



**10-2773-X**

**Amplifier Kit**

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## 1.0 ABOUT THIS MANUAL

This manual is intended to be a complete reference for the installation, operation and service of Fike's Amplifier Kit (P/N 10-2773-X). The information contained in this manual shall be used by factory trained service technicians who are authorized to work on this product. This manual also serves as the Operations Manual for the component.

The first-time installer and/or user should thoroughly read and understand the instructions contained within this manual before using this device. These instructions must be followed to avoid damage to the equipment itself or adverse operating conditions caused by improper installation and programming.

### 1.1 DOCUMENT HISTORY

Document Title: Amplifier Card, Product Manual

Document Reorder Number: 06-576

Revision	Section	Date	Reason for Change
0	All Sections	05/2010	Initial Release
1	All Sections	12/2011	Voice Phase 1A
2	Section 4.5.8	06/2012	UL 2572 Updates
3	Sections 1.1, 1.4, 5.1, 5.2, 5.6, 7.1 and Appendix B	05/2013	Voice control priorities and audio synchronization
4	All Sections	09/2015	Clarifications and General Updates

### 1.2 PRODUCT SUPPORT

If you have a question or encounter a problem not covered in this manual, you should first try to contact the distributor who installed the Fike system. Fike has a worldwide distribution network. Each distributor sells, installs, and services Fike equipment. Look on the back of the cabinet door, there should be a sticker with an indication of the distributor who installed the system. If you cannot locate the distributor, please call Fike Customer Service for locating your nearest distributor, or go to our web-site at [www.fike.com](http://www.fike.com). If you are unable to contact your installing distributor or you simply do not know who installed the system, you can contact Fike Technical Support at (800) 979-3453, Option 21, Monday through Friday, 8:00 am to 4:30 pm CST.

### 1.3 SAFETY INFORMATION

Important safety admonishments are used throughout this manual to warn of possible hazards to persons or equipment.

#### **I Caution**

Cautions are used to indicate the presence of a hazard which will or may cause damage to the equipment if safety instructions are not followed or if the hazard is not avoided.

**i Note:** Provides information on installation, operation, maintenance, performance or general tips that are important but not hazardous to anything or anyone.

## 1.4 TERMS USED IN THIS MANUAL

**Authority Having Jurisdiction** – The organization, office, or individual responsible for approving equipment, materials, and installation, or a procedure.

**Class A** – A circuit pathway designation that performs as follows: includes a redundant path; operation capability continues past a single open; and conditions that affect the intended circuit operation are reported at the FACP.

**Class B** – A circuit pathway designation that performs as follows: does not include a redundant path; operational capability stops at a single open; and conditions that affect the intended circuit operation are reported at the FACP.

**Configure** – Panel set-up to properly recognize and supervise a device as the design requires.

**Fire Alarm Control Unit (Panel)** – A system component that receives inputs from automatic and manual fire alarm devices and might supply power to detection devices and to a transponder(s) or off-premises transmitter(s). The control unit might also operate releasing circuits or solenoids, provide transfer of power to the notification appliances, or transfer of condition to relays or devices connected to the control unit. The fire alarm control unit can be a local fire alarm control unit or a master control unit.

**Non Power-Limited** – A circuit designation given for wiring purposes. The amount of current flowing through the circuit is unlimited vs. being limited, or power-limited. AC power and battery wiring are non-power-limited.

**Power-Limited** – A circuit designation given for wiring purposes. The amount of current flowing through the circuit is limited versus being unlimited, or non-power-limited.

**Zone** – A defined area within the protected premises. A zone can define an area from which a signal can be received, an area to which a signal can be sent, or an area in which a form of control can be executed. This term is used to create the relationship between activation inputs to notification outputs and peripherals.

**RS485** – A data communication standard produced by the Electronics Industry Association (EIA). This standard was developed to allow for reasonable success in transferring data over specified distances and/or data rates.

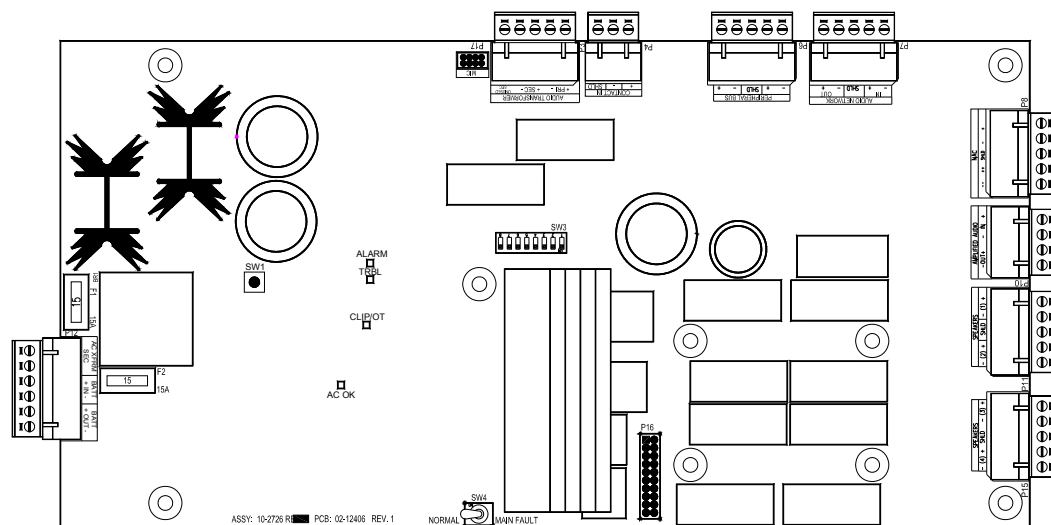
**Fire Command Center** – The principal attended or un-attended location where the status of the detection, alarm communications, and control systems is displayed and from which the system(s) can be manually controlled.

**Synchronization** – A means of coordinating notification appliances so that they operate in unison.

## 2.0 PRODUCT DESCRIPTION

The 10-2773-X, Amplifier Kit is the heart of Fike's Emergency Voice Alarm Communication System. The kit includes the, Amplifier Card (P/N 10-2726), AC power transformer (120 or 240 VAC) and audio transformer. When ordering the amplifier kit, you must use the following ordering format to specify which power transformer you require.

Part Number: 10-2773-**P**, where **P** = power transformer rating (**1** = 120 VAC, **2** = 240 VAC)



**Exhibit 1: Amplifier Card**

The amplifier card is designed to feed a single audio zone and provides an integral 24 VDC visual notification appliance circuit. The amplifier card is capable of providing up to 50 watts of audio output power to connected voice evacuation speakers. The amplifier card provides four Class B audio output circuits that are compatible with 25 or 70 Vrms speakers. Each speaker circuit is capable of distributing the entire 50 watts of available amplifier power or the 50 watts can be distributed amongst all four circuits in any combination, as long as the 50 watts maximum is not exceeded. An optional Class A card (P/N 10-2746) can be installed where redundant speaker circuit wiring is required.

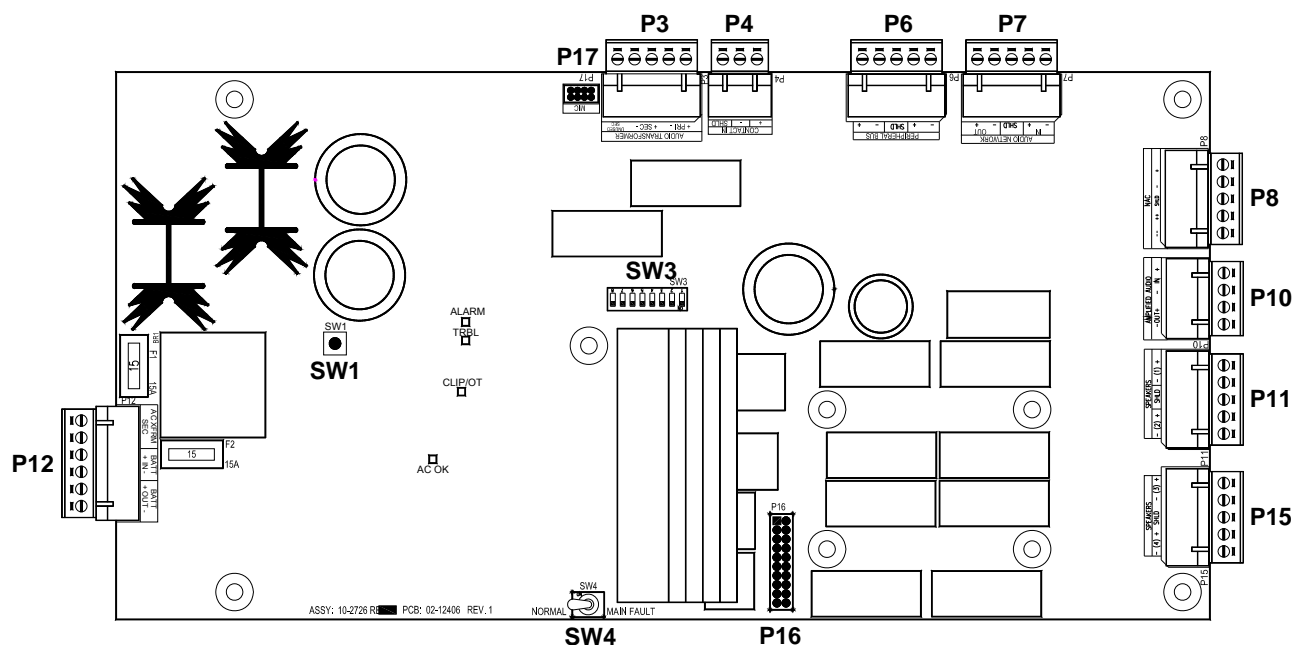
The amplifier card has an integral backup amplifier circuit. In the event that the primary amp circuit should fail, the backup amplifier circuit will automatically be switched in. This eliminates the need for the installation of a secondary (backup) amplifier for each audio zone.

The amplifier card is equipped with an integral battery charger and power supply that is capable of supplying power and battery backup for up to three amplifiers. A 120 or 240 VAC power transformer is supplied with each amplifier card. An audio amplifier transformer is also supplied with each amplifier card. This transformer is used to boost the amplifier audio output to either 25 VRMS or 70 VRMS depending upon the voltage of the speakers used.

The amplifier card can store up to 16 digitally recorded voice messages, each of which may be up to 30 seconds long. User-defined custom messages can be recorded and downloaded to non-volatile memory on the amplifier through the control panel's programming software (C-Linx).

The amplifier interfaces to the system via the host control panel's RS485 peripheral bus, which allows up to 31 amplifiers to be connected to a single control panel.

## 2.1 CIRCUIT DESCRIPTIONS



**Exhibit 2: Amplifier Card Terminal Designations**

**Exhibit 3: Amplifier Card Specifications**

Terminal Block	Terminal Labels	Function and Electrical Ratings/Requirements	Wiring Requirements
P3	AUDIO TRANSFORMER PRIMARY (+, -)	Audio transformer primary input; 14 VAC (RMS) @ 3.59 A AC <sup>1</sup> Connects to Audio Transformer primary, P/N 02-12825 Supervised	Wire leads from the transformer to the amplifier card must be located within the same enclosure.
	AUDIO TRANSFORMER SECONDARY (+, -)	Audio transformer secondary output; rated voltage is either 25 VAC (RMS) @ 2 A AC or 70.7 VAC (RMS) at 0.71 A AC Connects to Audio Transformer secondary, P/N 02-12825 Supervised	Voltage selected by wiring pair from audio transformer.
	UNUSED SECONDARY	Used to land unused audio transformer secondary (25 or 70.7 VAC)	
P4	CONTACT IN (+, -, SHLD)	Contact monitor input: rated 5 VDC @ 2.1 mA Power-limited and Supervised Maximum ground fault impedance value = 0 ohms	Requires 4.7K end-of-line resistor, P/N 02-1769
P6	PERIPHERAL BUS (-, +, SHLD, -, +)	RS485 peripheral (feed through); 9600 or 38400 Baud, 1 start bit, 2 stop bits, 8 data bits	Belden 9841 wire or equivalent; maximum 4,000 ft. (1,219 m) 100Ω max. wire impedance 0.05μF max. capacitance 100Ω termination resistor (P/N 02-2519 if last device)
		Connection to Peripheral Terminal P5 on CyberCat (31 devices max.)	
		Power-limited and Supervised	
		RS485 peripheral input; 9600 or 38400 Baud, 1 start bit, 2 stop bits, 8 data bits	
		Power-limited and Supervised Max. ground fault impedance = 0 ohms	

<sup>1</sup> Audio transformer is NOT powered at all times to conserve power. Power is supplied only when the amp is activated.



**Exhibit 4: Amplifier Card Specifications Continued**

Terminal Block	Terminal Labels	Function and Electrical Ratings/Requirements	Wiring Requirements
P7	AUDIO NETWORK IN (-, +), OUT (-, +)	Digital audio bus output; used for live paging	Out on one amplifier connects to IN on another. Class A wiring only <sup>1</sup> Belden 9841 wire or equivalent; maximum 4,000 ft. (1,219 m) between nodes
		Maximum ground fault impedance value = 0 ohms	
		Power-limited and Supervised	
P8	NAC (-, +)	Notification appliance circuit output; Class B circuit rated 2 A @ 24 VDC	See Fike document P/N 06-186 for maximum line impedance and compatible devices Maximum ground fault impedance value = 60K ohms Class B requires 1K end-of-line resistor, P/N 02-1973
		Power-limited, Supervised, Regulated	
		Supports Gentex and System Sensor sync protocols	
P10	AMPLIFIED AUDIO OUT (-, +)	Notification appliance circuit output; Class A terminals; no EOL required.	Wire runs from interconnected amplifier cards must be located within the same enclosure. See Section 4.5.6 for wiring diagram.
P11	SPEAKERS 1 & 2 (+, -, SHLD)	Amplified audio output; used for Dual Channel applications to cross connect two amplifier modules	When using 70 VRMS speakers, a minimum of 18 AWG wire with a minimum insulation thickness of 1/32 inch (.8 mm) shall be used. See Fike document P/N 06-186 compatible devices Maximum ground fault impedance value = 60K ohms
		Rated at 25 VAC (RMS) @ 2A AC or 70.7 VAC (RMS) @ 0.71A AC	
		Supervised	
P12	AMPLIFIED AUDIO IN (-, +)	Amplified audio input from cross connected amplifier module	Wiring 16 AWG (THHN) min.
P12	AC XFRM SEC	Speaker output; rated for 25 VAC (RMS) or 70.7 VAC (RMS), 50 watts maximum	When using 70 VRMS speakers, a minimum of 18 AWG wire with a minimum insulation thickness of 1/32 inch (.8 mm) shall be used. See Fike document P/N 06-186 compatible devices Maximum ground fault impedance value = 60K ohms
		Class B with 10K EOL	
		Power-limited and Supervised	
	BATT IN (+,-)	24 VAC transformer secondary input (same for both 120 and 240 VAC transformer)	Wiring 14 AWG (THHN) min. Maximum wire length 10 ft. (3 m)
		120 VAC, 60 Hertz @ 1.375 A (transformer P/N 02-10881)	
		240 VAC, 50/60 Hertz @ 649 mA (transformer P/N 02-10882)	
		Non-power-limited and Supervised	
		Fused by F1, 15 A field replaceable fuse (P/N 02-4174)	
		Terminal block accepts 12–16 AWG	
		Standby battery input; 24 VDC nominal	Wiring 14 AWG (THHN) min. Maximum wire length 10 ft. (3 m)
		Non-power-limited and Supervised	
		Sealed lead acid batteries only; 18 AH Maximum	
		Maximum supply current: 12 A @ 27 VDC	
		Maximum charge current: 4 A @ 27 VDC	
		Fused by F2, 15 A field replaceable fuse (P/N 02-4174)	
		Terminal block accepts 12-16 AWG	Wiring 14 AWG (THHN) min. Maximum wire length 10 ft. (3 m)
		Non-power-limited and Supervised	

<sup>1</sup> The audio network interconnects between the digital paging card, remote paging card, and amplifier cards.

Exhibit 5: Amplifier Card Specifications Continued

Terminal Block	Terminal Labels	Function and Electrical Ratings/Requirements	Wiring Requirements
P12	BATT OUT (+,-)	Standby battery output; 24 VDC nominal to additional amplifier cards. A single set of 18 AH batteries can provide standby power for up to 3 amplifier cards total.	
P15	SPEAKERS 3 & 4 (+, -, SHLD)	Speaker output; rated for 25 VAC (RMS) or 70.7 VAC (RMS), 50 watts maximum	When using 70 VRMS speakers, a minimum of 18 AWG wire with a minimum insulation thickness of 1/32 inch (.8 mm) shall be used.  Maximum ground fault impedance value = 60K ohms
		Class B with 10K EOL	
		Power-limited and Supervised	
P16		Terminal connector for connection of optional Class A Speaker Card	
P17	MIC1	Microphone input, supervised	Used for single amp with microphone applications only.
SW1		Amplifier reset switch. Amplifier must be reset after changing any dip-switch setting.	
SW3		Dip-switch for assigning cards address on the panel's RS485 peripheral bus (2-32); Switches 1-6 = Bus Address	
		Switch 7 = Peripheral Bus Speed	
SW4	Normal/Main Fault	Toggle-switch for testing primary/secondary amplifier circuit.	
	D12	Alarm (EVAC) LED, Red, blinks	
	D13	Trouble LED, Yellow, blinks	
	D16	Clip/OT (Amplifier Clipping, Over Temperature Warning) LED, Yellow, blinks	
	D25	AC OK LED, Green, Continuous	

## 2.2 COMPATIBILITY

The amplifier card is compatible with the following Fike Intelligent control panels: CyberCat 254, CyberCat 1016 and CyberCat 50, firmware version 5.XX and higher.

## 2.3 AGENCY STANDARDS AND COMPLIANCE

This Fire Alarm product complies with the following standards:

- NFPA 70 - NEC, Article 300 Wiring Methods
- NFPA 70 - NEC, Article 760 Fire Protective Signaling Systems
- NFPA 72 - National Fire Alarm and Signaling Code
- UL 864 - Control Units and Accessories for Fire Alarm Systems
- UL 1711 - Amplifiers for Fire Protective Signaling Systems
- UL 2572 - Mass Notification Systems

## 2.4 RELATED FIRE ALARM STANDARDS

- NFPA 1 - Fire Prevention Code
- NFPA 77 - Static Electricity
- NFPA 101 - Life Safety Code
- Applicable Local and State Building Codes
- Requirements of the Local Authority Having Jurisdiction

## 2.5 RELATED DOCUMENTATION

Further details about the product referenced in this document can be found in the following manuals.

Document Title	Part Number
CyberCat 254/1016 Installation Manual	06-326
CyberCat 254/1016 Operation & Maintenance Manual	06-326-2
Input/Output Control Card Installation Instructions	06-446
Audio Control Card Installation Instructions	06-558
FCC Microphone Housing Installation Instructions	06-569
Fire Command Center Enclosure Installation Instructions	06-570
Remote Audio Enclosure (1 Amp) Installation Instructions	06-597
Remote Audio Enclosure (3 Amp) Installation Instructions	06-572
Remote Audio Enclosure (5 Amp) Installation Instructions	06-573
Class A Speaker Card Installation Instructions	06-574
FCC Digital Paging Assembly	06-564
LOC Digital Paging Assembly	06-613
Device Compatibility Document	06-186

**Exhibit 6: Related Documentation**

## 2.6 SPECIFICATIONS

Maximum Current:	Alarm 322 mA (all LEDs on) Standby 322 mA (power LED on)
Operating Temperature:	0° to 49° C (32°to 120° F), 93% RH
Terminal blocks:	Accept 12 - 26 AWG
Card Dimensions:	12" (30.48 cm) L x 6" (15.24 cm) W x 2.5" (6.35 cm) H

### 3.0 SYSTEM CONFIGURATIONS

Fike's voice evacuation system is modular by design. This allows components to be added to the system as needed to suit specific project requirements. The information presented in this section identifies the components that are required to achieve the stated system functionality.

#### 3.1 SINGLE CHANNEL SYSTEM

A single channel system utilizes one or more amplifier cards distributed throughout the facility. Each amplifier can serve only one evacuation zone or area. Each amplifier can play a single audio message (i.e., EVAC, Alert, Drill, etc.) in response to a system event. See Sections 5.2 and 5.3 for a complete description of single channel operation.

**Exhibit 7: Single Channel System Minimum Requirements**

System functionality	Components needed
Basic voice evacuation:	<ol style="list-style-type: none"> <li>1. CyberCat control panel; P/N 10-064 (1016) or P/N 10-066 (254)</li> <li>2. Remote audio enclosure <i>(if the amplifier cannot be mounted within the CyberCat enclosure)</i></li> <li>3. Amplifier kit; P/N 10-2773</li> <li>4. 18 AH standby batteries</li> <li>5. Class A Speaker Card; P/N 10-2746 (if Class A is required)</li> </ol>
Manual activation capability add:	<ol style="list-style-type: none"> <li>1. Audio Control Switch Card; P/N 10-2661 or</li> <li>2. Input/Output Switch Card; P/N 10-2659 or</li> <li>3. Monitor Module; P/N 55-041, 55-046 or</li> <li>4. Mini Monitor Module; P/N 55-045, 55-050</li> </ol>
Local paging capability add:	<ol style="list-style-type: none"> <li>1. Microphone Housing; P/N 10-2757 <i>(paging is isolated to the amplifier that the microphone is connected to).</i></li> </ol>
Selective paging, evacuation, MNS/ECS capability add:	<ol style="list-style-type: none"> <li>1. Additional amplifier kits; P/N 10-2773 <i>(one per paging zone/area)</i></li> <li>2. Remote Audio Enclosure(s); P/N 10-2803, 10-2754 or 10-2755</li> <li>3. FCC Digital Paging Assembly<sup>1</sup>; P/N 10-2751</li> <li>4. Additional switch cards for initiation of selective page commands (if required): <ul style="list-style-type: none"> <li>• Audio Control Switch Card; P/N 10-2661</li> <li>• Input/Output Switch Card; P/N 10-2659</li> </ul> </li> </ol>
Remote paging capability add:	<ol style="list-style-type: none"> <li>1. Local Operating Console, P/N 10-2800</li> <li>2. Local Operating Console with RDU; P/N 10-2801</li> </ol>
Basic <sup>2</sup> fire-phone capability add:	<ol style="list-style-type: none"> <li>1. FCC Digital Paging Assembly<sup>1</sup>; P/N 10-2751</li> <li>2. Fire-phone Housing; P/N 10-2756</li> <li>3. Fire-fighter's Phone Jacks; P/N 24-133</li> </ol>
Addressable <sup>2</sup> fire-phone capability add:	<ol style="list-style-type: none"> <li>1. FCC Digital Paging Assembly; P/N 10-2751</li> <li>2. Fire-phone Housing; P/N 10-2756</li> <li>3. Fire-phone Switch Card; P/N 10-2728<sup>3 4</sup></li> <li>4. Supplemental Fire-phone Switch Card; P/N 10-2730<sup>5</sup></li> <li>5. Fire-phone module; P/N 24-135</li> <li>6. Fire-fighter's Phone Jacks; P/N 24-133</li> </ol>

<sup>1</sup> Only one FCC digital paging assembly is required or ALLOWED per system. This includes a Networked Control Panel system or an Audio Bus system. Assembly is required on all systems that incorporate fire-phones or multiple paging zones (selective paging).

<sup>2</sup> Refer to Fike document P/N 06-564 "FCC Digital Paging Assembly Product Manual" for a description of a basic fire-phone system versus addressable fire-phone system.

<sup>3</sup> Provides SLC for connection of up to 99 fire-phone modules, P/N 24-135.

<sup>4</sup> Provides 20 switches for connecting fire-phone modules to fire-phone SLC.

<sup>5</sup> Up to four cards can be connected to the Fire-Phone Card, P/N 10-2728.

### 3.2 DUAL CHANNEL SYSTEM

A dual channel system utilizes two amplifier cards cross coupled together. This configuration allows the audio message generated by either amplifier to be shared with the other amp. As a result, any of the eight available speaker circuits can play the audio message generated by either amplifier in response to a system event (i.e., EVAC, Alert, Drill, etc.). See Sections 5.3 and 5.4 for a complete description of dual channel operation.

**Exhibit 8: Dual Channel System Minimum Requirements**

System functionality	Components needed
Basic voice evacuation:	<ol style="list-style-type: none"> <li>1. CyberCat control panel; P/N 10-064 (1016) or P/N 10-066 (254)</li> <li>2. Remote audio enclosure(s)<sup>1</sup>; P/N 10-2803, 10-2754 or 10-2755</li> <li>3. Two amplifier kits; P/N 10-2773<sup>1</sup></li> <li>4. 18 AH standby batteries</li> <li>5. Class A Speaker Card; P/N 10-2746 (if Class A is required)</li> </ol>
Manual activation capability add:	<ol style="list-style-type: none"> <li>1. Audio Control Switch Card; P/N 10-2661 or</li> <li>2. Input/Output Switch Card; P/N 10-2659 or</li> <li>3. Monitor Module; PN 55-041, 55-046 or</li> <li>4. Mini Monitor Module; PN 55-045, 55-050</li> </ol>
Local paging capability add:	<ol style="list-style-type: none"> <li>1. Microphone Housing; P/N 10-2757 (<i>paging is isolated to the amplifier that the microphone is connected to</i>).</li> </ol>
Selective paging, evacuation, MNS/ECS capability add:	<ol style="list-style-type: none"> <li>1. Additional amplifier kits; P/N 10-2773 (<i>one per paging zone/area</i>)</li> <li>2. Remote Audio Enclosure(s)<sup>1</sup>; P/N 10-2803, 10-2754 or 10-2755</li> <li>3. FCC Digital Paging Assembly<sup>2</sup>; P/N 10-2751</li> <li>4. Additional switch cards for initiation of selective page commands (if required): <ul style="list-style-type: none"> <li>• Audio Control Switch Card; P/N 10-2661</li> <li>• Input/Output Switch Card; P/N 10-2659</li> </ul> </li> </ol>
Remote paging capability add:	<ol style="list-style-type: none"> <li>1. Local Operating Console; P/N 10-2800</li> <li>2. Local Operating Console with RDU; P/N 10-2801</li> </ol>
Basic <sup>2</sup> fire-phone capability add:	<ol style="list-style-type: none"> <li>1. FCC Digital Paging Assembly<sup>2</sup>; P/N 10-2751</li> <li>2. Fire-phone Housing; P/N 10-2756</li> <li>3. Fire-fighter's Phone Jacks; P/N 24-133</li> </ol>
Addressable <sup>2</sup> fire-phone capability add:	<ol style="list-style-type: none"> <li>1. FCC Digital Paging Assembly<sup>2</sup>; P/N 10-2751</li> <li>2. Fire-phone Housing; P/N 10-2756</li> <li>3. Fire-phone Switch Card; P/N 10-2728<sup>3</sup> <sup>4</sup></li> <li>4. Supplemental Fire-phone Switch Card; P/N 10-2730<sup>5</sup></li> <li>5. Fire-phone module; P/N 24-135</li> <li>6. Fire-fighter's Phone Jacks; P/N 24-133</li> </ol>

<sup>1</sup> Dual channel amplifiers must be mounted within the same enclosure.

<sup>2</sup> Only one FCC digital paging assembly is required or ALLOWED per system. This includes a Networked Control Panel system or an Audio Bus system. Assembly is required on all systems that incorporate fire-phones or multiple paging zones (selective paging).

<sup>3</sup> Provides SLC for connection of up to 99 fire-phone modules, P/N 24-135.

<sup>4</sup> Provides 20 switches for connecting fire-phone modules to fire-phone SLC.

<sup>5</sup> Up to four cards can be connected to the Fire-Phone Card, P/N 10-2728.

## 4.0 INSTALLATION

The following installation instructions must be strictly adhered to when installing the card to prevent potential damage to the card and the associated control panel.

### **Caution**

The card and associated control panel 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 anti-static packaging to protect electronic assemblies removed from the unit.

### **Caution**

Never remove or install boards, internal cables or components with power applied. Failure to follow the instructions provided in this section can result in irreparable damage to the system components. This damage may adversely affect the operation of the control unit but its effect may not be readily apparent.

### **Caution**

Do not install the Amplifier Card into the enclosure until after all construction clean-up has been completed in order to avoid any potential damage to the electronics due to dust and debris. Before installing the system components, thoroughly clean the enclosure(s) to remove any dirt, dust and debris.

**Note:** The Class A speaker card must be installed prior installing the amplifier card(s) into the system enclosures. Refer to Fike document 06-574 for installation instructions.

## 4.1 ENCLOSURES

The amplifier card can be installed into any of the following enclosures based on your specific project requirements. Refer to the referenced document for a complete description of the enclosure features and ordering options.

1. Fire Command Center Enclosure. Refer to Fike document 06-570.
2. One AMP, Remote Audio Enclosure. Refer to Fike document 06-597.
3. Three AMP, Remote Audio Enclosure. Refer to Fike document 06-572.
4. Five AMP, Remote Audio Enclosure. Refer to Fike document 06-573.

### 4.2 PULL FIELD WIRING INTO THE ENCLOSURE

Unless otherwise detailed in this manual or in other documents relating to this card, the designer, installation and service technician shall utilize published standards and references such as: NFPA 70 National Electrical Code; NFPA 72 National Fire Alarm Code; and other standards which may be relevant to the Local Authority Having Jurisdiction (AHJ) for field wiring installation requirements.

Fire Alarm System wiring is classified as either power-limited or non-power-limited per NEC Article 760. All power-limited wiring must be separated from all non-power-limited wiring by a minimum distance of 0.25" (6 mm).

**Note:** The P12 – AC Power Supply Input is the only non-power-limited circuit on the Amplifier card. All other circuits are supervised and power-limited.

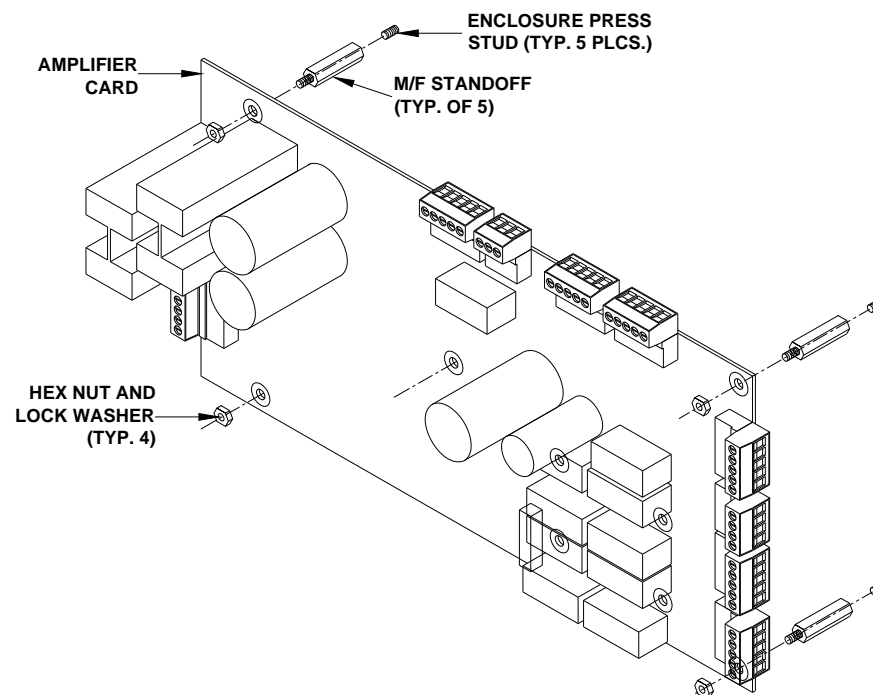
### 4.3 MOUNT THE CARD AND TRANSFORMERS

The mounting location for the amplifier card varies depending upon the enclosure it is being installed into. Refer to the installation instructions supplied with each enclosure for acceptable mounting locations for the amplifier card and associated transformers within each enclosure.

The voice evacuation system enclosures are equipped with press studs that allow mounting of the system components to the back of the enclosure. The following instructions shall be used to mount each component to the back box.

To install the amplifier card:

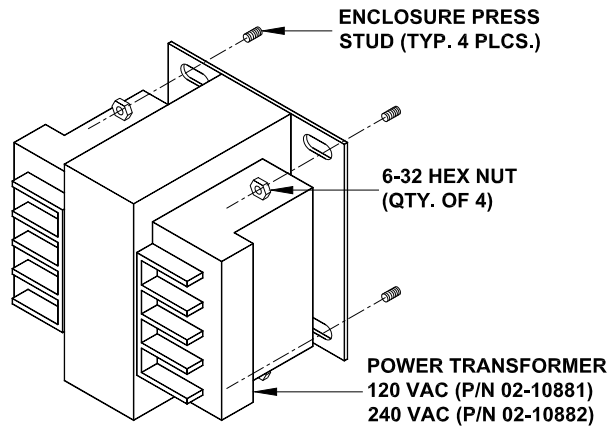
1. Remove the card and supplied mounting hardware from the packaging.
2. Install the Class A Speaker Card (P/N 10-2746), if applicable.
3. Locate the five press studs provided in the enclosure for mounting the amplifier card (See Exhibit 9) and thread the standoffs onto the studs.
4. Align the mounting holes in the amplifier card with the standoffs and secure with supplied hex nuts (qty. of 4).



**Exhibit 9: Amplifier Card Installation**

To install the power transformer:

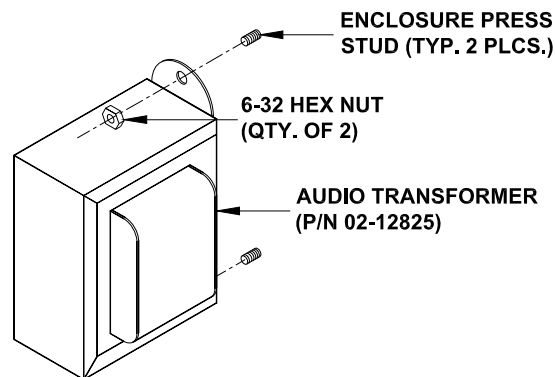
1. Remove the transformer and supplied mounting hardware from the packaging.
2. Locate the four press studs provided in the enclosure for mounting the transformer and place the transformer onto the press studs (See Exhibit 10).
3. Secure the transformer to the press studs with the supplied hex nuts (qty. of 4).



**Exhibit 10: Power Transformer Installation**

To install the audio transformer:

1. Remove the transformer and supplied mounting hardware from the packaging.
2. Locate the two press studs provided in the enclosure for mounting the transformer and place the transformer onto the press studs (See Exhibit 11).
3. Secure the transformer to the press studs with the supplied hex nuts (qty. of 2).
4. When mounted in the Single or Fire Command Center enclosure the transformer wires are to be routed between the Amplifier and the Enclosure

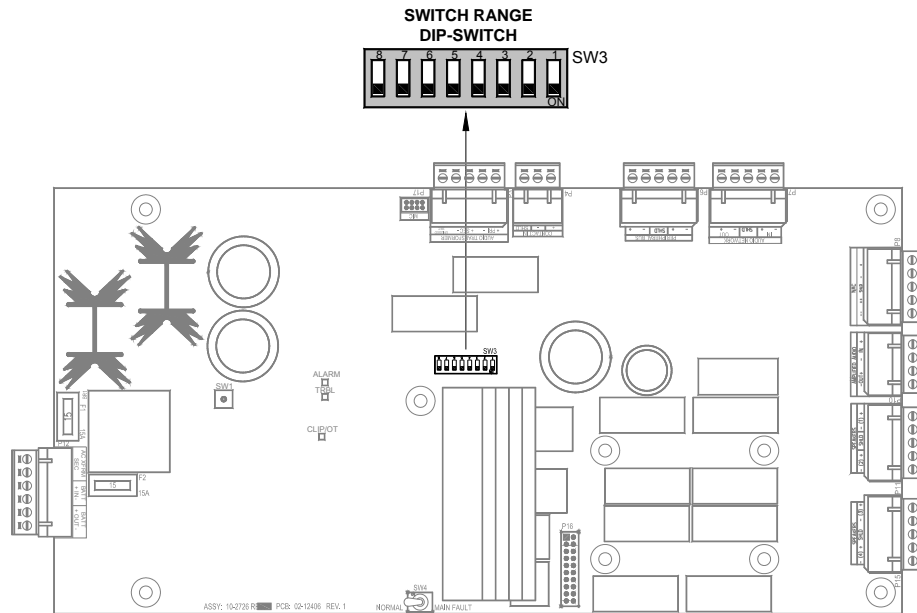


**Exhibit 11: Audio Transformer Installation**



#### 4.4 SET THE CARD'S BINARY ADDRESS

Each amplifier card requires a unique address for identification on the RS485 peripheral bus. Dip-switch SW3-1 through 6 is used to set the address for the device (See Exhibit 12). A maximum number of 31 devices can be connected to the RS485 peripheral bus circuit.



**Exhibit 12: Card Addressing Switch**

The device addresses do not need to be sequential and can be set to any number between 02 and 32. Note that 00 is not a valid address and 01 is reserved for the control panel. See Exhibit 13 for DIP switch settings for each binary address (ID number).

Dip-switch SW3 (switch 7) is used to set the peripheral bus communication speed that will be used by the amplifier card. In the OFF position, the card will communicate at 9600 bps (standard). In the ON position, the card will communicate at 38400 bps (fast). The selected communication speed must match the host control panel settings.

DIP-switch 8 must be set to ON if **ALL** of the Fike products that participate on the Audio Bus are V2.30 or higher. If **ANY** of the products are not at V2.30 or higher then ALL must have DIP-switch 8 set to OFF. Excluding Amplifier NAC firmware 10-2745.

**Note:** The amplifier must be reset after changing any DIP switch settings; either by pressing the reset switch (SW1) on the amplifier or resetting the host control panel.

Binary Value	1	2	4	8	16	32
Dip Switch #	1	2	3	4	5	6
Address						
0	NOT VALID					
1	ON	◀ PANEL ONLY				
2		ON				
3	ON	ON				
4			ON			
5	ON		ON			
6		ON	ON			
7	ON	ON	ON			
8				ON		
9	ON			ON		
10		ON		ON		
11	ON	ON		ON		
12			ON	ON		
13	ON		ON	ON		
14		ON	ON	ON		
15	ON	ON	ON	ON		
16					ON	
17	ON				ON	
18		ON			ON	
19	ON	ON			ON	
20			ON		ON	
21	ON		ON		ON	
22		ON	ON		ON	
23	ON	ON	ON		ON	
24				ON	ON	
25	ON			ON	ON	
26		ON		ON	ON	
27	ON	ON		ON	ON	
28			ON	ON	ON	
29	ON		ON	ON	ON	
30		ON	ON	ON	ON	
31	ON	ON	ON	ON	ON	
32						ON

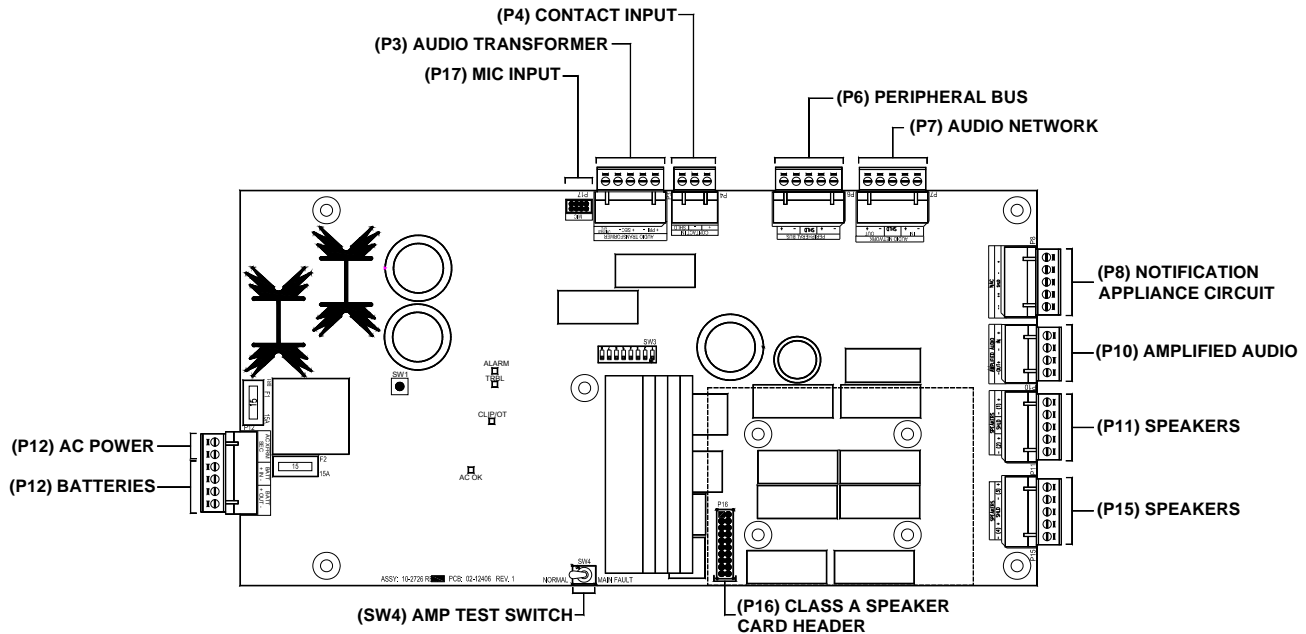
**Exhibit 13: Binary Addressing Table**

## 4.5 CONNECT FIELD WIRING TO CARD

Remove all power (AC and DC) before connecting field wiring. Before connecting the circuits to the Amplifier Card, check the wiring for unwanted shorts, voltages and ground faults. Correct any circuit faults prior to landing field wiring.

The amplifier card is equipped with removable terminal block connectors that allow you to remove the terminals for landing field wiring. After field wiring has been connected to the terminal block, simply reinsert it back into the terminal block header to complete the field wiring connection to the controller.

Exhibit 14 shows the amplifier cards terminal block designations and their general function for reference purposes. Wiring diagrams illustrating each terminal block connection are provided in the following sections.

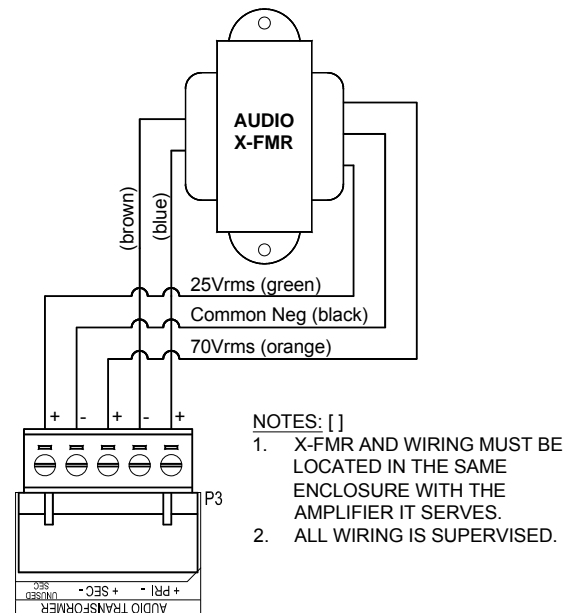


**Exhibit 14: Amplifier Card Terminal Designations**

### 4.5.1 AUDIO TRANSFORMER – (P3)

The amplifier card is capable of producing low-level tones and messages. To drive the speaker circuits, the audio signal must be fed through an audio transformer (P/N 02-12825). The output of the audio transformer is fed back into the amplifier card via Terminal P3 and then to the speaker circuits (See Exhibit 15).

The audio amplifier is capable of boosting the audio signal to either 25Vrms or 70Vrms. The transformer provides five wires: primary + (blue); primary – (brown); secondary – (black); secondary + 25Vrms (green); and secondary + 70Vrms (orange). If the system is to utilize 25Vrms speakers, connect the +25Vrms (green) and common negative wire (black) to the amplifier card's Audio Transformer secondary input. If using 70Vrms speakers, connect the +70Vrms (orange) and common negative wire (black) to the amplifier card's Audio Transformer secondary input as show in Exhibit 15. The unused positive wire (25 or 70Vrms) shall be landed on the terminal marked Unused Sec.

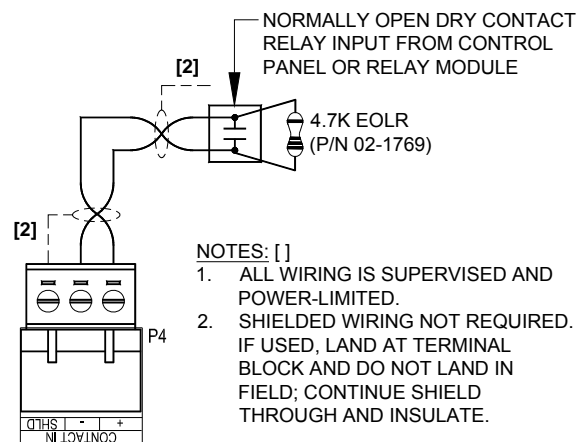


**Exhibit 15: Audio Transformer Connections**

### 4.5.2 CONTACT INPUT - (P4)

Exhibit 16 illustrates how connect a normally open, alarm contact to Terminal P4 on the amplifier card. This connection can be used to facilitate fail-safe activation of the amplifier if the RS485 interface with the host control panel is lost.

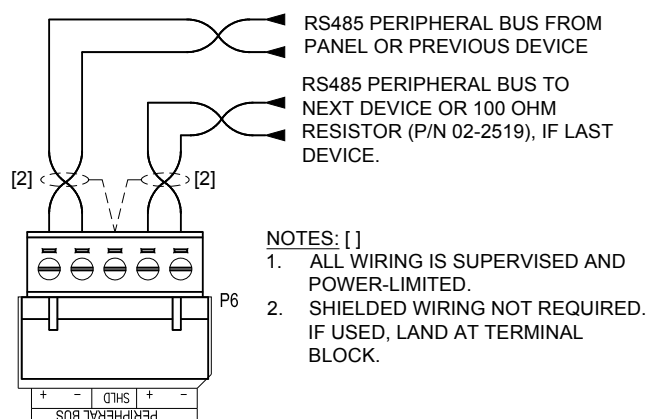
Refer to Section 5.5 for a complete description of amplifier fail-safe operation.



**Exhibit 16: Contact Input Connections**

### 4.5.3 PERIPHERAL BUS - (P6)

Exhibit 17 illustrates how to connect the amplifier card to the associated Fire Alarm Control Panel's RS485 peripheral bus. This connection provides an intelligent interface between the amplifier card and the control panel for supervision and activation purposes. The panel's peripheral bus allows the amplifier to be located up to 4,000 ft. (1,219 m) away using Belden 9841, twisted-shielded cable or equivalent.



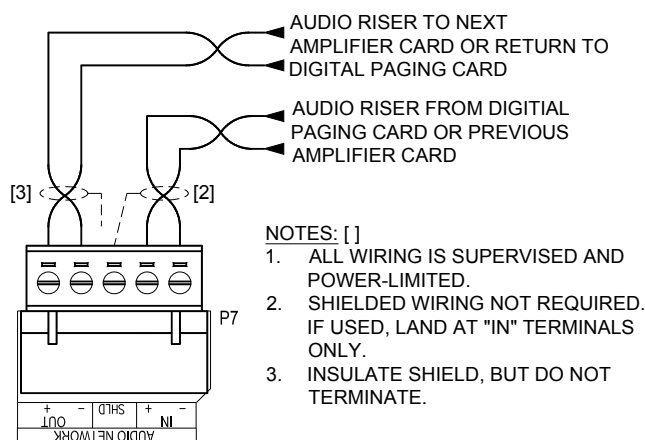
**Exhibit 17: Peripheral Bus Connections**

### 4.5.4 AUDIO NETWORK - (P7)

Exhibit 18 illustrates how to connect the amplifier to the voice systems digital audio network (bus). This connection is used to connect all system voice components (i.e., amplifiers, digital paging card, and remote paging cards) together for broadcasting of live pages (maximum 128). Maximum 4,000 ft. (1,219 m) from one voice component to another voice component using Belden 9841, twisted-shielded cable or equivalent.

The audio network originates at the digital paging card (P/N 10-2727) and the field wiring must be run from audio network connection terminals "OUT" to "IN" and must return to the digital paging card (Class A network).

Refer to Fike document 06-564, "FCC Digital Paging Assembly Product Manual" for connection details.

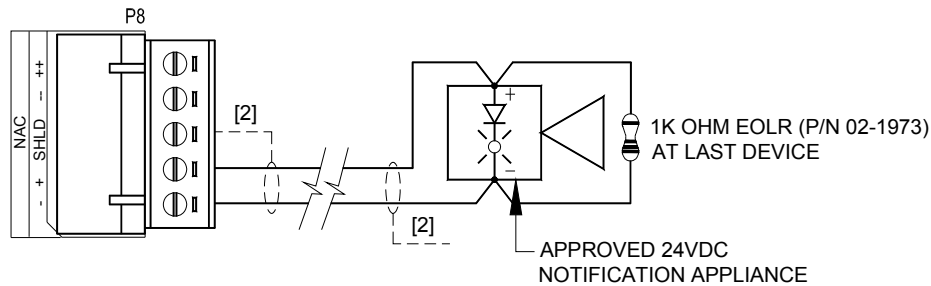


**Exhibit 18: Audio Network Connections**

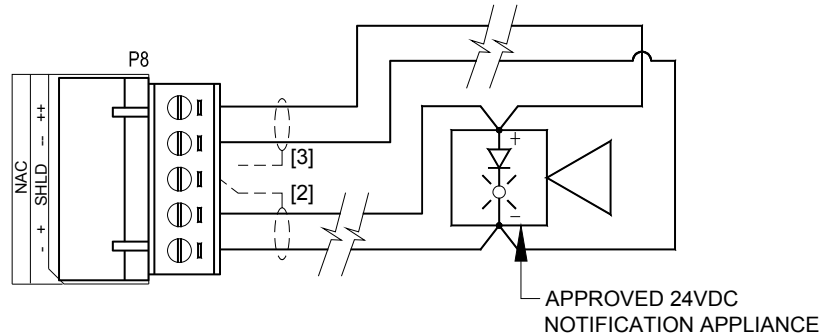
#### 4.5.5 NOTIFICATION APPLIANCE CIRCUIT - (P8)

Exhibits 19 and 20 illustrate how to wire the amplifier's single notification appliance circuit using either Class B or Class A wiring. The circuit is rated for 2A at 24Vdc and supports both Gentex and System Sensor synchronization protocols. The sync pulse generated will synchronize just the devices connected to the circuit.

**Note:** Refer to Fike document 06-186 "Device Compatibility Document" for a complete listing of compatible notification appliances.



**Exhibit 19: Notification Appliance Circuit – Class B**



**Exhibit 20: Notification Appliance Circuit – Class A**

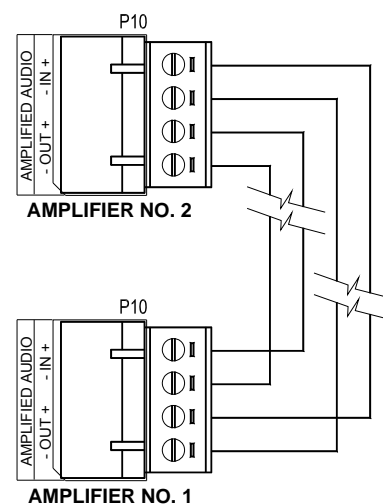
### 4.5.6 AMPLIFIED AUDIO - (P10)

Exhibit 21 illustrates how to wire two (2) amplifier cards together for dual channel applications. This interconnection allows the audio message being generated by each amplifier to be shared with the other. When using this configuration, each pair of interconnected amplifiers is limited to a maximum speaker load of 50 watts.

Refer to Appendix A for dual channel application example.

**Note:** Interconnect wiring must be contained within the same enclosure.

**Note:** For a complete description of dual channel operation, refer to Sections 5.3 and 5.4.

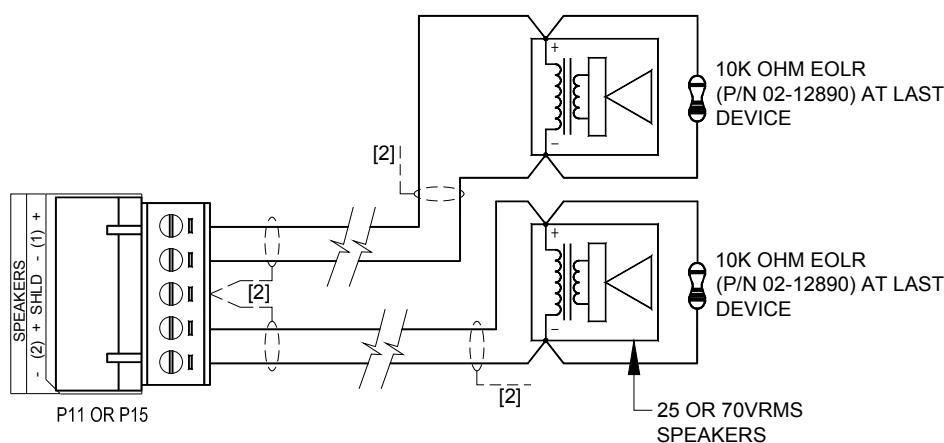


**Exhibit 21: Amplified Audio Connections**

### 4.5.7 SPEAKERS - (P11 AND P15)

Exhibit 22 illustrates how to wire speakers to the amplifier card using Class B wiring. Each speaker circuit supports the use of 25Vrms or 70Vrms speakers with a 50 watt maximum load.

**Note:** Refer to Fike document 06-186 "Device Compatibility Document" for a complete listing of compatible speaker appliances.



**NOTES: [ ]**

1. ALL WIRING IS SUPERVISED AND POWER-LIMITED.
2. SHIELDED WIRING NOT REQUIRED. IF USED, LAND AT TERMINAL BLOCK AND DO NOT LAND IN FIELD; CONTINUE SHIELD THROUGH AND INSULATE.

**Exhibit 22: Speaker Connections**

For installations that require the speaker circuits to be wired Class A, you must install a Class A Speaker Module (P/N 10-2746). Refer to Fike document 06-574 for Class Speaker Card installation and wiring instructions.

**Note:** When using 70 VRMS speakers, a minimum of 18 AWG wire with a minimum insulation thickness of 1/32 inch (.8 mm) shall be used.

#### 4.5.8 BATTERIES - (P12)

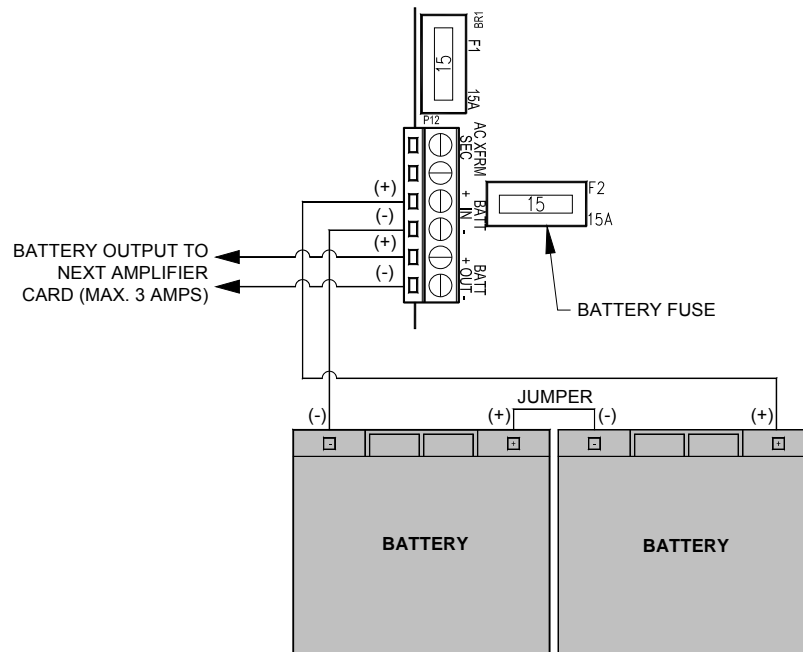
Exhibit 24 illustrates how to connect standby batteries to the amplifier card. Each amplifier card is equipped with an integral battery charging circuit that is capable of supplying 4 amps at 27 VDC to connected batteries (maximum 18 AH). Each amplifier provides a connection point that allows it to share its standby battery power with up to two additional amplifier cards. The following table lists the size of batteries required to provide power to one or more “fully loaded” amplifiers for the stated operation time.

System Type	Amplifier Qty.	Battery Size	Standby Operation	Alarm Operation
EVACS/MNS	1	Two, 7 AH	24 hrs.	15 minutes
EVACS/MNS	2	Two, 12 AH	24 hrs.	15 minutes
EVACS/MNS	3	Two, 18 AH	24 hrs.	15 minutes

**Exhibit 23: Battery Capacity Requirements**

To install the batteries:

1. If using a single set of batteries to serve multiple amplifiers, first disable the battery charging function on the secondary amplifiers using C-Linx. Then connect the BATT OUT +/- on the main amplifier doing the charging to the second amplifier BATT IN +/- . Repeat wiring arrangement for additional amplifiers.
2. Remove the batteries and install them into the enclosure. The standby batteries can be located in the same enclosure as the system amplifiers or they can be remotely mounted in an external battery enclosure.
3. Connect the positive battery cable from terminal P12 to the positive (+) terminal of one battery.
4. Connect the negative battery cable from terminal P12 to the negative (-) terminal of the other battery.
5. Install the supplied jumper cable between the negative (-) terminal of the first battery to the positive (+) terminal of the second battery. Batteries should only be connected after all field wiring has been landed and AC power has been applied.



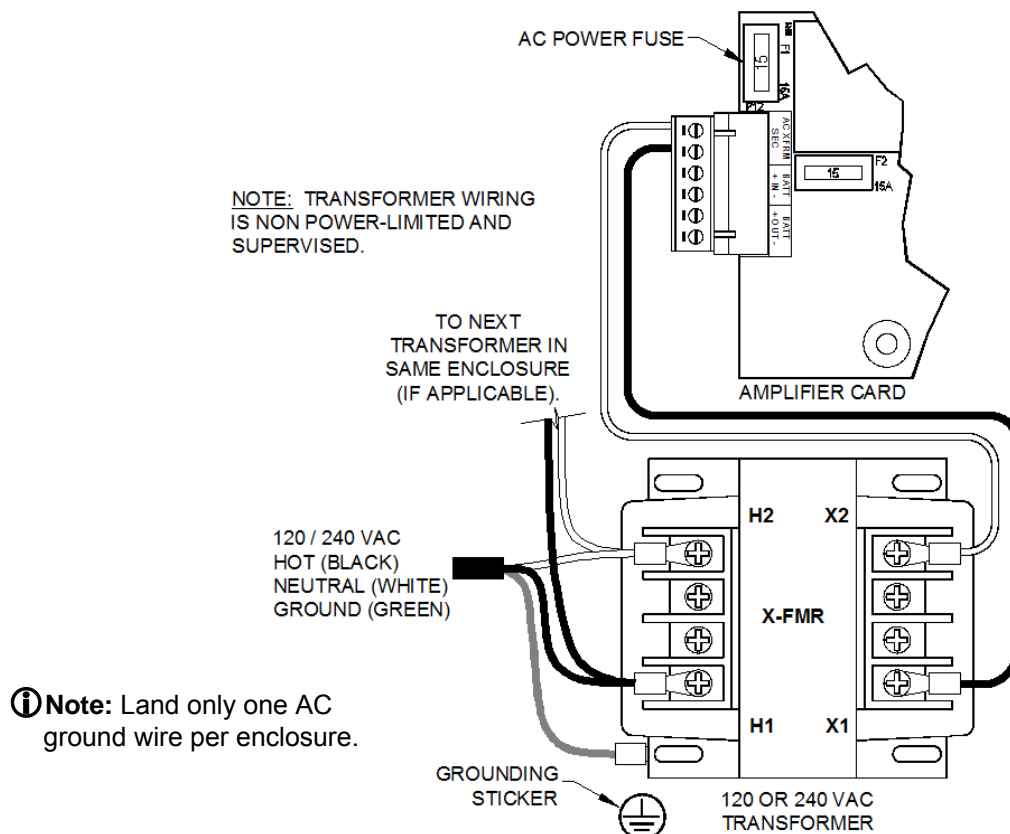
**Exhibit 24: Battery Connections**

### 4.5.9 AC XFRM SEC - (P12)

Exhibit 25 illustrates how to connect AC power to the amplifier card. Each amplifier card requires its own 120 or 240 VAC transformer in order to supply the required operating power to the card.

To connect AC power:

1. Verify that the circuit breaker supplying power to the transformer(s) is turned off and locked out before proceeding.
2. Route AC power wires to the primary side of the transformer (H1 and H2).
3. Install connectors onto incoming power wiring.
4. Connect AC hot and neutral wires to the transformer primary (H1 and H2). Never swap transformer primary (H1 and H2) and secondary (X1 and X2) by connecting AC feed to secondary terminals. Doing so will cause the transformer to step-up the power resulting in certain damage to the controller.
5. Temporarily loosen the lower left hex nut (identified with a grounding label) that is used to secure the power transformer to the back box; then install the AC ground wire (G) under the transformer body onto the mounting stud. Tighten the hex nut to secure the transformer and ground wire in place. This connection provides lightning and transient protection for the panel and must make a good mechanical connection to the enclosure.
6. Temporarily apply power with Primary Only wired and measure to validate secondary output (X1/X2) at 27 VAC.
7. Install wires from transformer secondary terminals (X1 and X2) to the AC XFRM SEC terminals on the amplifier.
8. Install the plastic terminal covers onto the transformer. **DO NOT** apply AC power at this time.

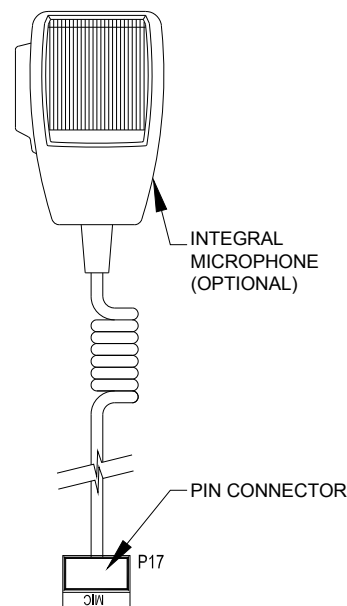


**Exhibit 25: AC Power Connections**

#### 4.5.10 INTEGRAL MICROPHONE INPUT - (P17)

Exhibit 26 illustrates how to connect the paging microphone to a system amplifier. Each amplifier card provides a connection point for a system microphone. The microphone, when connected directly to an amplifier, will deliver live audio messages only to that amplifier. For networked audio applications, the system microphone must be connected to the Digital Paging card (P/N 10-2727) in order to allow delivery of live audio messages to all system amplifiers simultaneously.

**Note:** Fike offers a Mic Simulator Jack (PN 10-2886) that can be used for troubleshooting.



**Exhibit 26: Microphone Input**



## 5.0 OPERATION

Operation of the Fike Emergency Voice Alarm Communication System is based on the standard Zone and State relationship that is used by all of Fike's Intelligent Fire Alarm control panels. Amplifier activation is tied to the panel's operational states via zone mapping and/or a switch press on the control panel or control card (i.e. paging control card, remote paging control card, I/O switch card, audio control switch card). The amplifier will either play a canned message, play live audio (page) or record the live audio and repeat over and over (page with record and repeat) for Voice or MNS operation. In addition, each amplifier has the capability of having a local microphone connected directly to the amplifier that allows paging directly to the speaker circuits upon keying of the microphone. No panel interaction is required for this operation.

Refer to Appendix A for examples of each of the following system applications.

### 5.1 SINGLE CHANNEL - AUTOMATIC

During system configuration, each of the panel's zones can be mapped to other zones to facilitate automatic initiation of EVAC signals within the affected zone(s) and initiation of Alert signals within adjacent zones; thus allowing selective evacuation and notification of the building occupants.

Each amplifier card must be programmed to activate its speaker circuits based on the operational state of a specific zone (1-253). Each operational state is assigned a priority level. When an event occurs, the host control panel will determine the highest priority state for the affected zone and will instruct each amplifier as to which canned audio message to play (16 total) in response to the event. The following table lists the operational states that the amplifier can be assigned to and their default priority settings.

Operational State	Priority	Configurable
Drill	1	NO
EVAC	2	NO
Alert	3	NO
Alarm	4 (initiates EVAC and Alert)	YES
Test Alarm	5	YES
Supervisory	6	YES
Process	7	YES

**Exhibit 27: State Priority**

In order to provide operational flexibility, the priority settings for Alarm, Test Alarm, Supervisory, and Process states can be configured to suit specific project requirements. This allows other system events (i.e., weather alerts, terrorist alerts, etc.) to be assigned higher priority levels over standard panel events; however, the standard operation priorities of Alarm, Test Alarm, Supervisory, and Process events will be enforced by the system. For example: Supervisory events cannot be assigned a higher priority than Alarm and Test Alarm events.

Each operational state can be assigned a different canned audio message that will be played in response to the event; however, each amplifier is only capable of playing a single audio message at one time (single channel audio). When more than one event occurs in a single zone, the amplifier assigned to that zone will play the audio message assigned to the operational state with the highest priority.

Each amplifier card is equipped with an integral piezo for audible annunciation. The piezo can be enabled/disabled in the amplifier configuration. The piezo will annunciate a different pattern in response to different system events as follows:

- Trouble and Alert = Piezo constantly ON
- Alarm and EVAC = ¼ second ON, ¼ second OFF
- Drill = 1/2 second ON, 1/2 second OFF

## 5.2 SINGLE CHANNEL - MANUAL

Manual activation of the system amplifiers can be accomplished using control switches on the fire alarm control panel, remote display, paging control card, remote paging control card, I/O switch card, and audio control switch card. Each of these devices provide switches that can be programmed to allow the system operator to manually initiate voice evacuation commands (i.e., Drill, EVAC, Alert, Page, Play Message ID, Record and Repeat, etc.) to single or multiple audio zones.

When a switch is pressed, the fire alarm control panel determines which amplifiers should be activated and instructs them to play either a canned message, play live audio (page) or record the live audio and repeat it over and over (page with record and repeat) in response to the switch activation. System operation is dependent upon system programming. The amplifiers will cease operation upon reset of the control panel or deactivation of the control switch.

Each switch on a control card (FCC paging control card, LOC paging control card, I/O switch card, and audio control switch card) must be assigned a priority level (1 – 254) with 1 being the highest and 254 being the lowest priority. These priority levels are used to resolve which switch has control priority over another switch that is programmed for voice or MNS operation. A switch with a lower priority setting cannot override a switch with a higher priority. Switches with the same priority setting can override another switch with the same priority setting or a lower priority setting.

### 5.2.1 LOCAL PAGING OPERATION

For smaller, single amplifier applications, paging can be accomplished by connecting a paging microphone directly to the amplifier's P17 terminal. This allows simultaneous paging to all four speaker circuits connected to that individual amplifier. Paging from the local microphone will override paging from the system's centralized microphone (if applicable).

Pressing the microphones push-to-talk switch will interrupt the tone/voice message being played (if active) and will direct the live page to all four amplifier speaker circuits. The amplifier will revert back to the tone/message once the push-to-talk switch is released.

### 5.2.2 DISTRIBUTED PAGING OPERATION

On a distributed audio system, an amplifier card is installed to serve each individual paging zone (i.e., floor or area). For systems such as this, the operator may be required to page to one or more zones in response to a fire event. In order to accomplish this, a FCC Digital Paging Assembly (P/N 10-2751) must be installed. The digital paging assembly includes a centralized paging microphone, paging control card and digital paging card. The digital paging card provides an audio network connection that allows all system amplifiers and remote microphones to be interconnected for paging operation. Paging is manually initiated using the configurable switches provided on the paging control card (i.e. Page to Alert, Page to EVAC, Page to All and Page to All Record and Repeat). For larger more complex systems, one or more control switch cards (P/N 10-2661 and 10-2659) and/or remote microphones (P/N 10-2800 or 10-2801) can be installed to expand the paging controls. These components provide a means for the system operator to manually initiate live pages from remote locations throughout the building or facility. Each switch can be configured to activate single, multiple or all audio zones.

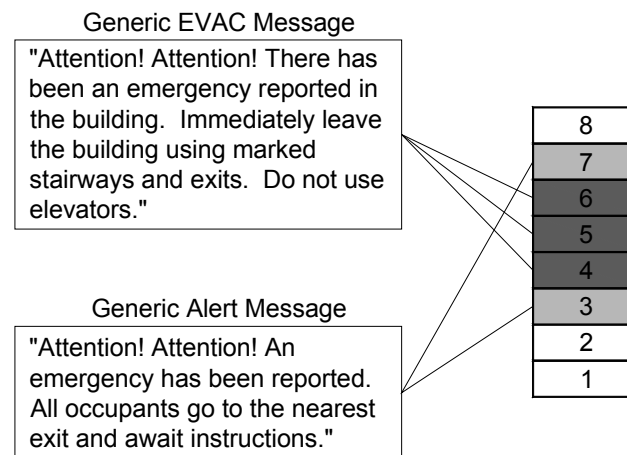
Refer to the "FCC Digital Paging Assembly Product Manual", P/N 06-564 for further details.

### 5.3 DUAL CHANNEL - AUTOMATIC

In a dual channel configuration, two amplifiers are tied together via their P10 Amplified Audio terminals to basically form a single dual channel amplifier. One amplifier is configured as the dedicated EVAC amp, while the other amplifier is configured as the Alert amp. This configuration basically creates a *single dual channel* amplifier with eight (8) speaker outputs. Each speaker circuit can be programmed to select either amplifier as their audio source in response to a system event. This allows either the EVAC or Alert message to be played through any of the eight (8) available speaker circuits in any combination.

Activation of dual channel amplifiers is tied to the panel's Alarm State via zone mapping. During system configuration, each of the panel's Alarm zones can be mapped to other zones to facilitate automatic initiation of EVAC signals within the affected zone(s) and initiation of Alert signals within adjacent zones; thus allowing selective evacuation and notification of the building occupants.

Exhibit 28 shows an eight story building equipped with two amplifier cards set up for dual channel operation. Each floor of the building is served by one of the eight available speaker circuits. In this example, a fire has been detected in zone 5. During system programming, zones 4 and 6 were programmed to automatically enter into the EVAC state when zone 5 is in Alarm. In addition, zones 3 and 7 were programmed to automatically enter into the Alert state when zone 5 is in Alarm. Each Alarm zone must be configured in this manner for proper dual channel operation. As additional alarms are received, the audio message being played as a result of the first alarm may change from Alert to EVAC as the fire event spreads. In addition, zones not previously alerted to the fire event will begin to hear the Alert message.



**Exhibit 28: Dual channel Automatic Operation**

For proper dual channel operation, the following configuration options must be set on each dual channel amplifier:

1. The Amplifier Zones for each amp (both EVAC and Alert) must be set to include all zones served by the eight (8) available speaker circuits.
2. Audio messages for each operational state must be set; however, each amplifier is only capable of playing a single audio message at one time.
3. Each speaker circuit (1 – 8) must be programmed to activate for the specific zone it serves (1-253).

## 5.4 DUAL CHANNEL - MANUAL

Manual activation of dual channel amplifiers can be accomplished using control switches on the fire alarm control panel, remote display, FCC paging control card, LOC paging control card, I/O switch card, and audio control switch card. Each of these devices provide switches that can be programmed to allow the system operator to manually initiate voice evacuation commands (i.e., Drill, EVAC, Alert, Page, Play Message ID, Record and Repeat, etc.) to single or multiple audio zones.

When a switch is pressed, the fire alarm control panel determines which amplifiers and speaker circuits should be activated. This allows them to play either a canned message, play live audio (page) or record the live audio and repeat it over and over (page with record and repeat) in response to the switch activation. System operation is dependent upon system programming. The amplifiers will cease operation upon reset of the control panel or deactivation of the control switch.

### **SCENARIO #1 – PAGING WITH NO ALARM ACTIVE**

When no alarm is active on the control system, both the EVAC and Alert amplifiers are in standby. Initiation of a page command via a control switch will cause only the amplifier that serves the selected zone to turn on and the individual speaker circuit to activate to play the live page (selective paging).

### **SCENARIO #2 – PAGING WITH ALARM (EVAC AND ALERT) ACTIVE**

When an alarm is active on the control system, both dual channel amplifiers (EVAC and Alert) are active. Selective paging to individual speaker circuits **CANNOT** be performed. This is due to the fact that the amplifier is capable of playing only one message (canned or live) at a time. Initiation of a page command to an individual speaker zone will cause either the EVAC or Alert amp to switch to page operation; therefore, causing the EVAC or Alert message being played on selected speaker circuits to turn off and play the live page, which is unacceptable. The amplifiers will return to automatic operation upon deactivation of the page command.

For this reason, paging functions in dual-channel mode are limited to Page to All, Page to Alert and Page to EVAC as described below.

#### Page to All

Both amplifiers will switch to page operation and all speaker circuits will play the live page.

#### Page to Alert

The Alert amp will switch to page operation and only the speaker circuits on both amps that are in Alert state will play the live page. The EVAC amp will continue to play its canned message.

#### Page to EVAC

The EVAC amp will switch to page operation and only the speaker circuits on both amps that are in EVAC state will play the live page. The Alert amp will continue to play its canned message.

**❗ Important Note:** If selective (zoned) paging is required, an amplifier must be installed for each individual paging zone required.

## **5.5 FAIL-SAFE**

Each system amplifier is equipped with a contact closure input (P4) that can be used to provide fail-safe operation. During normal operation, the amplifier continually checks the status of RS485 communication with the panel, as well as the state of the contact closure input. Should the RS485 communication between the host control panel and the amplifier be lost for a minimum of 30 seconds and the contact closure input activates, the amplifier will initiate fail-safe operation. The amplifier's NAC and speaker circuits will activate and play the assigned audio message(s).

Operation of the contact closure input is configured using the panel's programming software C-Linx. By default, this feature is disabled.

## **5.6 AUDIO SYNCHRONIZATION**

During typical operation, it is possible for the audio messages generated by the system amplifiers to become out of sync (i.e., audio message starts and stops at different times). This can potentially cause an echo effect where multiple amplifiers serve a common audio zone due to message playback delay. Page operation is the most common cause for the amplifiers to become out of sync. For example: If a page is initiated to one or more amps, it temporarily interrupts the playback of the automatic audio message. Once the page is complete, the amplifier(s) will recommence playback of the automatic audio message, which will be out of sync with the amplifiers not affected by the page.

The following configuration options shall be used to properly configure the amplifier card for sync operation. Configuration settings vary according to the system configuration and type of sync operation required.

### **Option 1 – Single or Networked panel system with individual zone synchronization**

In this option, sync operation is isolated to each individual zone on a single panel or networked panel system and zones are not shared across the network. The Audio Restart feature on the FCC and LOC digital paging cards is not required and should be disabled. All amplifiers that are to be synchronized shall be configured with sync operation enabled and to play the "Configured Message ID".

### **Option 2 – Single panel with synchronization across zones**

In this option, sync operation is shared between multiple zones on a single panel system. The Audio Restart feature on the FCC and LOC digital paging cards must be enabled and a Restart Time Delay of 0 seconds must be used. All amplifiers that are to be synchronized shall be configured with sync operation enabled and to play the "Configured Message ID".

### **Option 3 – Networked panels with synchronization across zones**

In this option, sync operation is shared across networked panels and zones. The Audio Restart feature on the FCC and LOC digital paging cards must be enabled and a Restart Time Delay of 20 seconds minimum must be used. All amplifiers that are to be synchronized shall be configured with sync operation enabled and to play either the "Configured Message ID", "Play Tones", or "Play New Message ID" during the audio restart delay.

**❗ Note:** Refer to Fike documents P/N 06-564, FCC Digital Paging Assembly Product Manual and P/N 06-613 LOC Digital Paging Assembly Product Manual for configuration options for sync operation.

## 6.0 PROGRAMMING

Programming of each amplifier card is accomplished using a lap top computer and Fike's C-Linx software. Refer to Fike document 06-448, "C-Linx Software manual" for programming instructions. Programming cable P/N 10-1874B is used to download the configuration to the connected amplifier card(s) via the host control panel's P3 configuration port.

The following tables identify the configurable features for the amplifier card that can be changed by using the panel's programming software C-Linx. The table also identifies features that are available, but are not permitted to be used per the CyberCat system's UL listing.

**Exhibit 29: UL (90.23) Programming Features**

Circuit or Component	Program Feature or Option	Permitted in UL 864? (Y/N)	Possible Settings (Defaults shown bold)	Settings permitted in UL 864	Notes
Voice EVAC Amplifier	<i>Common</i>				
	Application Type	Y	<b>Single Channel</b> / Dual Channel / Page Only		2
	<i>Miscellaneous</i>				
	Peripheral Address	Y	<b>2 - 32</b>		
	Locality	N	<b>Standard</b> / Boston / Chicago / NYC	Standard	3
	Record and Repeat Tones	N	<b>Play Tones</b> / No Tones	Play Tones	1
	Periodic Tones For Fire Page When Not Speaking	Y	Play Tones / <b>No Tones</b>		6
	Periodic Tones For MNS Page When Not Speaking	N	<b>Play Tones</b> / No Tones	Play Tones	7
	Speaker Voltage Output	Y	25 VAC / <b>70.7 VAC</b>		
	Power Input	Y	<b>120 VAC</b> / 240 VAC		
	Audio Bus	Y	<b>Enabled</b> / Disabled		
	Local Microphone	Y	Enabled / <b>Disabled</b>		
	Battery Charger	Y	<b>Enabled</b> / Disabled		
	Local Piezo	Y	<b>Enabled</b> / Disabled		
	<i>NAC</i>				
	State	Y	<b>Alarm</b> / Pre Alarm 2 / Pre Alarm 1 / Supervisory / Trouble / Process		
	Synchronization	Y	<b>None</b> / Gentex / System Sensor		
	Zones	Y	1 – 254		4
	Silenceable	Y	<b>Silence</b> / Non-Silence		
	Drill	Y	<b>Enabled</b> / Disabled		
	Walk Test	Y	<b>Enabled</b> / Disabled		
	Active During Fire Playback	Y	Enabled / <b>Disabled</b>		5
	Active During Fire Page	Y	Enabled / <b>Disabled</b>		5
	Active During MNS Playback	Y	Enabled / <b>Disabled</b>		5
	Active During MNS Page	Y	Enabled / <b>Disabled</b>		5
	NAC Delay Timeout	Y	<b>0</b> – 250 seconds		
	<u>Strobe OFF after Silence</u>	<u>Y</u>	<u>Enabled / Disabled</u>		

Notes:

1. Allows the selection to play MNS tone and Fire tones between record and repeat messages.
2. Select the type of application that the amplifier is being utilized as.

3. Locality setting is configured for operation of local jurisdiction requirements for only Boston, Chicago and New York. Outside of these jurisdictions, the setting should be set to Standard.
4. Select the zone number(s) that will activate the NAC (1 – 254).
5. These need to be enabled when you want the NAC circuit on the Amplifier to activate off of an event.
6. Allows the selection to play Fire tones periodically when no live announcement is made during Fire page.
7. Allows the selection to play MNS tones periodically when no live announcement is made during MNS page.

Exhibit 30: UL (90.23) Programming Features - Continued

Circuit or Component	Program Feature or Option	Permitted in UL 864? (Y/N)	Possible Settings (Defaults shown bold)	Settings permitted in UL 864	Notes
Voice EVAC Amplifier	<i>Contact Monitor</i>				
	Contact	Y	<b>Disabled</b> / Enabled		1
	Message 1	Y	Message ID (1 – 16)		
	Message 2	Y	Message ID (1 – 16)		
	<i>Message Assignments – Single Channel</i>				
	State	Y	Drill / Evac / Alert / Alarm / Test Alarm / Supervisory / Process		
	Message 1	Y	Message ID (1 – 16)		2
	Message 2	Y	Message ID (1 – 16)		2
	Silence	Y	Silenceable / <b>Non-Silence</b>		3
	Speaker Circuit (1 - 4)	Y	<b>Enable</b> / Disable		4
	Amplifier Zone Assignment	Y	1 - 254		5
	<i>Message Assignments – Dual Channel</i>				
	State	Y	Drill / Evac / Test Alarm		
	Message 1	Y	Message ID (1 – 16)		2
	Message 2	Y	Message ID (1 – 16)		2
	Silence	Y	Silenceable / <b>Non-Silence</b>		3
	Speaker Zones (1 - 4)	Y	1 - 254		6
	Amplifier Designation	Y	<b>Evacuation</b> / Alert		7
	<i>Message Assignments – Page Only</i>				
	State	Y	Drill / Test Alarm		
	Message 1	Y	Message ID (1 – 16)		2
	Message 2	Y	Message ID (1 – 16)		2
	Silence	Y	Silenceable / <b>Non-Silence</b>		3
	Speaker Zones (1 - 4)	Y	1 - 254		6
	<i>Amplifier Synchronization</i>				
	Amp Sync Enabled	Y	Enable / <b>Disable</b>		
	Amp Operation on Panel Network	Y	Play Cfg Msg ID Play Tones Play New Msg ID		8
	New Msg ID	Y	None, 1 - 16		8

## Notes:

1. The contact monitor input allows the amplifier card to be activated via a contact closure should the RS485 communication with the control panel fail.
2. Sets the first and second message that will be played in response to each panel state listed.
3. The Page State cannot be silenced.
4. Select the speaker circuits that will be active on the selected amplifier.
5. Select the zone(s) that each amplifier will serve.
6. Select the zone(s) that each speaker circuit will serve.
7. Dual channel operation utilizes two amps interconnected together to form a single amp. One must be configured as the EVAC amp and the other must be configured as the Alert amp.
8. Configuration option is only available if amplifier synchronization is enabled.

**Note:** For panel network systems, amplifiers must be programmed from the network panel they are connected to.

**Note:** When Amplifier configuration is required, both the Amp peripheral and Main Board configuration **MUST** be sent via C-Linx .



## 7.0 SYSTEM MESSAGES

Each amplifier card is capable of storing up to 18 custom messages. Custom messages can be recorded using any standard audio recording program that is capable of producing a 16 bit, mono wav file with an 8 khz sample rate, maximum 30 seconds long. Fike offers a comprehensive selection of prerecorded audio messages that can be downloaded from the Fike Forums web page. Each prerecorded message is available in a Female or Male voice in English or Spanish languages. Refer to 06-589 for more available messages.

Prior to shipment from the factory, the following prerecorded English female messages are loaded into each amplifier (message slots 1 – 11).

**Exhibit 31: System Messages**

Message Slot	Message
1	"Attention! Attention! An emergency has been reported in this building. Please cease operations and leave the building utilizing the nearest exit or fire exit stairway. Do not use the elevators. Repeat! Do not use the elevators."
2	"There has been an emergency reported in the building. Immediately leave the building using marked stairways and exits. Do not use elevators." Followed by five seconds of Slow Whoop.
3	"Attention! Attention! An emergency has been reported. All occupants go to the nearest exit and await instructions."
4	"Attention Please! An emergency has been reported in this building. While this report is being verified, please proceed to the corridor outside the nearest fire exit and standby for further instructions. Do not enter the fire exit! Do not use the elevators!"
5	"Attention! Please! An emergency has been reported. All occupants go to the nearest stairwell exit and walk down to your assigned re-entry floor or main lobby. Do not use the elevators. Walk to the nearest stairway."
6	"Attention! Attention! An emergency has been reported in the building. Please cease operations and leave the building utilizing the nearest exit or fire exit."
7	"Attention! Attention! An emergency has been reported. All occupants go to the nearest exit and await instructions. Do not use the elevators! Repeat, do not use the elevators!"
8	"Attention! Attention! A potential emergency condition has been reported in the building and is being investigated. Please remain in your current location and stand by for further instructions."
9	"Attention! Please! Emergency responders have given the all clear. You may now proceed calmly back into the building."
10	"May I have your attention, please. May I have your attention, please. There has been a fire alarm reported in the building. There has been a fire alarm reported in the building. Please proceed to the stairways and exit the building. Do not use the elevators, but proceed to the stairways and exit the building."
11	"May I have your attention please. A fire has been reported in the building. Please proceed to the stairway and exit the building. Do not use the elevators."
12	Canned (user defined)
13	Canned (user defined)
14	Canned (user defined)
15	Canned (user defined)
16	Canned (user defined)
17	Defaulted to code three temporal tone (FIRE) <sup>1</sup>
18	Defaulted to MNS tone <sup>2</sup>

**Note:** Messages 1 through 16 can be assigned to each of the panel's operational states (i.e., Alarm, Trouble, Supervisory, Process, Alert, EVAC, etc.).

**Note:** If two messages are selected to play in response to a system event (i.e., English then Spanish), the following sequence is used: temporal pattern – message 1 – temporal pattern – message 2 – temporal pattern. This sequence shall be repeated until the panel is silenced or reset.

<sup>1</sup> Tone that will play before and after each FIRE related audio message. Customizable, maximum 3 – 10 seconds long.

<sup>2</sup> Tone that will play before and after each MNS related audio message. Customizable, maximum 1 – 3 seconds long.

## 7.1 DOWNLOADING AUDIO MESSAGES TO SYSEM AMPLIFIERS

Fike's programming software C-Link is used to download audio messages to the voice system amplifiers. Audio messages (WAV files) should be stored in a central location for easy access. When configuring the AMP, a message (audio file) can be assigned to each of the sixteen available message ID's. Each amplifier can store its own set of audio messages, unique from the other system amplifiers if necessary.

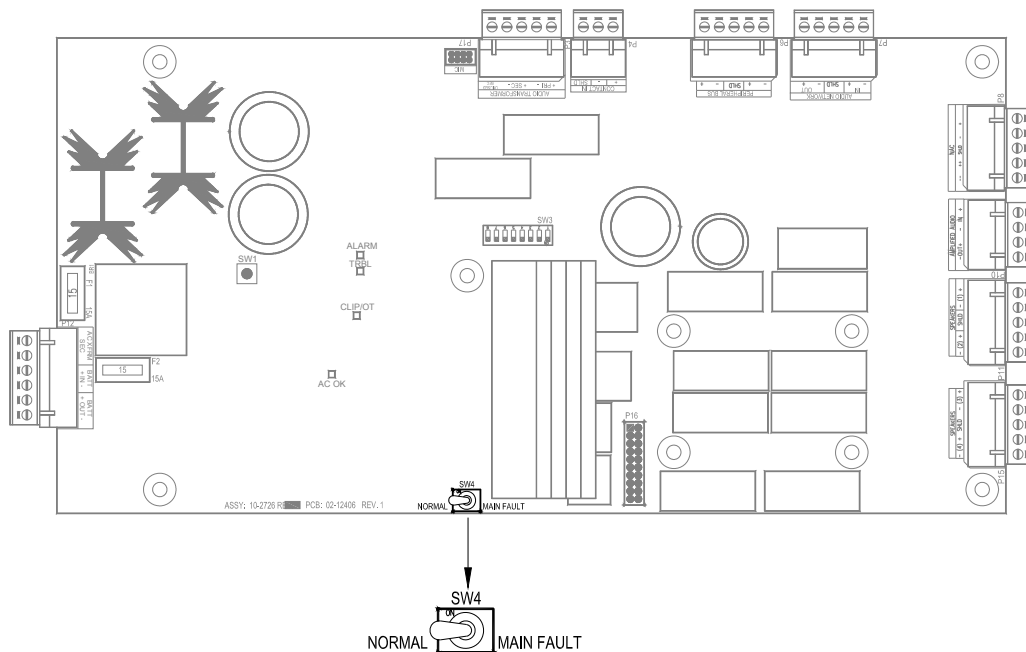
## 8.0 TESTING AND PLACING INTO SERVICE

To ensure proper system operation, this product must be tested in accordance with the requirements of NFPA 72 after 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.

### 8.1 TESTING THE BACKUP AMP CIRCUIT

Each amplifier card has a primary and secondary amplifier circuit built into the card. Toggle switch (SW4) on each amplifier card (See Exhibit 32) allows you to manually enable the secondary amplifier circuit by causing a fault on the main amplifier circuit. This allows the secondary circuit to be functionally tested for proper operation. Enabling the secondary circuit will initiate a trouble condition on the host control panel.



## 9.0 SERVICING

The amplifier card uses 15 amp replaceable fuses for AC power (F1) and batteries (F2). Supervised circuits employ End of Line resistors indicated below . Refer to the following table for a list of replacement parts.

**Exhibit 33: Spare Parts List**

<b>Part Number</b>	<b>Description</b>
10-2773-1	Amplifier Kit includes: 50 Watt Amplifier Card, 120 V power transformer and audio transformer
10-2773-2	Amplifier Kit includes: 50 Watt Amplifier Card, 240 V power transformer and audio transformer
10-2726	PCB Assembly, 50 Watt Amplifier Card
10-2746	PCB Assembly, Class A Speaker Card
10-2797	Remote Audio Enclosure, One AMP c = enclosure color ( <b>Red</b> or <b>Black</b> )
10-2754-c	Remote Audio Enclosure, Three AMP c = enclosure color ( <b>Red</b> or <b>Black</b> )
10-2755-c	Remote Audio Enclosure, Five AMP c = enclosure color ( <b>Red</b> or <b>Black</b> )
02-12825	Audio Transformer (25/70 VRMS)
02-10881	120 VAC Power Transformer
02-10882	240 VAC Power Transformer
10-2756-c	Fire-Phone Housing c = enclosure color ( <b>Red</b> or <b>Black</b> )
10-2757-c	Microphone Housing c = enclosure color ( <b>Red</b> or <b>Black</b> )
02-2519	Resistor, 100 ohm, .25W, 5% (peripheral bus)
02-12890	Resistor, 10K ohm, metal film, 1W, 5% (speakers)
02-1769	Resistor, 4.7K ohm, .25W, 5% (contact input)
02-1973	Resistor, 1K ohm, 1W, 5% (NAC)
02-4174	Fuse, Mini-Auto, Fast Acting, 15A (F1 & F2)
02-12420	Hardware Kit (amplifier mounting)

## APPENDIX A – APPLICATION EXAMPLES

The following Exhibits show different applications examples for Fike's voice evacuation system components for reference purposes. Refer to Section 5.0 for a complete description of each application example.

### A.1 SINGLE CHANNEL – AUTOMATIC

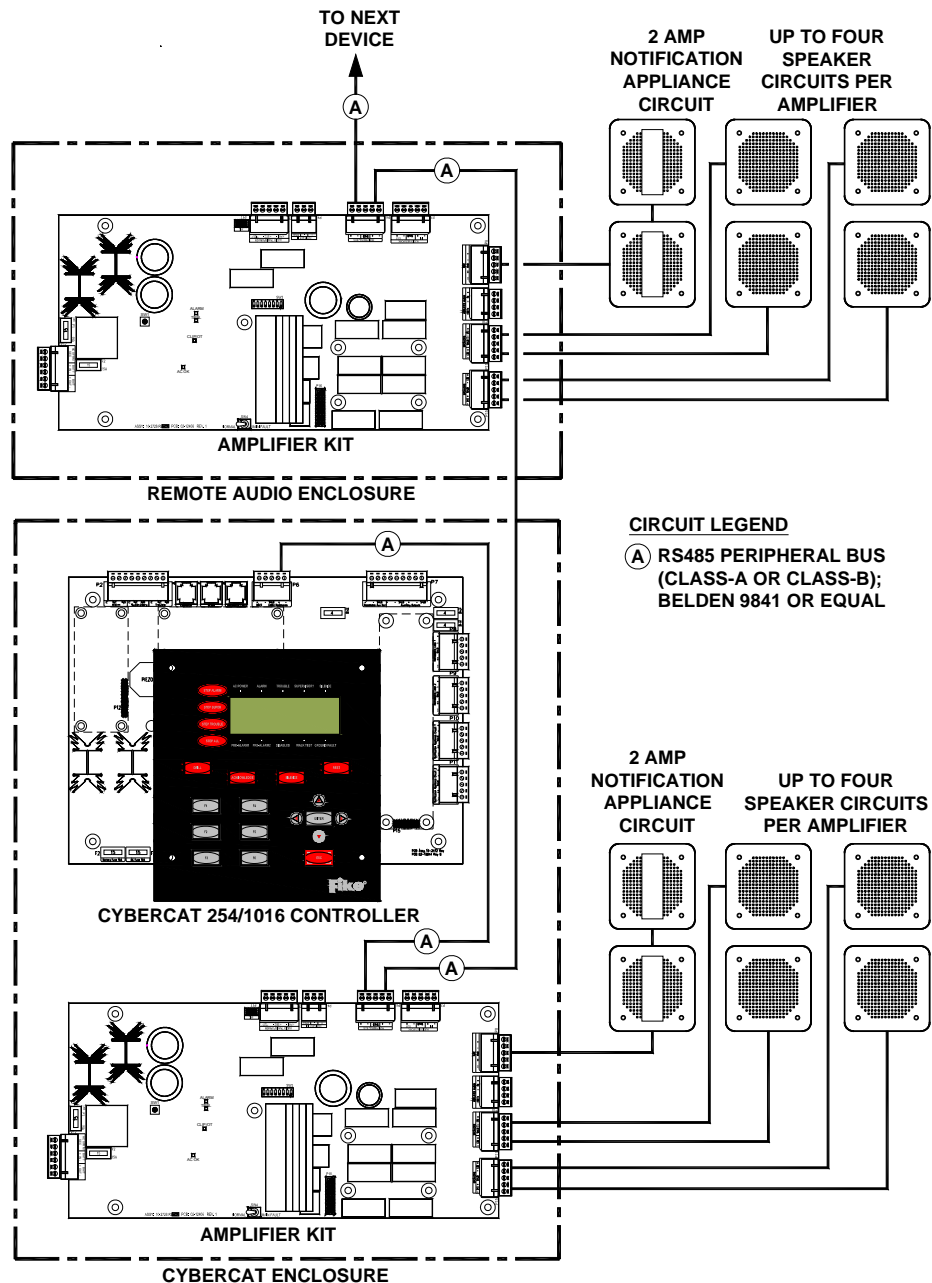


Exhibit A-1: Single Channel – Automatic

### A.2 SINGLE CHANNEL - MANUAL

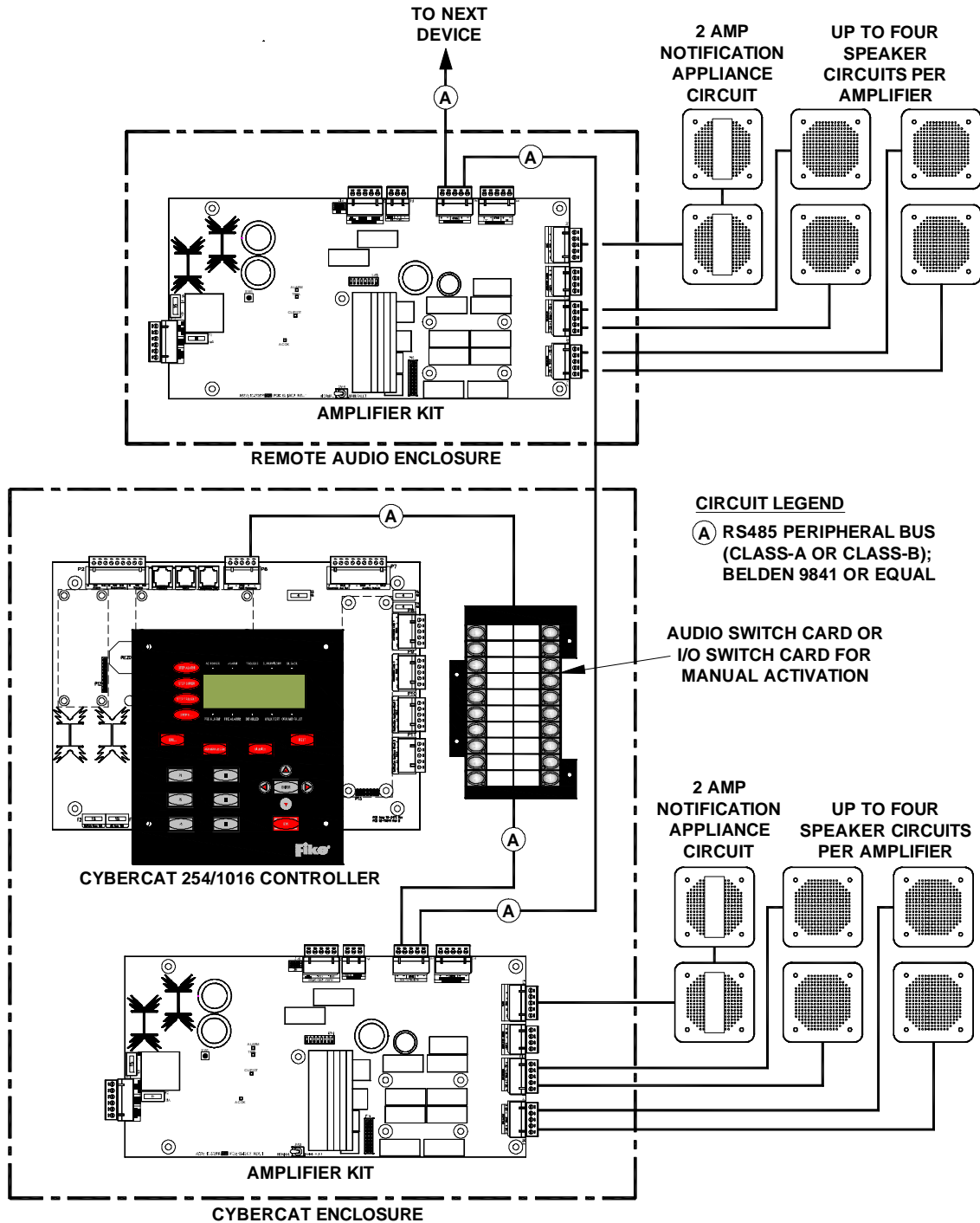
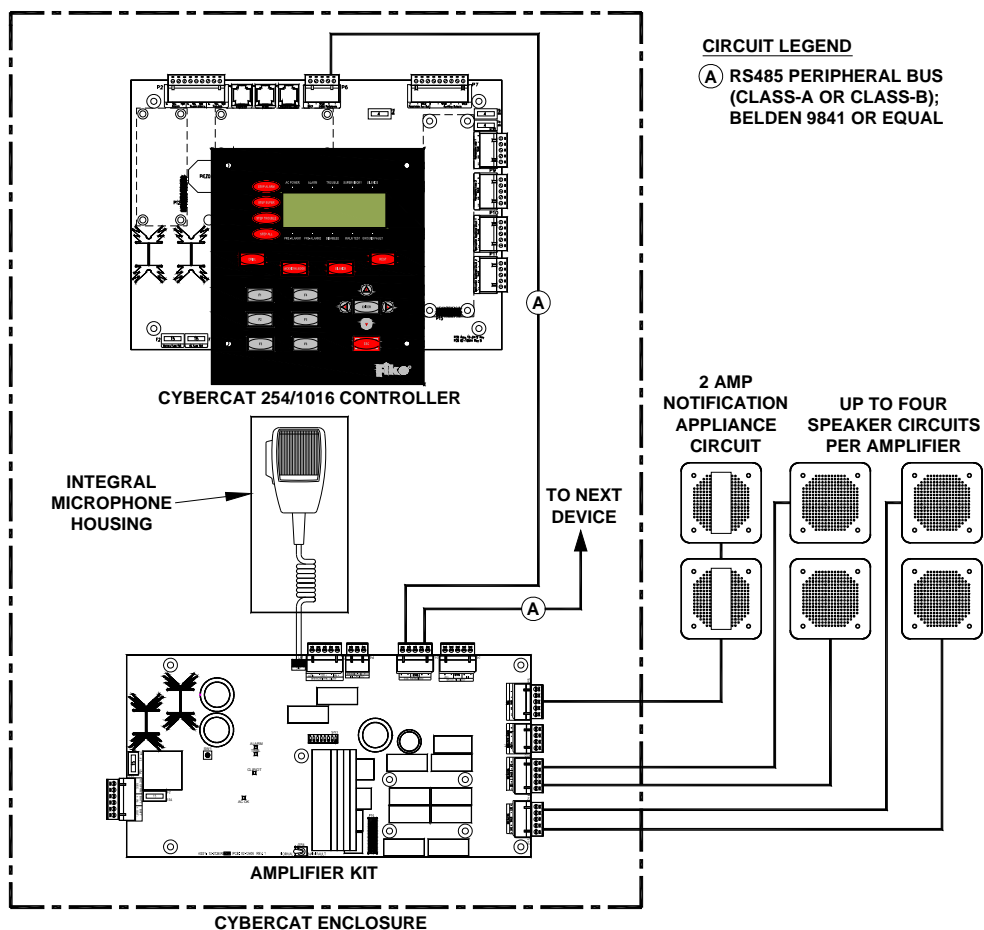


Exhibit A-2: Single Channel - Manual

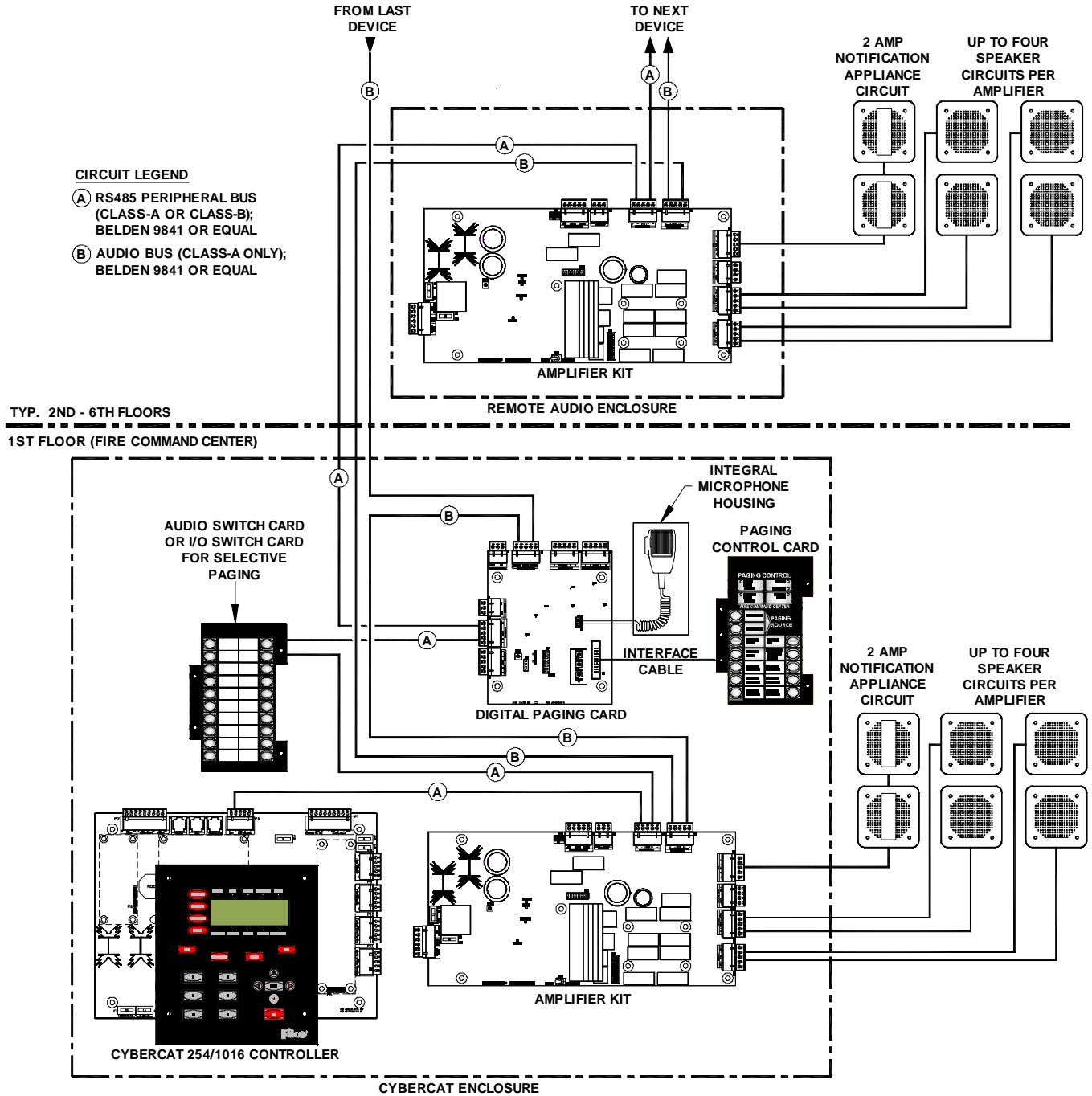
### A.3 SINGLE CHANNEL – LOCAL PAGING OPERATION



**Exhibit A-3: Single Channel – Local Paging Operation**

**Note:** Connecting the microphone directly to the amplifier card allows paging only to the four speaker circuits connected to that individual amplifier.

#### A.4 SINGLE CHANNEL - DISTRIBUTED PAGING



### Exhibit A-4: Single Channel – Distributed Paging

## A.5 DUAL CHANNEL – AUTOMATIC & MANUAL

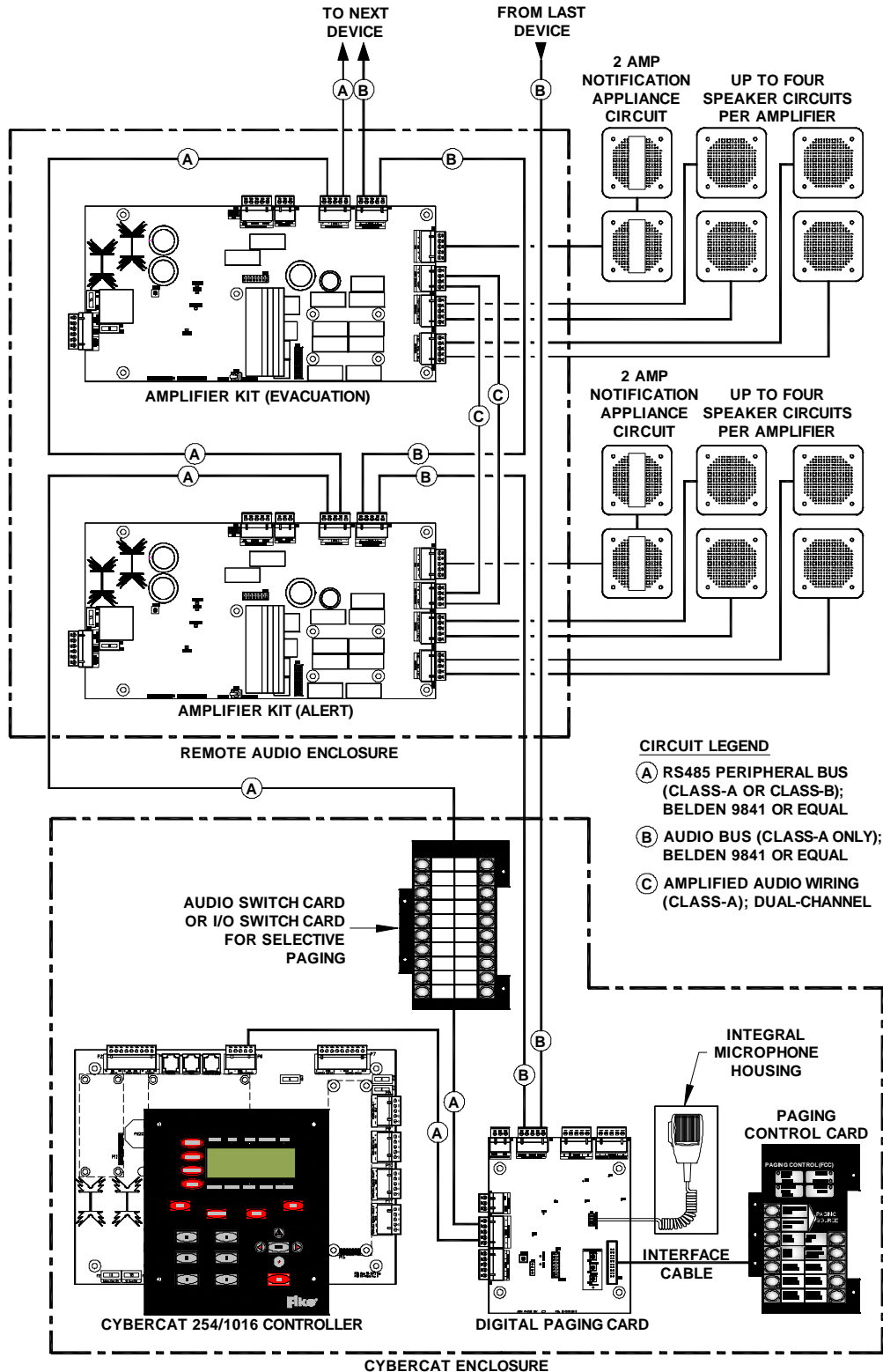


Exhibit A-5: Dual channel – Automatic & Manual



## APPENDIX B - TROUBLESHOOTING

The amplifier card provides four diagnostic LEDs to provide visual indication that the amplifier is active (LED D12) or that a problem with the board has occurred (LED D13 & D16). In addition, a detailed description of the event will be displayed on the host control panel's LCD display. The following table identifies the possible amplifier event messages, followed by the event description and the recommended steps to restore the system to normal:

**Exhibit B-1: Trouble Event Messages**

Event Display	Description	Suggested Corrective Action
AMP@#aa 21V POWR TRB (CyberCat™ only)	The amplifier at peripheral address #aa has detected a problem with its 21V rail.	<ol style="list-style-type: none"> <li>1. Check the speaker circuit(s) for an open or short wiring condition.</li> <li>2. Check the speaker circuit(s) for correct device load (50 watts max.).</li> <li>3. Return the amplifier card for repair or replacement.</li> </ol>
AMP@#aa 21V POWR CLR (CyberCat™ only)	The condition causing the 21V POWR TR event on the amplifier at peripheral address #aa has cleared.	<ol style="list-style-type: none"> <li>1. Note the cause of the fault and the steps that were used (if any) to correct the event.</li> </ol>
AMP@#aa AC POWR TRB (CyberCat™ only)	The amplifier at peripheral address #aa has detected a problem with its AC power input (P12), low or missing. The main CyberCat™ panel AC power LED will turn off with this trouble.	<ol style="list-style-type: none"> <li>1. Check the status of the AC fuse on the amplifier card.</li> <li>2. Meter the transform incoming AC primary for 120 or 240 VAC as required.</li> <li>3. Measure the transformer secondary for 27 VAC.</li> </ol>
AMP@#aa AC POWER CLR (CyberCat™ only)	The condition causing the AC POWR TR event on the amplifier at peripheral address #aa has cleared.	<ol style="list-style-type: none"> <li>1. Note the cause of the fault and the steps that were used (if any) to correct the event.</li> </ol>
AMP@#aa AMP POWER TR (CyberCat™ only)	The amplifier at peripheral address #aa has detected a problem with its 24V rail.	<ol style="list-style-type: none"> <li>1. Check the AC and Battery inputs for proper voltages.</li> <li>2. Check all circuit wiring.</li> <li>3. Call Fike Tech support to further diagnose the problem.</li> <li>4. Return the amplifier card for repair or replacement.</li> </ol>
AMP@#aa AMP POWR CLR (CyberCat™ only)	The condition causing the AMP POWER TR event on the amplifier at peripheral address #aa has cleared.	<ol style="list-style-type: none"> <li>1. Note the cause of the fault and the steps that were used (if any) to correct the event.</li> </ol>
AMP@#aa AUDIO BUS TR (CyberCat™ only)	The amplifier at peripheral address #aa has detected a trouble with its audio bus connection.	<ol style="list-style-type: none"> <li>1. Check for a wiring fault (open or short) on the audio bus circuit between a device that is in Audio Bus trouble and a device that is not in Audio Bus trouble.</li> <li>2. Install Fike PN 10-2939 485 Jumper to ensure wiring to and from device in trouble is not faulted</li> <li>3. Check the Digital Paging Module for power and proper operation.</li> <li>4. Ensure DIP-Switch 8 is set appropriately for firmware version of ALL devices that participate on the Audio Bus.</li> <li>5. If ALL devices on the Audio Bus are reporting Audio Bus trouble then start troubleshooting for wiring/connections at the Digital Paging Module and then move on to its neighboring devices on the Audio Bus.</li> </ol>
AMP@#aa AUDIO BUS CL (CyberCat™ only)	The condition causing the AUDIO BUS TR event on the amplifier at peripheral address #aa has cleared.	<ol style="list-style-type: none"> <li>1. Note the cause of the trouble and the steps that were taken (if any) to correct the event.</li> </ol>

## Exhibit B-2: Trouble Event Messages – Continued

Event Display	Description	Suggested Corrective Action
AMP@#aa BACK AMP TRB (CyberCat™ only)	The amplifier at peripheral address #aa has detected a voltage fault (high or low) or a high temperature fault on the back-up AMP circuit.	<ol style="list-style-type: none"> <li>1. The devices connected to the amplifier speaker circuits are drawing too much current. Check devices or proper operation and replace if necessary.</li> <li>2. The audio level of the amp is set too high, causing the board to overheat when the speaker circuits are active. It should go away when the amplifier turns off.</li> <li>3. Should the condition persist, return the amplifier card for repair or replacement.</li> </ol>
AMP@#aa BACK AMP CLR (CyberCat™ only)	The condition causing the BACK AMP TR event on the amplifier card at peripheral address #aa has cleared.	<ol style="list-style-type: none"> <li>1. Note the cause of the trouble and the steps that were taken (if any) to correct the event.</li> </ol>
AMP@#aa BATTERY TRB (CyberCat™ only)	The amplifier at peripheral address #aa has detected that the back-up battery is missing or has low charging current.	<ol style="list-style-type: none"> <li>1. Check the status of the battery fuse on the amplifier card.</li> <li>2. Use a meter to measure the battery terminals for 27.6 VDC.</li> <li>3. Measure the amplifier charging voltage by removing the battery terminal and temporarily installing a 1.2K ohm, ¼" watt resistor (P/N 02-11457).</li> </ol> <p>Remove the shorting jumper between the batteries and measure the voltage of each battery (12 VDC). Replace batteries if low.</p>
AMP@#aa BATT TRB CLR (CyberCat™ only)	The condition causing the BATTERY TRB event on the amplifier at peripheral address #aa has cleared.	<ol style="list-style-type: none"> <li>1. Note the cause of the fault and the steps that were used (if any) to correct the event.</li> </ol>
AMP@#aa CODEC COM TR (CyberCat™ only)	The amplifier at peripheral address #aa has developed a problem with the Codec chip. Either the amplifier PIC (U25) cannot communicate with the audio codec chip or the U21 or the Power On Codec test failed.	<ol style="list-style-type: none"> <li>1. Perform a hard reset on the amplifier card by pressing switch SW1 on the amplifier itself.</li> <li>2. Call Tech Support for possible further steps or return the amplifier card for repair or replacement.</li> </ol>
AMP@#aa CODEC COM CL (CyberCat™ only)	The condition causing the CODEC COM TR event on the amplifier at peripheral address #aa has cleared.	<ol style="list-style-type: none"> <li>1. Note the cause of the fault and the steps that were used (if any) to correct the event.</li> </ol>
AMP@#aa CONTACT TRBL (CyberCat™ only)	The amplifier at peripheral address #aa has detected a short or open condition on the contact monitor input circuit.	<ol style="list-style-type: none"> <li>1. Check field wiring connected to contact input.</li> </ol>
AMP@#aa CONTAC TR CL (CyberCat™ only)	The condition causing the CONTACT TRBL event on the contact monitor input circuit on the amplifier card at peripheral address #aa has cleared.	<ol style="list-style-type: none"> <li>1. Note the cause of the fault and the steps that were used (if any) to clear the event.</li> </ol>
AMP@#aa DUAL XFMR TR (CyberCat™ only)	The amplifier at peripheral address #aa has detected a wiring or main transformer fault between two amplifiers configured for dual-channel operation.	<ol style="list-style-type: none"> <li>1. Check amplified audio wire connections between the two interconnected amplifiers.</li> <li>2. Check the main power transformer (AC power) for proper voltages.</li> <li>3. Verify that connected amplifiers are configured for dual-channel operation.</li> </ol>
AMP@#aa DUAL XFMR CL (CyberCat™ only)	The condition causing the DUAL XFMR TR event on the amplifier at peripheral address #aa has cleared.	<ol style="list-style-type: none"> <li>1. Note the cause of the problem and the steps that were taken (if any) to correct the event.</li> </ol>
AMP@#aa GROUND FAULT (CyberCat™ only)	The amplifier at peripheral address #aa has detected a ground fault. Ground fault normal voltage range is 1.9 – 2.3VDC measuring on the AMP from TP1 and chassis ground.	<ol style="list-style-type: none"> <li>1. Remove the amplifier terminal blocks one at a time until the ground fault condition clears. Note which circuit is causing the ground fault.</li> <li>2. Break the problem circuit in halves until the section of field wiring that has the ground fault is isolated.</li> <li>3. With field wiring removed, power AMP from AC only then DC only. If ground fault remains with field wiring removed, fault is internal and the AMP card must be repaired or replaced.</li> <li>4. Correct the condition causing the ground fault.</li> </ol>

**Exhibit B-3: Trouble Event Messages - Continued**

<b>Event Display</b>	<b>Description</b>	<b>Suggested Corrective Action</b>
AMP@#aa GND FALT CLR (CyberCat™ only)	The condition causing the GND FALT CLR event on the amplifier card at peripheral address #aa has cleared.	1. Note the cause of the problem and the steps that were taken (if any) to correct the event.
AMP@#aa MAIN AMP TRB (CyberCat™ only)	The amplifier at peripheral address #aa has detected a voltage fault (high or low) or a high temperature fault on its main AMP circuit.	1. The devices connected to the amplifier speaker circuits are drawing too much current. Check devices or proper operation and replace if necessary. 2. The audio level of the amp is set too high, causing the board to overheat when the speaker circuits are active. It should go away when the amplifier turns off. 3. Should the condition persist, return the amplifier card for repair or replacement.
AMP@#aa MAIN AMP CLR (CyberCat™ only)	The condition causing the MAIN AMP TRB on the amplifier card at peripheral address #aa has cleared.	1. Note the cause of the trouble and the method used to clear the error..
AMP@#aa MAIN XFMR TR (CyberCat™ only)	The amplifier at peripheral address #aa has detected one of the following faults with the amplifier audio transformer: wiring problem, bad audio transformer, short or open anywhere on the audio path, incomplete page operation.	1. Check audio transformer connections to the amplifier card for proper wiring color connections. 2. Check primary output voltage supplied by amplifier card terminal P3 (14 VAC). Return the amplifier card for repair or replacement if voltage supplied is too low. 3. Check secondary output voltage supplied by audio transformer to the amplifier card terminal P3 (25 or 70.7 VAC). Replace the audio transformer if voltage supplied is too low. 4. A page operation was initiated but no live announcement was made within a minute of initiation or a live announcement was made but the operator did not cancel the page operation.
AMP@#aa MAIN XFMR CL (CyberCat™ only)	The condition causing the MAIN XFMR TR event on the amplifier card at peripheral address #aa has cleared.	1. Note the cause for the trouble and method used to clear the error.
AMP@#aa AUD PATH TRB (CyberCat™ only)	The amplifier at peripheral address #aa has detected one of the following faults with the amplifier audio transformer: wiring problem, bad audio transformer, short or open anywhere on the audio path, incomplete page operation.	1. Check audio transformer connections to the amplifier card for proper wiring color connections. 2. Check primary output voltage supplied by amplifier card terminal P3 (14 VAC). Return the amplifier card for repair or replacement if voltage supplied is too low. 3. Check secondary output voltage supplied by audio transformer to the amplifier card terminal P3 (25 or 70.7 VAC). Replace the audio transformer if voltage supplied is too low. 4. A page operation was initiated but no live announcement was made within a minute of initiation or a live announcement was made but the operator did not cancel the page operation.
AMP@#aa AUD PATH CLR (CyberCat™ only)	The condition causing the AUD PATH TRB event on the amplifier card at peripheral address #aa has cleared.	1. Note the cause for the trouble and method used to clear the error.
AMP@#aa MEM COMM TRB (CyberCat™ only)	The amplifier at peripheral address #aa has developed a communication problem between the PIC (U25) and flash memory chip or the Power On Flash test failed.	1. Return the amplifier card for repair or replacement.
AMP@#aa MEM COMM CLR (CyberCat™ only)	The condition causing the MEM COMM TR event on the amplifier at peripheral address #aa has cleared.	1. Note the cause of the fault and the steps that were used (if any) to correct the event.

## Exhibit B-4: Trouble Event Messages - Continued

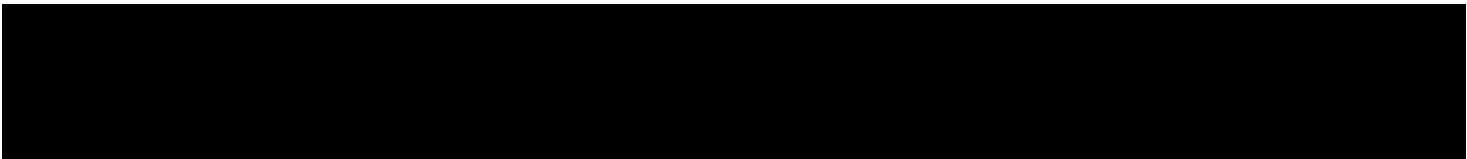
Event Display	Description	Suggested Corrective Action
AMP@#aa MICROPHON TR (CyberCat™ only)	The amplifier at peripheral address #aa has lost communication with its local microphone.	<ol style="list-style-type: none"> <li>1. Check the microphone connections at the microphone housing and at the digital paging card.</li> <li>2. Check the microphone wires for signs of damage.</li> <li>3. Locate the amplifier identified on the 2<sup>nd</sup> line of the event display. Go to that amplifier and check if the microphone is plugged directly at the amplifier.</li> <li>4. If the microphone is plugged into the DPM, check the configuration for the amplifier reporting the trouble making sure that the local microphone connection variable is disabled.</li> </ol>
AMP@#aa MICROPHON CL (CyberCat™ only)	The condition causing the MICRPHON TR event on the amplifier at peripheral address #aa has cleared.	<ol style="list-style-type: none"> <li>1. Note the cause of the fault and the steps that were used (if any) to correct the event.</li> </ol>
AMP@#aa MSG MISSING (CyberCat™ only)	The amplifier at peripheral address #aa has developed a problem with the audio message selected for playback. Message is corrupt or does not exist.	<ol style="list-style-type: none"> <li>1. Resend the audio messages to the amplifier.</li> <li>2. Use the C-Linx programming software to check if message slot #18 has a Supervisory tone loaded.</li> </ol>
AMP@#aa MSG MISS CLR (CyberCat™ only)	The condition causing the MSG MISSING event on the amplifier at peripheral address #aa has cleared.	<ol style="list-style-type: none"> <li>1. Note the cause of the fault and the steps that were used (if any) to correct the event.</li> </ol>
AMP@#aa PIC COMM TRB (CyberCat™ only)	The amplifier at peripheral address #aa has develop a communication problem between the PIC (U25) and the NAC booster PIC (U29).	<ol style="list-style-type: none"> <li>1. Us the AMP FV function found in the CyberCat™'s DIAGNOSTIC MENU 4 to check if the right firmware is loaded into the NAC booster PIC.</li> <li>2. Return the amplifier card for repair or replacement.</li> </ol>
AMP@#aa PIC COMM CLR (CyberCat™ only)	The condition causing the PIC COMM TRB vent on the amplifier at peripheral address #aa has cleared.	<ol style="list-style-type: none"> <li>1. Note the cause of the fault and the steps that were used (if any) to correct the event.</li> </ol>
AMP@#aa NAC SHORT TR (CyberCat™ only)	The amplifier at peripheral address #aa has detected a short or excessive current condition on its NAC.	<ol style="list-style-type: none"> <li>1. Use a meter to check the NAC wires for a short condition.</li> <li>2. Break down the NAC circuit into sections to determine which device is pulling the excessive current.</li> </ol>
AMP@#aa NAC SHORT CL (CyberCat™ only)	The condition causing the NAC SHORT TR event on the amplifier at peripheral address #aa has cleared.	<ol style="list-style-type: none"> <li>1. Note the cause of the fault and the steps that were used (if any) to correct the event.</li> </ol>
AMP@#aa NAC OPEN TRB (CyberCat™ only)	The amplifier at peripheral address #aa has detected an open circuit condition on its NAC.	<ol style="list-style-type: none"> <li>1. Use a meter to measure wire resistance. If wired Class B you should measure 1K ohm + wire resistance. If wired Class A, only wire resistance. If resistance is higher, circuit is likely OPEN.</li> <li>2. Break down the NAC circuit into sections to determine where the open in the circuit is located.</li> </ol>
AMP@#aa NAC OPEN CLR (CyberCat™ only)	The condition causing the NAC OPEN TRB event on the amplifier at peripheral address #aa has cleared.	<ol style="list-style-type: none"> <li>1. Note the cause of the fault and the steps that were used (if any) to correct the event.</li> </ol>
AMP@#aa PERIP BUS TR (CyberCat™ only)	The amplifier at peripheral address #aa has detected a trouble with its peripheral bus connection.	<ol style="list-style-type: none"> <li>1. Check for wiring fault (open or short) on the peripheral bus circuit.</li> <li>2. Check all circuit wiring for proper connections.</li> <li>3. Install Fike PN 10-2939 485 Jumper to ensure wiring to and from device in trouble is not faulted</li> </ol>
AMP@#aa PERIP BUS CL (CyberCat™ only)	The condition causing the PERIP BUS TR on the amplifier at peripheral address #aa has cleared.	<ol style="list-style-type: none"> <li>1. Note the cause of the fault and the steps that were used (if any) to correct the event.</li> </ol>

**Exhibit B-5: Trouble Event Messages - Continued**

Event Display	Description	Suggested Corrective Action
AMP@#aa SPKR#a OPEN (CyberCat™ only)	The amplifier at peripheral address #aa has detected an open condition on speaker circuit #a.	<ol style="list-style-type: none"> <li>1. Activate the speaker circuit and verify which devices on the circuit operate correctly with the open fault present. Devices downstream of the fault will not operate.</li> <li>2. Correct the wiring problem and test the circuit for proper operation.</li> </ol>
AMP@#aa SPKR#a OP CL (CyberCat™ only)	The condition causing the SPKR OPEN event on speaker circuit #a has cleared.	<ol style="list-style-type: none"> <li>1. Note the cause for the open fault and the steps that were used (if any) to correct the event.</li> </ol>
AMP@#aa SPKR#a SHORT (CyberCat™ only)	The amplifier at peripheral address #aa has detected a short condition on speaker circuit #a.	<ol style="list-style-type: none"> <li>1. Remove the speaker circuit and meter the wires for a short condition.</li> <li>2. Break down the circuit into sections to locate the short. If the meter does not detect a short condition, one of the speakers is pulling excessive current.</li> <li>3. Break down the circuit into sections to determine which device is pulling the excessive current.</li> </ol>
AMP@#aa SPKR#a SH CL (CyberCat™ only)	The condition causing the SPKR SHORT event on speaker circuit #a has cleared.	<ol style="list-style-type: none"> <li>1. Note which section of the circuit or device that caused the fault to clear.</li> </ol>

Reserved for future use.





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