrected. Silencing a trouble turns the audible tone off and switches LED operation from flashing to steady. A subsequent trouble, from a different circuit, will resound the audible tone and flash the associated trouble LED. Trouble signals are normally self resetting and clear as soon as the trouble conditions are corrected. While pressing and holding the Disable/Enable switch, yellow LEDs only indicate disabled conditions.

On/Off switches (right side) Use to activate and deactivate speaker circuits. *Notes:*

- 1) The switch function may be disabled on selected speaker circuits.
- 2) Subsequent alarms will reactivate deactivated circuits. Pressing the On/ Off switch while pressing and holding the Disable/Enable switch alternately enables and disables the selected circuit.



Figure 2.6 The DCM-4 Dual Channel Module

2.8 AMG-1 Audio Message Generator, Control and Indicators (See Figure 2.7)

LED Status Indicators

Audio Level - A green LED, which is normally illuminated in normal standby and alarm mode, remains on when the audio level is correct. When paging, talk loud enough to cause the LED to light. If the Audio Level LED remains off for 30 seconds, the CPU activates a system trouble.

All Call - A green LED (normally off) lights when pressing the All Call switch.

On Line - A green LED indicator normally flashes on and off to indicate communication between the System 5000 and the AMG-1.

Trouble - A yellow LED (normally off) lights to indicate a trouble in the audio subsystem (AMG-1, AA-30/AA-100/AA-120, FFT-7). The CPU-5000 also indicates an audio system trouble by flashing Module Trouble and System Trouble LEDs and sounding a pulsed audible tone until troubles are silenced or corrected. Silencing a trouble turns the audible tone off and switches CPU-5000 LED operation from flashing to steady. Trouble signals are



normally self-resetting and clear as soon as trouble conditions are corrected.

Controls

All Call switch - If connected and programmed, pressing this switch activates all speaker circuits or a specific group of speakers, according to programmed instructions in CPU memory. Releasing the All Call switch deactivates the speaker circuits if no alarms exist. If an alarm exists, speaker circuits remain active until the speakers are manually turned off or the system is reset.

Local Speaker Volume - Use this control to adjust the volume of the speaker located on the AMG-1 only.

Microphone - Use to page through the selected speakers. Activate the speakers by pressing the All Call switch or setting the control switches on individual speaker circuits (VCM-4/VCE-4 modules). Press the microphone switch and speak into the microphone, speaking loudly enough to light the green Audio Level LED.

2.9 AA-30 Audio Amplifier, Control and Indicators (See Figures 2.8 & 2.9)

- 1) Use the status indicators (located under the blank dress panel) on an audio amplifier for troubleshooting the system.
- 2) The CPU indicates a Speaker Trouble, Amplifier Trouble, Battery Trouble, or Brownout Trouble in an audio amplifier by flashing CPU Power Failure and System Trouble LEDs and sounding a pulsed audible tone until silencing or correcting the trouble. Silencing a trouble turns the audible tone off and switches CPU-5000 LED operation from flashing to steady. Trouble signals are normally self-resetting and clear as soon as the trouble conditions are corrected.
- 3) The Incorrect Level LED only indicates that the audio level needs adjustment—not a system trouble.



Figure 2.8 The AA-30 Audio Amplifier



Figure 2.9 AA-30 Audio Amplifier Status LEDs

2.10 AA-100/AA-120 Audio Amplifier, Control and Indicators (See Figures 2.10 & 2.11)

Audio Gain Switch Description

This multi-position rotary switch lets the installer adjust the gain of the audio output signal to compensate for audio line losses. After correct adjustment, the AA-120 produces its maximum rated output power of 25 V_{rms} and the AA-100 produces 70.7 V_{RMS}

Adjusting the Audio Gain Level

After installing amplifiers and circuitry and setting the amplifier for normal standby, use a small, slotted screwdriver to turn the rotary switch until the Normal Level LED is lit and the Incorrect Level LED is off. At this point, the audio gain is properly adjusted.

Note: To calibrate an audio amplifier, a 470 ohm resistor must be installed at the end of the low level audio loop.





Note: The amplifier will not indicate a trouble condition until 40 seconds after these faults occur.

Figure 2-11: AA-100/AA-120 Audio Amplifier Status LEDs

Selecting the AA-100/AA-120 Default Backup Tone

Use SW1, located in the lower right-hand corner of the AA-100/AA-120 circuit board, to select Hi/Lo or Slow Whoop as the default backup tone. The backup tone starts automatically if a low-level audio input to the AA-100/AA-120 is lost.



2.11 FFT-7 Fire Fighter's Telephone, Control and Indicators (See Figure 2.12)

LED Status Indicators

Page Mode - A green LED lights while pressing the Page Mode switch.

On Line - A green LED (normally on) indicates that the System 5000 is powering the Fire Fighter's Telephone system.

Phone Trouble - A yellow LED (normally off) lights to indicates a trouble in the Fire Fighter's Master Telephone (FFT-7) circuit.

Line Trouble - A yellow LED (normally off) lights to indicate a trouble in the wiring between the FFT-7 and corresponding VCM-4 modules.

Note: The CPU also shows a Phone Trouble or Line Trouble on the CPU-5000 by flashing Module Trouble and System Trouble LEDs and pulsing an audible tone until silencing or correcting the trouble. Silencing a trouble turns the audible tone off and switches CPU-5000 LED operation from flashing to steady. Trouble signals are normally self resetting and clear as soon as the trouble conditions are corrected.



Controls

Page switch - Press to page through an FFT-7. To enable paging from a remote FFT-7, follow these instructions:

- 1) Press the Page switch
- 2) Select the speaker circuits for paging by setting the control switches on VCM-4 speaker or telephone circuits or press the All Call switch (see instructions above)
- 3) Tell the person paging to speak into the FFT-7 handset. Note that paging should be loud enough to light the green Audio Level LED on the AMG-1

2.12 Optional MPS-24A Main Power Supply, Status Indicators (See Figure 2.13)

Trouble Indicators

The MPS-24A includes four trouble indicators (yellow LEDs, normally off) that light to show trouble conditions. Trouble signals are normally self resetting and clear as soon as the trouble condition is corrected.

LED	Indicates
AC Power Fail (LED 2)	1) loss of AC line voltage; 2) low AC line voltage; or 3) open circuit breaker.
Battery Fail (LED 3)	improper battery voltage.
Ground Fault (LED 4)	ground fault on the panel.
Ground Fault (LED 5)	ground fault on the panel.



Figure 2.13 MPS-24A Main Power Supply Status Indicators

2.13 AVPS-24 Audio Visual Power Supply, Status Indicator

The AVPS-24 includes a trouble LED (yellow LED, normally off) that lights to show the following trouble conditions:

- 1) a power supply malfunction;
- 2) loss of AC line voltage;
- 3) low AC line voltage;
- 4) open circuit breaker; or
- 5) open battery lead.



Figure 2.14 The Audio Visual Power Supply (AVPS-24)

Section 3 Periodic Testing and Maintenance

3.1 Periodic Testing and Servicing

Periodic testing and servicing, by qualified service personnel, is essential to ensure proper and reliable operation. Test and service according to the schedules and procedures outlined in: 1) NFPA standard 72-1993, Chapter 7 "Inspection, Testing, and Maintenance"; 2) System 5000 Troubleshooting Manual; and 3) service manuals and instructions for the system peripheral devices. Report any trouble condition or malfunction to your service representative immediately.

3.2 Operational Checks

Between formal periodic testing and servicing intervals, do the following operation checks monthly or more often as required by the Authority Having Jurisdiction.

- 1) Check that the green AC Power LED is on.
- 2) Check that all yellow LEDs are off.
- 3) Press and hold System Reset. All System 5000 LEDs should light sequentially.
- 4) Before activating any part of the system: a) notify fire department and/or central alarm receiving station if alarm conditions are transmitted; b) notify facility personnel of the testing, so that alarm sounding devices are ignored during test period; c) when necessary, prevent activating alarm signaling devices by pressing the On/Off switch on the signaling circuit(s) to be disabled, while pressing and holding the Disable/Enable switch.
- 5) Activate an initiating zone through an alarm initiating device and check that active signaling devices sound, and alarm indicators light. Check the paging function (if connected). Reset alarm initiating devices and the System 5000.
- 6) Repeat step 5 for each initiating zone
- 7) If the system contains fire fighter telephones, check operation of each telephone circuit.
- 8) Enable any signaling circuit(s) disabled in step 4(c). To enable a circuit press the On/Off switch on the disabled circuit(s) while pressing and holding the Disable/Enable switch.
- 9) Check that all yellow LEDs are off and that the green AC Power LED is lit. Reset all installed equipment.
- 10) When finished testing, immediately notify fire, central station and/or building personnel.

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