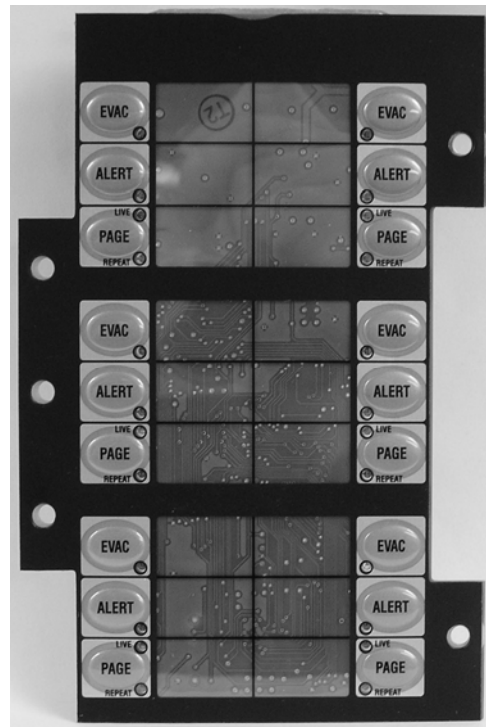




**10-2661**

**Audio Control Card**



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**DEVELOPED BY**

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**QUALITY**

Fike has maintained ISO 9001 certification since 1996. Prior to shipment, we thoroughly test our products and review our documentation to assure the highest quality in all respects.

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**WARRANTY**

Fike provides a one-year limited manufacturer's warranty on this product. All warranty returns must be returned from an authorized Fike Distributor. Contact Fike's Marketing department for further warranty information.

Fike maintains a repair department that is available to repair and return existing electronic components or exchange/purchase previously repaired inventory component (advance replacement). All returns must be approved prior to return. A Material Return Authorization (MRA) number must be indicated on the box of the item being returned. Contact the appropriate Regional Sales Manager for further information regarding product return procedures.

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**LIMITATIONS OF LIABILITY**

Installation in accordance with this manual, applicable codes, and the instructions of the Authority Having Jurisdiction is mandatory. Fike can not be held liable for any incidental or consequential damages arising from the loss of property or other damages or losses resulting from the use or misuse of Fike products beyond the cost of repair or replacement of any defective components. Fike reserves the right to make product improvements and change product specifications at any time.

While every precaution has been taken during the preparation of this manual to ensure the accuracy of its content, Fike assumes no responsibility for errors or omissions.

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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 the Audio Control Card. 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: Audio Control Card, Product Manual

Document Reorder Number: 06-558

Revision	Section	Date	Reason for Change
0	All Sections	05/2010	Initial Release
1	Section 3.4, 4.1 and 5.1	12/2011	Updated card wiring connections, added control priorities, and clarified switch operation without Alarms

### 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 can not 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 (888) 628-3453, Option 2, 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.

 **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.

 **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.

**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.

**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.

## 2.0 PRODUCT DESCRIPTION

The 10-2661, Audio Control Card (See Exhibit 1) is an optional component of Fike’s Emergency Voice Alarm System. It provides a tabular based display that incorporates six (6) red “EVAC”, six (6) red “Alert”, six (6) red “PAGE Live”, six (6) red “PAGE Repeat” LEDs, and eighteen (18) momentary touch-pad switches that allow you to manually initiate audio messages for up to six (6) audio zones. Each switch and LED can be programmed to provide control and status indication of individual or multiple speaker zones.

The card is designed to be mounted to the CyberCat enclosures dead-front door panel. It communicates with the host fire alarm control panel via an RS485 peripheral bus connection.

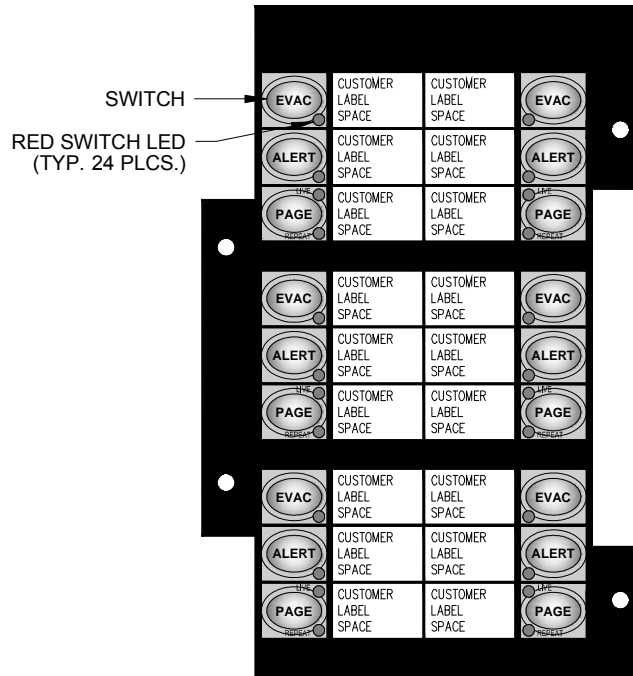


Exhibit 1: Operators View

## 2.1 COMPATIBILITY

The Audio Control Card is compatible with the following Fike intelligent control panels: CyberCat 254 and CyberCat 1016, firmware version 5.XX and higher. In order to properly mount the card inside the control panel enclosure, a dead-front enclosure must be used. Refer to the associated control panel manual for system enclosure options.

## 2.2 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 Code
- UL 864 – Control Units and Accessories for Fire Alarm Systems
- UL 1711 – Amplifiers for Fire Protective Signaling Systems

## 2.3 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

## 2.4 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

**Exhibit 2: Related Documentation**

## 2.5 SPECIFICATIONS

Operating Voltage Range: 15 – 30 VDC<sup>1</sup>

Maximum Current: Alarm = 102 mA (all LEDs on)  
Standby = 48 mA (all LEDs off)

Operating Temperature: 0° to 49° C (32° to 120° F), 93% RH<sup>2</sup>

Terminal Blocks Accept 14 – 26 AWG

All Connections are Supervised and Power Limited

RS485 Wiring: 4000 ft. (1219 m) to last device, (96Ω) maximum, Belden 9841 or equal

Card Dims: 3.75" (9.53 cm) W x 5.75" (14.6 cm) H

<sup>1</sup> Power for the card is provided via a separate power loop from the associated control panel or battery backed 24VDC, regulated, power-limited, power supply listed for Fire Protective Signaling Use.

<sup>2</sup> The useful life of the system's standby batteries and the electronic components may be adversely affected by extreme temperature ranges and humidity. Therefore, it is recommended that this component be installed in an environment with a nominal room temperature of 15-27° C / 60-80° F.

### 3.0 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

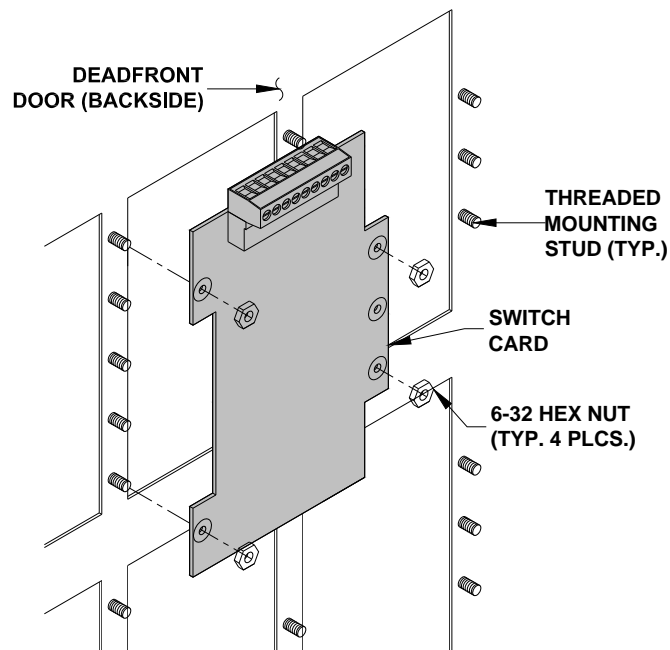
The card and associated control panel contains static sensitive components. Always ground yourself with a proper wrist strap before handling any circuits so that static charges are removed from the body. Use anti-static packaging to protect electronic assemblies removed from the unit.

#### 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.

### 3.1 MOUNT THE CARD

1. Carefully unpack the card and check for shipping damage.
2. Fill out and install custom label in slot provided in card faceplate. Label templates can be downloaded from Fike's Forum web page.
3. Select the mounting location for the card on the dead-front panel and install onto the four threaded standoffs (See Exhibit 3).
4. Secure the card to the dead-front panel using the mounting hardware provided with the card.

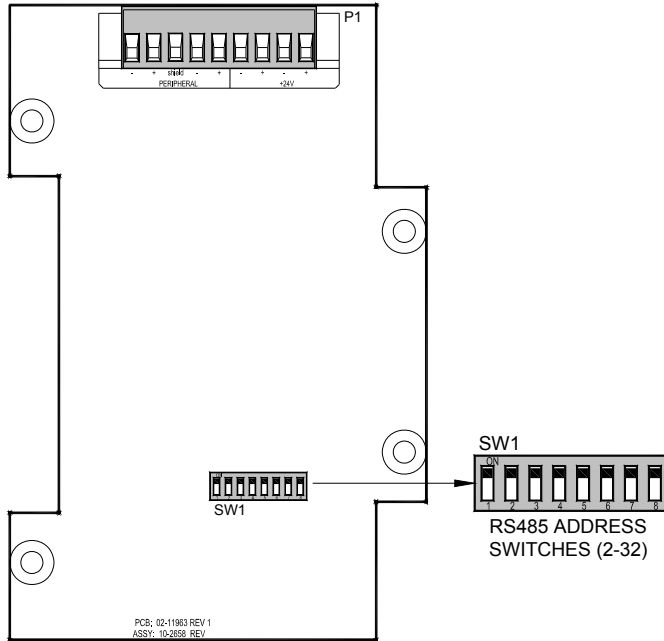


**Exhibit 3: Mounting Card to Dead-front Panel**



### 3.2 SET THE CARD'S BINARY ADDRESS

Each card requires a unique address for identification on the host control panel's RS485 peripheral bus. DIP switch SW1 is used to set the address for the device (See Exhibit 4). A maximum number of 31 devices can be connected to the RS485 peripheral bus circuit. 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 5 for DIP switch settings for each binary address (ID number).



**Exhibit 4: Card Addressing**

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	ON
32						ON

**Exhibit 5: Binary Addressing**

Dip-switch 7 is used to set the peripheral bus communication speed that will be used by the audio control card to communicate with the CyberCat panel. The selected communication speed set on the card must match the host control panel settings. In addition, all devices connected to the same peripheral bus must use the same communication speed setting. In the OFF position, the card will communicate at 9600 bps (standard). In the ON position, the card will communicate at 38400 bps (fast).

**⚠ Caution**

Turning dip-switch 8 on will clear the cards configuration. C-Linx must be used to resend the configuration to the card.

### 3.3 PULL FIELD WIRING TO CARD

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.

1. Pull RS485 and 24VDC power wiring to card's terminal block. Leave sufficient wire to make connections at card terminals without straining board components.

#### RS485 Wiring Limitations:

The audio control card communicates with the host control panel via an RS485 peripheral bus. The RS485 bus can drive up to 32 devices including the panel itself. The RS485 circuit can not be T-Tapped; it must be wired in a continuous fashion. The maximum wire distance from the control panel to the card is 4,000 feet (1,219 m) of Belden 9841 low capacitance cable. For plenum applications, use Belden 82841, 82842, or 89841. Limit the total wire resistance to 96 ohms maximum. Do not run the RS485 (power-limited) cable adjacent to, or in the same conduit as 120 volts AC (non power-limited) circuits, noisy electrical circuits that are powering mechanical bells or horns, audio circuits above 25 volts RMS, or motor control circuits.

#### 24VDC Wiring Limitations

The audio control card receives its operating power via a separate power loop from the associated control panel or a battery backed 24VDC, regulated, power-limited, power supply listed for Fire Protective Signaling Use. The card must be accounted for in the control panel's power and battery calculations. Utilize the power information provided in Section 2.5 for these calculations. If the control panel is configured to supervise the card, a loss of power will register as a communication failure at the control panel.

**Note:** If card power is supplied from a source other than the control panel, a ground fault condition could occur. To correct this problem, disable (isolate) ground fault detection on the field power supply. Ground fault detection will be performed by the host control panel.

2. Temporarily short conductors at one end and measure the total wire resistance. Compare measured value(s) to the listed circuit limitations for the particular panel that the card is being tied to. If values are within the circuit limitations, proceed to next step.

#### **Caution**

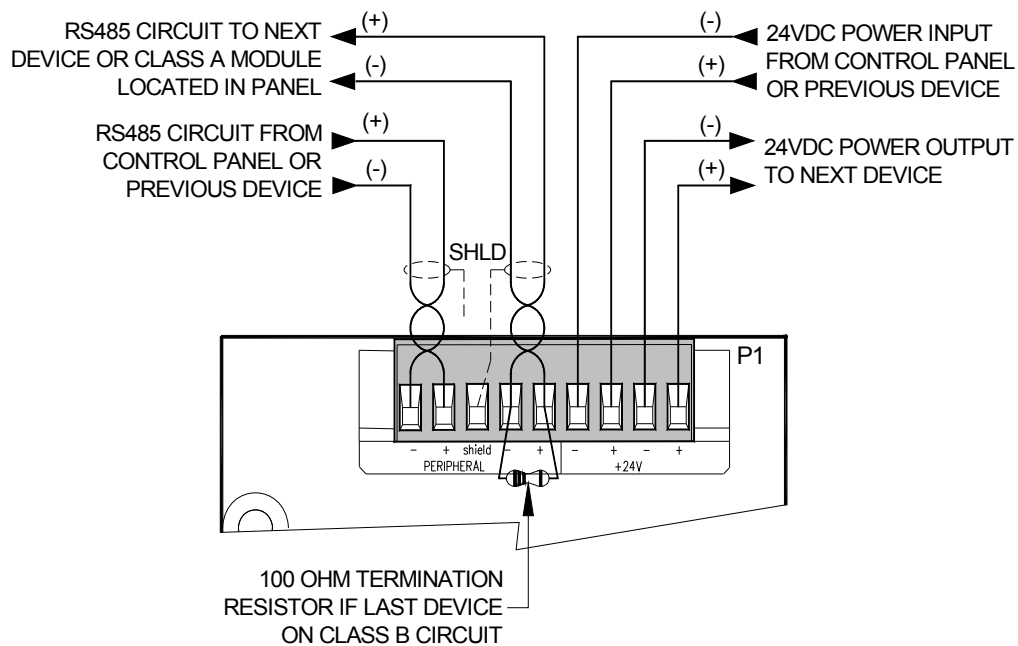
If megger testing of field wiring is required, all field devices **MUST** be disconnected from the circuit prior to testing. Megger testing could damage electronic components.

### 3.4 CONNECT FIELD WIRING TO CARD

1. Disconnect AC power and batteries from the control panel and wait 60 seconds prior to connecting field wiring. Failure to do so can damage circuits.
2. Disconnect the RS485 connections from the control panel.
3. Connect the RS485 circuit wiring to card's removable terminal block P1 (See Exhibit 6). Land outgoing shield wire to SHLD terminal. Do not land incoming shield wire. Insulate from shorts and grounds.
4. Remove the 100-ohm resistor and connect outgoing RS485 circuit wiring to terminal block P1 (See Exhibit 6). If last device on Class B circuit, leave the resistor in place.
5. Connect the 24VDC wiring to card's removable terminal block P1 (See Exhibit 6).
6. Connect outgoing 24VDC wiring (if applicable) to card's removable terminal block P1 (See Exhibit 6).

**⚠ Caution**

1. Do not over tighten screw terminals. Over tightening may damage threads, resulting in reduced terminal contact pressure and difficulty with screw terminal removal.
2. Do not reverse the 24VDC power and RS485 wiring. Damage to the system will occur.



**Exhibit 6: Wiring Connections**

### 3.5 POWER UP THE CARD

1. After all boards, cables and components have been properly installed; reapply AC power and batteries (in that order) to the associated control panel or field power supply. Immediately remove power if the panel or card(s) shows signs of abnormal operation.
2. Reconnect the RS485 terminal block to the host control panel.



### 4.0 PROGRAMMING

Programming of the 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 10-1874A is used to download the configuration to the card via the host control panel’s P3, programming port.

The following table identifies the configurable features of the audio control 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 7: UL (90.23) Programming Features**

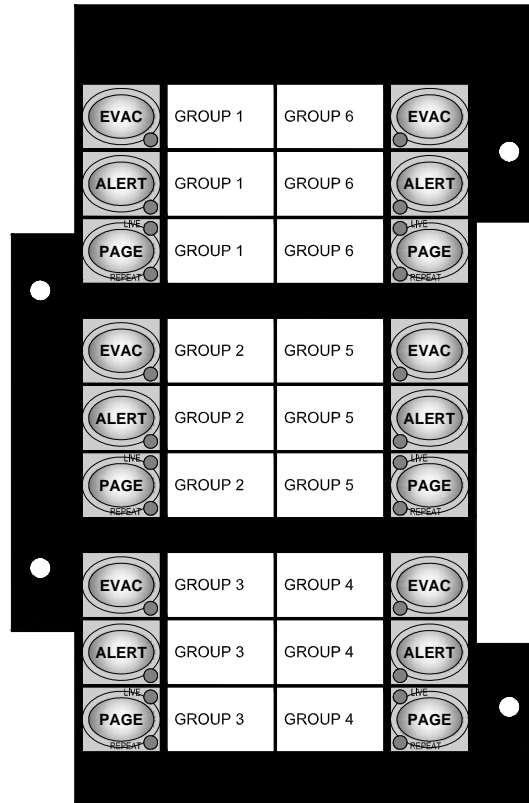
Circuit or Component	Program Feature or Option	Permitted in UL 864? (Y/N)	Possible Settings (Defaults shown bold)	Settings permitted in UL 864	Notes
Voice EVAC Switch Card	Peripheral Address	Y	2 - 32		
	Priority Level	Y	0 – 254 ( <b>Default 1</b> )		1
	Copy EVAC Zones to Alert and Page	Y	Yes / <b>No</b>		
	<i>Voice Evac Switch Groups 1 - 6</i>				
	EVAC Switch	Y	Enabled / <b>Disabled</b>		
	EVAC Zone Assignments	Y	1 – 254		
	ALERT Switch	Y	Enabled / <b>Disabled</b>		
	ALERT Zone Assignments	Y	1 – 254		
	PAGE Switch	Y	Enabled / <b>Disabled</b>		
	PAGE Zone Assignments	Y	1 – 254		

Notes:

- 1. 0 = None; 1 = Highest and 254 = Lowest.

**4.1 SWITCH GROUPING**

Each switch group on the card must be programmed with the zone number(s) that will be affected by the activation of the switch (See Exhibit 8). Each switch can be assigned to a single audio zone or multiple audio zones based on project requirements.



**Exhibit 8: Switch Grouping**

## 4.2 CONTROL PRIORITIES

Fike's voice system utilizes control priority levels to resolve which switch has operational priority over another switch that is programmed for the same operation. A switch card with a lower priority setting cannot override a switch card with a higher priority. Switch cards with the same priority setting can override another switch card with the same priority setting or a lower priority setting. Each card must be assigned a priority level from 0 to 254 using the panel's configuration software (C-Linx). 1 is the highest priority and 254 is the lowest priority. A setting of 0 disables the cards control priorities and must be used on all systems where priority schemes are not utilized.

### **Example 1:**

A switch in the fire command center (FCC) and local operating console (LOC) have both been programmed for EVAC Zone 1. The switch in the FCC enclosure has been assigned a priority level of 1, while the switch in the LOC has been assigned a priority level of 2. Pressing the switch in the FCC enclosure will cause Zone 1 to enter into the EVAC state. Both the switch in the FCC enclosure and the LOC will indicate that the EVAC state is active by turning on the corresponding switch LED. Since the switch in the LOC has a lower priority than the switch in the FCC enclosure, pressing the Zone 1 EVAC switch in the LOC to cancel the EVAC will have no effect.

### **Example 2:**

A switch in the fire command center (FCC) and local operating console (LOC) have both been programmed for Page Zone 1. Both switches have been assigned a priority level of 1. Pressing the switch in the FCC will cause Zone 1 to enter into the PAGE state. Both the switch in the FCC and LOC will indicate that the PAGE state is active by turning on the corresponding switch LED. The Remote Page Active LED in the LOC will activate and the Local Page Active LED in the FCC will activate. Since the switch in the LOC has the same priority level as the switch in the FCC, pressing the Zone 1 PAGE switch in the LOC will cause the active Zone 1 PAGE to cancel.

## **5.0 OPERATION**

The Audio Control Card allows you to manually initiate the programmed Alert or Evacuation message for the selected zones. Activation of the voice evacuation system via the Audio Control Card shall override the automatic operation of the voice system. For example: If Zone 1 is currently broadcasting the programmed Alert message in response to a system event in an adjacent zone; the system operator can manually initiate the EVAC message in the same zone by pressing the EVAC switch for Zone 1 on the card. The card also allows you to manually select individual or multiple zone(s) for live paging.

The card provides controls and indicators for up to six (6) audio zones. The function of the controls and indicators provided on the card are described below:

### **EVAC Switch**

Initiates the programmed Evacuation message in the selected zone(s). All amplifiers programmed to respond to EVAC for the selected zone will broadcast the evacuation message to its connected speakers in response to the switch activation. Once the switch is pressed, the associated red LED will flash to indicate activation of the switch and the panel buzzer will sound. The LED will illuminate steady once positive confirmation of amplifier activation is received. The amplifier(s) will play the evacuation message until the EVAC switch is pressed again. Once pressed, the amplifiers will return to automatic operation based on the current state of the zone.

### **ALERT Switch**

Initiates the programmed Alert message in the selected zone(s). All amplifiers programmed to respond to Alert for the selected zone will broadcast the message to its connected speakers in response to the switch activation. Once the switch is pressed, the associated red LED will flash to indicate activation of the switch and the panel buzzer will sound. The LED will illuminate steady once positive confirmation of amplifier activation is received. The amplifier(s) will play the evacuation message until the EVAC switch is pressed again. Once pressed, the amplifiers will return to automatic operation based on the current state of the zone.

### **PAGE Switch**

Activates the amplifier(s) in the selected zone(s) for live paging via the system microphone or fire-fighter's telephones (local or remote). Pressing the switch once will select the zone(s) for live paging. The red Live LED associated with the switch will flash to indicate activation of the switch. The LED will illuminate steady once positive confirmation of amplifier activation is received. Pressing the switch twice will select the zone(s) for record and repeat paging. The white Repeat LED associated with the switch will illuminate steady once positive confirmation of amplifier activation is received.

The record and repeat paging mode allows you to record a live message and send it to the selected zones amplifiers where it is stored in the amplifiers memory. The amplifier(s) will then continually repeat the recorded message until the Page switch is pressed again. Once pressed, the zone's amplifiers will return to automatic operation based on the current state of the zone.

## 5.1 INADVERTENT SWITCH PRESS (NONALARM CONDITION)

Operation of the ALERT or EVAC switches is normally tied to the panel's Alarm state. That is, they are typically used only when an Alarm event is present on the system to either alert or evacuate the building occupants. Pressing the ALERT or EVAC switches when the panel is not in alarm will cause the panel to operate as follows:

1. Inadvertent press of an EVAC switch will cause the panel buzzer to sound the "ALARM" tone and the Alarm LED will flash even though no alarm events are present on the system. Amplifiers will respond to the switch activation as previously described. A history message will be recorded for the switch activation. Press the panel's silence or acknowledge button to silence the panel buzzer. Press the EVAC switch again to cancel the condition.
2. Inadvertent press of an ALERT switch will cause the panel buzzer to sound the "TROUBLE" tone and the trouble LED will flash even though no trouble events are present on the system. Amplifiers will respond to the switch activation as previously described. A history message will be recorded for the switch activation. Press the panel's silence or acknowledge button to silence the panel buzzer. Press the ALERT switch again to cancel the condition.

## 6.0 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.

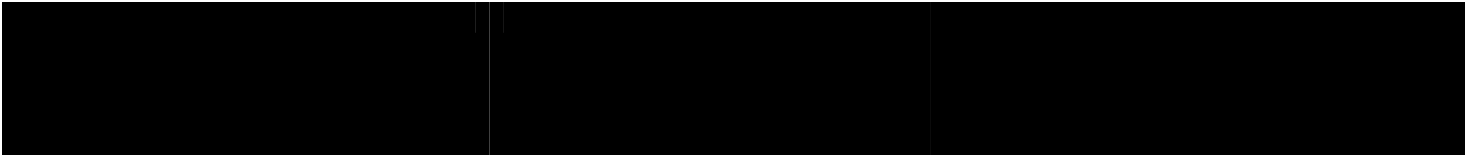
All components, circuits, system operations, or software functions known to be affected by a change must be 100% tested. In addition, to ensure that other operations are not inadvertently affected, at least 10% of initiating devices that are not directly affected by the change, up to a maximum of 50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

## 7.0 SERVICING

There are no serviceable components on this card. If the card begins to operate incorrectly, replace the card.







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