Mircom

FleXNet™

# FX-MNS-6000

## Network Fire Alarm and Emergency Communication System

## Installation and Operation Manual

LT-6683 Rev 0
December 2022

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# 1.0 Introduction

## 1.1 The FX-MNS-6000 Network Fire and Emergency Communication System

Mircom's FX-MNS-6000 Network Fire Alarm and Emergency Communication system offers modular components for network systems providing a wide variety of applications. Designed for peer to peer network communications, using industrial standard ARCnet protocol. The FX-MNS-6000 allows for a maximum of 63 nodes (where a node can be a control center or a floor panel) while providing reliability and flexibility. This fire alarm and audio system provides zoned emergency multi-channel audio with emergency paging and fire evacuation, and an optional firefighters' telephone communication to and from the CACF (Central Alarm and Control Facilities) location to all remote telephone handsets.

Each integrated fire and audio network panel or BBX-FXMNS-6000 node consists of an enclosure which contains both an audio portion and a fire alarm portion. The fire alarm portion consists of a FX-6000MNS-CH Main Chassis, which accommodates the main fire alarm control board, an ANC-6000 Audio Network Card, and a TNC-5000 Telephone Network Card. The audio portion consists of a QMB-6000 card cage that holds up to 4 amplifiers and a QCC-6000 Communications Card. Also, within this BBX-FXMNS-6000 enclosure is a QPS-6650 power supply and batteries.

Each FX-6000MNS-CH node main fire alarm board provides one intelligent analog loop supporting 159 Advanced Protocol (AP) analog sensors and 159 AP addressable modules (with a maximum of 99 CLIP sensors and 99 CLIP addressable modules). For example, if there are 99 CLIP (non AP) sensors on a loop, you may add an additional 60 AP sensors for a total of 159. **NOTE:** AP sensors and monitors can be set as CLIP sensors and monitors for retrofit use. There are also 4 Class A/B Indicating Circuits (NACs) rated at 1.7 amperes each and connection for any of our display modules DSPL-420DS, DSPL-2440DS and DSPL-420-16TZDS.

The paging microphone and firefighters' telephone may be used together or independently, connected to a Central Alarm and Control Facility (CACF).

For communication and annunciation there is a microphone for paging, a paging selector panel, firefighters' telephone and associated selector panels all housed in a central enclosure (CACF). The master paging and telephone modules are intended for installation in a CACF.

The QBB-6001 is an expansion audio only cabinet (connected to an BBX-FXMNS-6000 node). It contains two QMB-6000 card cages which hold up to 4 QAD-6425-70/25 amplifiers each for a total of 8 amplifiers and a QCC-6000 Communications Card. Also contained in this cabinet is a QPS-6650 power supply and batteries.

### 1.1.1 Overall Fire Alarm Features

- Large System Capacity and Modular Design.
- Provides peer-to-peer network communications
- Supports up to 63 nodes (including lobby panel).
- Supports copper and/or fiber optic network cable.
- Supports a request, grant, or deny system with all controls disabled on node annunciators as per ULC 527-11.
- Supports a degraded mode of operation (more than one operating node) and a standalone mode of operation (only one operating node) as per ULC 527-11.

- Each Analog Loop is capable of supporting 159 AP Analog Sensors and 159 AP Addressable Modules (with a maximum of 99 CLIP sensors and 99 CLIP addressable modules) which can be wired as Class A, Class X, or Class B.
- 27 Ampere Power Supply.
- Four Class A/B NACs rated at 1.7 Amperes each, which can be configured as Audible or Visual (silenceable or non-silenceable circuits). Audibles may be steady, Temporal Code, California Code, or March Time.
- Indicating circuits (NACs) may be configured to provide additional auxiliary power or resettable auxiliary power. NAC expansion using the INX-10A and INX-10ADS.
- Fault isolators are present on all in-panel addressable loops.
- Configurable Signal Silence Inhibit, Auto Signal Silence, Two-Stage Operation, Assisted Walk Test.
- Outputs for 4 Wire resettable Smoke Power Supply, Auxiliary Power Supply, and an interface to the Mircom RTI-1 Remote Trouble Indicator.
- RS-485 Interface for Remote Annunciators. Remote Annunciators do not occupy a node on the network. Up to seven annunciators can be connected per node.
- Three Level Password Protection with field settable definition which enables the installer to determine what functions are accessible for each level of password
- Four queues for acknowledge with Alarm ACK, Supervisory ACK, Trouble ACK, and BLDG (Monitor) ACK LED indicators and pushbuttons.
- Auxiliary Form-C Relay Contacts for Common Alarm, Common Supervisory, and Common Trouble.
- RS-232 Port for remote system printer or “CRT terminal”.
- Two Event History Logs; one for Alarm related events and one for all events.
- Large 4 line by 20 character alphanumeric, back-lit LCD Display with user-friendly menu system.
- Common Controls and Indicators for System Reset, Lamp Test, Fire Drill, Signal Silence, General Alarm, General Alarm Acknowledge, AC On, CPU Fault, and Ground Fault.
- Two Spare configurable switches and LED Indicators.
- 16 Zone configurable LED (bi-coloured) Annunciator with slide-in labels for Zone Description.
- Provides drift compensation for ionization and photoelectric smoke detectors
- Provides Signal Coding of signal circuits for easy alarm identification (code consists of 1 to 4 digits, each digit consisting of 1-15 pulses on the signal)
- Selection for Canadian (ULC) or USA (UL) requirements for Smoke Sensor sensitivity.
- Extensive transient protection.
- Surface Mountable Enclosures with removable doors for easy installation and service.
- Removable Terminal Blocks for easy wiring and service.
- Quad Loop Adder module ALCN-792MISO for expanding addressable loops by 2; with daughter board ALCN-792D expanding addressable loops by a total of 4.
- The BBX-FXMNS-6000 enclosure is for the Integrated Fire and Audio consisting of a backbox, door and middle chassis. Part of this enclosure is the vertical mount telephone QMT-5302NV and the vertical mount paging microphone QMP-6101NV.
- The RAXN-LCDG is a graphical display remote annunciator.

- The FleX-Net™ is compatible with COPTIR, Pinnacle, Acclimate and 4-20mA devices.
- Configuration options are provided for grouping inputs.
- Panel supports previous, current and next configuration. Configuration automatically reverts back to previous or moves to future configuration through front-panel menu.
- OPEN Graphic Navigator Software Package (OpenGN) allows 3D graphic display of premises and devices. Use the Ethernet port on the main board to connect to OpenGN graphics software.
- Boolean logic functions are now available within the configuration software.
- Allows a choice of multiple configuration files to support site-specific requirements.
- The FleXBoot™ shell offers UNIX style commands for directory listing, log download, diagnostic probing and system tuning and optimization.

### 1.1.2 Overall Audio Features:

- Supervises signal circuits while in use.
- Control of fire management operations (e.g. all-call paging and total evacuation signalling).
- Indication of all required fault conditions.
- Microprocessor-based operations with hardware and software watchdog timer to ensure reliable system operation.
- Supervised tone generators.
- Up to 100 audio zones per node, 4788 audio amplifiers per Network system.
- Up to 5 (analog) firefighters' telephone zones per node and 315 (analog) telephone zones per Network system. 99 addressable telephone zones per loop, maximum of 29 addressable telephone loops per node, maximum of 144 addressable telephone zones per system.
- Operates from 24 VDC backup batteries in the event of a power failure.
- Removable terminal blocks for ease of installation and maintenance.
- Speaker circuits integrated with amplifier circuits.
- Maximum of 100 Watts per amplifier.
- Maximum of 575 Watts per expansion cabinet.
- Supports up to 10 audio cabinets (1 main plus 9 expansion audio cabinets)
- Each expansion audio cabinet up to 2000 feet.
- Optional redundant backup amplifier per node.
- Multi-channel playback.
- Auxiliary Audio Input with amplifier supervision during non-fire use.
- Optional remote supervised splitters for separate corridor and room silencing.
- Each amplifier can play back on a separate audio channel.
- Each amplifier can be Class A and Class B field wired.

## 1.2 Document Conventions

### 1.2.1 Circuits and Zones

The term **circuits** refers to an actual electrical interface, initiating (detection), indicating (signal), or relay.

The term **zone** is a logical concept for a fire alarm protected area, and will consist of at least one circuit.

Often the terms **zone** and **circuit** are used interchangeably, but in this manual the term circuit is used.

On the FleX-Net™, circuits can be hardwired inputs and outputs or addressable inputs and outputs. Both hardwired inputs and outputs, and addressable inputs and outputs may be grouped together to form logical zones.

### 1.2.2 Wiring Styles

**Initiating circuits** are configured by default as Class B. They may be configured as Class A as described in System *Configuration*. This operation uses odd and even pairs of two-wire Class B circuits to make one four-wire Class A circuit, thus cutting in half the number of available initiating circuits.

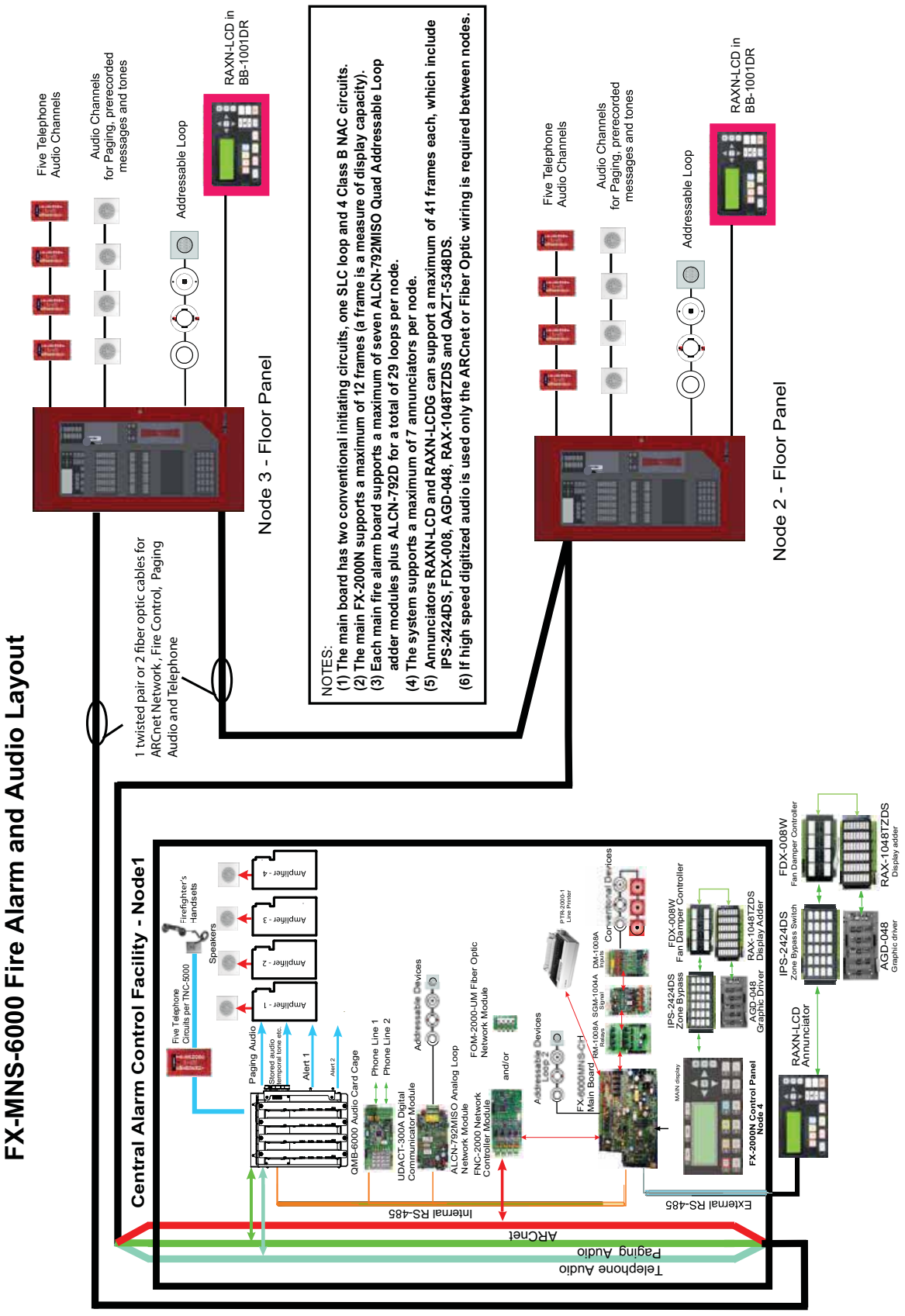
**Indicating circuits (NACs)** may be individually wired as Class A or Class B without affecting the number of circuits available.

Addressable Loops may be configured system wide as Class B or Class A. With the addition of isolators, a Class A will become a Class X.

## 1.3 FX-MNS-6000 Fire and Audio Expansion System Layout

Figure 1 shows a typical FX-MNS-6000 system layout with the main lobby control panel as Node 1 and the combination of fire and audio systems as Node 2 and 3. The diagram also shows addressable fire alarm loops, paging and telephone connections and QBB-6001 extension audio cabinets.

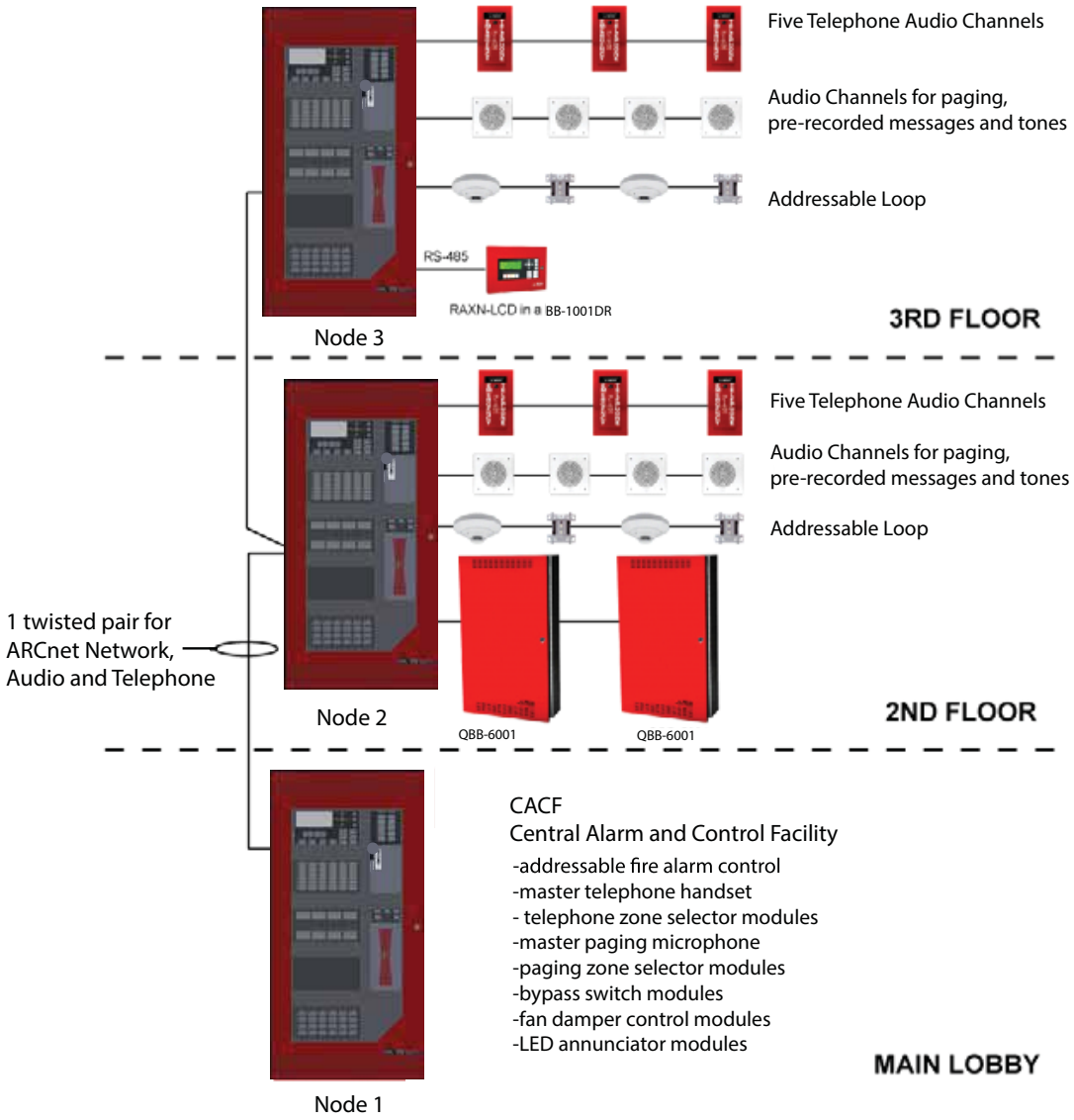
**Figure 1 Typical FX-MNS-6000 Layout**



## 1.4 FX-MNS-6000 Fire with Audio Expansion System Layout

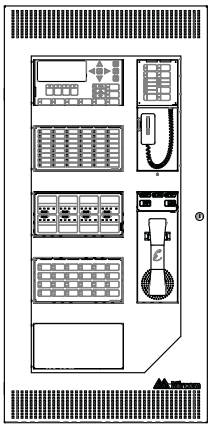
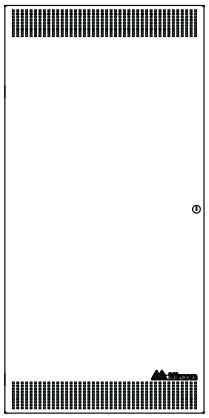
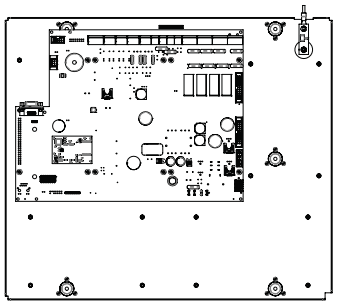
The figure below shows a typical FX-MNS-6000 system layout with the main lobby control panel as Node 1 and the combination of fire and audio systems as Node 2 and 3. The diagram also shows addressable fire alarm loops, paging and telephone connections and QBB-6001 extension audio cabinets.

**Figure 2 Typical FX-MNS-6000 Layout with Audio Expansion**



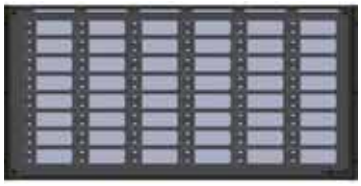
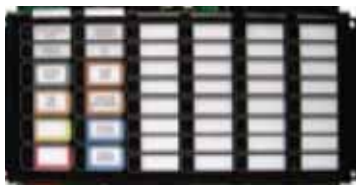
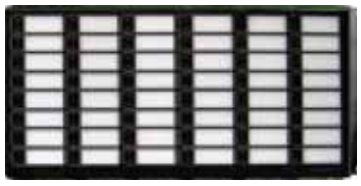
# 2.0 System Components

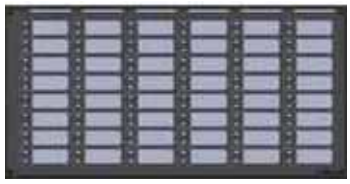
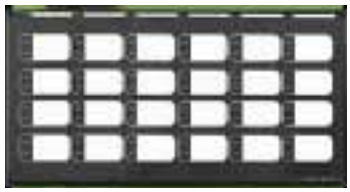
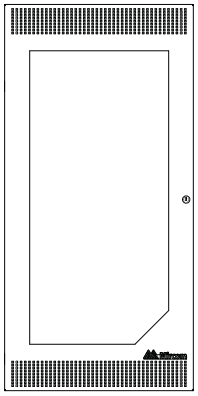
**Table 1: FX-6000MNS System Components**

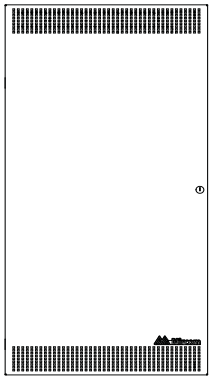
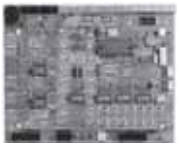
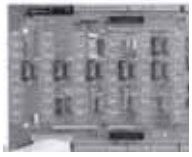
| | Model | Description |
|---|---|---|
|   | BBX-FXMNS-6000 Enclosure<br><br>QBB-6001 Audio Expansion Enclosure | Each FX-MNS-6000 integrated fire and audio network panel consists of a BBX-FXMNS-6000 enclosure which contains an audio portion QMB-6000 card cage that holds up to 4 amplifiers and a QCC-6000 Communications Card, a fire alarm portion FX-6000MNS-CH Main Chassis, which holds the main fire alarm control board, an ANC-6000 Audio Network Card, a TNC-5000 Telephone Network Card and a QPS-6650 power supply, and batteries. The QBB-6001 expansion audio cabinet (connected to an FX-MNS-6000 node) contains up to a maximum of two QMB-6000 card cages which holds up to 4 amplifiers each for a total of 8 amplifiers, one QCC-6000 Communications Card, a QPS-6650 power supply and batteries. |
|  | FX-6000MNS-CH | Consists of a backplate which is mounted into the BBX-FXMNS-6000 backbox and a main Fire Alarm Control board. This backplate can accommodate up to 10 adder modules (including 3 controller modules).<br><br>The Fire Alarm Control board includes one SLC and four Class A/B NACs. |
|  | FNC-2000 | Provides network capability for the main Fire Alarm Control board. One module is required per one network node panel. The FNC-2000 Fire Network Controller module is mounted in position 2 over the main fire alarm control board. |

| | Model | Description |
|---|---|---|
|  | ANC-6000 | Audio Network Controller module. The ANC-6000 Audio Network Controller module is mounted in a QX-6000 backbox over the main fire alarm board. |
|  | TNC-5000 | Telephone Network Controller module. This module is mounted over the ANC-6000 module. The recommended mounting of the TNC-5000 is sideways with LEDs across the top. |
|  | QCC-6000 | Communication Card that is required for audio system expansion (beyond 1 amplifier cage).<br>One is required in each audio enclosure if there is more than one audio enclosure. It mounts on the right side of the QMB-6000 backplane. |
|  | FOM-2000-UM | **Single Mode or Multi-Mode Fiber Optics Module** (Optional)<br>Connects to the FNC-2000 Fire Alarm Network Controller Module and allows fiber optics cabling. |
|  | ALCN-792MISO | Isolated Quad Loop Controller Module. |
|  | ALCN-792D | Daughter board for ALCN-792MISO Isolated Quad Loop Controller Module |
|  | DM-1008A | Eight Initiating Circuit Module |

| | | |
|---|---|---|
|  | SGM-1004A | Four NAC Circuit Module |
|  | RM-1008A | Eight Relay Circuit Module |
|  | PR-300 | Polarity Reversal and City Tie Module |
|  | UDACT-300A | Digital Communicator/Dialer Module |
|  | FDX-008W(KI) | Fan Damper Module with white LEDs for AUTO switch position indication. FDX-008W provides switch operation of 8 fan damper zones and the FDX-008WKI provides switch operation of 7 fan damper zones and one keyswitch operation of the 8th fan damper zone |
|  | DSPL-420DS | 4 line by 20 character display which can be mounted into backbox BBX-FXMNS-6000 backbox |
|  | DSPL-2440DS | Graphic display which can be mounted in the BBX-FXMNS-6000 backbox |

| | | |
|---|---|---|
|  | DSPL-420-16TZDS | 4 line by 20 character display which provides 16 zone alarm and trouble indicators. can be mounted in the BBX-FXMNS-6000 backbox |
|  | IPS-4848DS | Programmable Input Switches Module (mounts in the BBX-FXMNS-6000 backbox and can also be part of the RAXN-LCD) |
|  | IPS-2424DS | Programmable Input Switches Module (mounts in the BBX-FXMNS-6000 backbox and can also be part of the RAXN-LCD) |
|  | RAM-1032TZDS | Model RAM-1032TZDS Main Chassis Remote Annunciator with 16 Bi-coloured LEDs and 32 trouble LEDs |
|  | RAX-1048TZDS | Model RAX-1048TZDS Adder Annunciator Chassis with 48 Bi-coloured LEDs and 48 trouble LEDs |
|  | QMP-6101NV | Network Master Paging Control Panel (Vertical Mount) mounts in the BBX-FXMNS-6000 backbox |

| | | |
|---|---|---|
|  | QMT-5302NV | Network Master Telephone Control Panel (Vertical Mount) mounts in the BBX-FXMNS-6000 backbox |
|  | QAZT-5348DS | Addressable Telephone and Paging Selector Panel mounts in the BBX-FXMNS-6000 backbox |
|  | QAZT-5302DS | Addressable Telephone and Paging Selector Panel mounts in the BBX-FXMNS-6000 backbox |
|  | QAD-6425-70 | 70V Amplifier, maximum four speaker zones. |
| | QAD-6425-25 | 25V Amplifier, maximum four speaker zones. |
|  | BBX-FXMNS-6000 Fire Alarm and Audio Enclosure<br>(red door with window/ black backbox) | Enclosure 45.85”H x 22.4”W x 9.33”D |

| | | |
|---|---|---|
|  | QBB-6001 Expansion Audio Enclosure<br>(full red door/black backbox) | Enclosure 45.85”H x 22.9”W x 10.03”D |
|  | RAXN-LCD | Remote Shared Display Annunciator. Please refer to LT-895 RAXN-LCD manual for further information. |
|  | RAXN-LCDG | Remote Shared Graphical Display Annunciator. Please refer to LT-6033 RAXN-LCDG manual for further information. |
|  | MGD-32 | Master Graphic Driver Annunciator Board |
|  | AGD-048 | Adder Graphic Driver Board |
|  | BAT-12V18A<br>BAT-12V26A<br>BAT-12V33A<br>BAT-12V42A<br>BAT-12V55A<br>BAT-12V75A<br>BAT-12V80A | Batteries available from 18 to 80 AH.<br>Batteries larger than 55AH will fit into a BC-160(R) battery cabinet. |
| MP-300(R)(S) | End-of-line Resistor Plate, R for red, S for stainless steel finish | |
| BC-160(R) | External Battery Cabinet (ULC and UL listed) | |

# 3.0 Installation

This chapter describes the installation of the BBX-FXMNS-6000 enclosure and the BB-6001 enclosure.

## 3.1 BBX-FXMNS-6000 Enclosure Installation

This enclosure can accommodate the FX-6000MNS-CH chassis with FleX-Net main fire alarm board and adder modules, the QMP-6101NV vertical mounting master paging microphone and the QMT-5302NV Master Telephone panels.The BBX-FXMNS-6000 enclosure includes a backbox, an inner door and an outer door.

**Figure 3 BBX-FXMNS-6000 Enclosure**

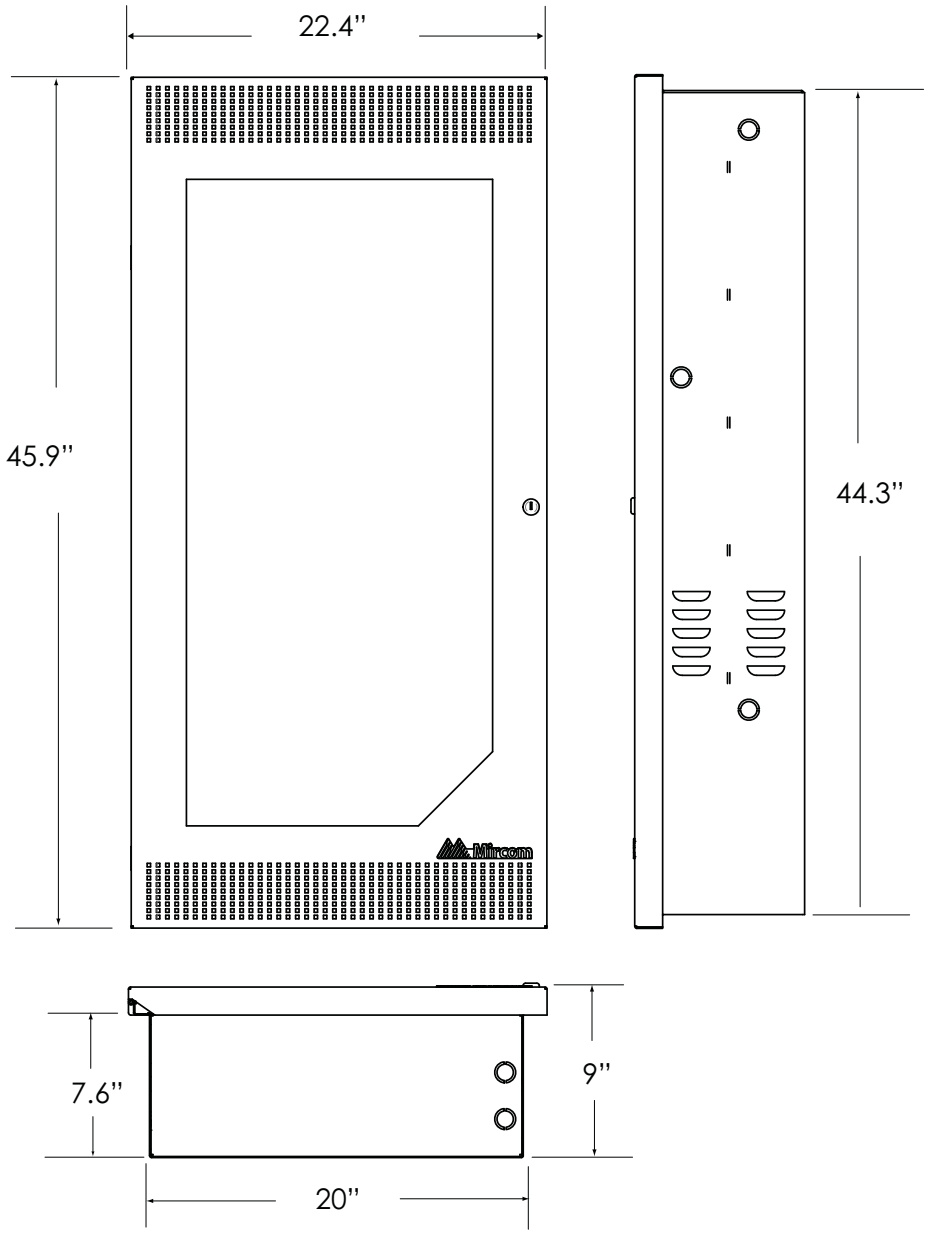
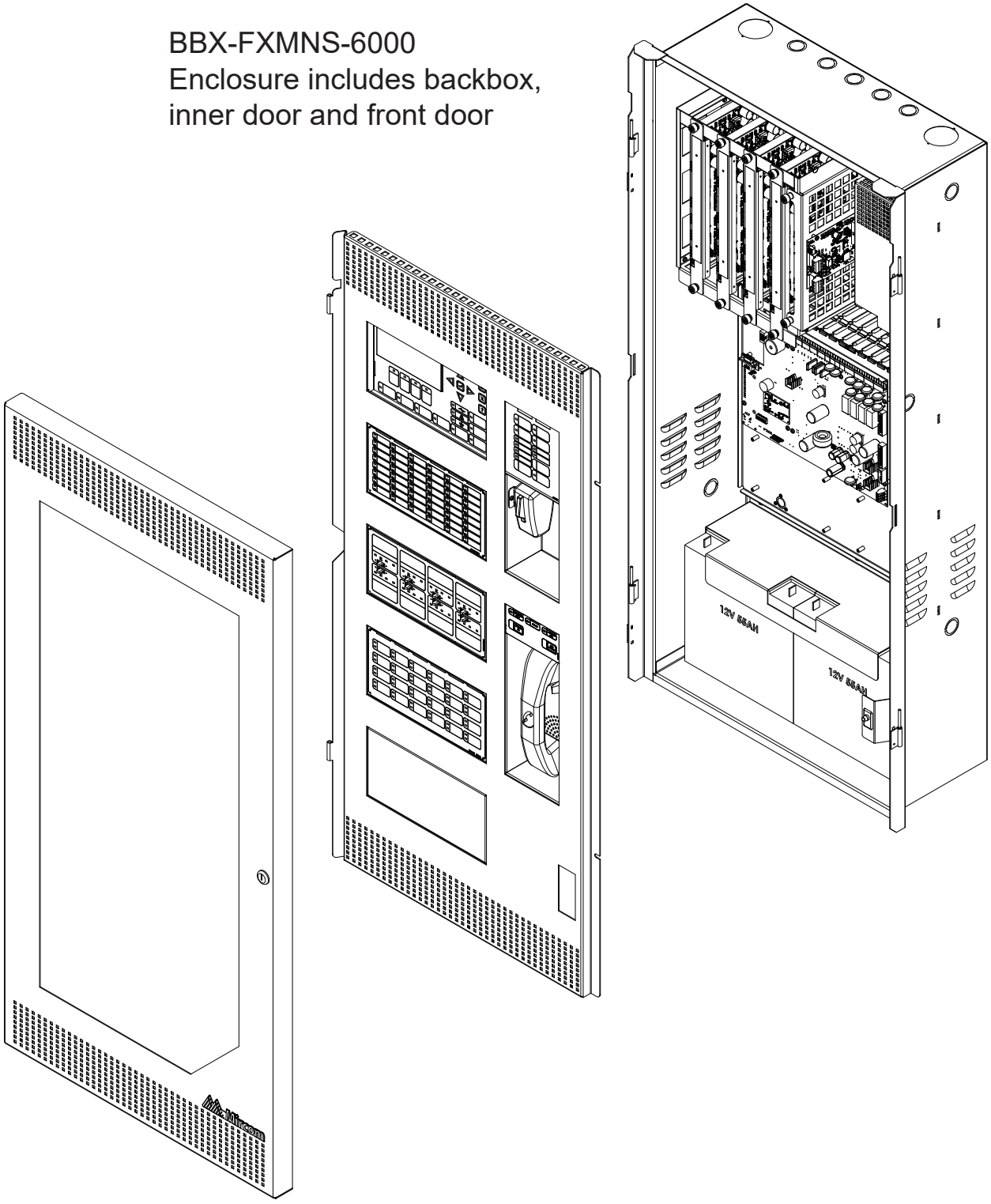


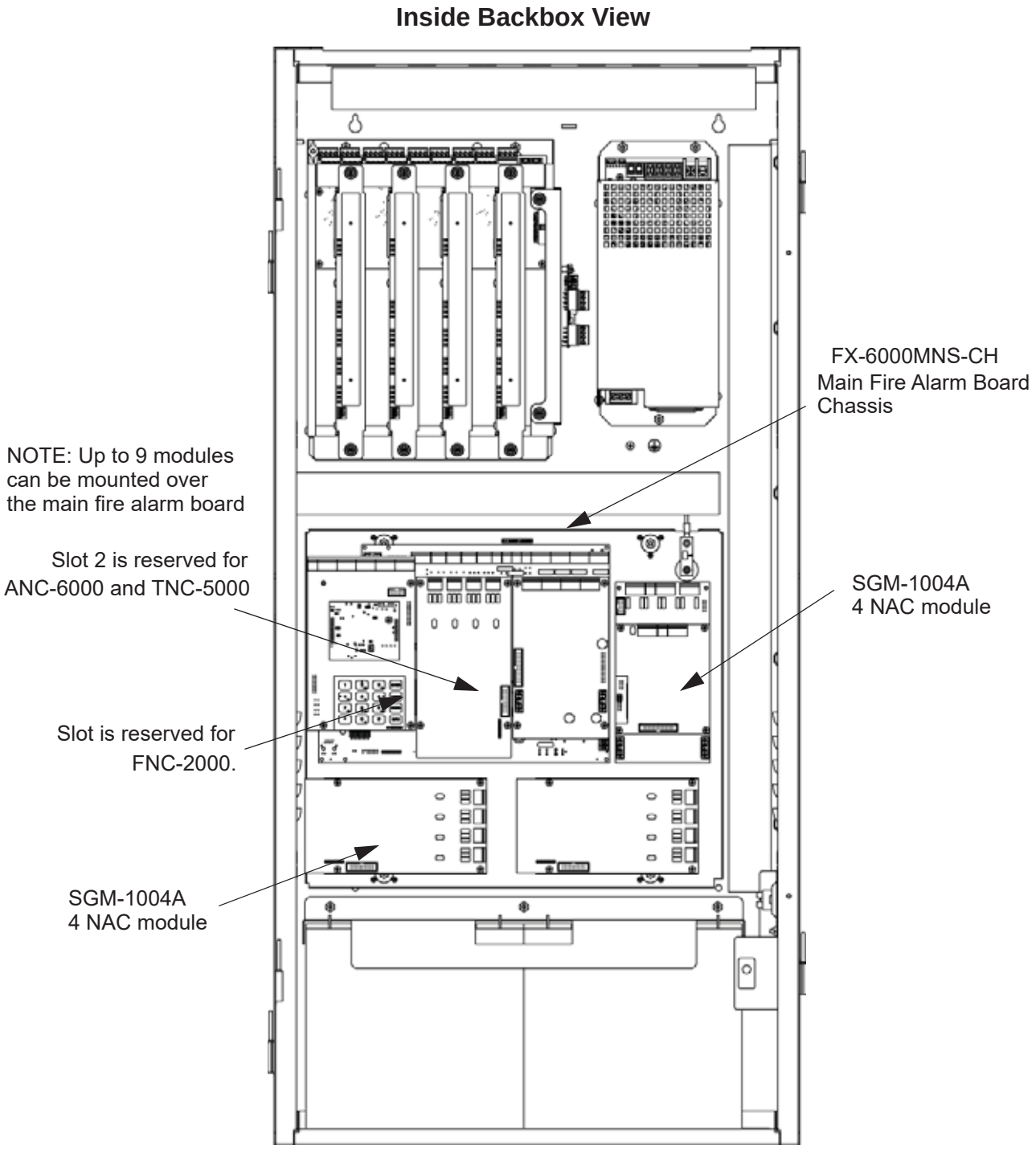
**Figure 4 BBX-FXMNS-6000 Enclosure Complete View**



### 3.1.1 FX-6000MNS-CH Main Fire Alarm Chassis

This chassis mounts into the BBX-FXMNS-6000 Enclosure (backbox) as shown below.

**Figure 5 FX-6000MNS-CH mounted within the BBX-FXMNS-6000 Enclosure**

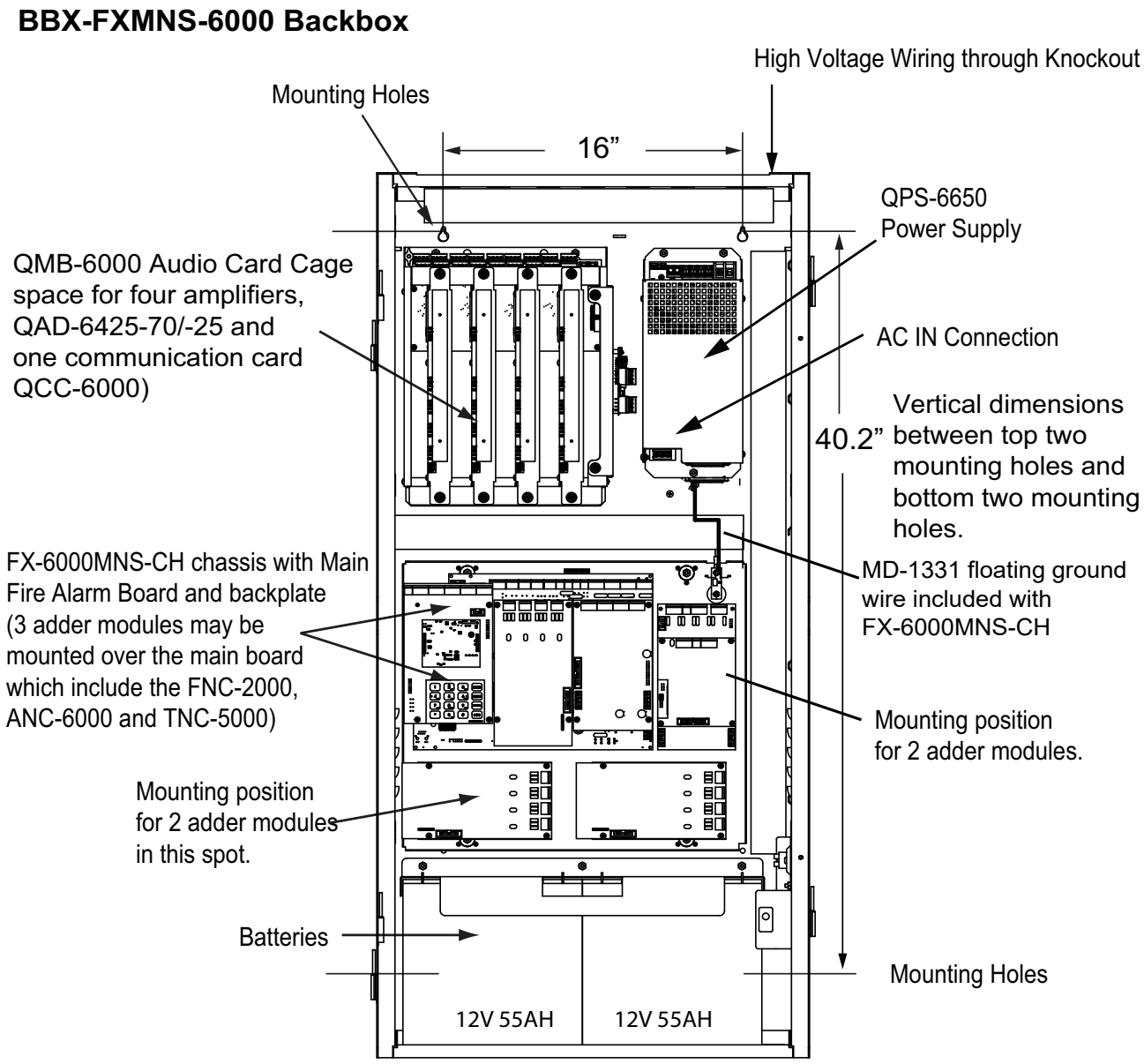


### 3.1.2 QMB-6000 Amplifier Card Cage

This card cage mounts into the BBX-FXMNS-6000 Enclosure (backbox) as shown in figure below.

The BBX-FXMNS-6000 backbox supports the QMB-6000 amplifier card cage which holds up to four amplifiers, the Fire Alarm main board chassis and QPS-6650 Power Supply.

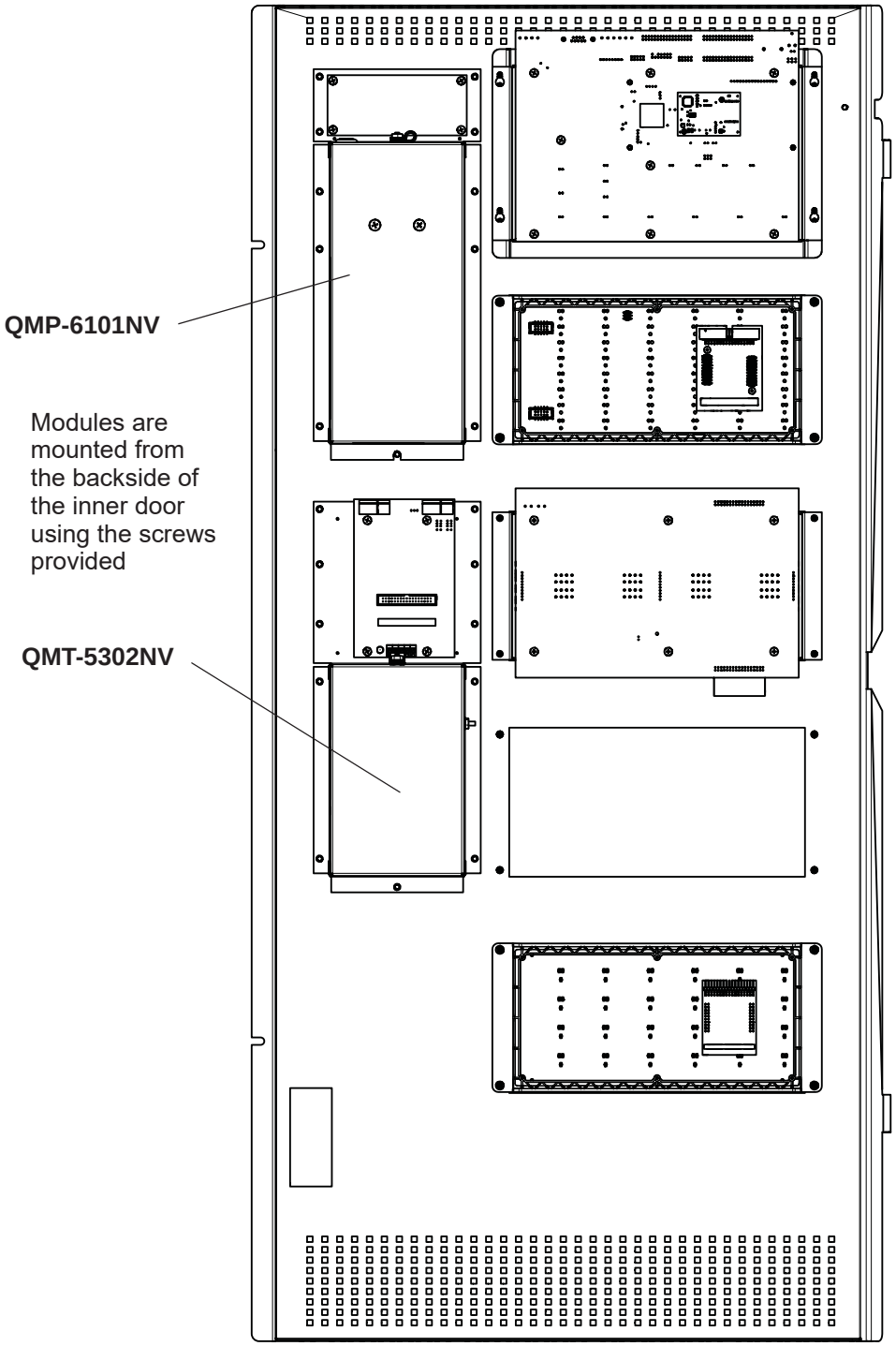
**Figure 6 BBX-FXMNS-6000 Backbox Dimensions and Contents**



### 3.1.3 QMP-6101NV Master Paging Microphone and QMT-5302NV Master Telephone

The QMP-6101NV and QMT-5302NV are mounted on the inner door of the BBX-FXMNS-6000 enclosure  Refer to Figure 7

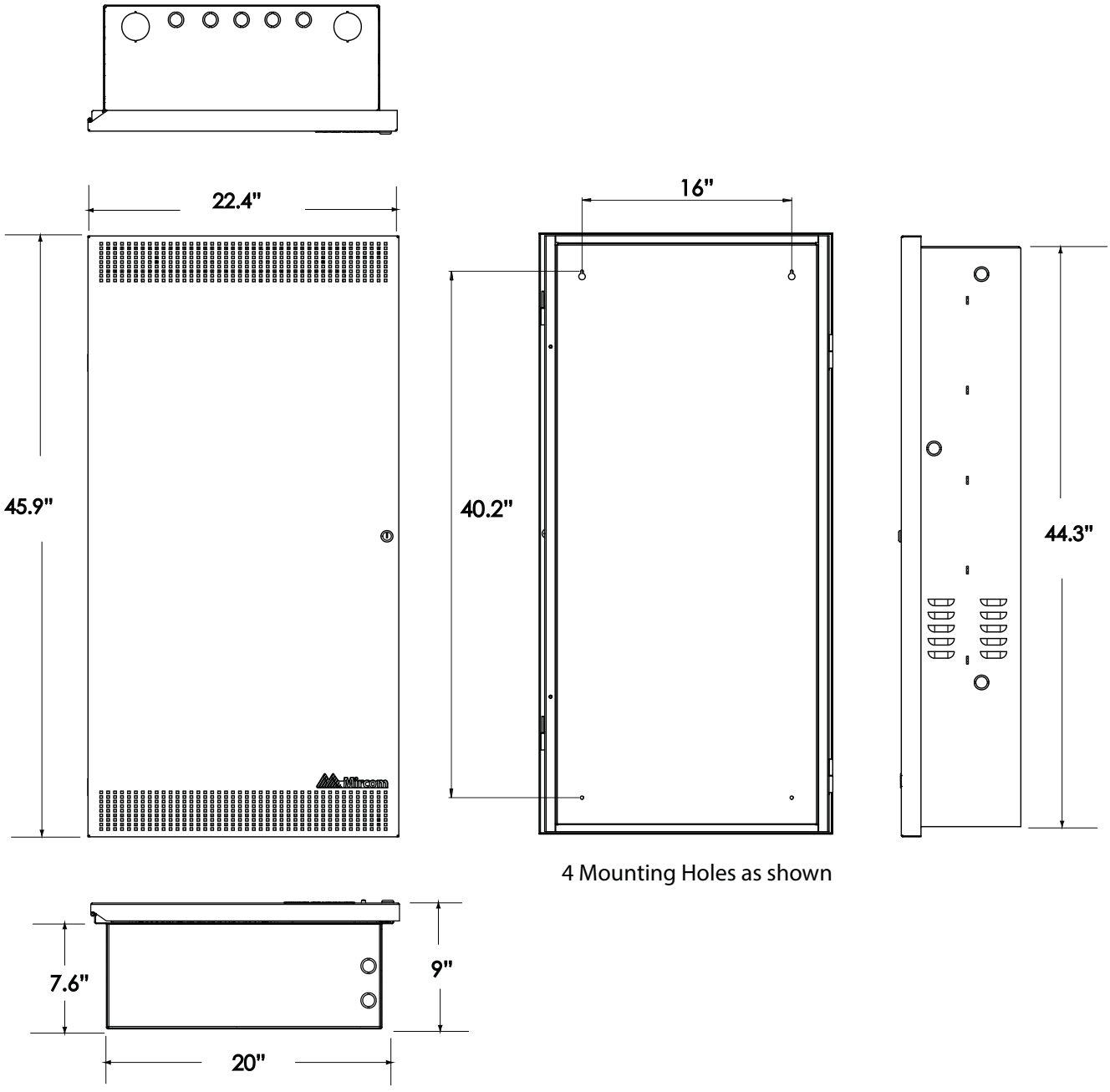
**Figure 7 BBX-FXMNS-6000 Inner Door**



## 3.2 QBB-6001 Expansion Audio Cabinet Installation

The QBB-6001 expansion audio cabinet may be surface mounted only. The QBB-6001 consists of the bacbox and door. Install all cabinets and enclosures empty. Pull all required wiring in through the conduit holes provided (must be punched out). Do not mount the modules until mechanical installation is complete and all wires have been fed into the cabinets and enclosures.

**Figure 8 QBB-6001 Dimensions, Mounting Holes and Knockouts for Installation**



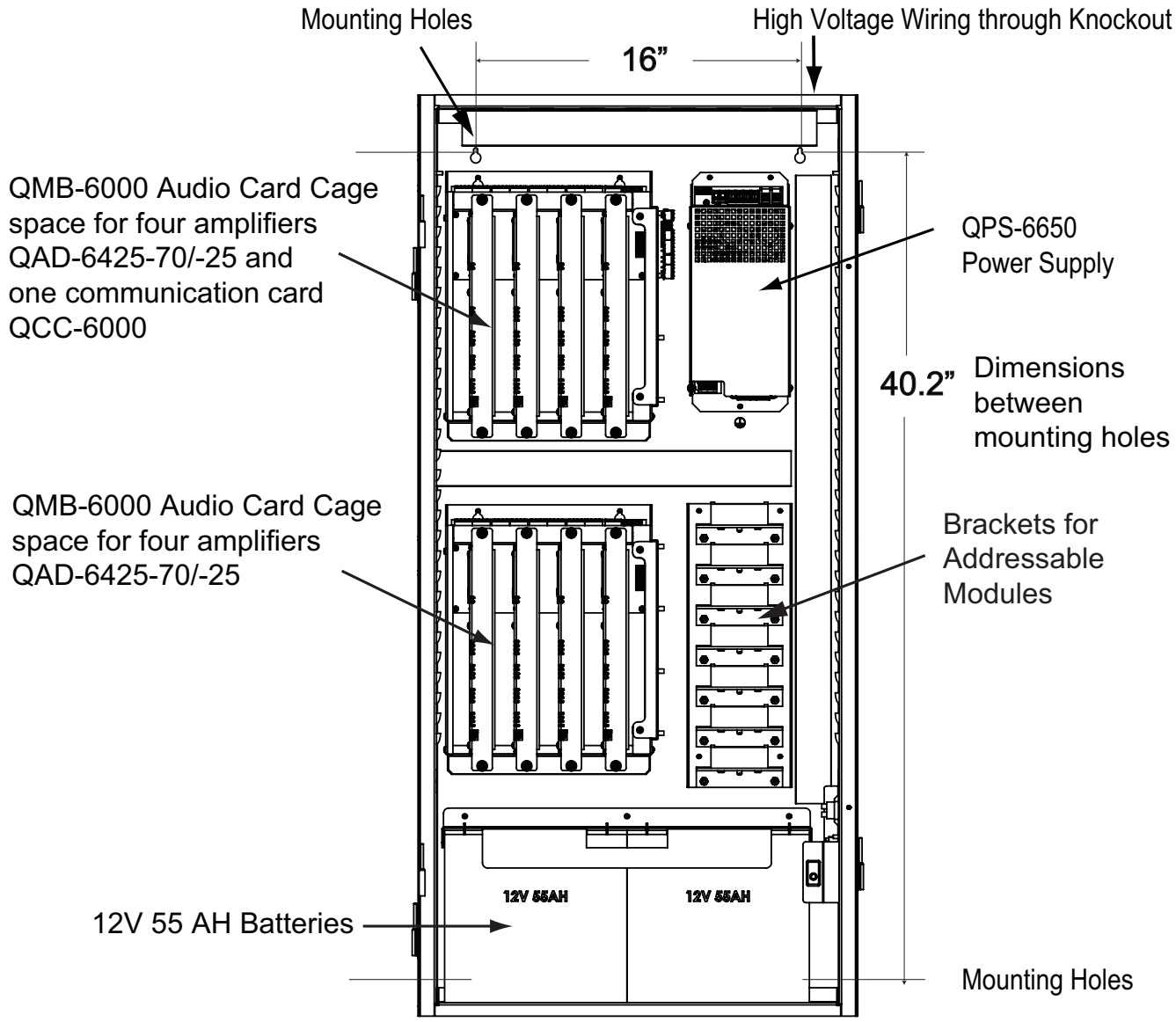

**Note:** It is extremely important to connect the audio cabinets earth-ground point (chassis ground) to the earth ground. Conduits should be brought in only through the conduits provided at both sides of the backbox.

## 3.3 QBB-6001 Enclosure

The QBB-6001 expansion audio cabinet includes the QPS-6650 Power Supply, and up to two QMB-6000 Card cages.

Up to eight Amplifier Modules QAD-6425-25/-70 may be installed into two QMB-6000 card cages. The total maximum wattage per expansion audio cabinet is 575 Watts.

**Figure 9 QBB-6001 Expansion Audio Cabinet Module Placement**



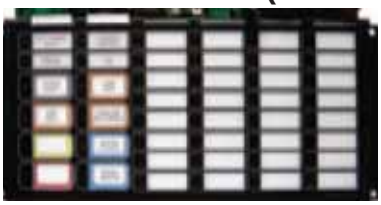
## 3.4 Display Modules

Each display module occupies one display position. These modules are mounted in the BBX-FXMNS-6000 enclosure which has cutouts (with brackets) on the inner door. A “Frame” is a measure of display capacity, used in the programming of the system.

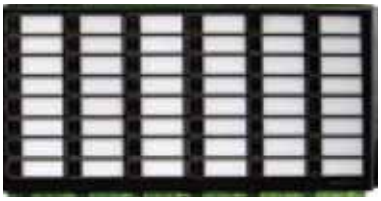
**DSPL-420DS**
**Narrow Display Control**
**(3 Frames)**

**DSPL-2440DS**
**Graphic Display Control**
**(3 Frames)**

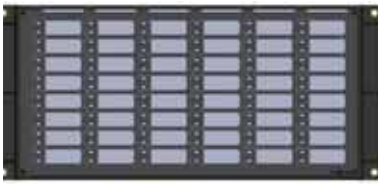
**RAM-1032TZDS**
**Programmable Zone LED**
**Annunciator Module (3 Frames)**



**RAX-1048TZDS**
**Programmable Zone/Trouble**
**LED Annunciator Module**
**(3 Frames)**



**IPS-4848DS**
**Programmable Input**
**Switches Module (4 Frames)**



**FDX-008W(KI)**
**Fan Damper Module**
**(1 Frame)**

# 4.0 Module Settings

## 4.1 Main Fire Alarm Module (MD-871A “N” Version Main Chassis)

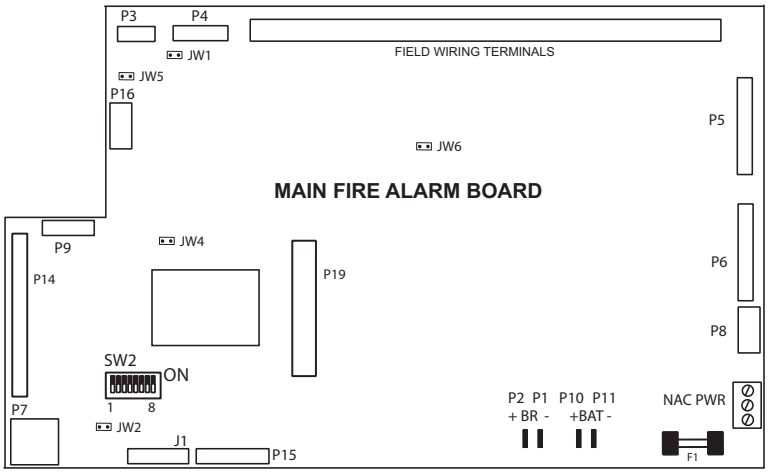
This main board has one addressable loop and network capability.

**JW1** Jumper is removed if a PR-300 or UDACT-300A is installed.
**JW2,JW4** Jumpers are Factory Set and should not be changed.
**JW5** Normally un-installed, add jumper to silence on-board buzzer.
**JW6** Normally installed, remove jumper to enable external power supply supervision.
**P1,2** Factory connection to Bridge Rectifier.
**P3** Black RS-485 Connector connects to the Adder Loop ALCN-792MISO if used. (Addressable Loops 3 and 4)
**P4** Connector for PR-300 Module or UDACT-300A.
**P5** Connector for next 8 Conventional Hardwire Circuit Adder Modules (Loop 1).
**P6** Connector for first 8 Conventional Hardwire Circuit Adder Modules (Loop 0).
**P7** Ethernet jack.
**P8** Power Connector for Adder Modules.
**P9** RS-232C for Printer or “CRT” Monitor.
**P10,11** Connection to 24 VDC Battery. Observe Polarity.
**P14** Connector for Display Module.
**P15, J1** Connectors for Factory Use.
**P16** High speed RS-485 audio link to ANC-6000 Audio Network Controller Module. When connected provides ARCnet or Fiber Optic audio and telephone communication.
**P19** Connector for FNC-2000 Fire Network Controller Module.
**SW2** DIP Switch for node address.
**NAC PWR** **24V FWR** input terminals for additional power for signal adder modules.
**F1** 20 Amp slow blow non-replaceable fuse.

**Note:** To enable communication from the Main Module to all of the Adder Modules, it is necessary to add a Continuity Jumper on the last Adder Module in a chain (see the appropriate Module Settings section to verify the location of the Continuity Jumper on a particular Circuit Adder Module). Only the last circuit adder module should have a jumper plug on its continuity jumper; all others must be left without a jumper plug

**TO CONFIGURE THE FIRE ALARM PANEL USE THE RS-485 CONNECTOR P4 OF THE LAST ADDER LOOP CONTROLLER MODULE INSTALLED OR IF NOT PRESENT, P3 ON THE FleX-Net™ MAIN FIRE ALARM MODULE**

**Figure 10 Main Fire Alarm Module (MD-871A"N" Version Main Board.**



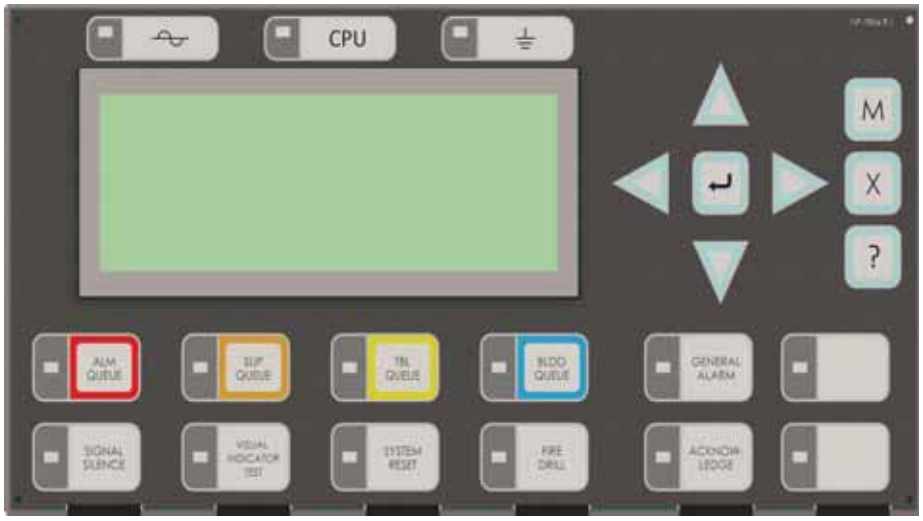

### 4.1.1 SW2 DIP Switch Node Address Setting on Main Fire Alarm Module

Refer to table in Appendix for Node Address Setting. Available addresses are 1 to 63. DIP Switch SW2-1 is the least significant digit.

## 4.2 DSPL-420DS Main Display Module

The DSPL-420DS mounts onto inner door of the BBX-FXMNS-6000. This display is part of the following main fire alarm chassis: FX-6000MNS-CH.

**Figure 11 DSPL-420DS Main Display Module (Part of Main Chassis c/w Main Fire Alarm Module)**




**P1:** Cable connects to P14 of the main fire alarm board (Figure 10).

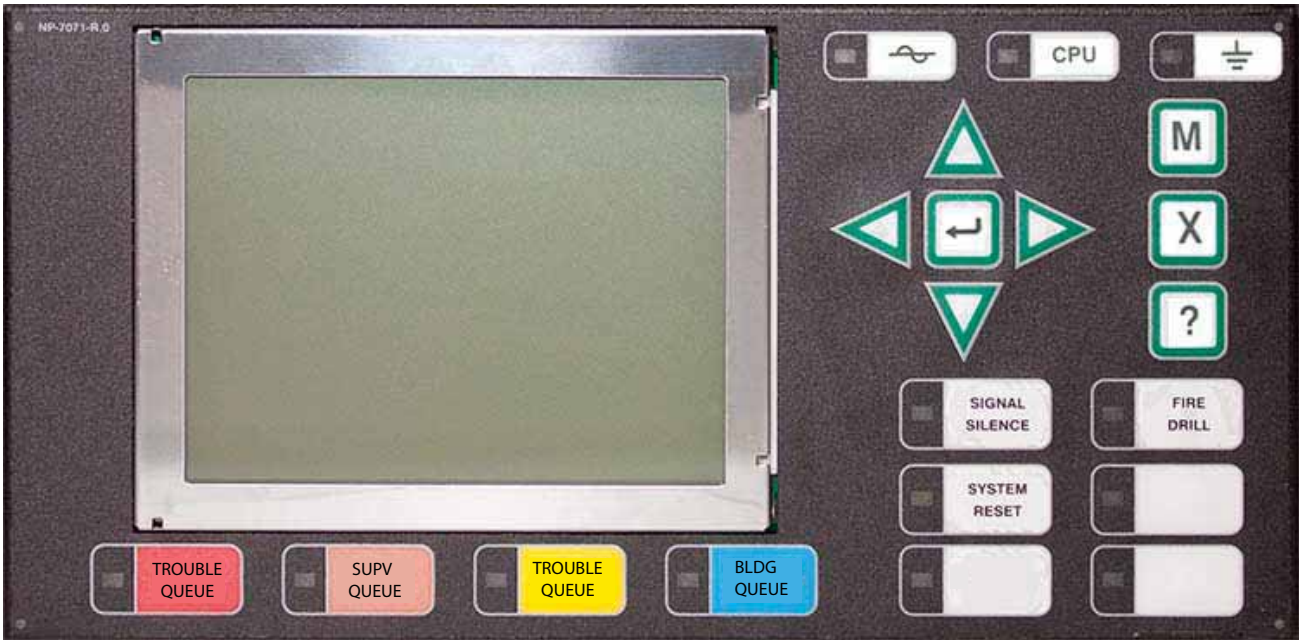
**P2:** Connection to P1 of any adder display module if used.

**Note:** The main display module comes with slide-in paper labels including both English and French slide-ins, and laser printer-compatible blanks for zone labelling.

## 4.3 DSPL-2440DS Graphical Main Display Module

The DSPL-2440DS is a separate item. It can be mounted onto the inner door of the BBX-FXMNS-6000. It can replace the DSPL-420DS found with the model FX-6000MNS-CH.

**Figure 12 DSPL-2440DS Graphical Main Display Module**




**P1:** Cable connects to P14 of the main fire alarm board (Figure 10).

**P2:** Connection to P1 of any adder display module if used.

**Note:** The main display module comes with slide-in paper labels including both English and French slide-ins, and laser printer-compatible blanks for zone labelling.

## 4.4 FNC-2000 Fire Network Controller Module

An FNC-2000 Fire Network Controller module is required in each fire alarm node in the system. The FNC-2000 also provides a connection for an optional FOM-2000-UM Fiber Optics Module.

**Figure 13 FNC-2000 Fire Network Controller Module**

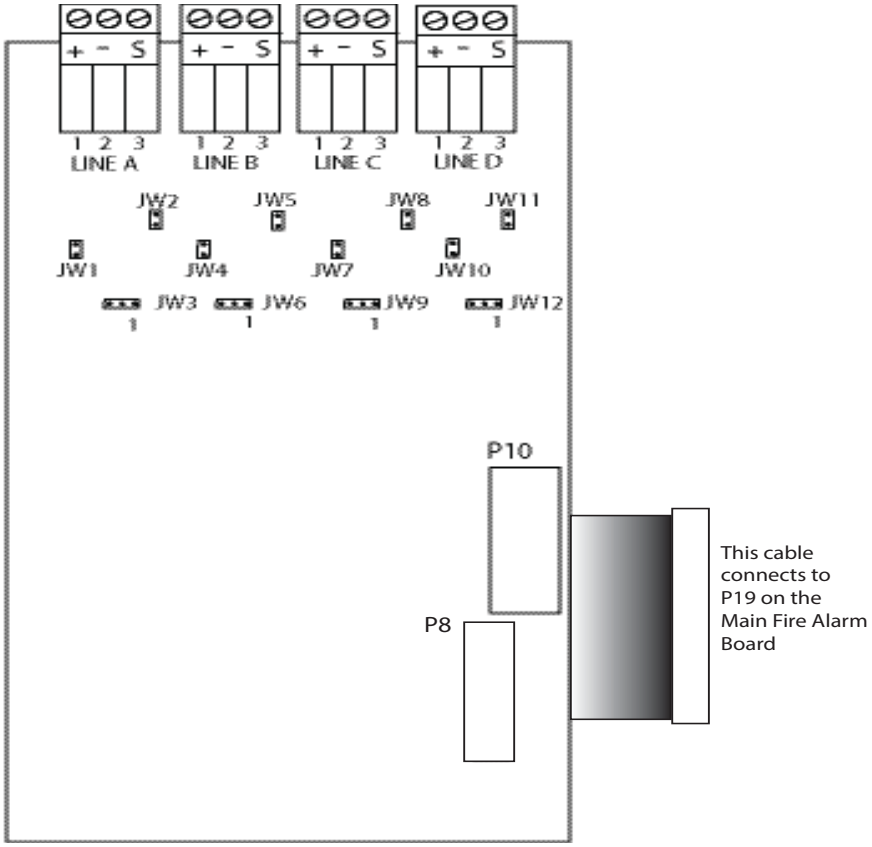


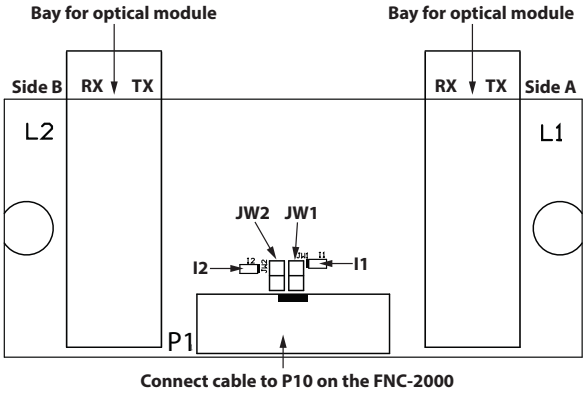

**Table 2: FNC-2000 Module List of Connectors and Jumpers and Functions**

| CONNECTOR or JUMPERS | Functions |
|---|---|
| **P8** | **P8** is for Factory Use Only. |
| **P10** | **P10** connects to **P1** of the FOM-2000-UM Fiber Optic Network Adder Module if used. |
| **JW1, JW2, JW4, JW7, JW8, JW11** | Jumpers for **JW1**, **JW4**, **JW7**, and **JW10** equal Line Termination (always short).<br>Jumpers for **JW2** and **JW8** equal Ground Fault (always short). |
| **JW5 and JW11** | Leave both un-installed. Do not connect JW5 or JW11 (open) |
| **JW3, JW6, JW9, JW12** | Jumpers for **JW3**, **JW6**, **JW9**, **JW12** shall be present between pins 2 and 3 (far left) and remain as is. |

**Note:** Network connection is through twisted cable from Line A, B, C and D. Refer to Figure 36 for specific wiring and cable information.

## 4.5 FOM-2000-UM Fiber Optic Network Module

**Figure 14 FOM-2000-UM Fiber Optic Network Module**




One of these modules is required at each panel where fiber optics will be used between them. The FOM-2000-UM is mounted over the FNC-2000 Network board (over the field wiring terminals) with two #6 Phillips screws and two Hex spacers.

**Table 3: FOM-2000-UM Fiber Optic Network Module Cable Connection**

| Connector | Function |
|---|---|
| **P1** | **P1** cable attaches to **P10** of the FNC-2000 Fire Network Controller Module. |
| **JW1** | **JW1** must be on (closed) if an optical module is installed in L1. **JW2** must be on (closed) if an optical module is installed in L2. |
| **JW2** | If there is no optical module in L1, remove the jumper from **JW1**. If there is no optical module in L2, remove the jumper from **JW2**. |

## 4.6 RAX-1048TZDS Zone Display Module

**Figure 15 Zone Display Module (RAX-1048TZDS)**

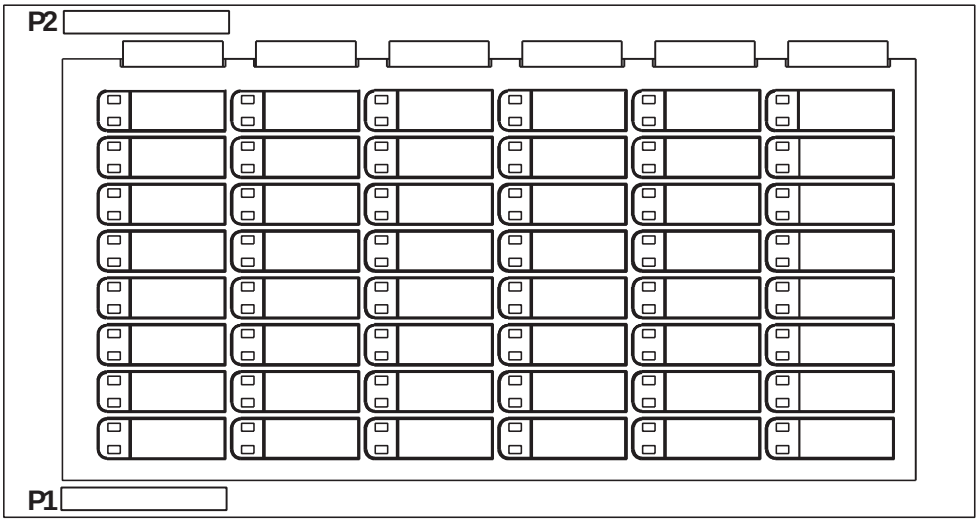



**Table 4: RAX-1048TZDS Zone Display Module Cable Function**

| Connector | Function |
|---|---|
| **P1** | **P1** Cable connects to P2 of previous display module. |
| **P2** | **P2** Cable connects to P1 of next display module |

**Note:** The zone display module comes with laser printer-compatible slide-in paper labels for zone labelling.

## 4.7 IPS-4848DS Programmable Input Switches Module

**Figure 16 IPS-4848DS Programmable Input Switches Module**

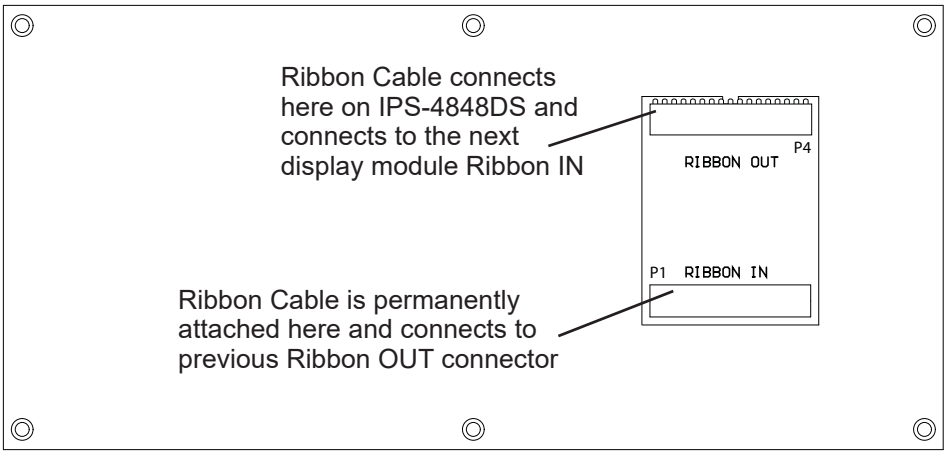



**Table 5: IPS-4848DS Programmable Input Switches Module Cable Function**

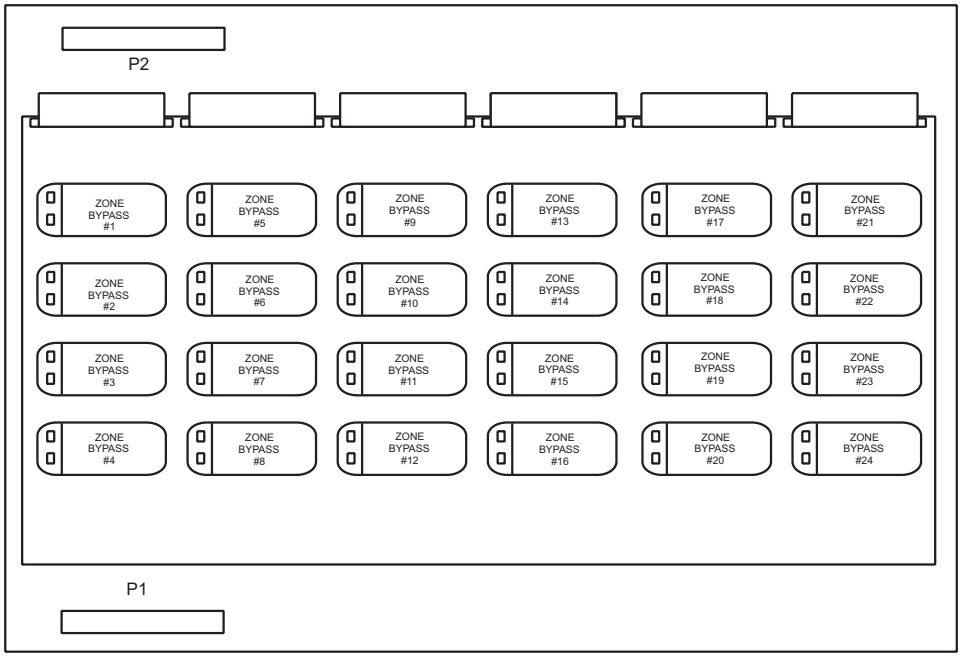
| Connector | Function |
|---|---|
| **P1** | **P1** Cable connects to P2(or P4) of previous display module. |
| **P4** | **P4** Cable connects to P1 of next display module |

**Note:** The IPS-4848DS module comes with laser printer-compatible slide-in paper labels for zone labelling.

## 4.8 IPS-2424DS Programmable Input Switches Module

The IPS-2424DS Programmable Input Switches Module provides 24 programmable switches, 24 bi-coloured (red/amber) LEDs for fire alarm zone annunciation and 24 amber trouble LEDs

**Figure 17 IPS-2424DS Programmable Input Switches Module**




### Table 6: IPS-2424DS Programmable Input Switches Module Cable Function

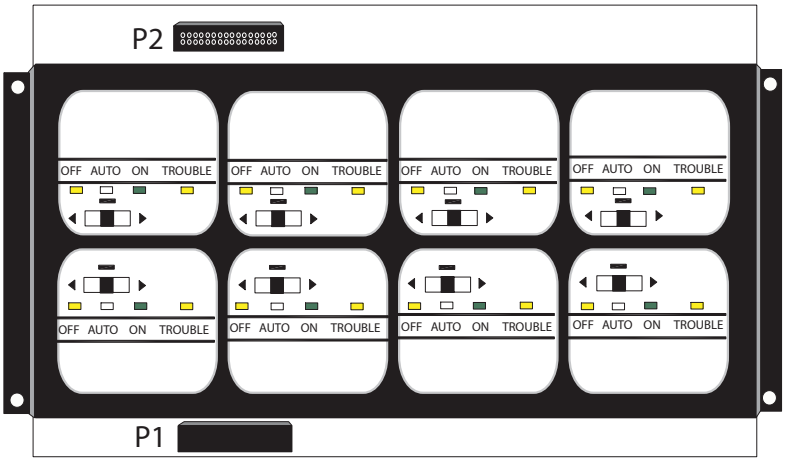
| Connector | Function |
|---|---|
| **P1** | **P1** Cable connects to P2 of previous display module. |
| **P2** | **P2** Cable connects to P1 of next display module |

**Note:** The IPS-2424DS module comes with laser printer-compatible slide-in paper labels for zone labelling.

## 4.9 FDX-008W(KI) Fan Damper Control Display Module

There are two models of the Fan Damper Control Display modules available. The FDX-008W provides switch control and LED indication of 8 fan damper zones. The FDX-008WKI provides switch control of 7 fan damper zones with the eighth zone activated by keyswitch. LED indication is provided for all 8 fan damper zones on the FDX-008WKI. Both the FDX-008W and the FDX-008WKI are used in conjunction with a FleX-Net™ Fire Alarm Control Panel.

**Figure 18 Fan Damper Control Display Module (FDX-008W(KI))**



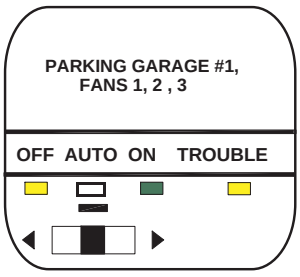

### 4.9.1 Fan Damper Operation

The FDX-008W Fan Damper Control Display module has eight configurable output circuits, each with a three position switch. The FDX-008WKI operates in the same manner as the FDX-008W except zone 8 is controlled by a remote keyswitch. Each switch has an ON and OFF position, plus an AUTO position. If the switch is placed in the AUTO position, the white AUTO LED will illuminate steady and the output will activate as programmed or configured. The output can be manually turned ON or OFF by placing the switch in the ON or OFF position, respectively.

Basically each switch can be configured to operate multiple fans or dampers. For each switch, there are 3 operations provided; outputs to turn ON, same outputs to turn OFF and inputs to bypass.

An example of the most common use of the FDX-008W or FDX-008WKI Fan Damper Control Display module is to operate exhaust fans and confirm fan operation (via monitor modules). See Figure 19 on the next page for a block diagram of fan and monitor set up.

### 4.9.2 Example




As shown in the figure to the right, Parking Garage #1 has 3 exhaust fans. The three position switch is configured to operate (to turn ON) fans 1, 2 and 3 in stairwell #1. The switch is set in the AUTO position (white AUTO LED on steady). Upon activation (via alarm or some other programmed trigger) with the switch in AUTO, the 3 fans (1,2, and 3) in stairwell #1 are turned ON automatically. Monitor modules in the Parking Garage #1 detect that all 3 fans are operating, therefore the ON LED will illuminate steadily. If one of the fans did not turn ON (due to malfunction), both the ON and OFF LEDs will flash at the slow trouble rate. The TRBL (trouble) LED will illuminate steady amber based on feedback from the monitor module that one or more of the fans is not working.

AUTO LED shows steady for switch in AUTO position.

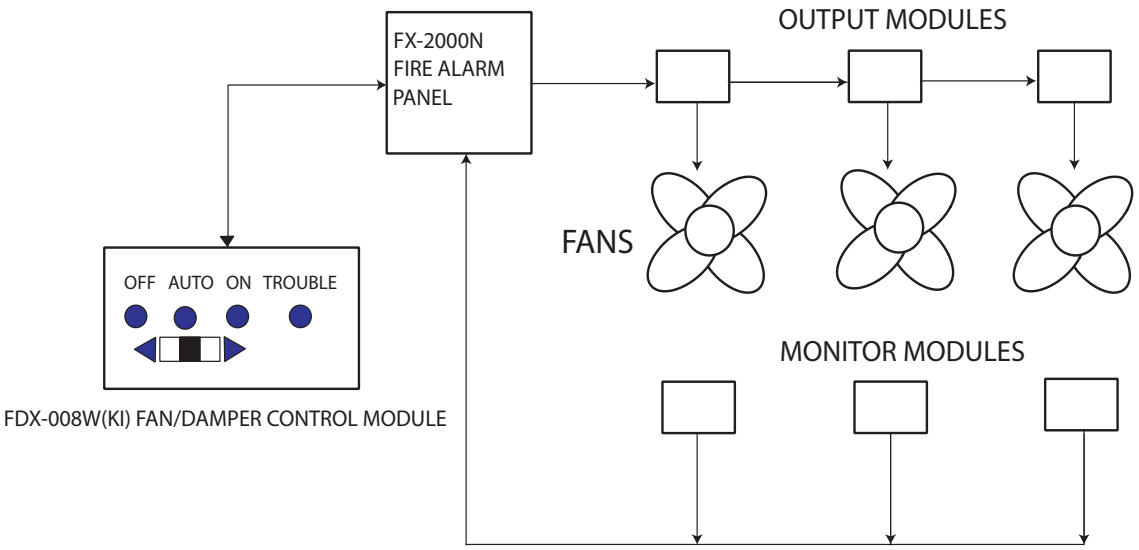
ON LED shows steady for all outputs operating and confirmed.

OFF LED shows steady for all outputs NOT operating and confirmed.

TRBL LED shows steady for one or more outputs NOT operating and confirmed.

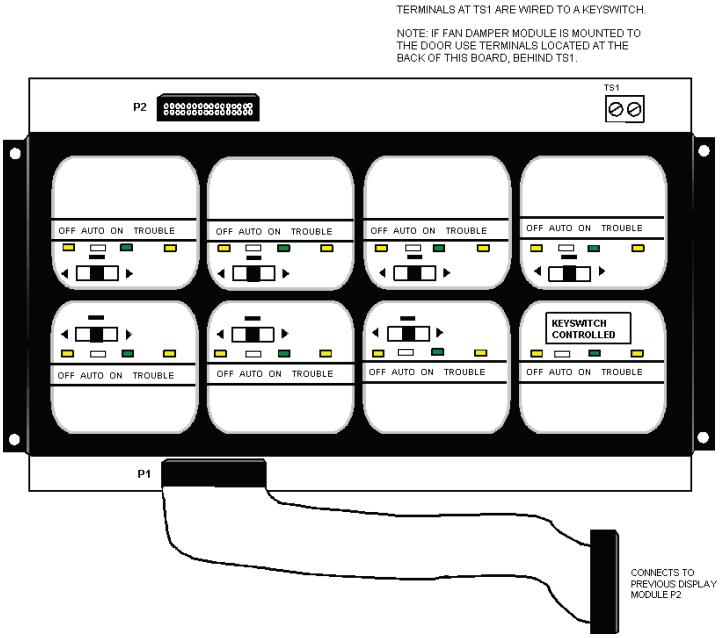
**Note:** A bypass function always has priority, so that if a circuit is bypassed by moving the switch manually or by loop bypass (FX-2000N Fire Alarm Panel), no other action will operate this switch other than again moving the switch manually or by un-bypassing the loop.

**Figure 19 FDX-008W Block Diagram of Fan and Monitor Set-up**




Before mounting the FDX-008WKI module, if a keyswitch is to be connected, wire the keyswitch to terminals at TS1 as shown in Figure  below. Mount the FDX-008W and FDX-008WKI Fan Damper Control Display modules in any position on the front part of the FX-2000N chassis and backbox.

**Figure 20 FDX-008WKI Fan Damper Control Display Module**



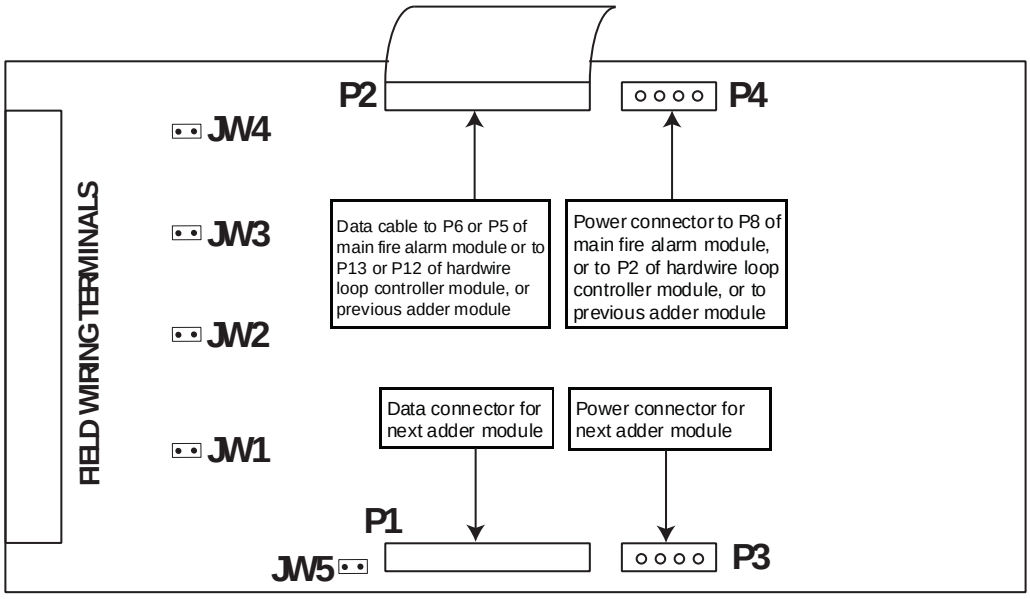

**Note:** There are also terminals located behind TS1 on the other side of the board for the convenience of wiring the keyswitch. The last fan damper zone in the bottom right position of the FDX-008WKI is controlled by the keyswitch

### 4.9.3 UUKL with FDX-008W and FDX-008WKI

The models FDX-008W and FDX-008WKI can be effectively used to provide an automatic and manual control system for smoke. Refer to document number LT-966 for extensive instructions regarding UUKL applications.

## 4.10 DM-1008A Hardwire Detection Adder Module

**Figure 21 Hardwire Detection Adder Module (DM-1008A)**




**JW1:** Install jumper for Class A operation of initiating circuits 1 and 2.

**JW2:** Install jumper for Class A operation of initiating circuits 3 and 4.

**JW3:** Install jumper for Class A operation of initiating circuits 5 and 6.

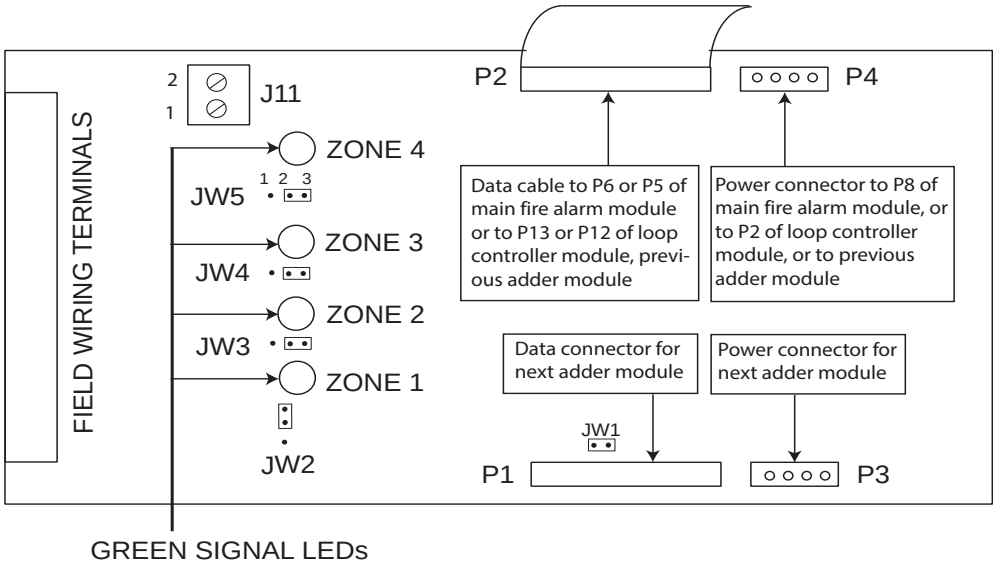
**JW4:** Install jumper for Class A operation of initiating circuits 7 and 8.

**JW5:** Remove continuity jumper if there are any more adder modules installed..

**Note:** For Class A operation the FX-2000N must be configured as Class A via the configuration program.

## 4.11 SGM-1004A Hardwire Signal Adder Module

**Figure 22 Hardwire Signal Adder Module (SGM-1004A)**




### 4.11.1 Basic Mode

Jumpers on the SGM-1004A Signal Adder Module and their functions:

**JW1:** Remove continuity jumper if this is not the last adder module installed.

**JW2, JW3, JW4, and JW5:** Leave these jumpers open, on positions 2 and 3.

**J11 Terminals:** Not connected.

**Components**

There are four green LEDs on the board, one for each signal zone. The LED will illuminate or flash following the signal rate sent to its zone. It will be off when the system is normal and they will illuminate when a signal zone is activated. The LED does not reflect what is happening on the signal zone, just that it is receiving data to activate that signal zone.

**Note:** Jumpers JW2, JW3, JW4 and JW5 are positioned on pins 2 and 3 (right two pins with board orientation as shown above) from factory.

**Operation**

There are two modes of operation for this module. The basic mode of operation does not involve any isolators connected to the signal zones. For this case, leave jumpers JW2, JW3, JW4 and JW5 as they come on pins 2 and 3, and do not make any connection to terminal block J11. The second mode is used when isolators are to be connected to the signal circuits. For further information on bell cut relays or isolators, please refer to the specific fire alarm panel manual or the isolator instruction manual.

### 4.11.2 Isolator Mode

**Jumpers for the Isolator Mode**

**JW2:** Place jumper over pins 2 and 3 for the ability to connect an isolator on Zone 1.

**JW3:** Place jumper over pins 2 and 3 for the ability to connect an isolator on Zone 2.

**JW4:** Place jumper over pins 2 and 3 for the ability to connect an isolator on Zone 3.

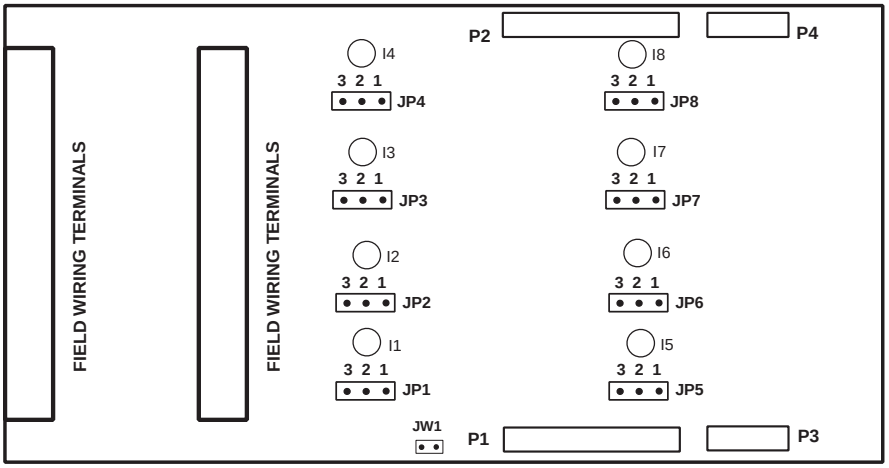
**JW5:** Place jumper over pins 2 and 3 for the ability to connect an isolator on Zone 4.

**Attention:** Discard jumpers on zones that are not configured for isolators.

**J11:** Wire these terminals to an alarm relay. These may be tapped if more signal modules are used in this manner.

## 4.12 RM-1008A Hardwire Relay Adder Module

**Figure 23 Hardwire Relay Adder Module (RM-1008A)**




**P2:** Data cable to P6 or P5 of main fire alarm module, or to previous adder module.

**P1:** Data connector for next adder module.

**P4:** Power connector to P8 of main fire alarm module, or to previous adder module.

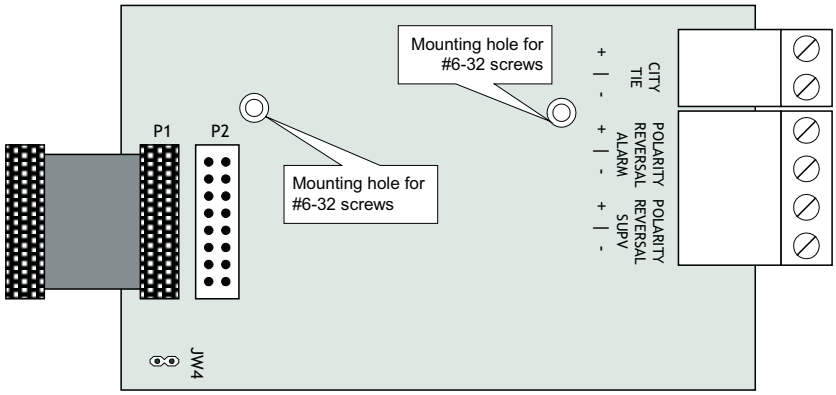
**P3:** Power connector for next adder module.

**JW1:** Remove continuity jumper if there are any more adder modules installed. If this is the last module installed, leave JW1 on.

**JP1-JP8:** Move jumpers from pins 1 and 2 to 2 and 3 to connect relay commons between two or more relays.

## 4.13 Polarity Reversal and City Tie Module (Model PR-300)

**Figure 24 Polarity reversal and city tie module**




The following hardware configuration must be performed before installing the PR-300.

**Table 7: PR-300 jumper settings**

| | |
|---|---|
| **P1** | Cable connects to **P4** on the **FX-2000N Main Fire Alarm Board** |
| **P2** | Not used. If a UDACT-300A is used in conjunction with a PR-300, then the UDACT-300A ribbon cable P1 is connected to header P2 of the PR-300. |
| **JW4** | Jumper JW4 is always left intact. |

The Alarm Transmit signal to the PR-300 can be programmed to turn OFF when signal silence is active (Not allowed by UL 864, refer to Configuration section of this manual). This allows the City Tie Box to be manually reset. On subsequent alarms the silenceable signals will resound and the City Tie Box will be retriggered. Please refer to the Configurator for more information.

The Trouble Transmit signal to the PR-300 can be programmed to delay AC power fail. Please refer to the Configurator for more information.

**Note:** Jumper JW4 on the FX-2000N main fire alarm board must be removed if a city tie module is installed.

## 4.14 UDACT-300A MAIN BOARD

There are two jumpers on the UDACT-300A which are used for operation/configuration purposes. Jumper JW1 is used to reset the default passcode. Jumper JW2 is required for configuring (which can be done using the FX-2000N Configurator Software) the UDACT-300A. Refer to Figure 25 below for location of jumpers, cable connections, pushbutton and LEDs. Table 8 following, provides a description of the user items on the UDACT-300A.

**Figure 25 UDACT-300A Board Layout**

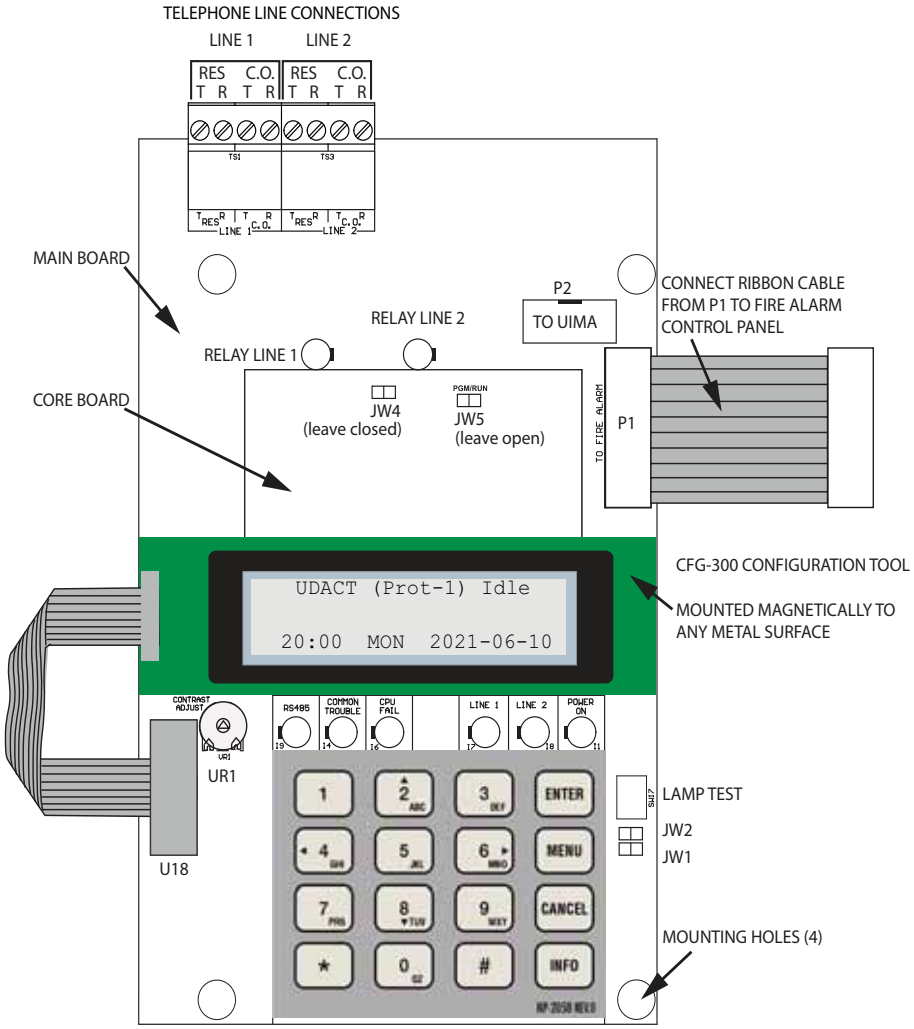



**Table 8: UDACT-300A Cable Connectors and Miscellaneous**

| Cable Connector | Function |
|---|---|
| **P1** | Ribbon Cable for connecting to P4 of FX-2000N main fire alarm module or to P2 header on the PR-300 if used. |
| **P2** | RS-232C/RS-485 Connection for computer configuration. |
| **U18** | Connector for CFG-300 Configuration Tool |
| **Lamp Test button** | Press and hold this button to test all the UDACT-300A LEDs |
| **UR1 Potentiometer** | This potentiometer is for adjustment of the CFG-300 LCD contrast. |

The following table lists all the LEDs located on the UDACT-300A board and states the function of each LED.

**Table 9: UDACT-300A List of LEDs and their Functions**

| LEDs | LED Function |
|---|---|
| **Relay Line 1** | Located below Line 1 terminal block. When Line 1 relay is energized, this green LED will illuminate |
| **Relay Line 2** | Located below Line 2 terminal block. When Line 2 relay is energized, this green LED will illuminate. |
| **RS-485** | Status LED for communication, will flash when RS-485 communication is active. |
| **Common Trouble** | Steady amber for any troubles on the Fire Alarm panel or UDACT-300A. |
| **CPU Fail** | Steady amber for any on board CPU trouble. |
| **Telephone Line 1** | Telephone status indicator LED; Red when the line is in use, Amber when there is a line trouble. |
| **Telephone Line 2** | Telephone status indicator LED; Red when the line is in use, Amber when there is a line trouble. |
| **Power ON** | Green LED is ON steady when power is supplied to the board. |

The following table lists the user jumpers available on the UDACT-300A and their functions.

**Table 10: UDACT-300A List of Jumpers for Operation and Configuration**

| Jumper Number | Jumper Function |
|---|---|
| **JW1** | Normally open. Place jumper here and power down the UDACT-300A by disconnecting P1 or power down the fire alarm panel (AC and Batteries), then power back to revert to default passcode. After reset, remove the jumper. Leave normally open. |
| **JW2** | Normally open to BLOCK remote configuration via modem, PC with a UIMA converter module or using the LCD and keypad at the UDACT-300A. Place jumper here to ALLOW any type of configuration. Remove jumper once configuration is complete. |

**Note:** This module cannot be installed if a city tie module is used.

See the *UDACT-300A Installation and Operation Manual LT-888* for more information.

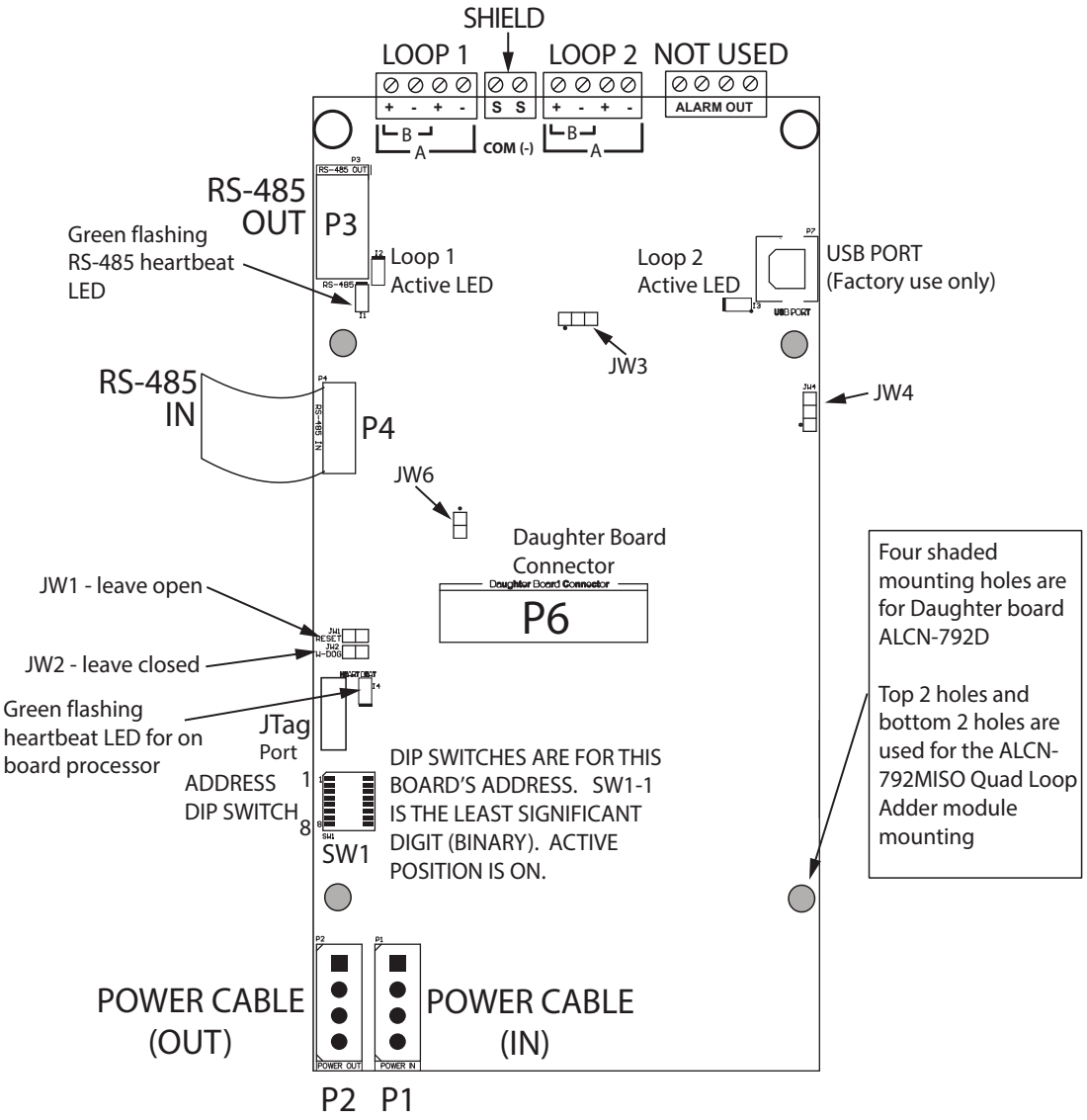
## 4.15 ALCN-792MISO Isolated Quad Loop Adder Module with ALCN-792D Daughter Board

The Quad Loop Adder module provides two addressable loops plus an additional two loops as part of the daughter board ALCN-792D which is mounted over the ALCN-792MISO. The Quad Loop Adder module may be mounted over the main fire alarm controller board of the FX-2000N Fire Alarm Panel or on any chassis that supports adder boards. Refer to the Display and Adder Modules section for mounting applications. This module is mounted using four #6 screws and (if necessary) four 1 1/2" spacers.

| | |
|---|---|
| **Power** | The power is supplied to the board via cable from the main fire alarm board or from the previous loop controller module into the P1 POWER IN connector. Connect the P2 POWER OUT connector to the next loop controller module or other adder module. One power cable is supplied with this module. |
| **RS-485:** | The RS-485 cable is attached at P4 on ALCN-792MISO and is either connected to P3 of the main fire alarm controller module or connected from the previous loop controller module or other adder board. If the next loop controller module is used, connect the RS-485 out at P3 on ALCN-792MISO to the next loop controller module cable from P4; if it is not used, leave without connection. |
| **DIP Switches:** | Use the DIP switches to set the binary address of the board. SW1-1 is the lowest significant digit and ON is active. For example, an address of two would be created by turning SW1-1 OFF, SW1-2 ON and DIP switches SW1-3 to SW1-8 OFF. Refer to Appendix C for DIP switch settings. |
| **Loop 1:** | This is the addressable loop for all initiating devices. Wire the loop as shown in Figure 33, Figure 34 and Figure 35. |
| **Loop 2:** | This is the addressable loop for all initiating devices. Wire the loop as shown in Figure 33, Figure 34 and Figure 35. |
| **Jumpers:** | A jumper is provided at JW2 for normal operation. To reset the board, leave the jumper at JW2 and momentarily short the pins at position JW1.<br>ALCN-792MISO:<br>• JW1: Factory use only. Leave open.<br>• JW2: Factory use only. Leave closed.<br>• JW3: 3 pin jumper. Normally set to 1-2, can be set to 2-3 to prevent noise from CLIP System Sensor sounder bases on Loop 1. Pin 1 is marked with a dot.<br>• JW4: 3 pin jumper. Normally set to 1-2, can be set to 2-3 to prevent noise from CLIP System Sensor sounder bases on Loop 2. Pin 1 is marked with a dot.<br>• JW6 on ALCN-792MISO: Factory use only. Leave closed.<br>ALCN-792D:<br>• JW1 - Normally set to 1-2, can be set to 2-3 to prevent noise from CLIP System Sensor sounder bases on Loop 4.<br>• JW2 - Normally set to 1-2, can be set to 2-3 to prevent noise from CLIP System Sensor sounder bases on Loop 3. |
| **RS-232 Debug Interface:** | This connection if for factory use only. |
| **JTAG Port:** | This connection is for factory use only. |

Mounting holes, terminals for wiring, cable connections and jumper locations on the ALCN-792MISO Quad Loop Adder module are shown in Figure 26 below.

**Figure 26 ALCN-792MISO Quad Loop Adder Module**




**Wiring The Addressable Loops**

There are two addressable loops present on this board that are wired in the same manner as shown in the wiring diagrams beginning with Figure 33. Although these drawings show only Loop 1; Loop 2 is wired in the same way as Loop 1 is.

**Notes for ALCN-792MISO:**

- All circuits are power limited and must use type FPL, FPLR, or FPLP power limited cable.
- Loop wiring: maximum loop resistance is 40 ohms total. These lines power-limited and fully supervised.

### 4.15.1 ALCN-792MISO DIP Switch Setting

Set the DIP switches on SW1 starting at address 1 for the first ALCN-792MISO adder and consecutively up to seven for the next six ALCN-792MISO modules. Refer to Appendix C for DIP switch settings.

### 4.15.2 ALCN-792D Daughter Board Installation

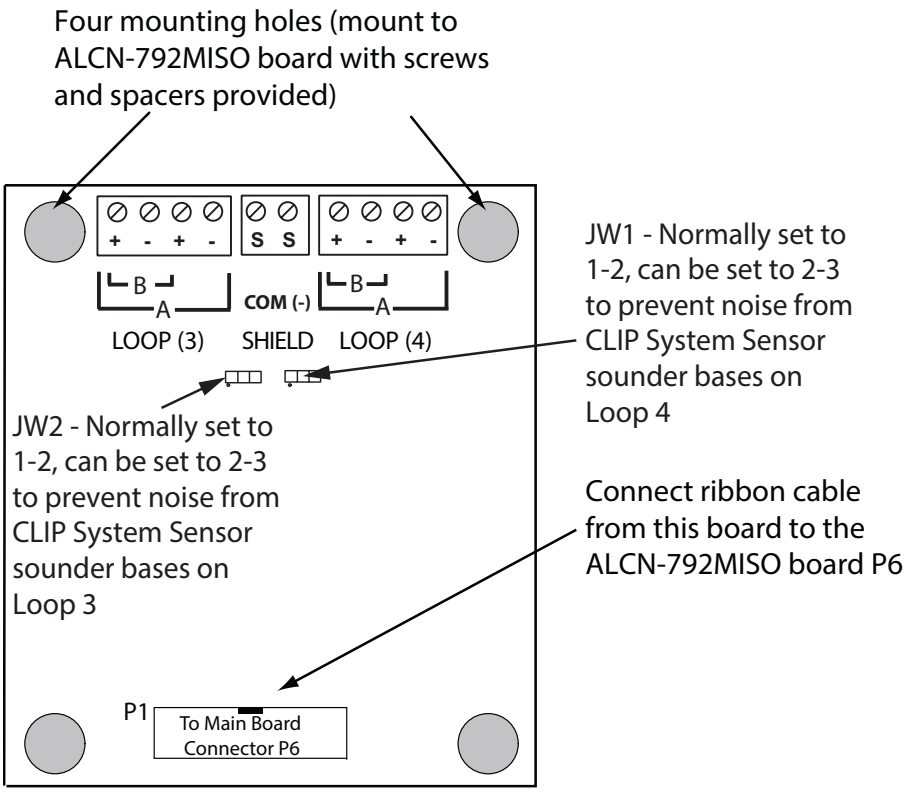
The location of Loop 1 and 2 terminals on ALCN-792D are shown in Figure 27 below. Also shown are the jumper locations.

The ALCN-792D Daughter Board provides another two addressable loops when connected to the ALCN-792MISO Quad Loop Adder Board. This daughter board is mounted over the ALCN-792MISO using the four screws and spacers provided. Wire the two addressable loops on the ALCN-792D Daughter Board in the same manner as the ALCN-792MISO addressable loops are wired.

If the loops have shielding, connect the shields to the terminals marked COM(-). To prevent the board reporting a ground fault, do not connect shields on SLC lines to earth ground.

Note: Unshielded wiring is preferred.

**Figure 27 ALCN-792D Daughter Board**




**Notes for ALCN-792D:**

- All circuits are power limited and must use type FPL, FPLR, or FPLP power limited cable.
- Loop wiring: maximum loop resistance is 40 ohms total. These lines are power-limited and fully supervised.

# 5.0 Field Wiring for Fire Alarm

## 5.1 Main Fire Alarm Board Wiring

Wire devices to terminals as shown in Figure 28 below. Refer to Appendix A for specifications and to LT-1023 for compatible devices.

**Attention:** Do not exceed power supply ratings:
Main Chassis: FX-6000MNS-CH: total current for NACs is 10A max.

**Notes:** "All wiring shall be in accordance with NFPA 70 and CSA C22.1, Safety Standard for Electrical Installations, Canadian Electrical Code."
The terminal blocks are removable for ease of wiring.

All power limited circuits must use type FPL, FPLR, or FPLP power limited cable.

**Figure 28 Main Fire Alarm Controller Board Field Terminal Connections**

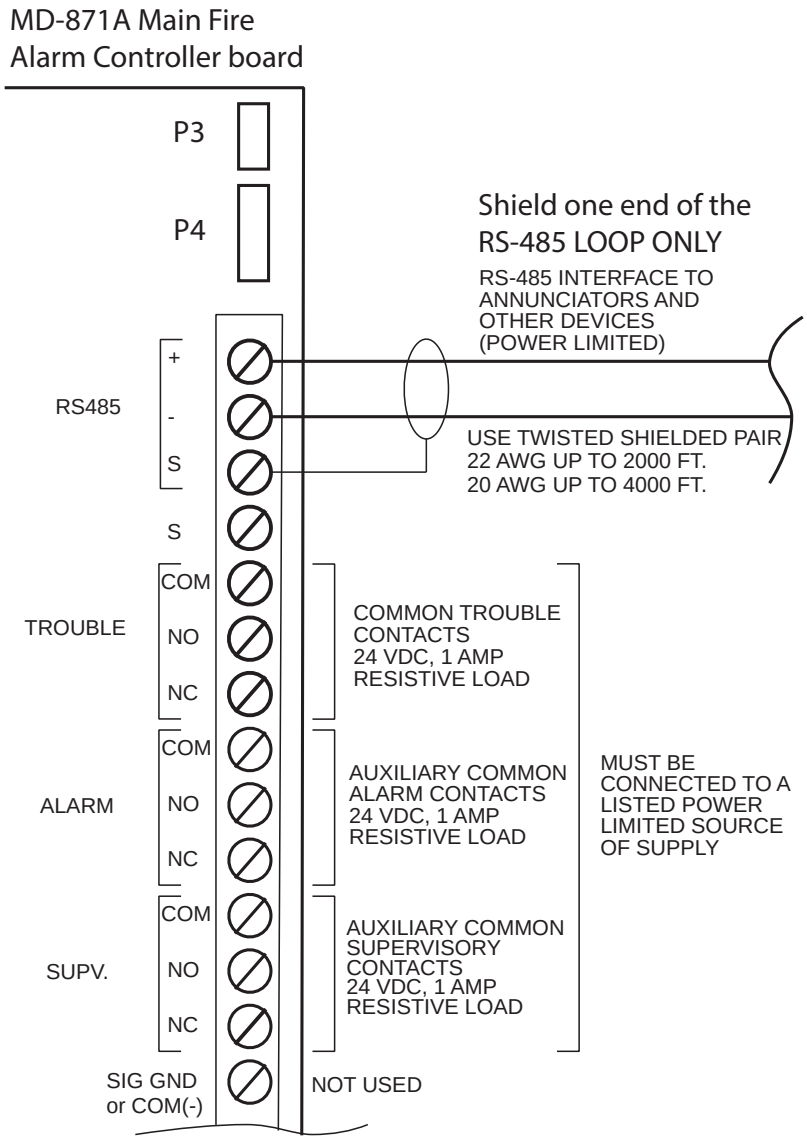
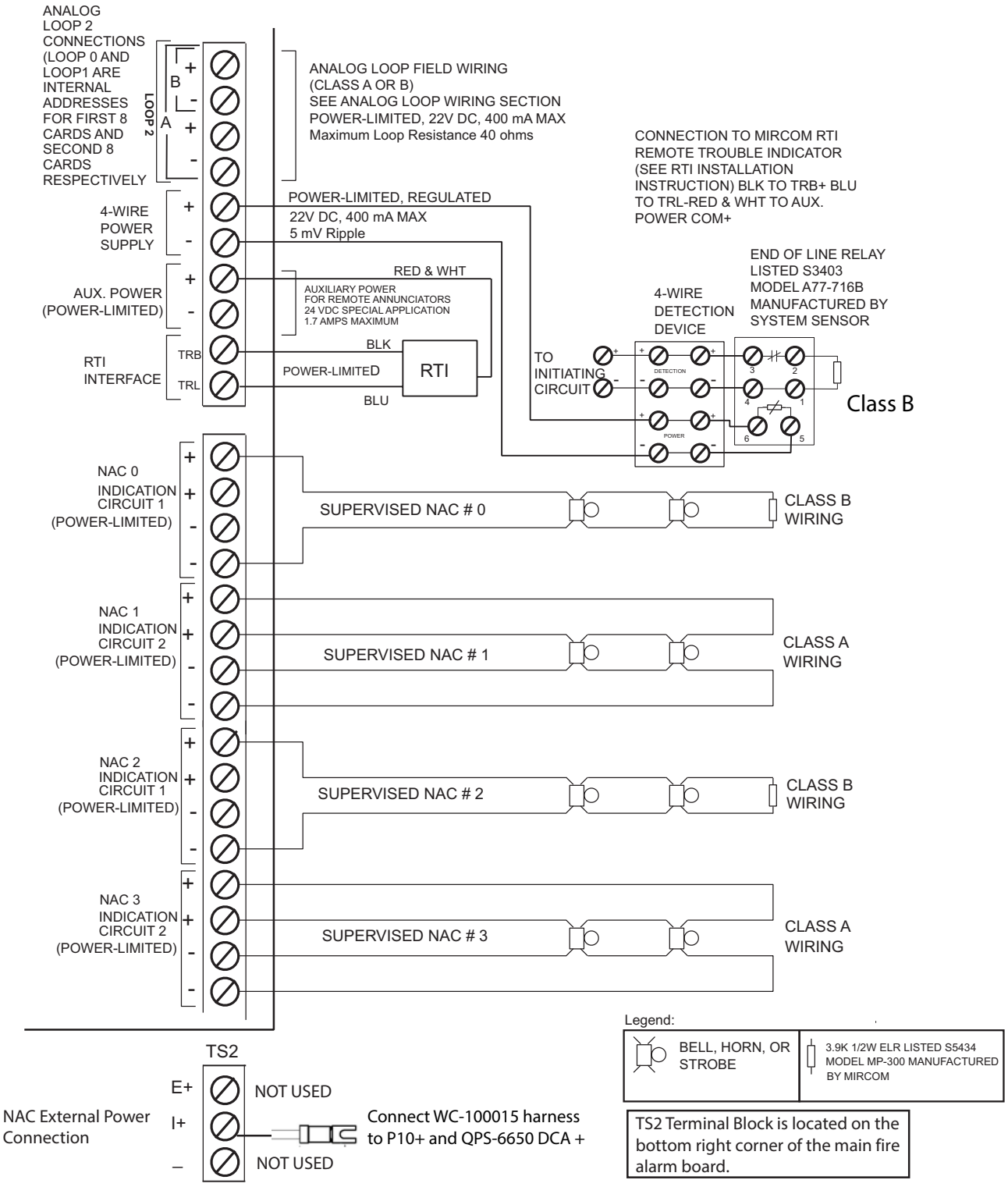


**Figure 29 Main Fire Alarm Control board Field Terminal Connections (continued)**

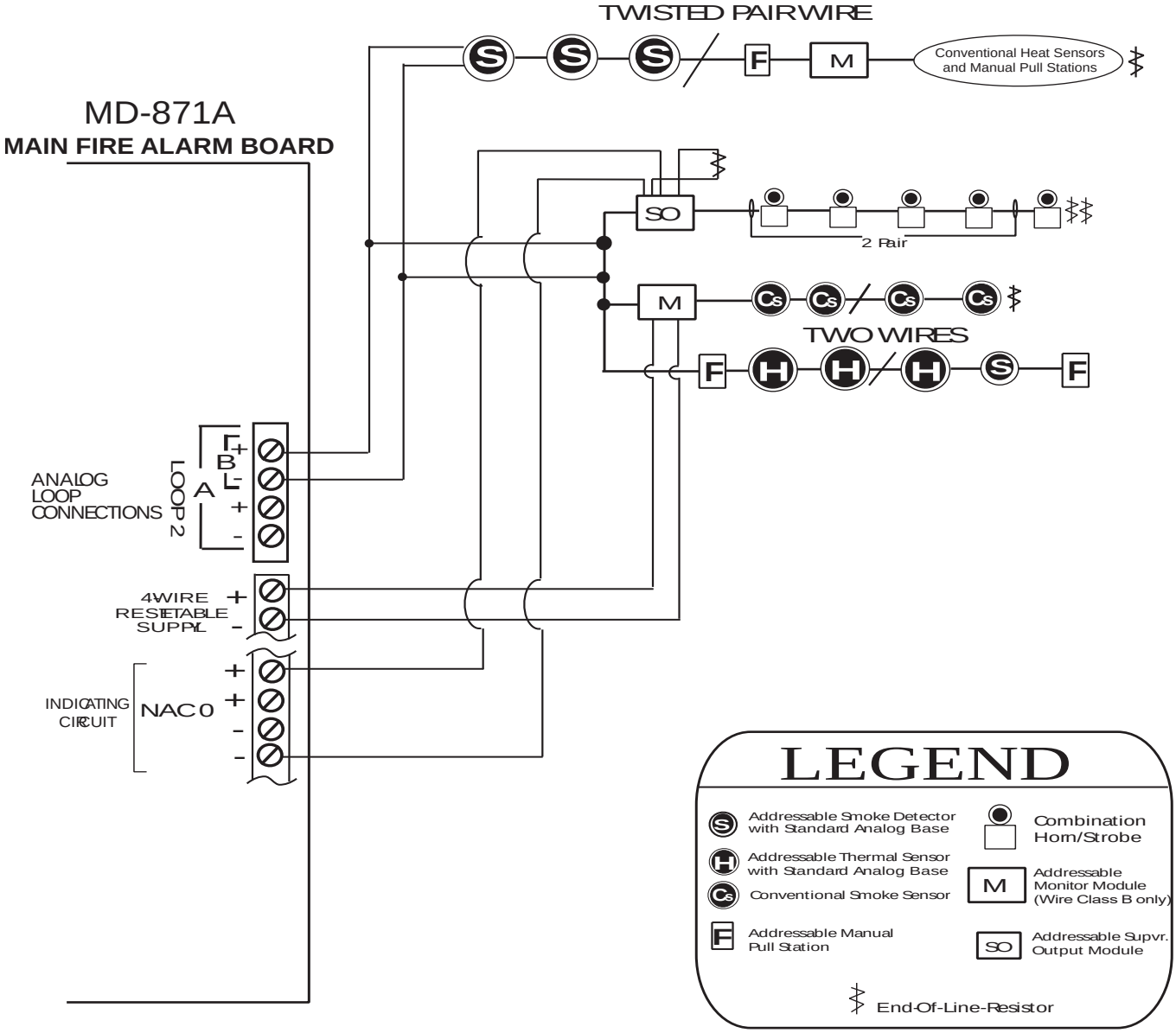



**Note:** All circuits are power limited (unless marked otherwise) and must use type FPL, FPLR, or FPLP power limited cable.

NACs are fully supervised and rated for regulated 24 VDC, 1.7A max. They must be wired as shown in the Wiring Tables and Information on page 58.

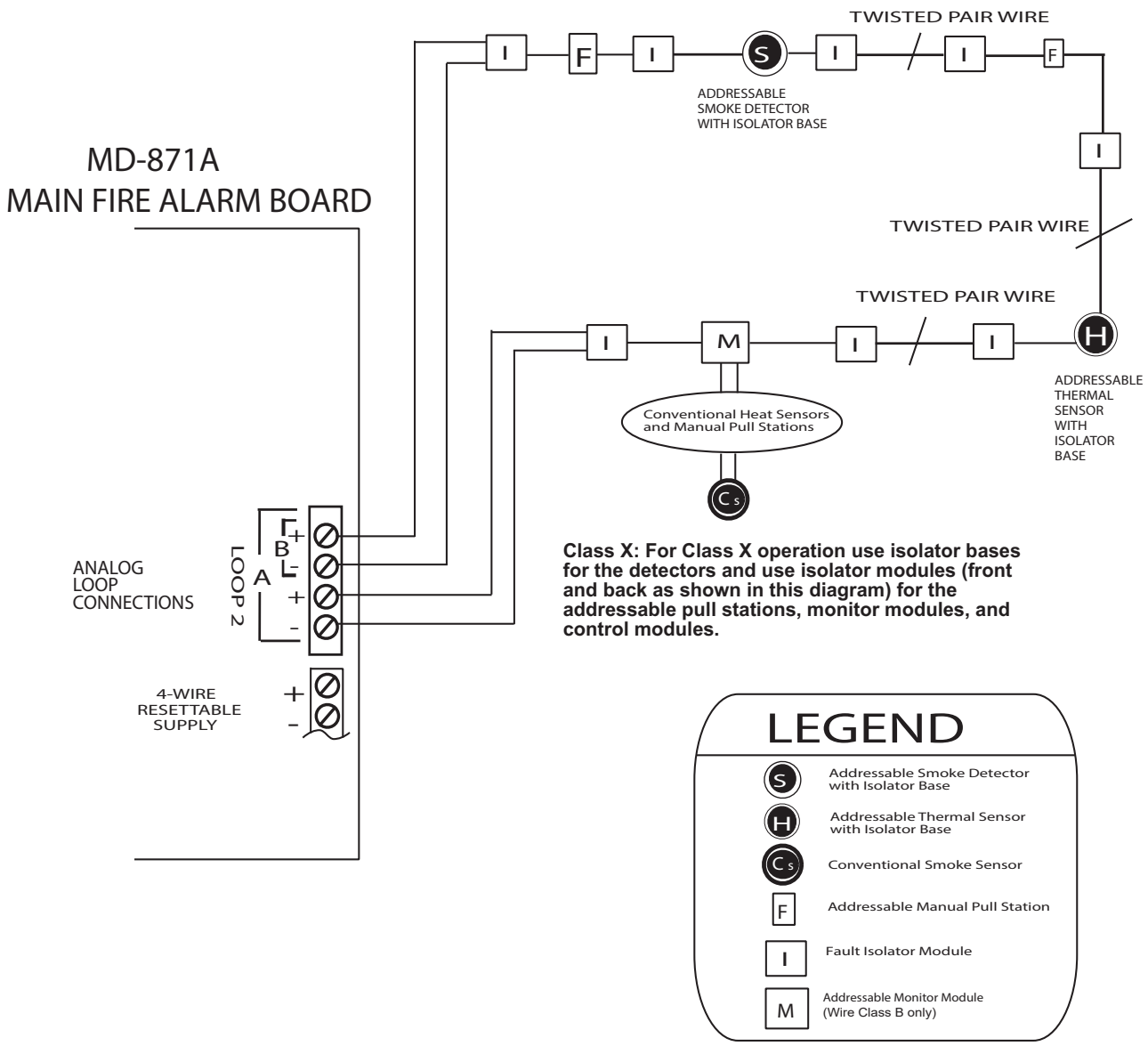
## 5.2 Addressable Loop Wiring

**Figure 30 Loop Terminal Connections - Class B**



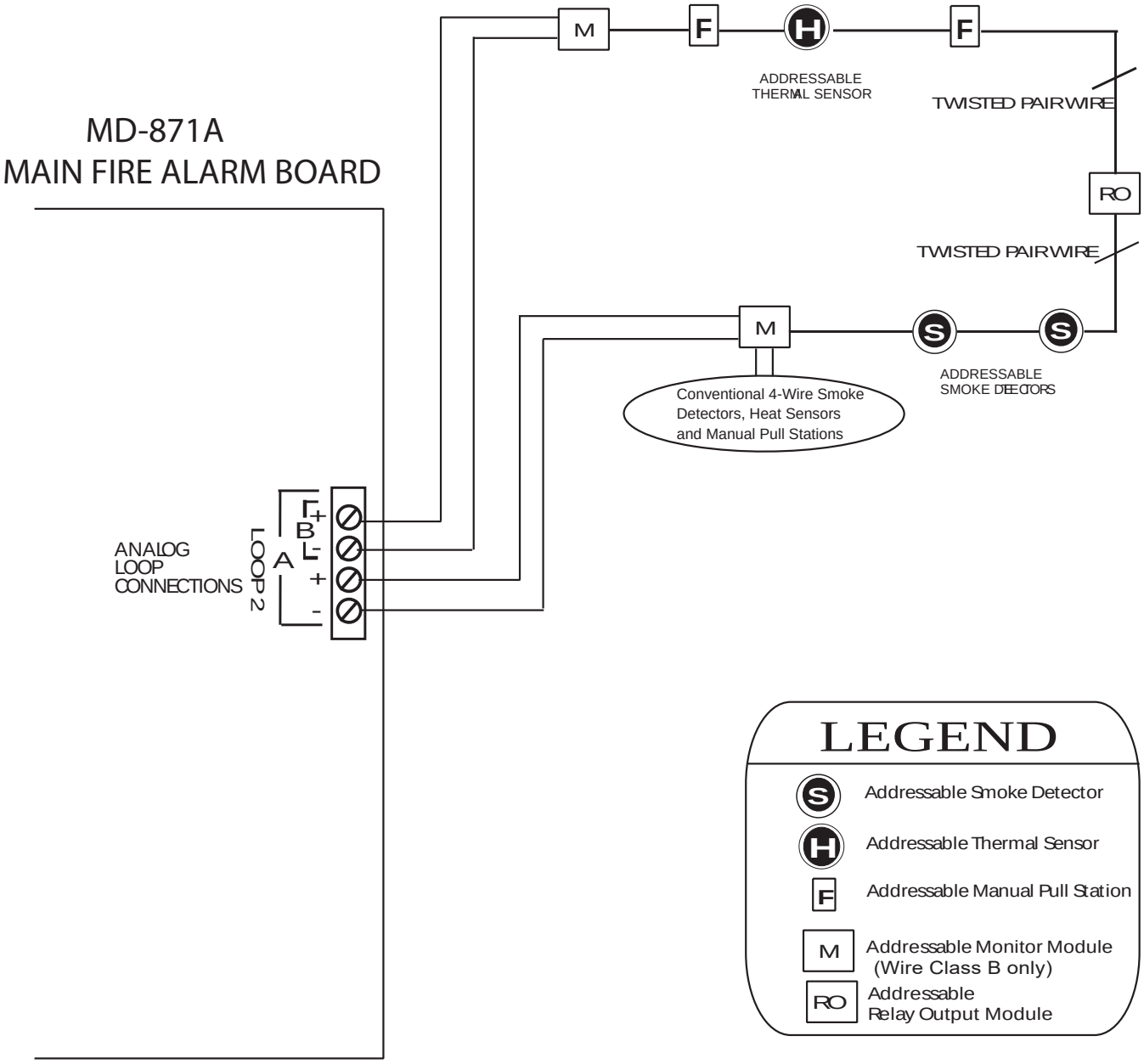

**Note:** Terminal blocks are “depluggable” for ease of wiring.
All power limited circuits must use type FPL, FPLR, or FPLP power limited cable.
Loop wiring: maximum loop resistance is 40 ohms total. These lines are power limited and fully supervised.
Observe in and out polarity when using module and base isolators.

**Figure 31 Loop Terminal Connections - Class X (Formerly Style 7)**



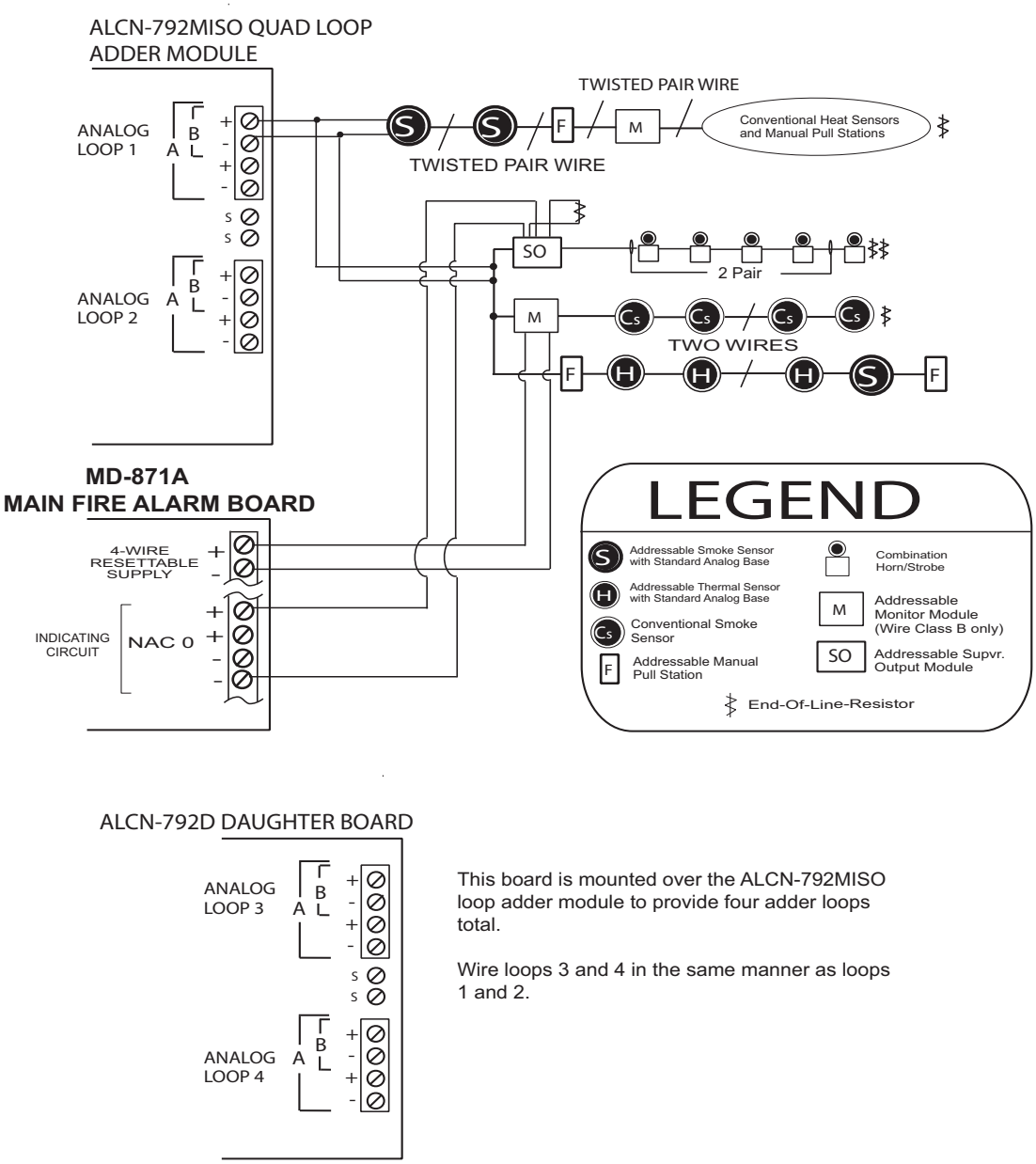

**Note:** All power limited circuits must use type FPL, FPLR, or FPLP power limited cable. Isolators need to be close nipple connected to the device being protected. Loop wiring: maximum loop resistance is 40 ohms total. These lines are power-limited and fully supervised.

**Figure 32 Loop Terminal Connections - Class A**




**Note:** All power limited circuits must use type FPL, FPLR, or FPLP power limited cable. Loop wiring: maximum loop resistance is 40 ohms total. These lines power-limited and fully supervised.

**Figure 33 Quad Loop Terminal Connections - Class B**

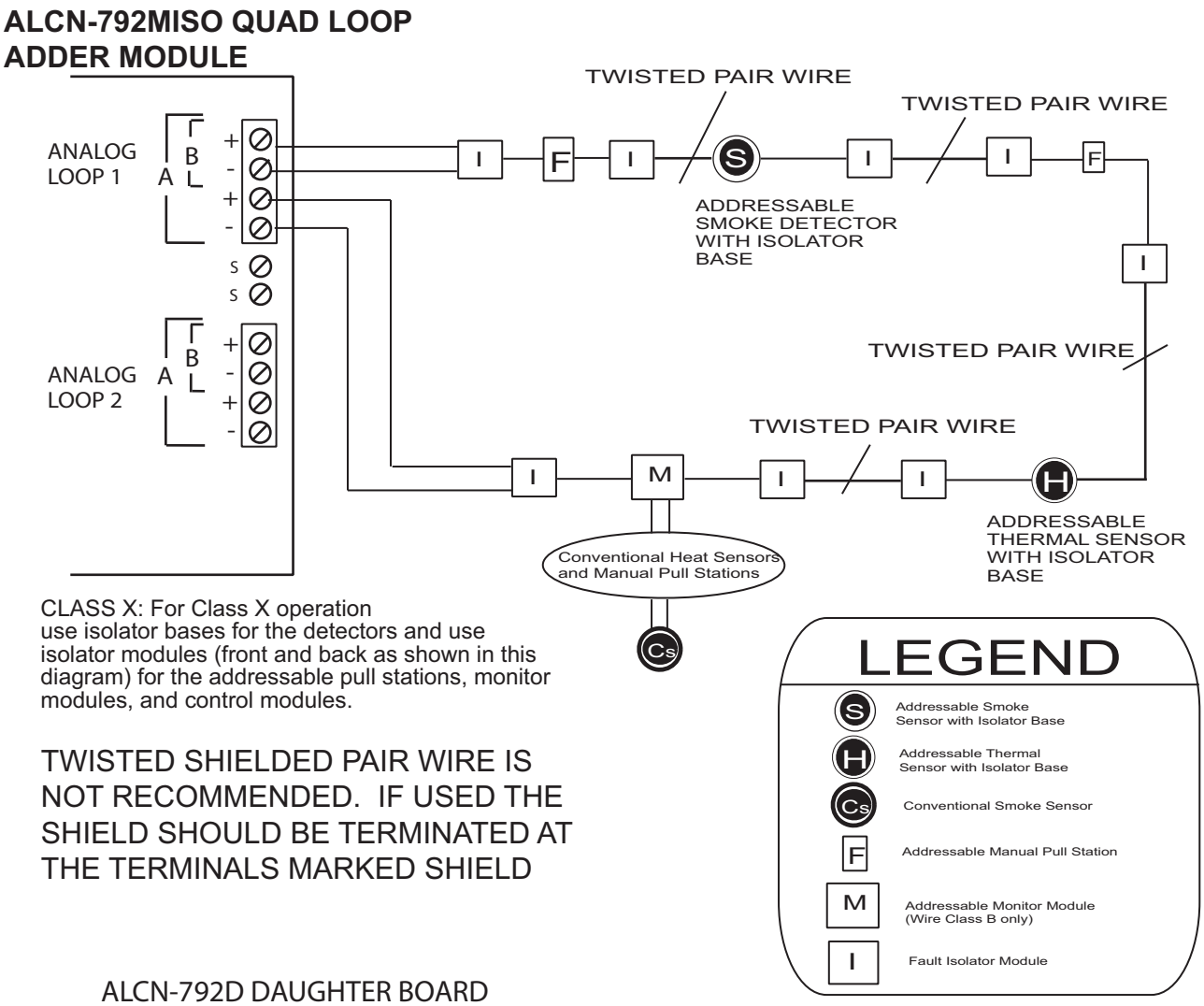


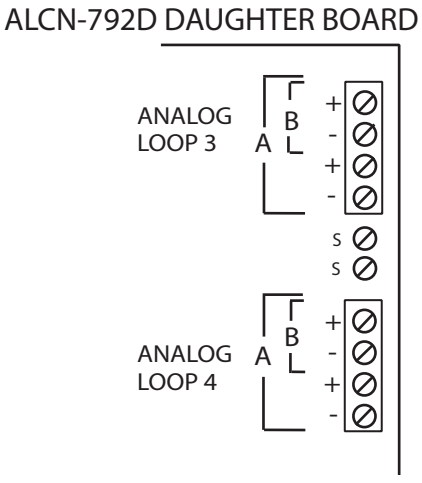

This board is mounted over the ALCN-792MISO loop adder module to provide four adder loops total.

Wire loops 3 and 4 in the same manner as loops 1 and 2.

**Note:** All power limited circuits must use type FPL, FPLR, or FPLP power limited cable. Loop wiring: maximum loop resistance is 40 ohms total. These lines are power-limited and fully supervised.

**Figure 34 Quad Loop Adder Module Terminal Connections - Class X (Formerly Style 7)**



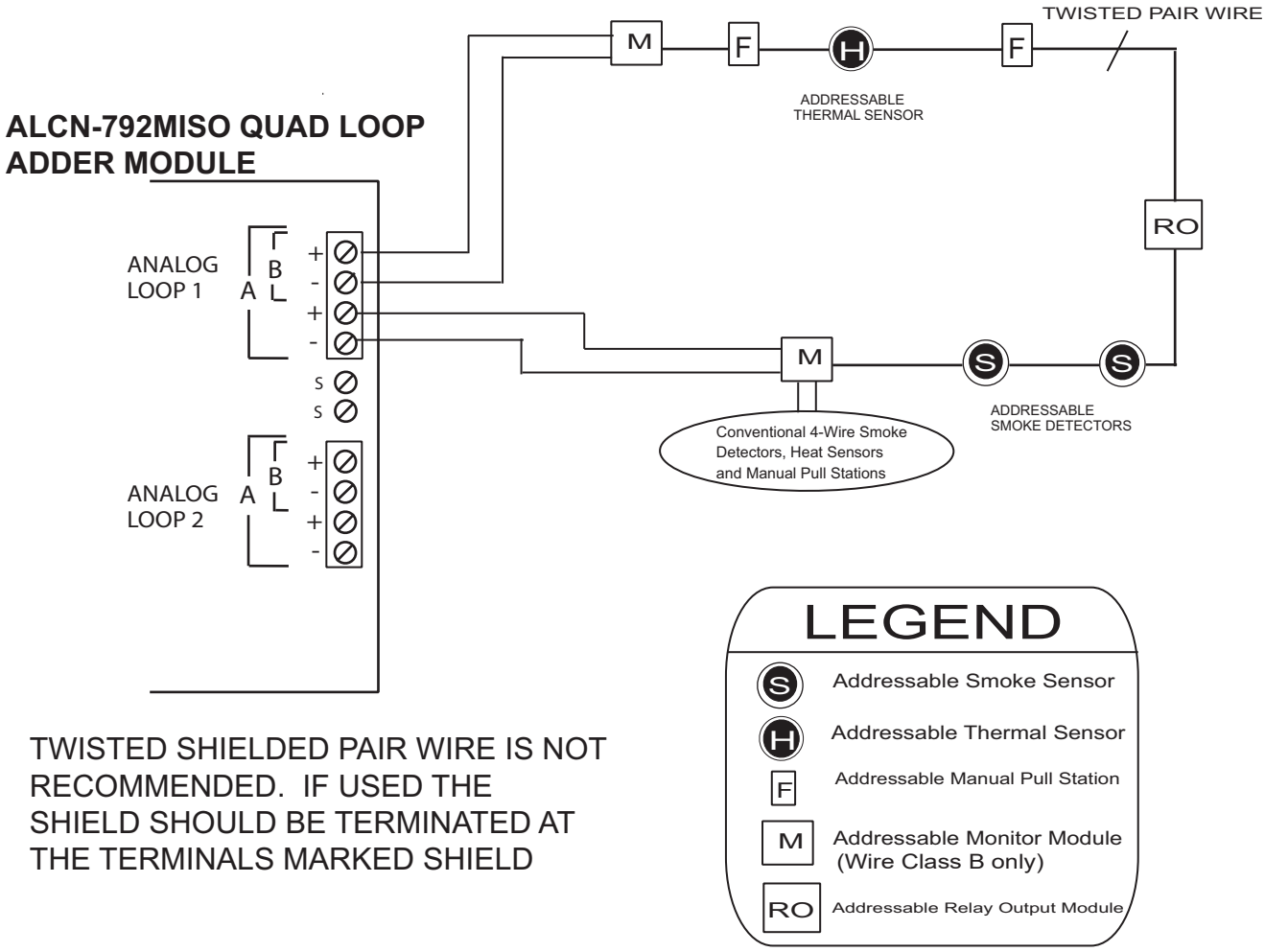




This board is mounted over the ALCN-792MISO to provide and additional two loops, for a total of four loops.

Wire loops 3 and 4 in the same manner as loops 1 and 2.

**Note:** All power limited circuits must use type FPL, FPLR, or FPLP power limited cable. Isolators need to be close nipple connected to the device being protected. Loop wiring: maximum loop resistance is 40 ohms total. These lines are power-limited and fully supervised.

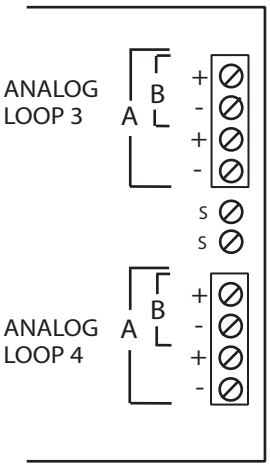
**Figure 35 Quad Loop Adder Module Terminal Connections - Class A**




TWISTED SHIELDED PAIR WIRE IS NOT RECOMMENDED. IF USED THE SHIELD SHOULD BE TERMINATED AT THE TERMINALS MARKED SHIELD




ALCN-792D DAUGHTER BOARD




This board is mounted over the ALCN-792MISO loop adder module to provide an addition two loops, for a total of four loops.

Wire loops 3 and 4 in the same manner as loops 1 and 2.

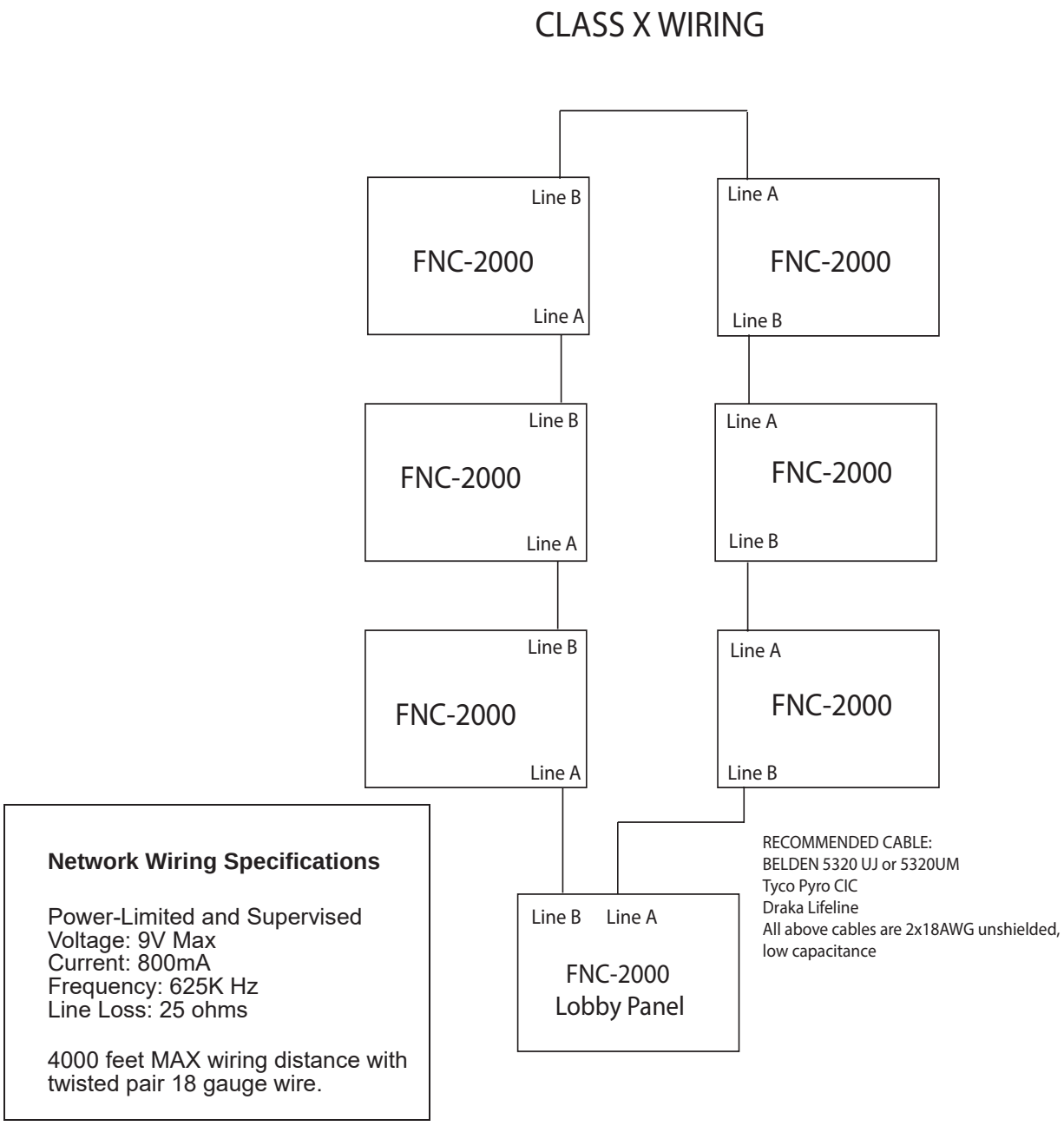
**Note:** All power limited circuits must use type FPL, FPLR, or FPLP power limited cable. Loop wiring: maximum loop resistance is 40 ohms total. These lines are power-limited and fully supervised.

## 5.3 Network Wiring

### 5.3.1 FNC-2000 Fire Network Controller Module Wiring

The FNC-2000 Fire Network Controller modules are wired from terminals marked Line A, positive and negative (see specific cable recommended in Figure ) to the Line B terminals of the next FNC-2000 module. **Use of shielded cable is not recommended**. Wire from Line B terminals to Line A of the next FNC-2000 module. Start from the lobby panel and wire to all the FNC-2000, wiring the last FNC-2000 back to Line B of the first FNC-2000 at the lobby panel for Class X.

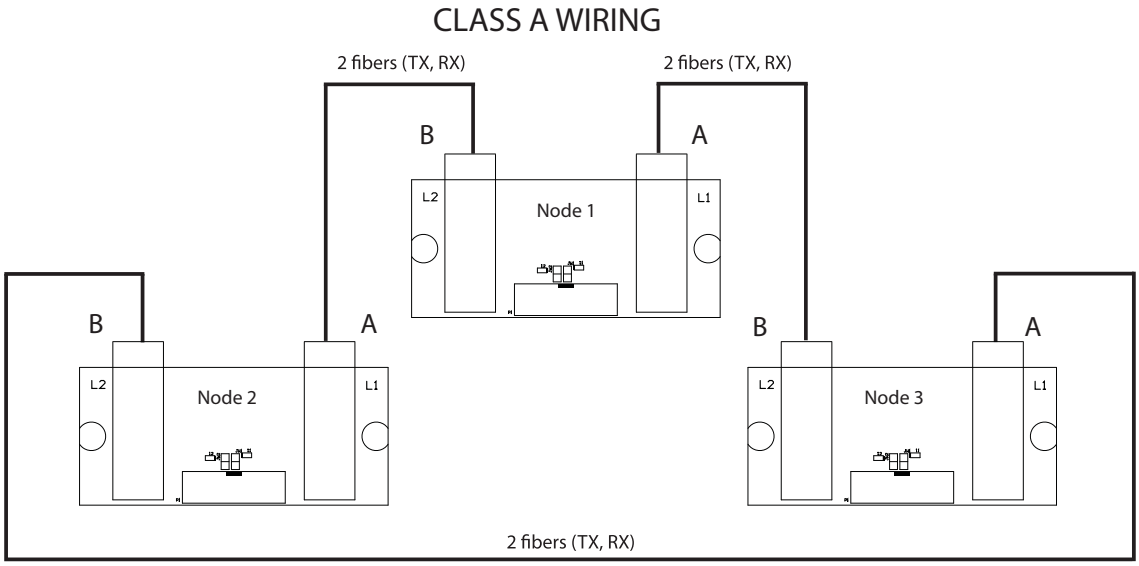
**Figure 36 Class X Wiring for the FNC-2000 Module**



### 5.3.2 FOM-2000-UM Fiber Optic Network Adder Module

The FOM-2000-UM Fiber Optic Network Adder Module is wired with fiber optic cable. Connect L1 to L2 and L2 to L1 as shown in the Class A wiring of Figure 37. Refer to LT-6907 document for more wiring and installation information.

**Figure 37 FOM-2000-UM Fiber Optic Network Adder Module Wiring**

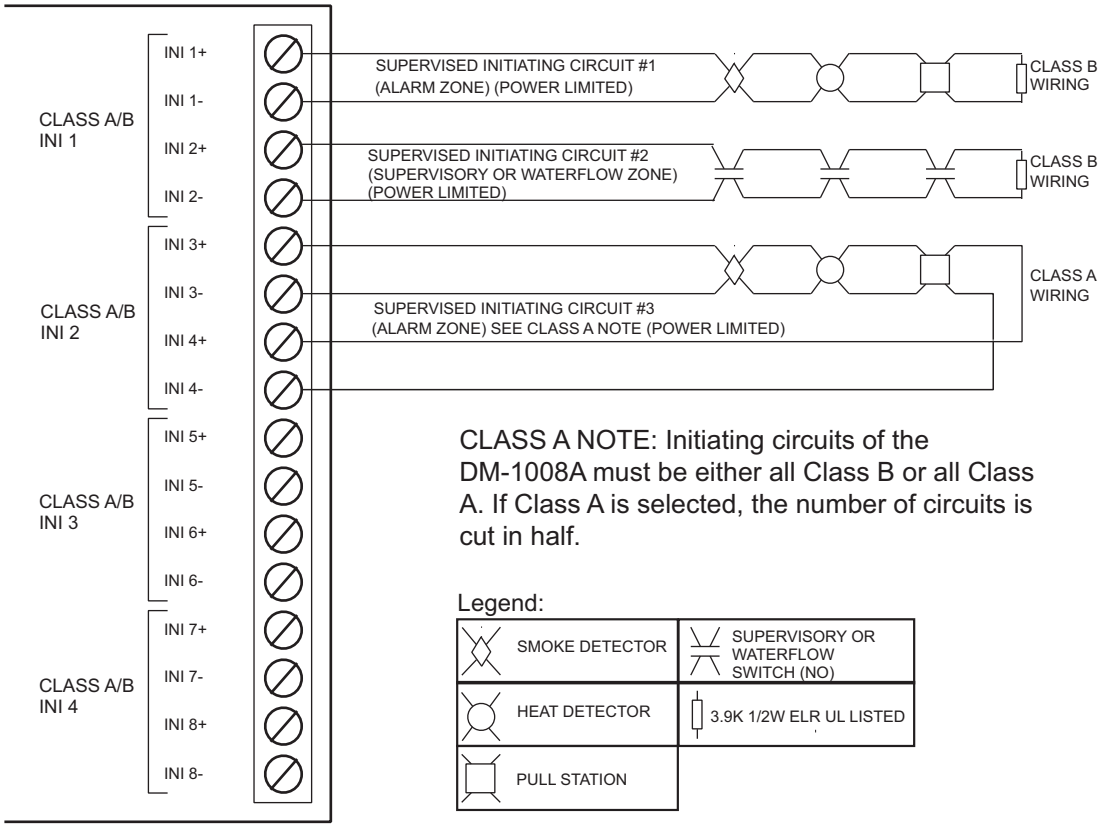


## 5.4 Analog Initiating Wiring

### 5.4.1 Detection Module (DM-1008A) Terminal Connections

Wire devices to terminals as shown below. See wiring tables, and Appendix A for electrical specifications and document LT-1023 for compatible devices.

**Figure 38 Hardwire Detection Module (DM-1008A) Terminal Connections**



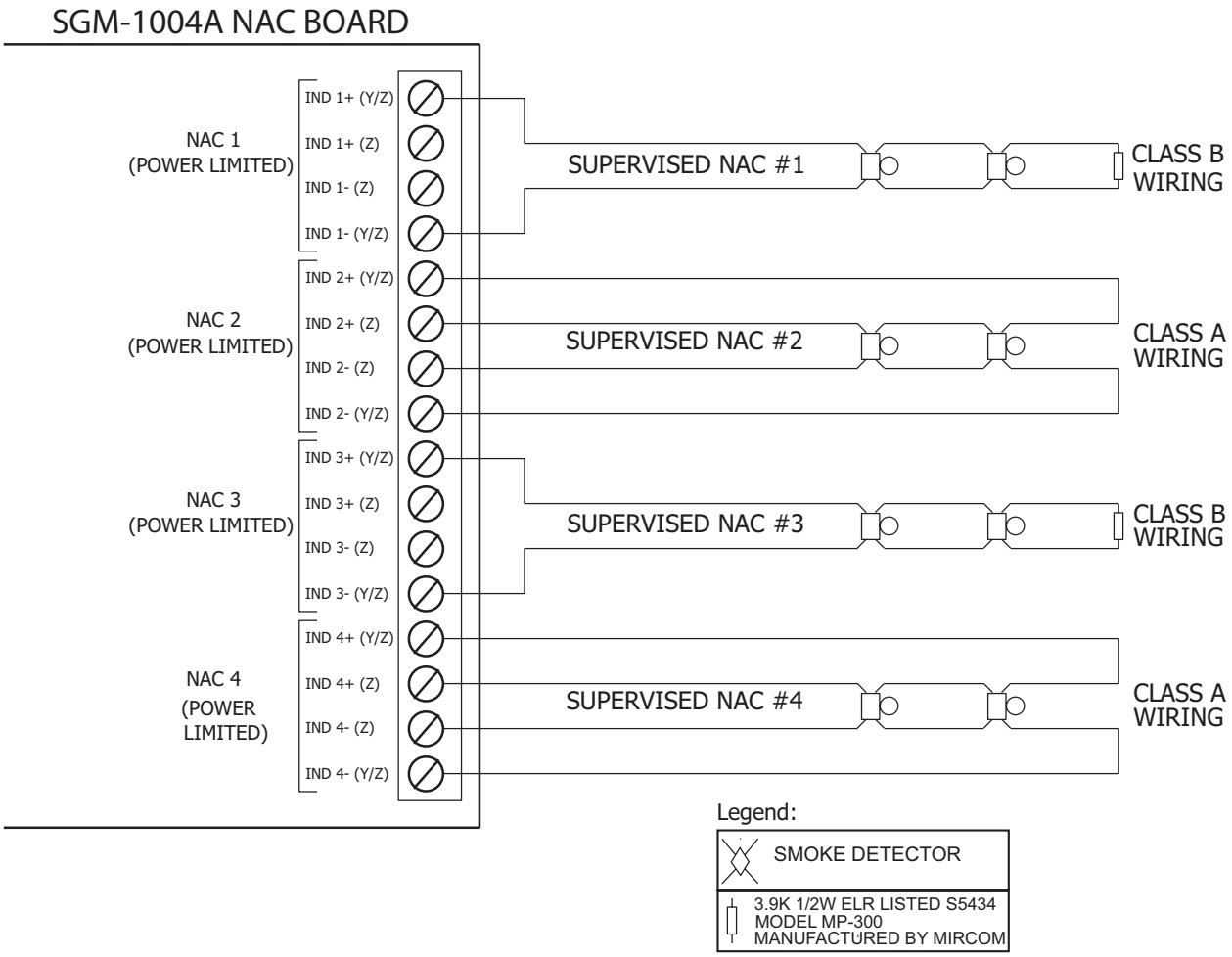

**Note:** Terminal blocks are “depluggable” for ease of wiring.
All power limited circuits must use type FPL, FPLR, or FPLP power limited cable. Initiating circuits are fully supervised and rated for 22 VDC, 3 mA standby, 5 mV ripple, 50 mA max alarm. They may be configured as required. The alarm threshold is 21 mA. Maximum loop resistance is 100 ohms, 50 ohms per side. All conventional hardwire initiating circuits are Compatibility ID "A".

## 5.5 Analog NAC Wiring

### 5.5.1 Signal Module (SGM-1004A) Terminal Connections

Wire devices to terminals as shown in Figure 39 below. See Appendix A for signal module specifications, and LT-1023 for compatible devices.

**Figure 39 Hardwire Signal Module Terminal Connections**



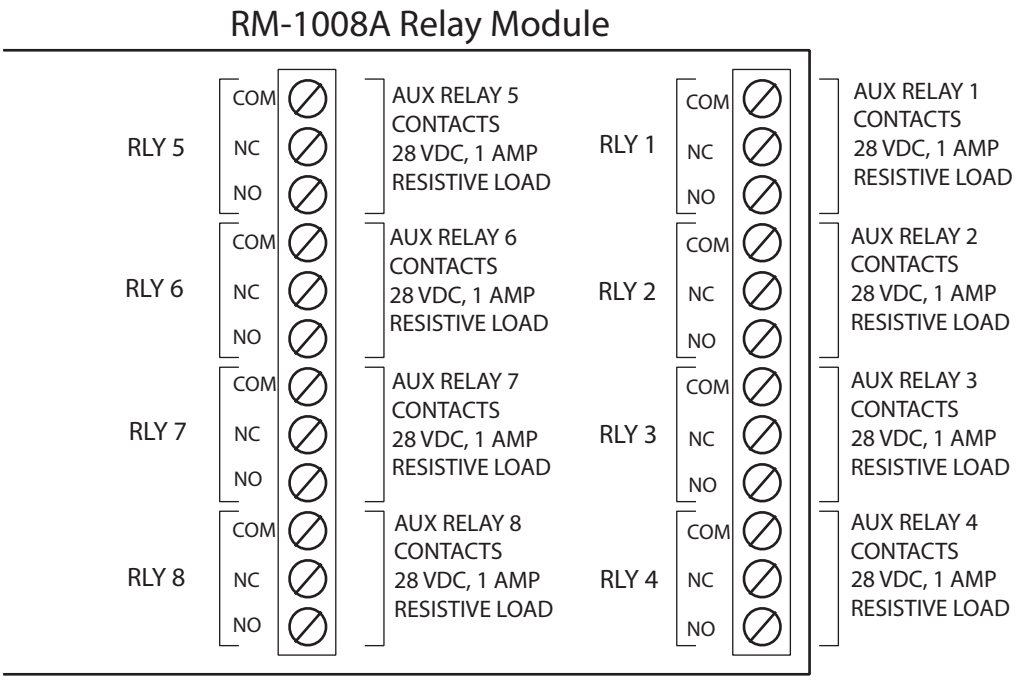

**Note:** The terminal blocks are “depluggable” for ease of wiring.
All power limited circuits must use type FPL, FPLR, or FPLP power limited cable.
SGM-1004A NACs are fully supervised and rated for 24 VDC regulated, 1.5A max. They must be wired as shown in Wiring Tables and Information on page 58.

## 5.6 Analog Relay Wiring

### 5.6.1 Relay Module (RM-1008A) Terminal Connections

Relays are available as shown below.

**Figure 40 Hardwire Relay Module Terminal Connections**




**Note:** All relay circuits are power limited and must use type FPL, FPLR, or FPLP power limited cable.
All relay circuits must be connected to a listed power limited source of supply.

**Attention: Do not connect any voltage greater than 30 VAC directly to these relays.**

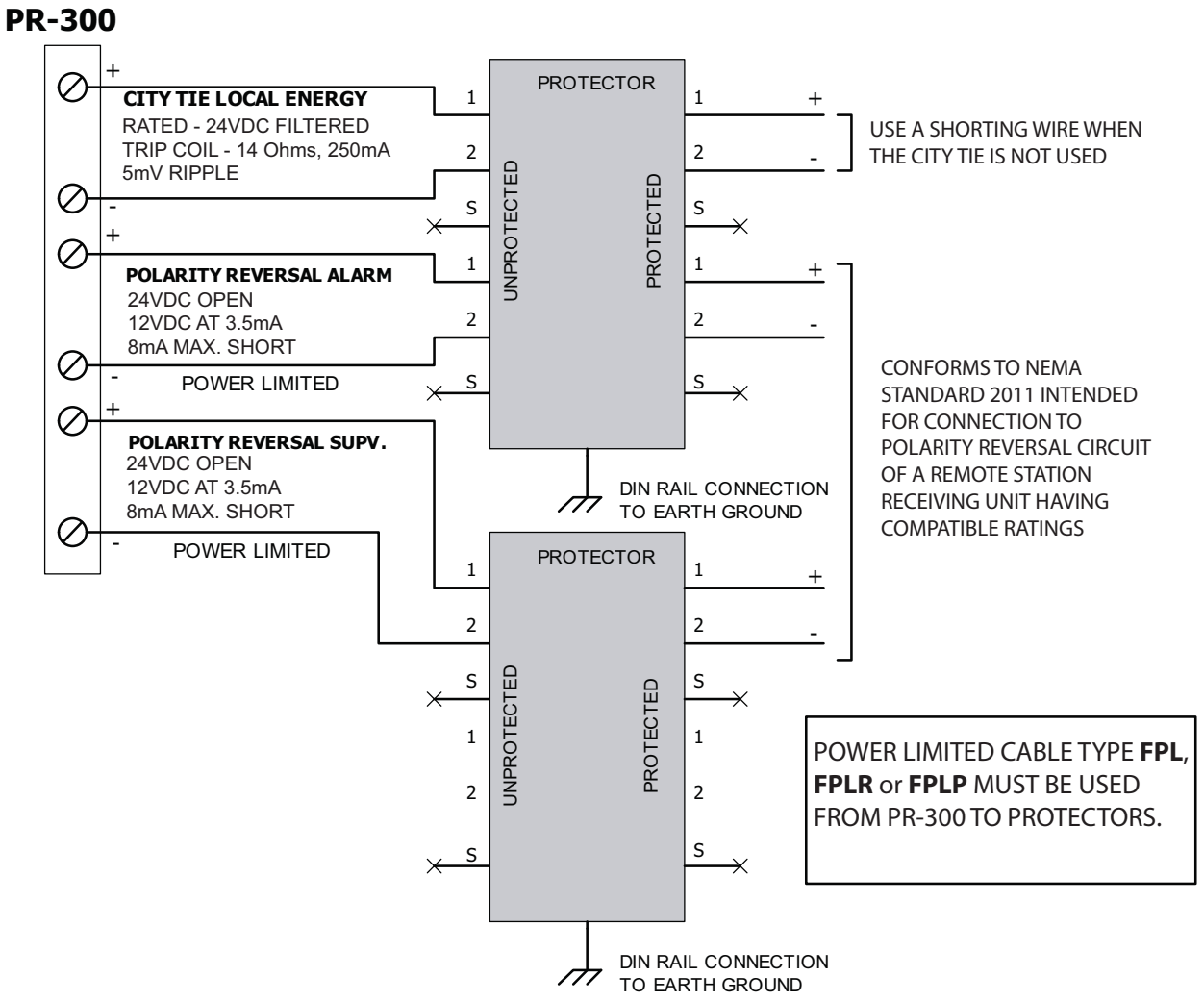
## 5.7 Polarity Reversal and City Tie Module (PR-300) Wiring

Wire PR-300 Polarity Reversal and City Tie Module (if used) as shown in Figure  below. Power Limited cable type FPL, FPLR or FPLP must be used.

For USA installation, the installer must use **Atlantic Scientific (Tel: 407-725-8000), Model #24544 Protective Device**, or similar **UL-Listed QVRG secondary protector**, as shown.

For use in Canada, the Protective Device is not required but still recommended.

**Figure 41 Polarity reversal and city tie module terminal connection**



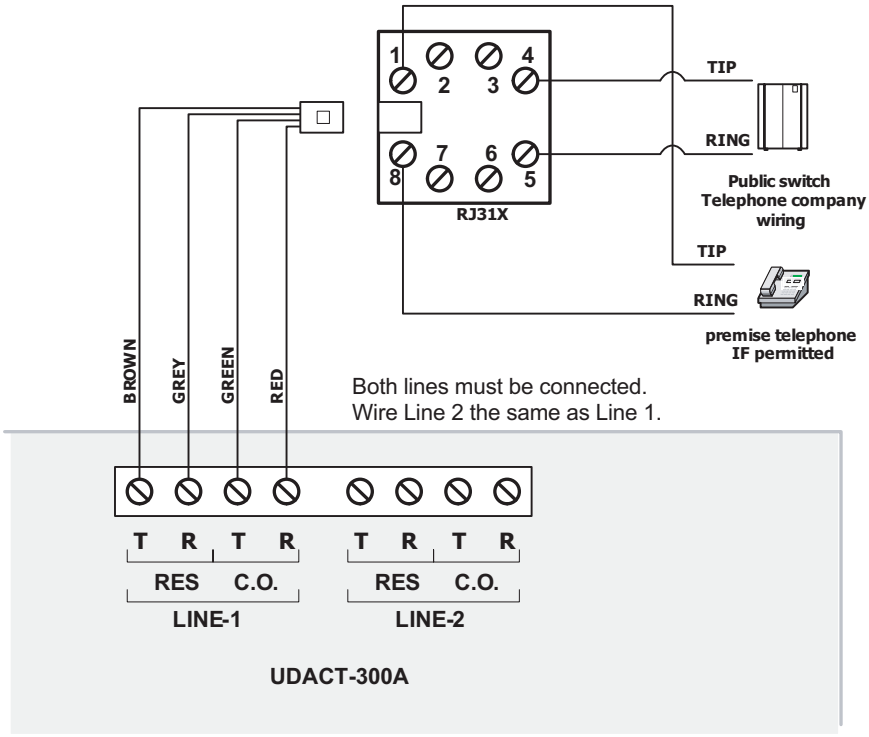

**Note:** Either the PR-300's city tie or polarity reversal interface may be used, but not both.
The city tie interface is not power limited.
Plug PR-300 ribbon cable (P1) into connector (P4) of the FX-2000N main fire alarm module.
Cut jumper (JW1) on the PR-300 module in order to transmit a trouble condition to the monitoring station.
Remove jumper plug from jumper JW4 on the main fire alarm module.
The polarity reversal interface is power limited and must use type FPL, FPLR, or FPLP power limited cable.
For polarity reversal operation, short the city tie connection.

## 5.8 UDACT-300A Main Board Terminal Connections

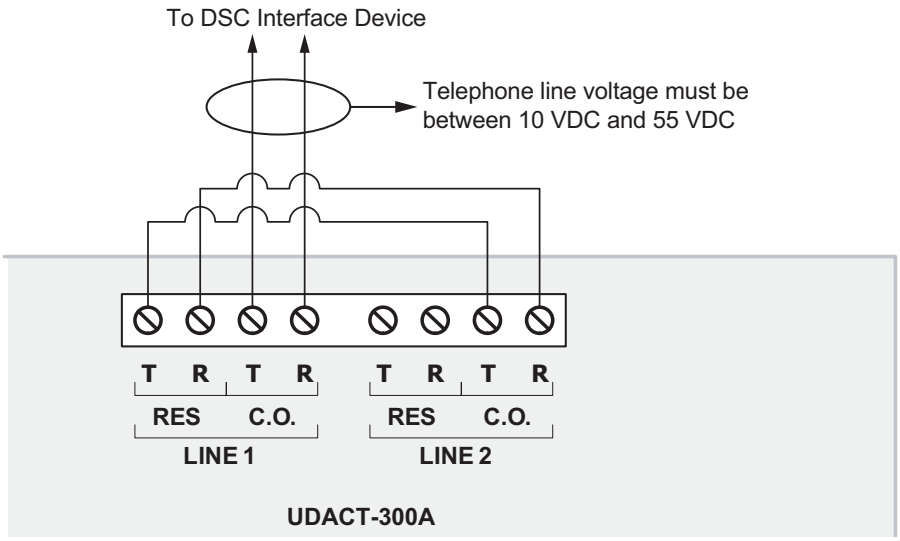
Wire the two telephone lines to RJ31X Connector terminals as shown in Figure 42 below. The UDACT-300A terminals are located on the top left hand corner of the board.

**Note: For two wired telephone lines see figure below. For combination wired and wireless, refer to UDACT-300A manual LT-888.**
**To comply with UL 864 9th edition "Other Transmission Technologies" or UL 864 10th edition "Performance Based Technologies", wire as shown in figure below.**
**Most Authorities Having Jurisdiction (AHJ) do not allow the connection of premise telephones, see specifications for more information.**

**Figure 42 Telephone Line Wiring Diagram**




**For wireless report, connect as below:**



## 5.9 Power Supply Wiring

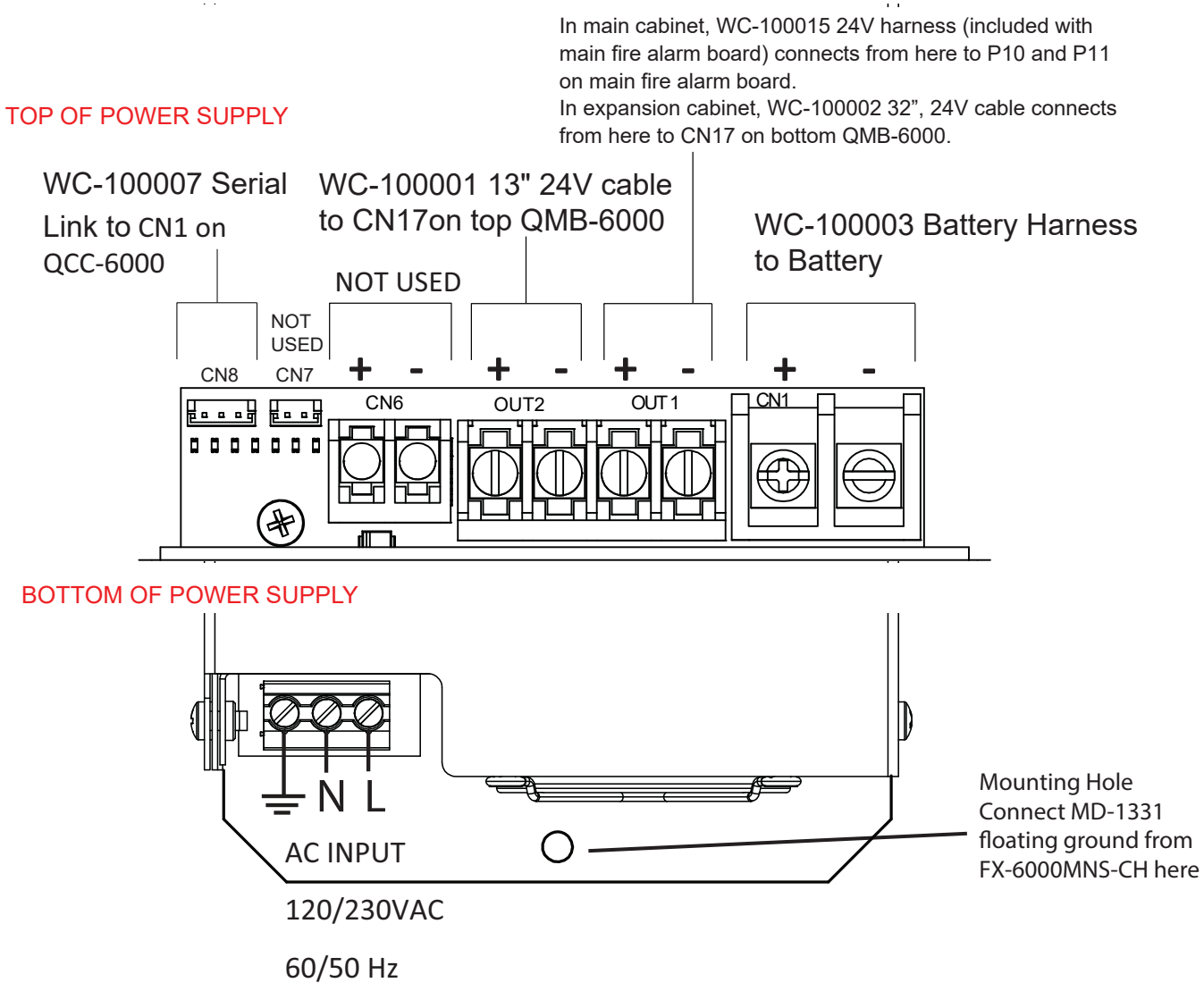
### 5.9.1 QPS-6650 Power Supply Connections

The power supply is model QPS-6650. The ratings are outlined in the table below.

| Model | Electrical Input Ratings | Power Supply Total Current | Battery Fuse on Main Module |
|---|---|---|---|
| QPS-6650 | 120 VAC, 60 Hz/ 230 VAC, 50Hz | 27 AH @ 24V DC | 50 Amp |

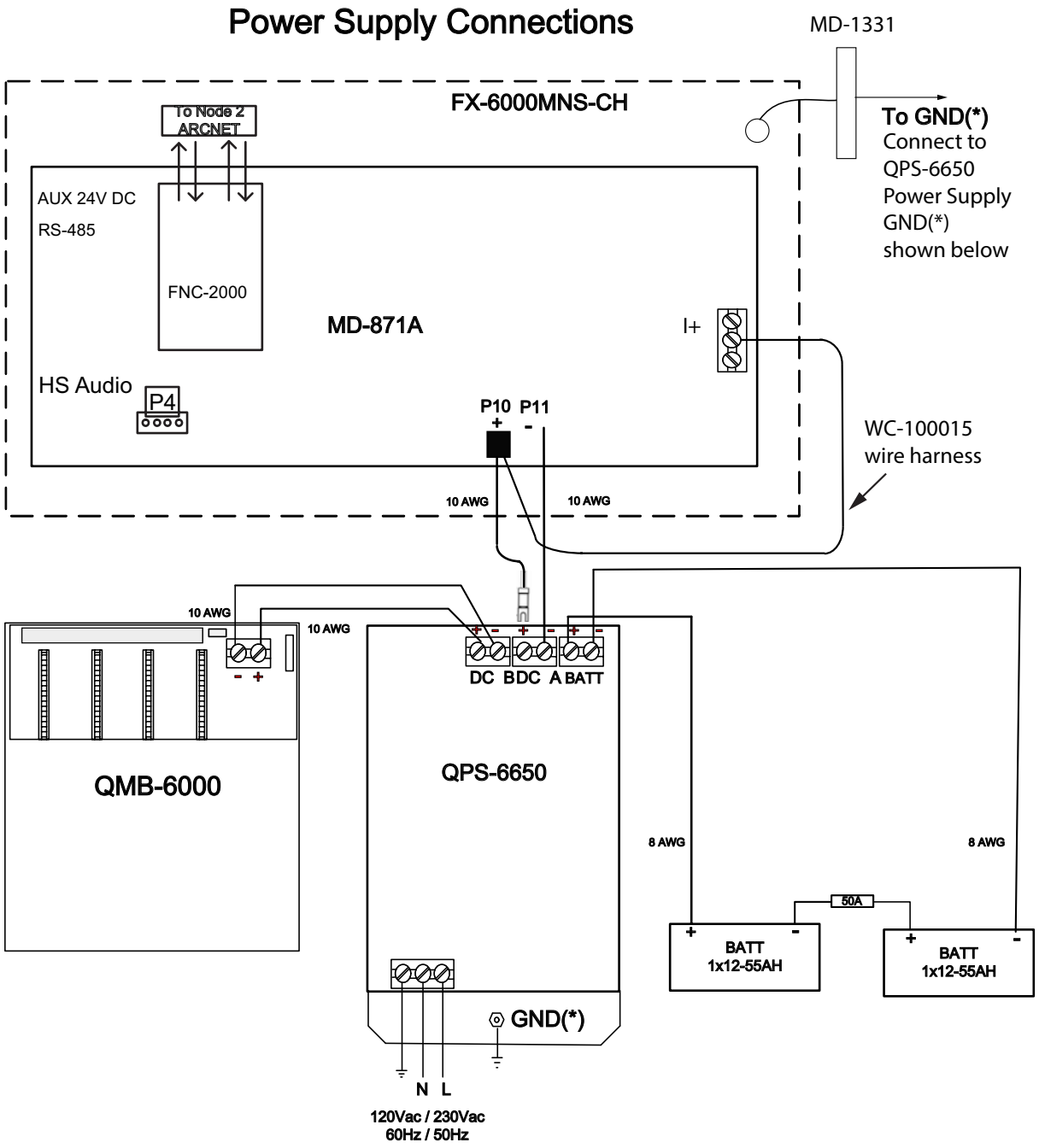
See Appendix A for more power supply specifications. Wire as shown below with proper gauge wire.

**Figure 43 Power Supply Connections**




**Attention:** **CAUTION:** To prevent sparking, connect batteries after the system's main A.C. power is turned ON**.**
***Do not exceed power supply ratings.***
**Adhere to voltage markings as specified on labels.**

**Figure 44 Power Supply Connections within BBX-FXMNS-6000 Enclosure.**



## 5.10 Wiring Tables and Information

**Table 11: Wiring Table for Initiating Circuits.**

| Wire Gauge | Maximum Wiring Run to Last Device (ELR) | |
|---|---|---|
| (AWG) | ft. | m |
| 22 | 2990 | 910 |
| 20 | 4760 | 1450 |
| 18 | 7560 | 2300 |
| 16 | 12000 | 3600 |
| 14 | 19000 | 5800 |
| 12 | 30400 | 9200 |

**Note:** Maximum loop resistance should not exceed 100 Ohms.

**Table 12: Wiring Table for NACs**

Main board NACs are rated for 1.7 amps each. The SGM-1004A NACs are rated for 1.5 amps each.

| Total Signal Load | Maximum Wiring Run to Last Device (ELR) | | | | | | | | Max Loop Resistance |
|---|---|---|---|---|---|---|---|---|---|
| | 18AWG | | 16AWG | | 14AWG | | 12AWG | | |
| Amperes | ft. | m | ft. | m | ft. | m | ft. | m | Ohms |
| 0.06 | 2350 | 716 | 3750 | 1143 | 6000 | 1829 | 8500 | 2591 | 30 |
| 0.12 | 1180 | 360 | 1850 | 567 | 3000 | 915 | 4250 | 1296 | 15 |
| 0.30 | 470 | 143 | 750 | 229 | 1200 | 366 | 1900 | 579 | 6 |
| 0.60 | 235 | 71 | 375 | 114 | 600 | 183 | 850 | 259 | 3 |
| 0.90 | 156 | 47 | 250 | 76 | 400 | 122 | 570 | 174 | 2 |
| 1.20 | 118 | 36 | 185 | 56 | 300 | 91 | 425 | 129 | 1.5 |
| 1.50 | 94 | 29 | 150 | 46 | 240 | 73 | 343 | 105 | 1.2 |
| 1.7 | 78 | 24 | 125 | 38 | 200 | 61 | 285 | 87 | 1.0 |

**Note:** Maximum voltage drop should not exceed 1.39 Volts for main board and 1 Volt for SGM-1004A.

**Table 13: Analog Loop Wiring**

| Wire Gauge (use twisted pair) | Loop Total (Out and In) Maximum Twisted Pair Wire Run | |
|---|---|---|
| (AWG) | ft. | m |
| 12 | 10,000 | 3049 |
| 14 | 7971 | 2429 |
| 16 | 4980 | 1518 |
| 18 | 3132 | 955 |

**Note:** Line capacitance shall not exceed 0.5 µF.
Inductance shall not exceed 1 mH.
Resistance shall not exceed 40 ohms.

**Power Wiring:** Use Table 12: Wiring Table for NACs on the previous page to see the wiring information for the remote annunciator being used.

**RS-485 Wiring:** See the wiring information for the remote annunciator being used.

**4-Wire Smoke Wiring:** The maximum allowable current is 0.2 amperes. The maximum allowed voltage drop is 1 volt. Refer to Table 12: Wiring Table for NACs on the previous page.

**Shield for Analog Loop Wiring:** Only twisted pair is recommended, but if shielded twisted pair is used, wire shield at the start and the end of the loop to the terminals marked Shield at the loop adder board.

# 6.0 Field Wiring of Audio

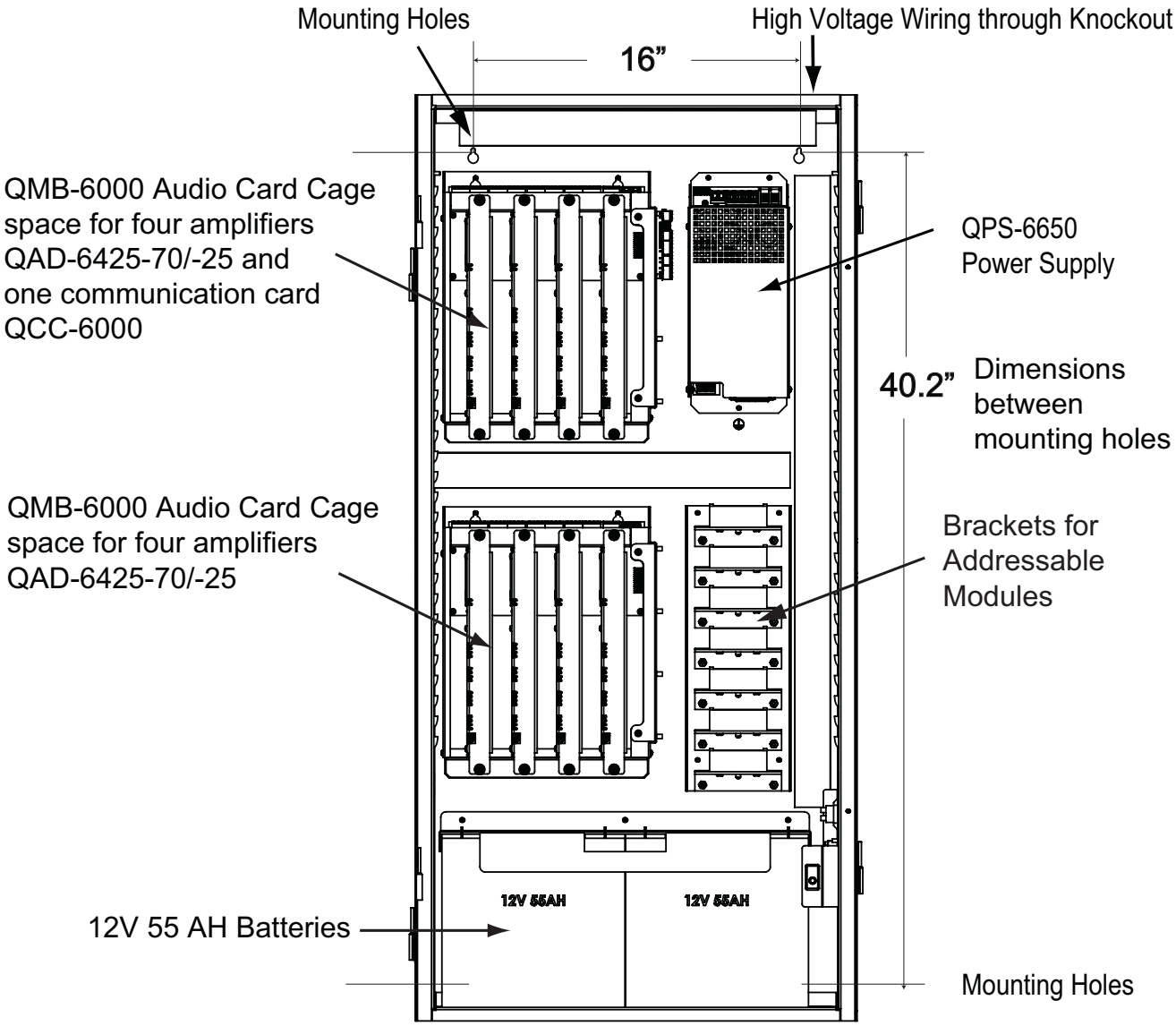
The modules that mount into the audio card cage are the amplifier modules. Up to four amplifiers may be installed in each BBX-FXMNS-6000 enclosure and QBB-6001 Expansion Audio Cabinet. One of the four amplifiers may be designated as a backup amplifier through configuration. The backup amplifier can back up all the following connected amplifiers by physical wiring from the amplifier backplate to the next amplifier backplate.

## 6.1 QBB-6001 Enclosure (Expansion Cabinet) Assembly

The modules that mount into the QBB-6001 expansion audio cabinet include the QPS-6650 Power Supply, and up to two QMB-6000 Card cages. Module interconnects are shown in Figure 45.

Up to eight Amplifier Modules QAD-6425-25/-70 may be installed into two QMB-6000 card cages. The total maximum wattage per expansion audio cabinet is 575 Watts.

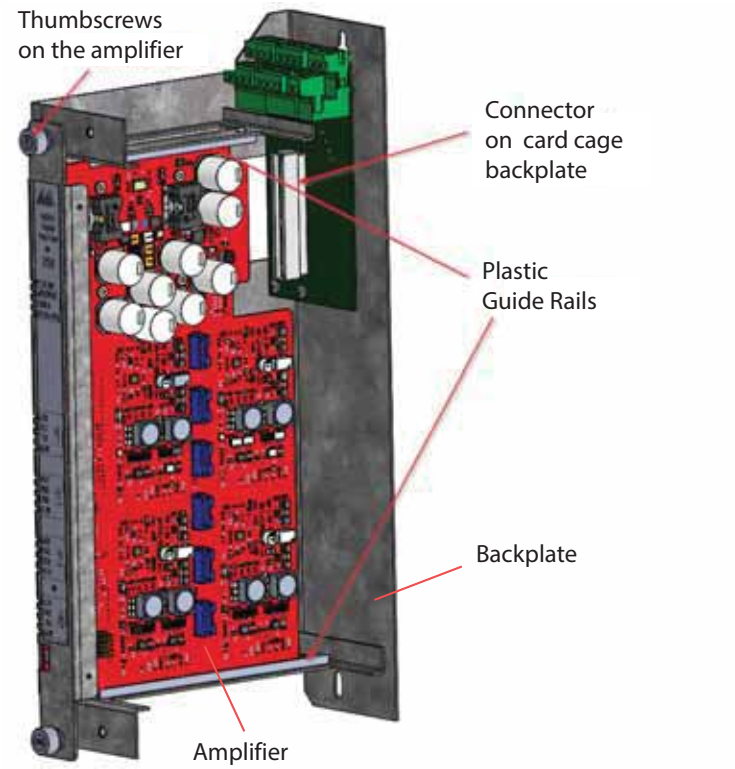
**Figure 45 QBB-6001 Expansion Audio Cabinet Module Placement**



Components on the amplifiers should be facing right when inserted into backplane. Make sure connections for the power supply and battery charger are as shown above. Place all amplifier modules from left to right in slot positions one to four in each card cage. Up to 9 expansion audio cabinets QBB-6001 can be used per Fire Alarm Node.

## 6.2 Installing and Removing Amplifiers

**Attention: Improper installation or excessive force will damage the backplane and amplifiers being installed or removed.**




### 6.2.1 Installing QAD Amplifier Modules

1. Hold the amplifier to be installed by the front metal face. *Do not* handle, push or pull any of the components on the amplifier this will damage those components.
2. Line up the amplifier being installed with the runners or guides on the card cage and slide the amplifier back to the point where the amplifier just about touches the pins on the backplane.
3. Make sure that the amplifier is square with the backplane.
4. Press the amplifier firmly from the front face toward the backplane until the amplifier is in position with the connector on the backplane and the amplifier snaps into place
5. Screw down the amplifier with the top and bottom screws provided on the amplifier card.

### 6.2.2 Removing the QAD Amplifier Modules

1. Unscrew the two screws holding the amplifier in place. *Do not* handle, push or pull any of the components on the amplifier as this will damage those components.
2. Place the forefinger of one hand on the top section of the amplifier metal front plate and the forefinger of the other hand on the bottom edge of the amplifier metal front plate.
3. Carefully pull the amplifier forward until the amplifier connector is disconnected from the backplane connector.
4. Holding the amplifier firmly by the front metal, slide the amplifier forward and completely remove it from the card cage.

**Attention: Power should be disconnected before removing and inserting modules and cables.**

## 6.3 QCC-6000 Communications Card

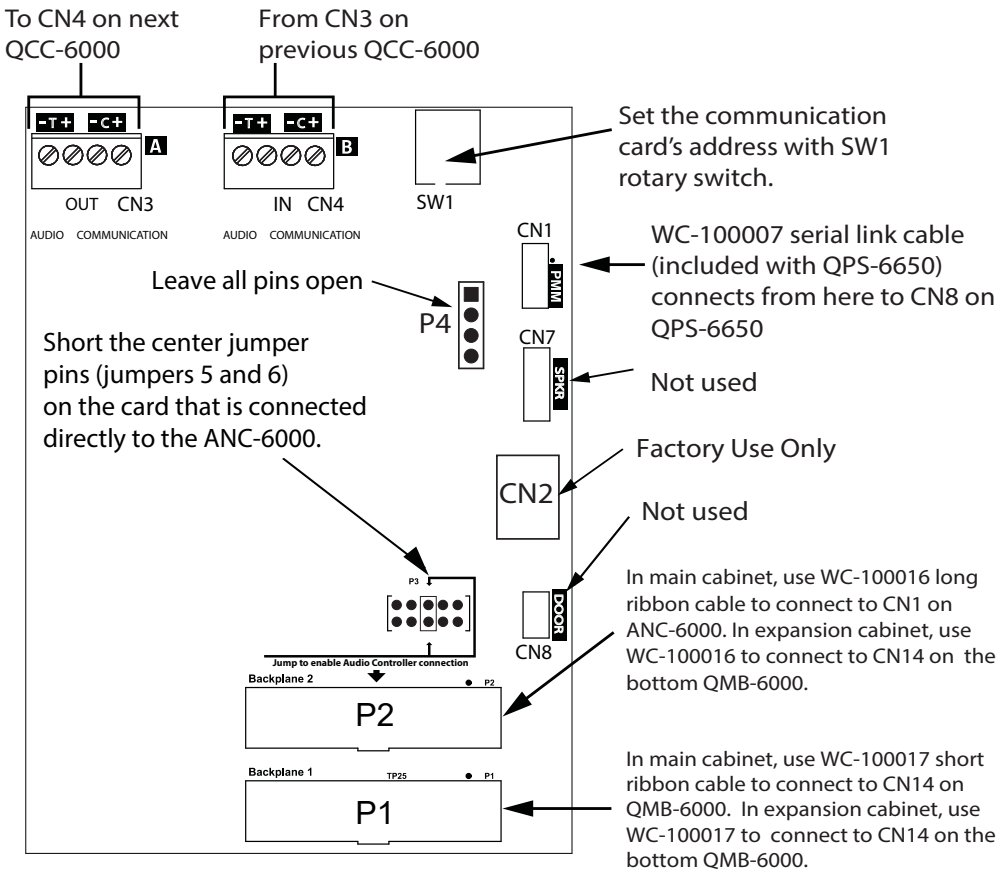
The QCC-6000 Card is required for audio system expansion (beyond 1 amplifier cage). It allows for remote audio cabinet expansion up to 2000 feet (suitable wire gauge is 18 AWG). It supports up to 9 expansion cabinets on each FleX-Net™ node.

A QCC-6000 Card is required for every audio enclosure if there is more than one audio enclosure.

Mount the QCC-6000 on the far right side of the audio card cage.

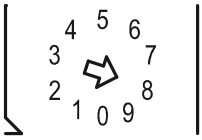
Use the rotary switch SW1 to set the card's address. The card in the main cabinet should be 0. Set each card consecutively so that there are no gaps.

**Figure 46 QCC-6000 Communications Card**

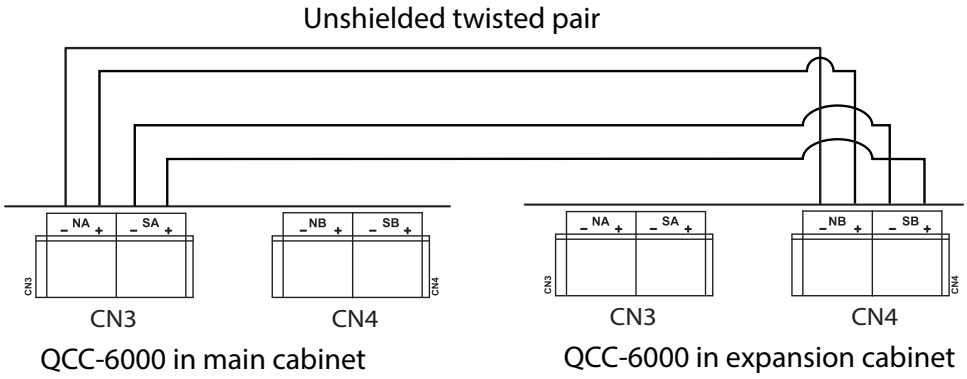



Rotary Switch SW1 is set starting from 0 to 9 for each expansion cabinet. Maximum 10 per node.

**Figure 47 QCC-6000 Rotary Switch**




**Field Wiring between QCC-6000s Class B**




The maximum wiring length between QCC-6000s is 2000 feet (610 m).

**Figure 48 Installing the QCC Communications Card.**

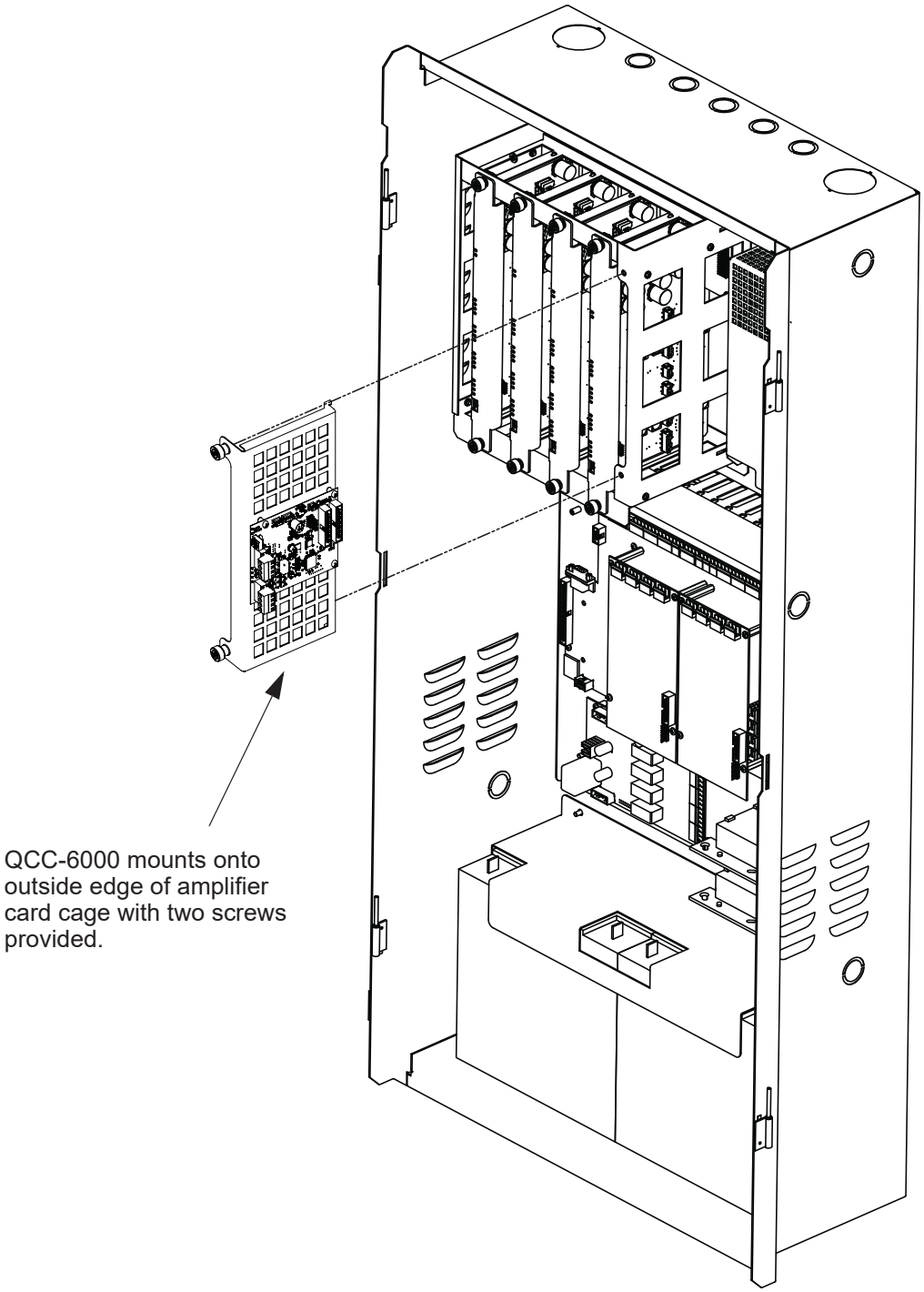


**Figure 49 QCC-6000 Communications Class B Wiring**

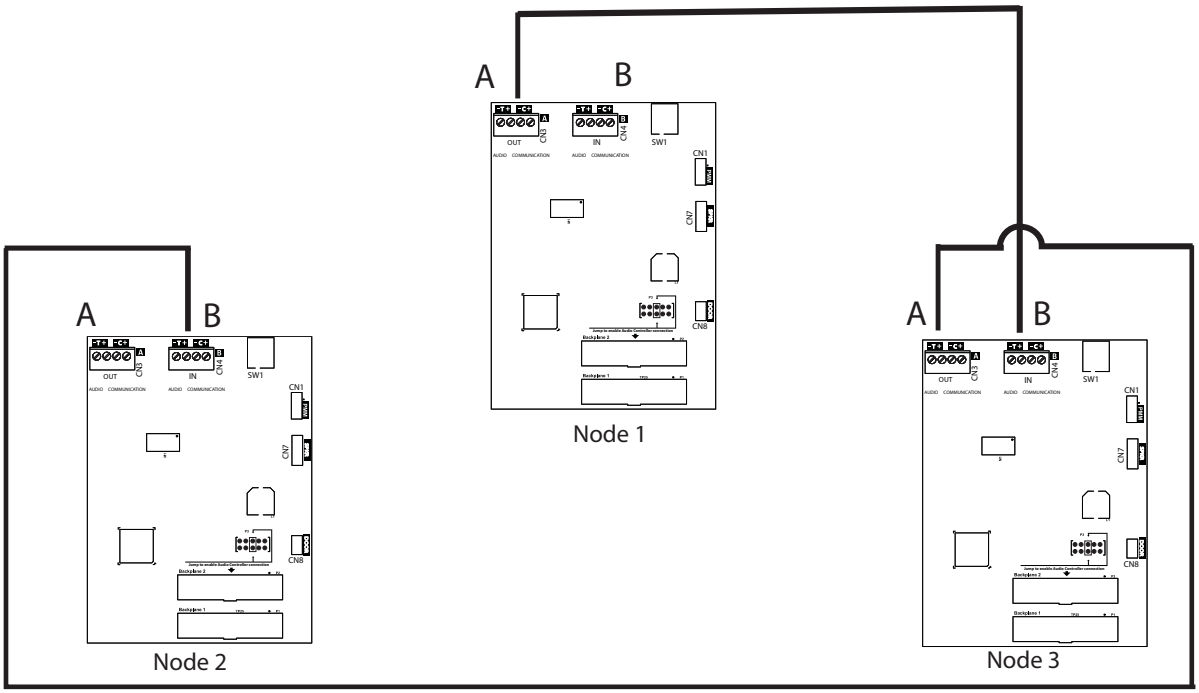
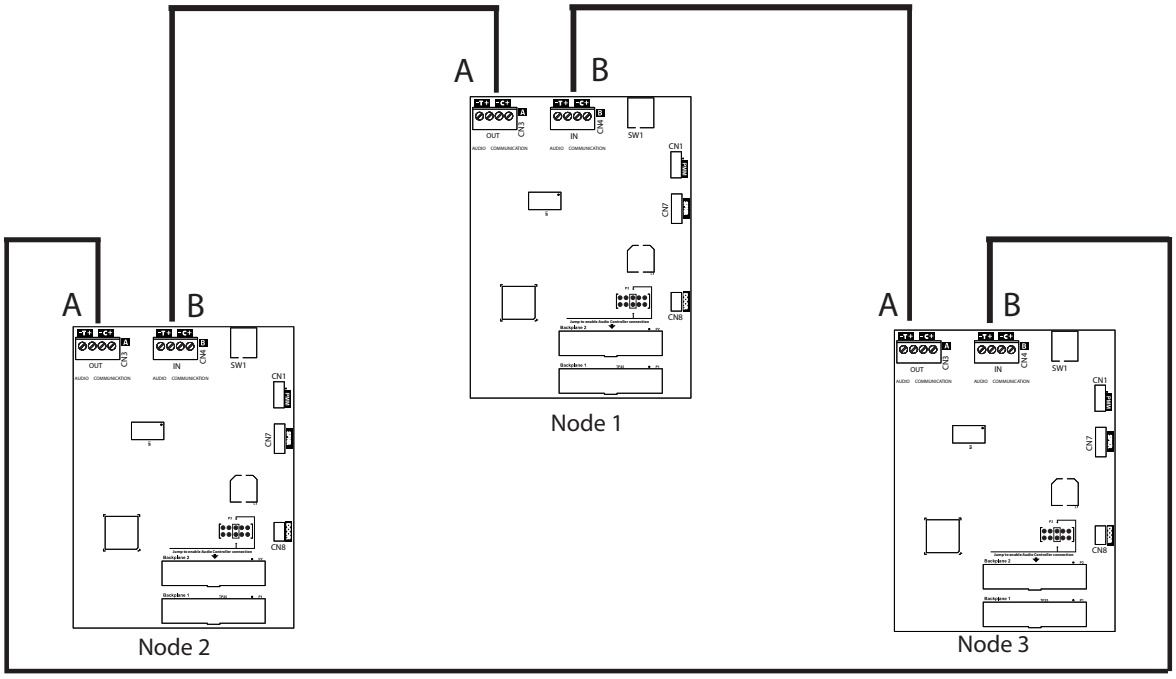



**Figure 50 QCC-6000 Communications Class A Wiring**



## 6.4 Audio Network Card and Telephone Network Card

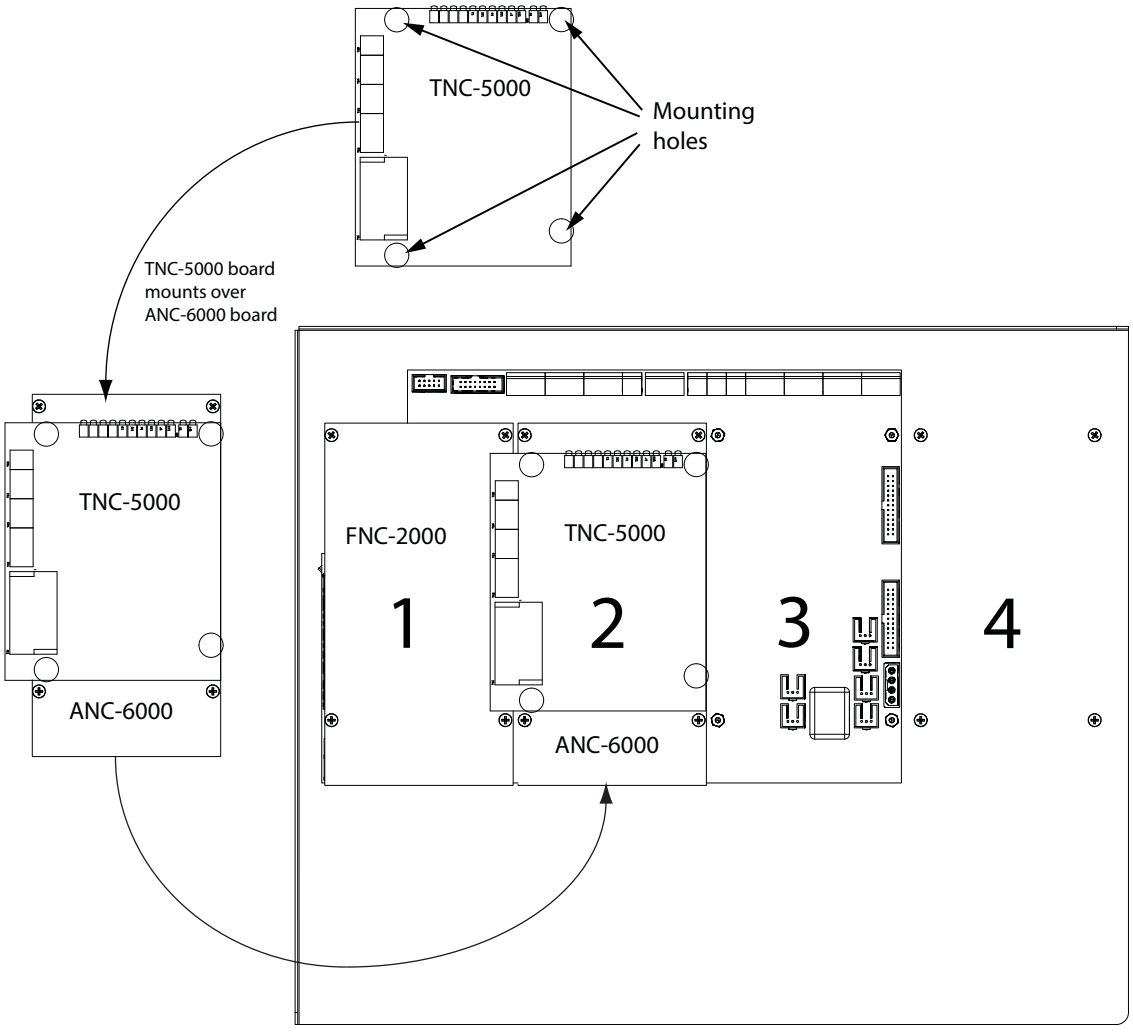
Each QMB-6000 backplate requires an ANC-6000 Audio Network Controller Card. The TNC-5000 Telephone Controller Network card is necessary only if Telephone circuits are required. Below is a diagram for mounting both audio and telephone cards over the main fire alarm board in FX-6000MNS-CH.

The ANC-6000 can be mounted in positions 2, 3, or 4.

The FNC-2000 can by mounted in positions 1 or 2.

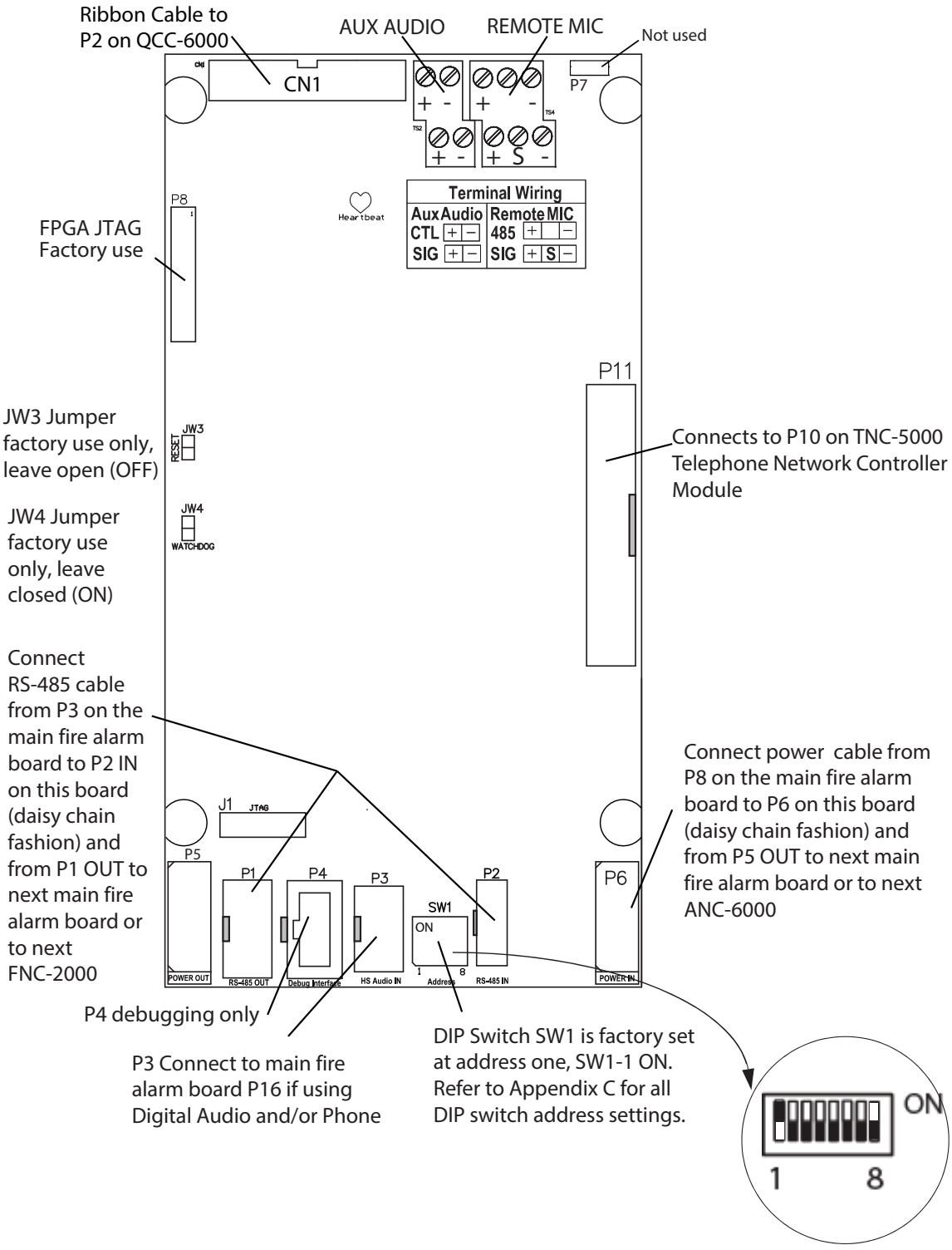
The TNC-5000 must be mounted over the ANC-6000.

**Figure 51 Mounting the Audio and Telephone Card over the Main Fire Alarm Board in FX-6000MNS-CH**



## 6.5 ANC-6000 Audio Network Controller Board

**Figure 52 ANC-6000 Audio Network Controller board**



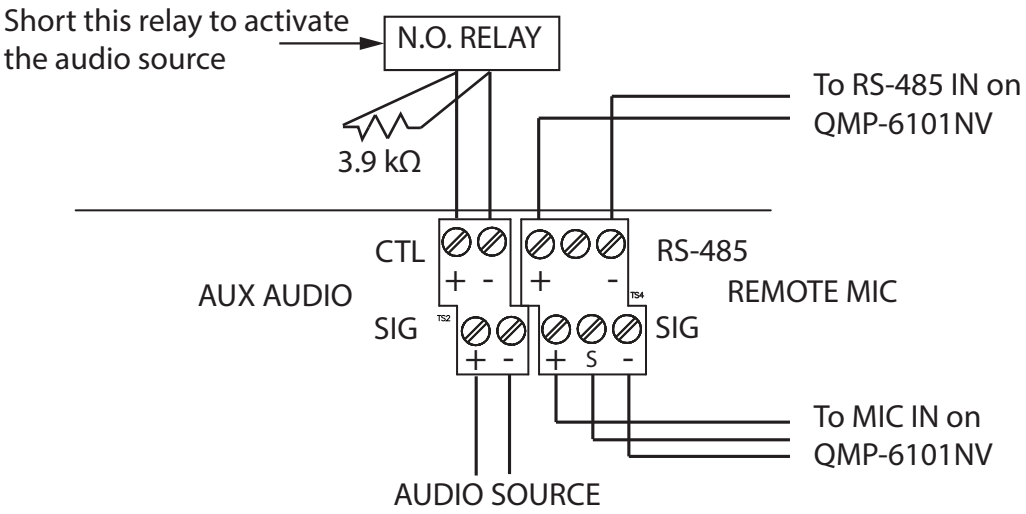
## 6.6 ANC-6000 Wiring

The auxiliary audio input has a maximum input of 1 VRMS. The transformer is isolated on the ANC-6000.

Connect an audio source, for example background music or paging, to the SIG terminal. Connect a normally open relay and 3.9 kΩ resistor to the CTL terminal as shown in Figure 53. Short the relay to activate the auxiliary audio.

See 7.2 for instructions on wiring the ANC-6000 to the QMP-6101NV.

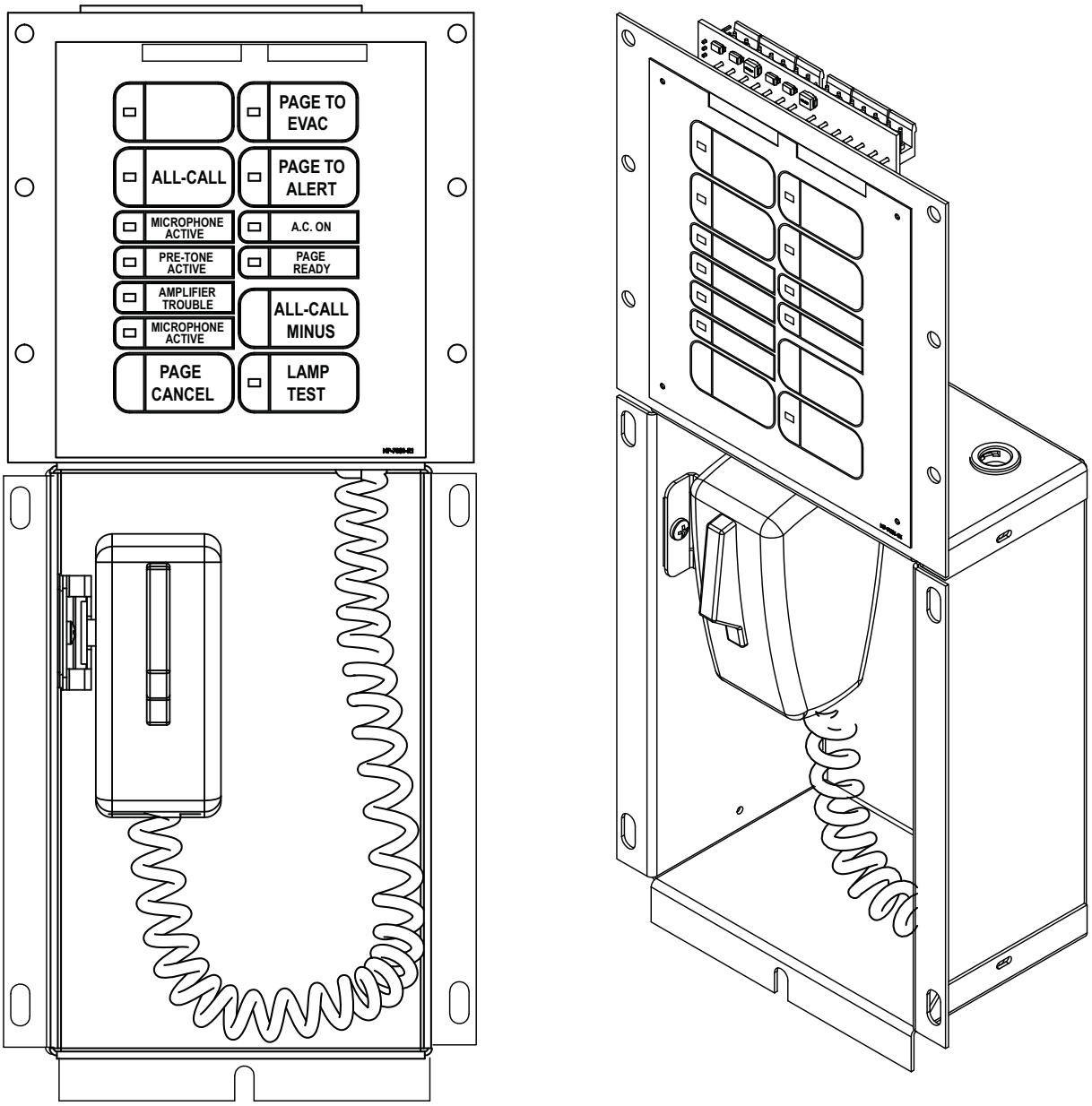
**Figure 53 ANC-6000 Wiring Diagram**



# 7.0 QMP-6101NV Vertical Paging Control Module

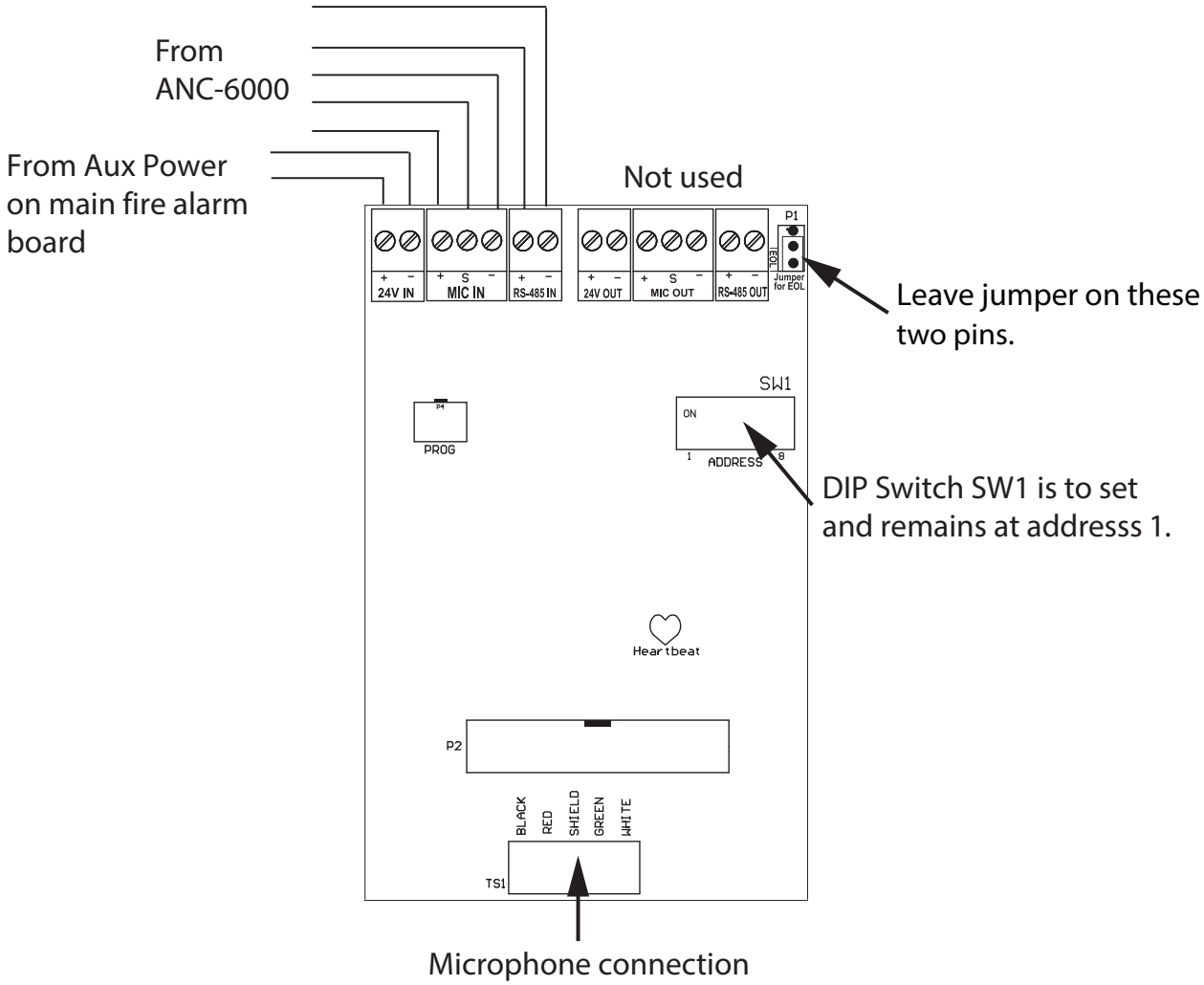
The QMP-6101NV Paging Module fits into the new BBX-FXMNS-6000 Enclosure. It mounts on the inside door chassis (part of the BBX-FXMNS-6000).

**Figure 54 QMP-6101NV Vertical Paging Control Module**



## 7.1 Paging Modules

**Figure 55 QMP-6101NV Network Master Paging Control Module Connections and Terminal Blocks**




The interface wiring between the ANC-6000 and QMP-6101NV is as follows:

| | |
|---|---|
| **24V +, -** | 18-22 AWG Twisted Pair |
| **MIC+, MIC-, SHLD:** | 18-22 AWG Twisted Shielded Pair |
| **RS-485** | 18-22 AWG Twisted Pair |

The maximum wiring run from the ANC-6000 and QMP-6101NV is 20 feet or 6 metres.

## 7.2 QAZT-5348DS Zoned Paging Selector Panel

Each QAZT-5348DS annunciates and controls up to 48 audio zones. There is one button and two LEDs per zone. The lower amber LED indicates Zone trouble. The upper green LED indicates whether that zone is selected for voice paging via the master microphone.

Paging zone selection buttons toggle ON and OFF voice paging for that zone.

# 8.0 QMP-6101NV Paging Operation

This section describes the controls and indicators on the QMP-6101NV Master Paging Microphone Module and the QAZT-5348DS Paging Selector Module.

## 8.1 QMP-6101NV LEDs

### 8.1.1 All Call

Illuminates steady green to indicate that the All-Call function is active.

### 8.1.2 Microphone Active LED

Flashes green to indicate any activity on the paging bus (i.e. other microphone in use). Illuminates steady green when associated microphone (at proximity of LED) is in use.

### 8.1.3 Pre-Tone Active LED

Steady amber when paging and warden paging is active.

### 8.1.4 Amplifier Trouble LED

Indicates any amplifier internal trouble.

### 8.1.5 Microphone Trouble LED

Flashes amber to indicate a microphone trouble.

### 8.1.6 Page to Evac LED

Illuminates steady green when the Page to Evac pushbutton is active.

### 8.1.7 Page to Alert LED

Illuminates steady green when the Page to Alert pushbutton is active.

### 8.1.8 AC ON LED

This green LED illuminates steadily to Indicate that AC power is present.

### 8.1.9 Page Ready LED

Illuminates steady green when the push-to-talk (PTT) on the microphone is depressed (active).

#### Lamp Test LED

This amber LED illuminates steadily to indicate that the Lamp Test has been activated.

## 8.2 QMP-6101NV Pushbutton Controls

### 8.2.1 All-Call Button

Selects all zones for voice paging.

### 8.2.2 All-Call Minus Button

Inverts the selection of zones for voice paging.

### 8.2.3 Page to Evac

Pressing this button selects all the audio zones currently in evacuation mode, for paging.

### 8.2.4 Page to Alert

Pressing this button selects all the audio zones currently in alert mode, for paging.

### 8.2.5 Page Cancel

Pressing this button de-selects all zones (including those manually selected) from paging.

### 8.2.6 Lamp Test Button

Flashes all LED indicators.

### 8.2.7 Microphone PTT Button

The microphone's PTT (push-to-talk) button is located on the microphone itself. When depressed, allows voice paging (from the microphone) to be enabled to all zones selected for paging, unless page cancel is active. Note that pressing PTT will not result in any paging activity unless there are zones selected for paging.

## 8.3 QAZT-5348DS Paging Selector Panel LEDs

### 8.3.1 Page LED

Illuminates green if the zone is selected for voice paging.

### 8.3.2 Trouble LED

Flashes amber to indicate that the zone is in trouble.

## 8.4 QAZT-5348DS Pushbuttons

### 8.4.1 Page Button (if enabled)

Selects / deselects that zone for voice paging.

# 9.0 TNC-5000 Telephone Network Controller Module

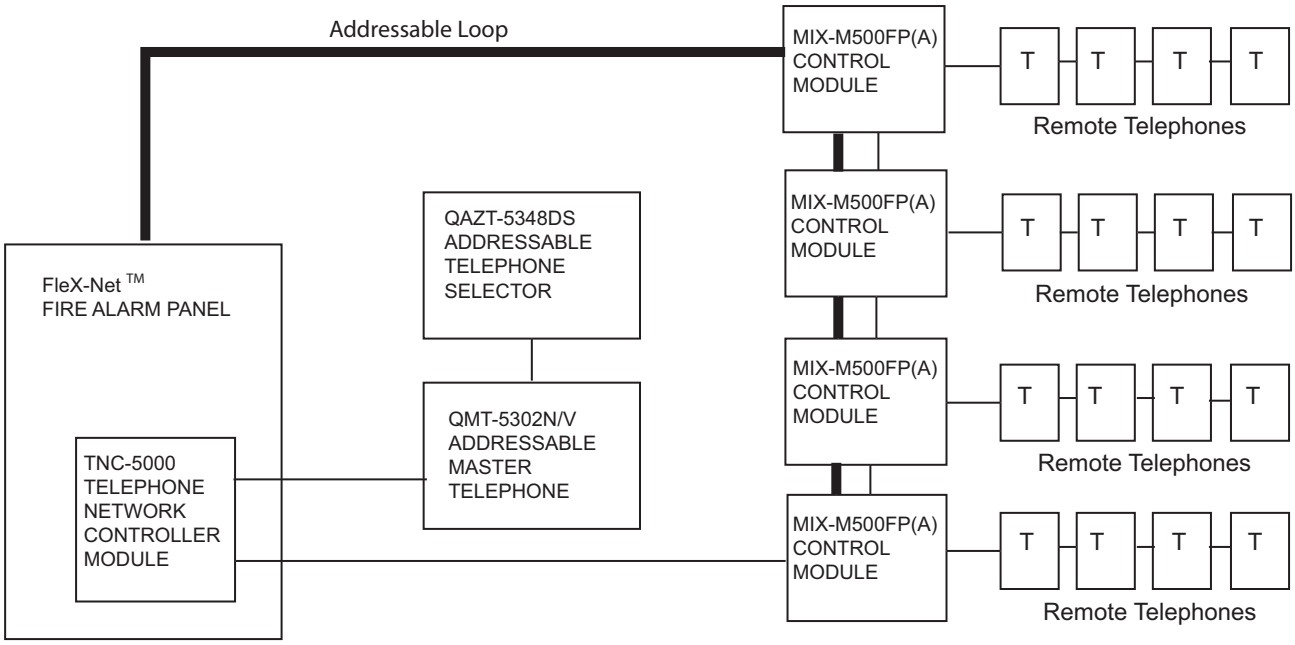
## 9.1 Module Mounting Locations

The TNC-5000 Telephone Network Controller board can be mounted in one place. The TNC-5000 Telephone Network Controller Board is mounted above the ANC-6000 Audio Network board, both are mounted in position 2 above the main fire alarm board, see Figure 51.

## 9.2 Typical Addressable Telephone Set-up

The typical addressable telephone set-up is with an addressable fire alarm system using the TNC-5000 and from the TNC-5000 to the Master Telephone (QMT-5302NV). The selector panels (QAZT-5348DS) are connected to the Master Telephone by cable only. The MIX-M500FP(A) Control Modules are connected to the addressable loop from the main fire alarm panel and to each other and the Master Telephone. Remote telephones are connected to the control modules.

**Figure 56 Typical Addressable Telephone Set-up**



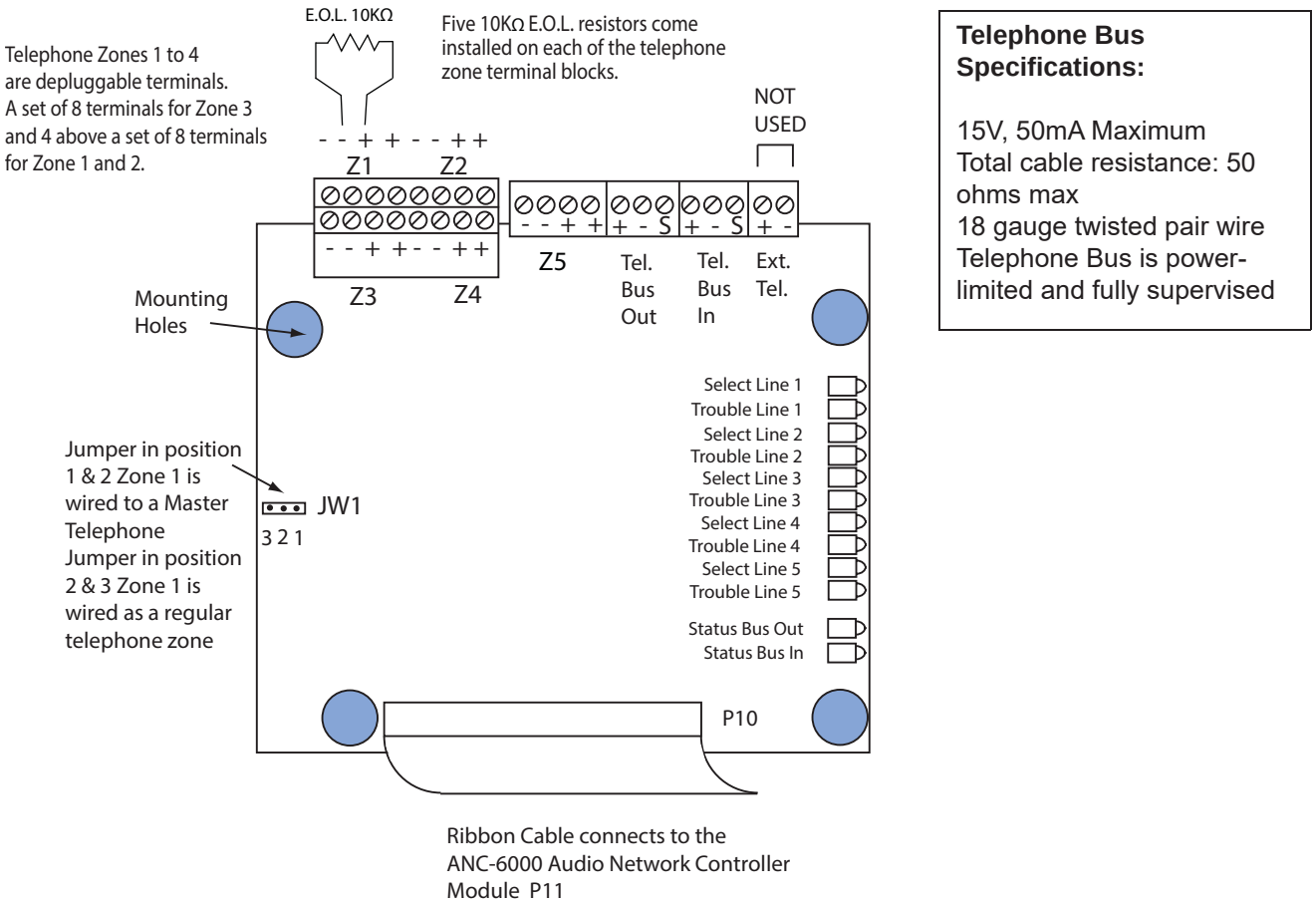
## 9.3 Connectors and Terminal Locations

Table 14 below shows the cable connections and jumpers required and additional wiring. Refer to Figure 57 for connector and terminal locations.

**Table 14: TNC-5000 Connectors and Terminals**

| TNC-5000 Connector and Terminals | Connects to |
|---|---|
| P10 Cable | P11 on the ANC-6000 Audio Network Controller Module. |
| Z1 Terminals | These two terminals are wired to the Master Telephone if used, otherwise to any telephone zone. |
| Z2, Z3, Z4 and Z5 Terminals | These terminals are wired to telephone zones. |
| Telephone Bus In and Out Terminals | Wire from previous TNC-5000 to next TNC-5000. Total cable resistance is 50 ohms maximum, 18 gauge twisted pair. Telephone Bus is power limited and fully supervised |
| JW1 | Jumper positions 1 and 2 if zone 1 is connected to a Master Telephone. |
| JW1 | Jumper positions 2 and 3 if zone 1 is NOT connected to a Master Telephone. |

**Figure 57 TNC-5000 Telephone Network Controller Board Layout**

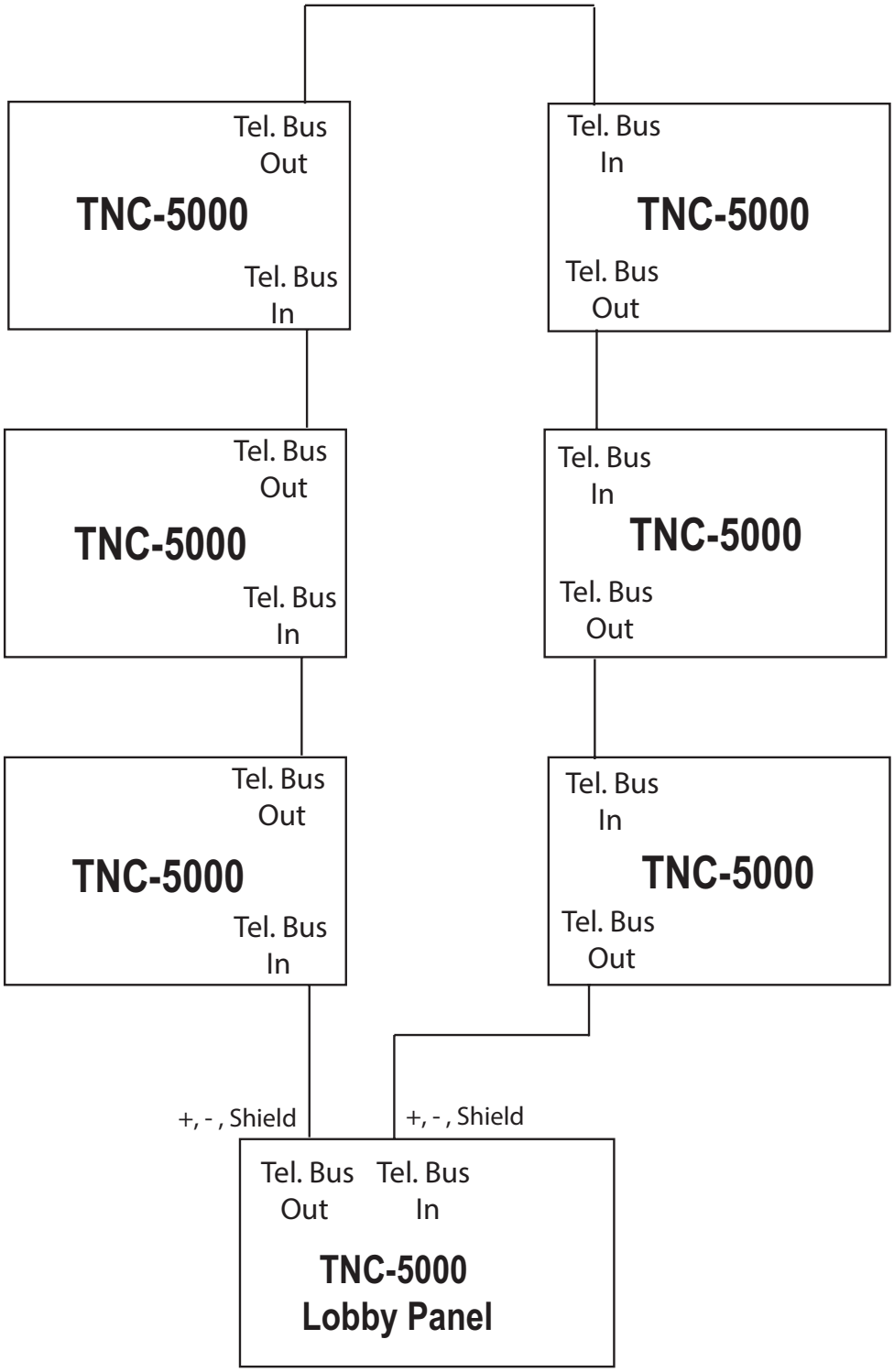



**Telephone Bus Specifications:**

15V, 50mA Maximum
Total cable resistance: 50 ohms max
18 gauge twisted pair wire
Telephone Bus is power-limited and fully supervised

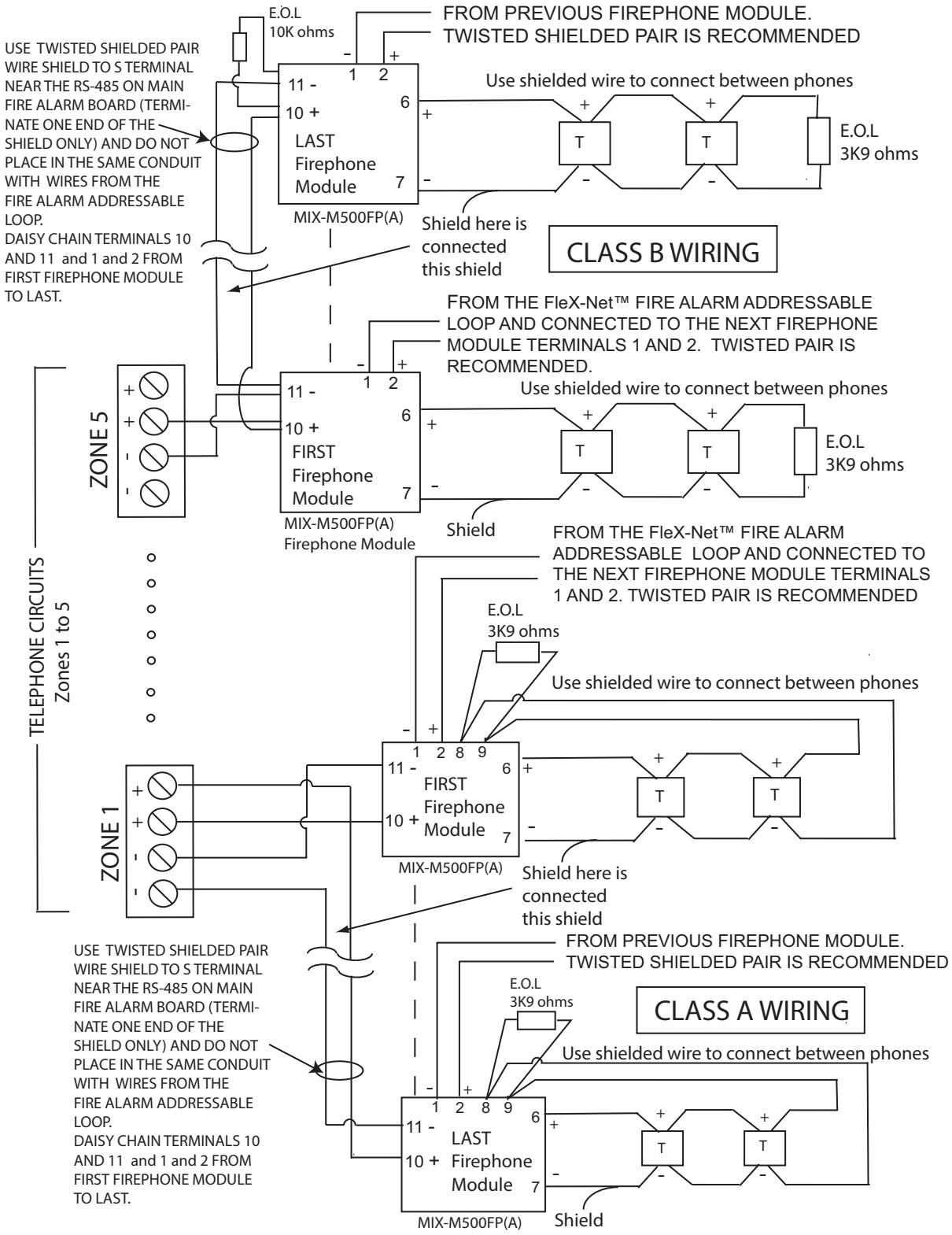
## 9.4 TNC-5000 Telephone Wiring

**Figure 58 Telephone Bus Wiring Diagram**



Zones 1 to 5 are wired to telephones via MIX-M500FP(A) addressable control modules. Only Zone 1 is wired to the Master Telephone (if used) at the main fire alarm center, otherwise Zone 1 is wired as another telephone zone when a master telephone is not required.

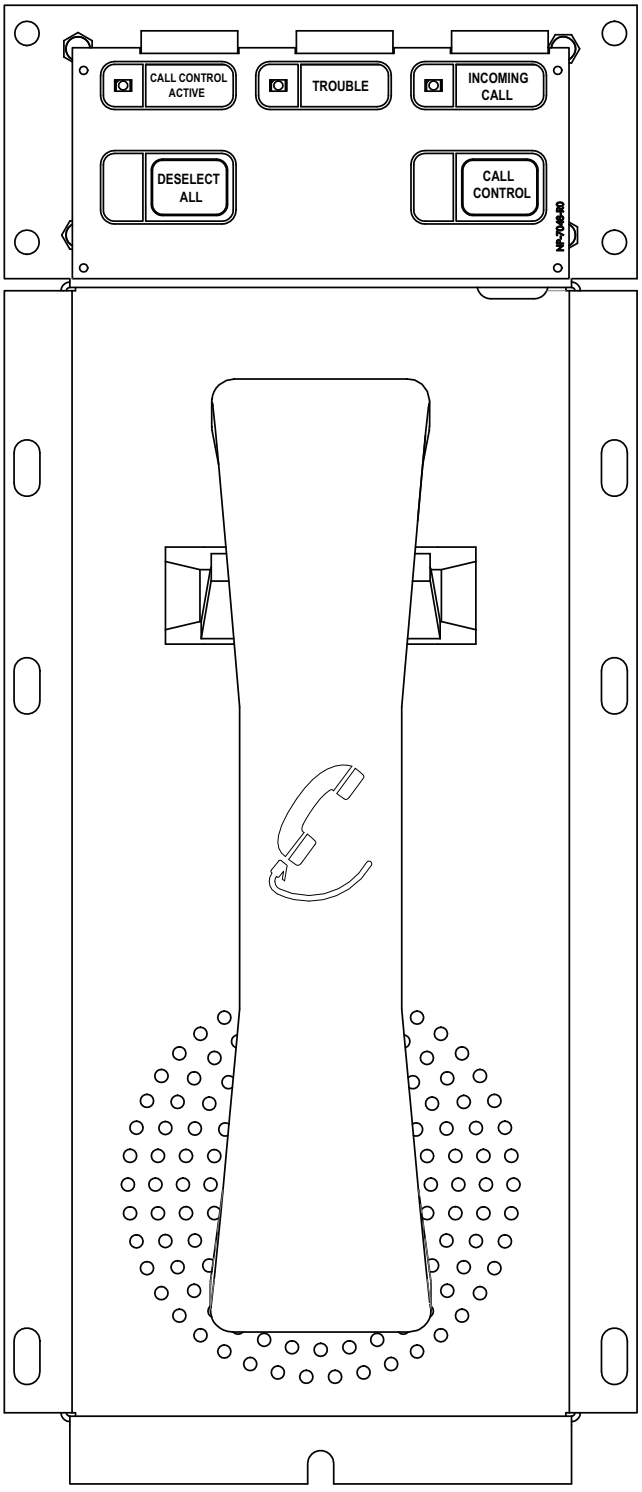
**Figure 59 TNC-5000 Telephone Zone Wiring**



## 9.5 QMT-5302NV Vertical Master Telephone

The QMT-5302NV Vertical Master Telephone Module fits into the BBX-FXMNS-6000 Enclosure. The master telephone is mounted to the inside door chassis.

**Figure 60 QMT-5302NV Master Firefighters' Telephone**

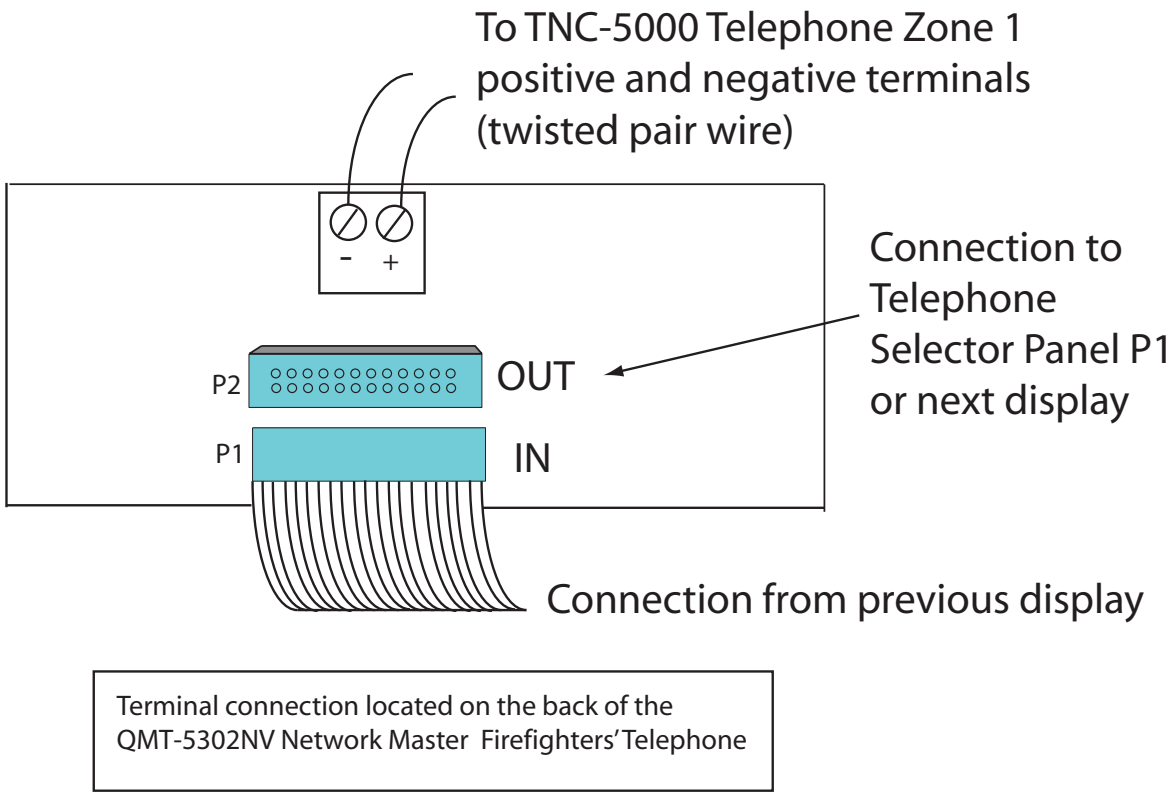


## 9.6 QMT-5302NV Connections

The connections required on the QMT-5302NV Network Master Firefighters' Telephone Control Module are the cable from the previous display module to P1 or IN connector on the bottom left of the board and the OUT connection goes to the IN connector of the next display board.

The master telephone positive and negative terminals connect to the TNC-5000 Zone 1 positive and negative terminals with twisted shielded pair wires. Refer to Figure 61 below for connector and terminal block locations of the QMT-5302NV.

**Figure 61 QMT-5302NV Cable Connection and Terminal Wiring**




## 9.7 QMT-5302NV Connections

The connections required on the QMT-5302NV Network Master Firefighters' Telephone Control Module are the cable from the previous display module to P1 or IN connector on the bottom left of the board and the OUT connection goes to the IN connector of the next display board.

The master telephone positive and negative terminals connect to the TNC-5000 Zone 1 positive and negative terminals with twisted shielded pair wires. Refer to  below for connector and terminal block locations of the QMT-5302N.

**Figure 62 QAZT-5348DS Network Firefighters' Telephone Selector Panel**

Each QAZT-5348DS annunciates and controls up to 48 telephone zones. There is one button and two LEDs per zone. The lower amber LED indicates zone trouble. The upper green LED indicates whether that zone is selected for telephone communication.

Telephone zone selection buttons toggle ON and OFF telephone communication for that zone.

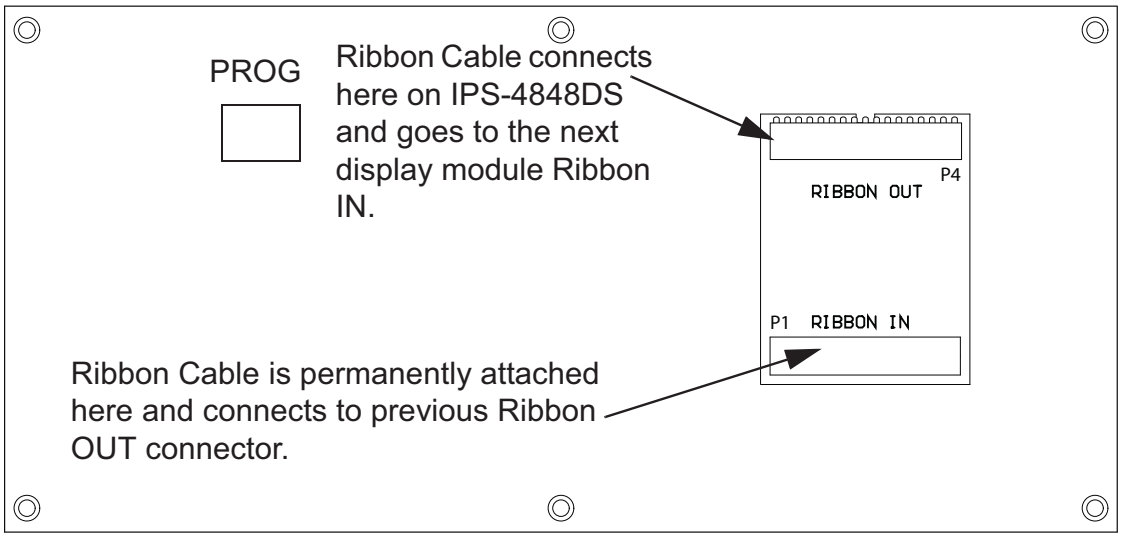
**Note:** Use configurator to set up the QAZT-5348DS Telephone Zone Selector Panels**.**

## 9.8 QAZT-5348DS Network Firefighters’ Telephone Selector Panel

Connect the first QAZT-5348DS Network Firefighters’ Telephone Selector panel to the master telephone by connecting the Ribbon In cable into P2 on the QMT-5302NV Master Telephone. Ribbon Out cable to the Ribbon In of the next QAZT-5348DS or P1 of the next display panel (up to six total). See Figure 63 below.

**Note:** All modules such as QMP-6101NV Network Master Paging Control Module, the QMT-5302NV Network Master Firefighters’ Telephone Control Module, the IPS-4848DS display module and the paging or telephone selector panel QAZT-5348DS are daisy chained together starting from the LCD display module, DSPL-420DS, DSPL-2440DS, RAXN-LCD or RAXN-LCDG. Total number of boards allowed in the daisy chain connection is 6 (12 frames).

**Figure 63 QAZT-5348DS Telephone Selector Panel Cable Connections.**




## 9.9 Telephone Operation

When any telephone zone rings (the local buzzer sounds intermittently, and the green zone LED and Incoming Call LED flash) press that zone's button (on the selector panel QAZT-5348DS) once to answer. Once any one zone has been answered, calls from any other zone will cause that zone's green LED and the Incoming Call LED at the master telephone to flash and the buzzer will sound.

Press the answered zone's button once again to hang up. (Note that the telephone zone will hang up automatically if all handsets on the zone are placed back on the hook).

## 9.10 QMT-5302NV Master Telephone LEDs

### 9.10.1 Trouble LED

This LED will flash amber if there is any zone or other trouble in the firefighters' telephone system.

### 9.10.2 Incoming Call LED

This LED will flash green if any telephone zone has a handset off-hook and unanswered. It will illuminate steady green if all telephone zones with off-hook handsets have been answered.

### 9.10.3 Call Control Active LED

This LED will illuminate when there is a connection between the designated Master Telephone (at the CACF) and the present QMT-5302N/QMT-5302NV telephone.

## 9.11 QMT-5302NV Master Telephone Pushbutton Controls

### 9.11.1 Call Control

Pressing this pushbutton will connect this master telephone with master telephones as configured.

### 9.11.2 Deselect All

Pressing this pushbutton will disconnect all master telephone calls initiated at this node (Call Control minus).

## 9.12 QAZT-5348DS Network Telephone Selector Panel LEDs

### 9.12.1 Telephone Zone Green LED

This LED will flash green if there is any handset off-hook on that zone, and the zone has not been answered by pressing the zone's button. Once answered, the LED will be steady green.

### 9.12.2 Telephone Zone Amber LED

This LED will flash amber to indicate trouble on open-circuit zone faults (e.g. missing end-of-line resistor or wire breaks) or short-circuit zone faults.

## 9.13 QAZT-5348DS Network Telephone Selector Panel Pushbuttons

### 9.13.1 Telephone Selection Pushbutton

Pressing the telephone selector pushbutton will select the associated telephone to be connected to the Master Telephone. Pressing this button a second time will hang up.

## 9.14 Audio Amplifier Wiring

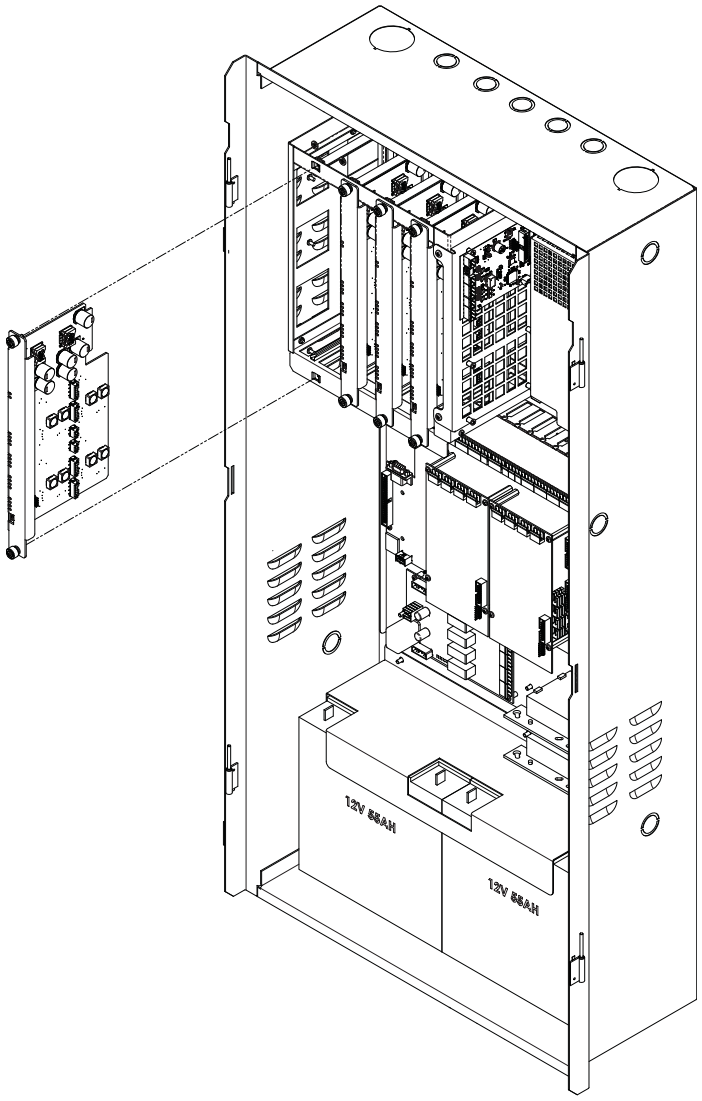
There are two 100 Watt amplifiers available, a 70V version and a 25V version.

| Amplifier | Description |
|---|---|
| **QAD-6425-70** | One 100 watt supervised speaker circuit, 70V or<br>One 75 watt and one 25 watt supervised speaker circuits, 70V or<br>Two 50 watt individually supervised speaker circuits, 70V or<br>One 50 watt and two 25 watt individually supervised speaker circuits, 70V or<br>Four 25 watt individually supervised speaker circuits, 70V |
| **QAD-6425-25** | One 100 watt supervised speaker circuit, 25V or<br>One 75 watt and one 25 watt supervised speaker circuits, 25V or<br>Two 50 watt individually supervised speaker circuits, 25V or<br>One 50 watt and two 25 watt individually supervised speaker circuits, 25V or<br>Four 25 watt individually supervised speaker circuits, 25V |

## 9.15 Amplifier Mounting Installation

Install amplifiers as shown in Figure 64 below.

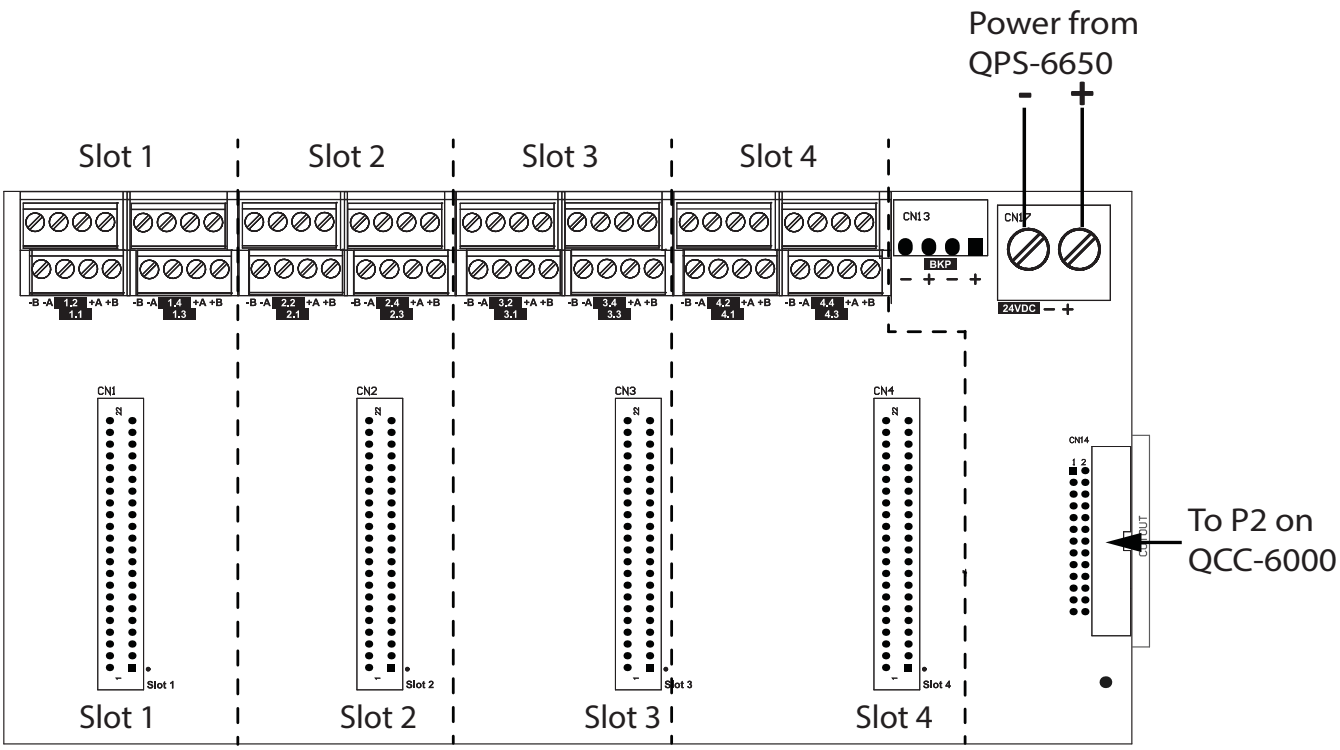
**Figure 64 Installing the Amplifiers into the QMB-6000 Card Cage**




The QMB-6000 card cage provides the terminals for the amplifier field wiring. There are 4 slots for the amplifier cards, and 4 sets of terminals for the speaker wiring. Figure 65 shows the correlation between the slots for the amplifier cards and the terminals for the speakers.

**Note:** Slot 4 is reserved for the backup amplifier.

**Figure 65 QMB-6000 Terminals for Amplifier Wiring**

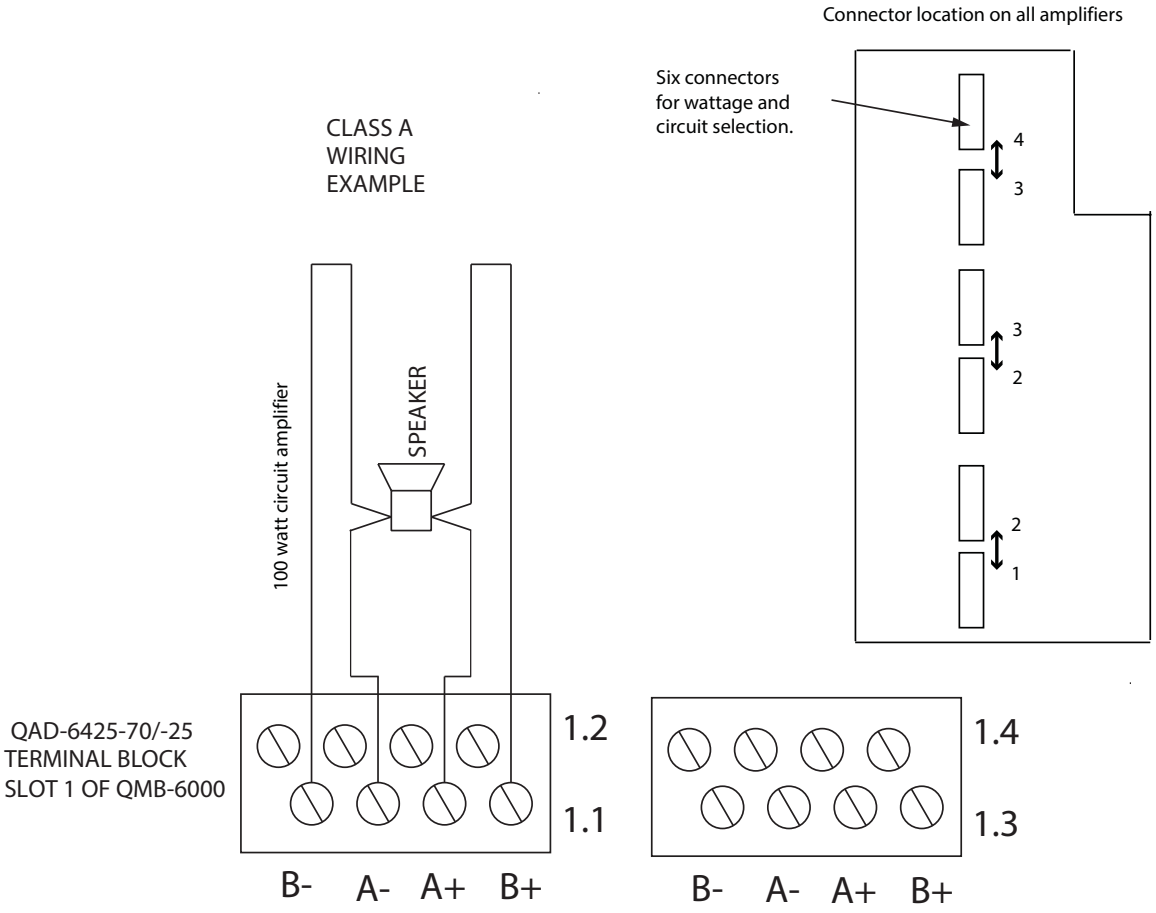


## 9.16 Amplifier Wiring

### 9.16.1 QAD-6425-25/-70 Amplifier Wiring (100W Circuit)

The QAD-6425-25/-70 amplifiers can be wired as one 100 Watt supervised speaker output. Each 100W circuit may be wired as Class A or Class B. Must use terminal block 1.1 and 1.2 for 100W circuit wiring.Wiring for 100W Amplifier Circuit

**Figure 66 Wiring for 100 Watt Amplifier Circuit**




**Notes:**

- Must use terminal block 1.1 for 100W circuit wiring
- For one 100W circuit place all 3 jumpers (WC-10008) on the connectors marked 1 and 2, 2 and 3, and 3 and 4 on the amplifier.
- All circuits are power limited and supervised.
- See speaker wiring chart for wire gauge selection.
- Refer to Table 15 for proper end of line resistor value.

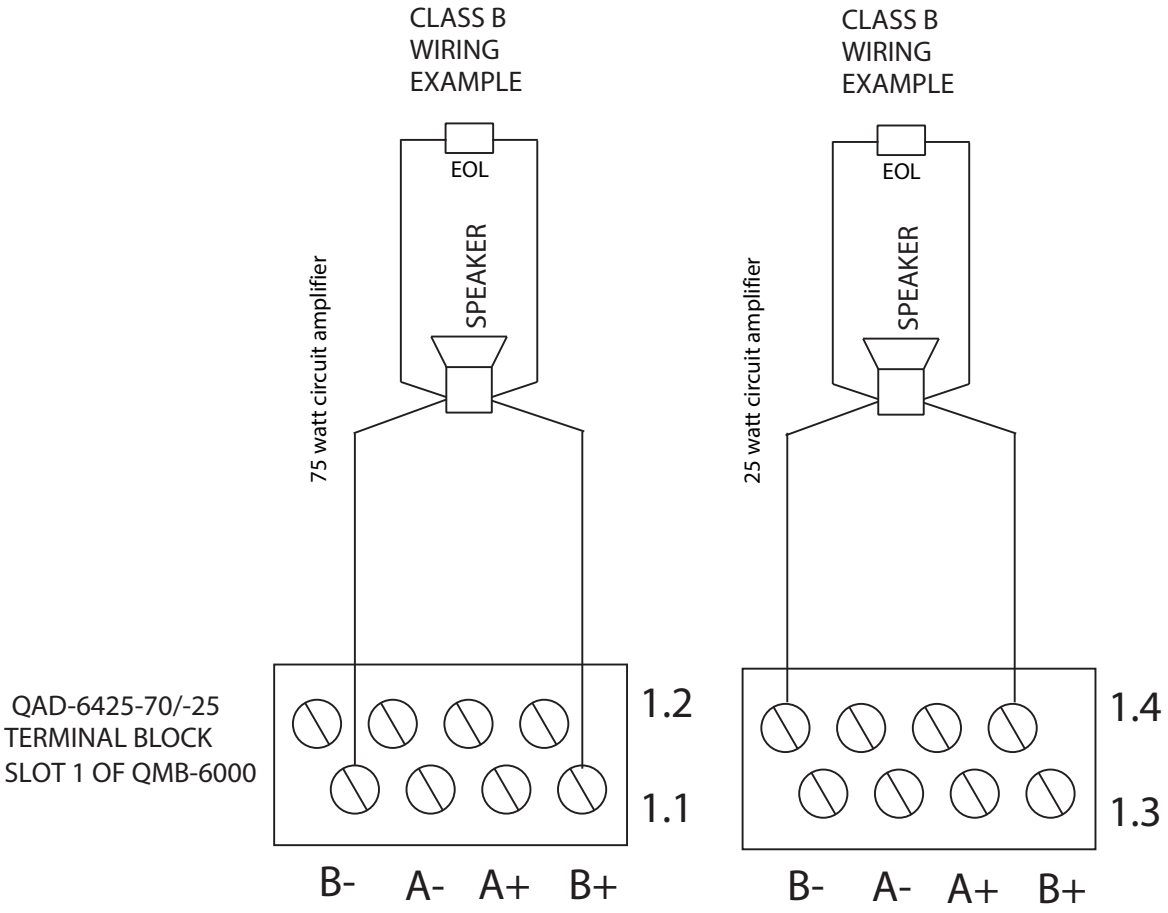
**Table 15 End of Line Resistor Value for Amplifier Circuits**

| Amplifier Type | Configuration | EOL Value |
|---|---|---|
| 25V | 25W | 3k9 ohms |
| | 50W | 3k9 ohms |
| | 75W | 3k9 ohms |
| | 100W | 3k9 ohms |
| 70V | 25W | 10k ohms |
| | 50W | 10k ohms |
| | 75W | 10k ohms |
| | 100W | 10k ohms |

### 9.16.2 QAD-6425-25/-70 Amplifier Wiring (75W and 25W Circuits)

The QAD-6425-25/-70 amplifiers can be wired as one 75 Watt and one 25W supervised speaker output. Each circuit may be wired as Class A or Class B. Must use terminal block 1.1 (or 2.1, 3.1, 4.1) for the 75W circuit wiring.

**Figure 67 Wiring for 75W and 25W Amplifier Circuits**



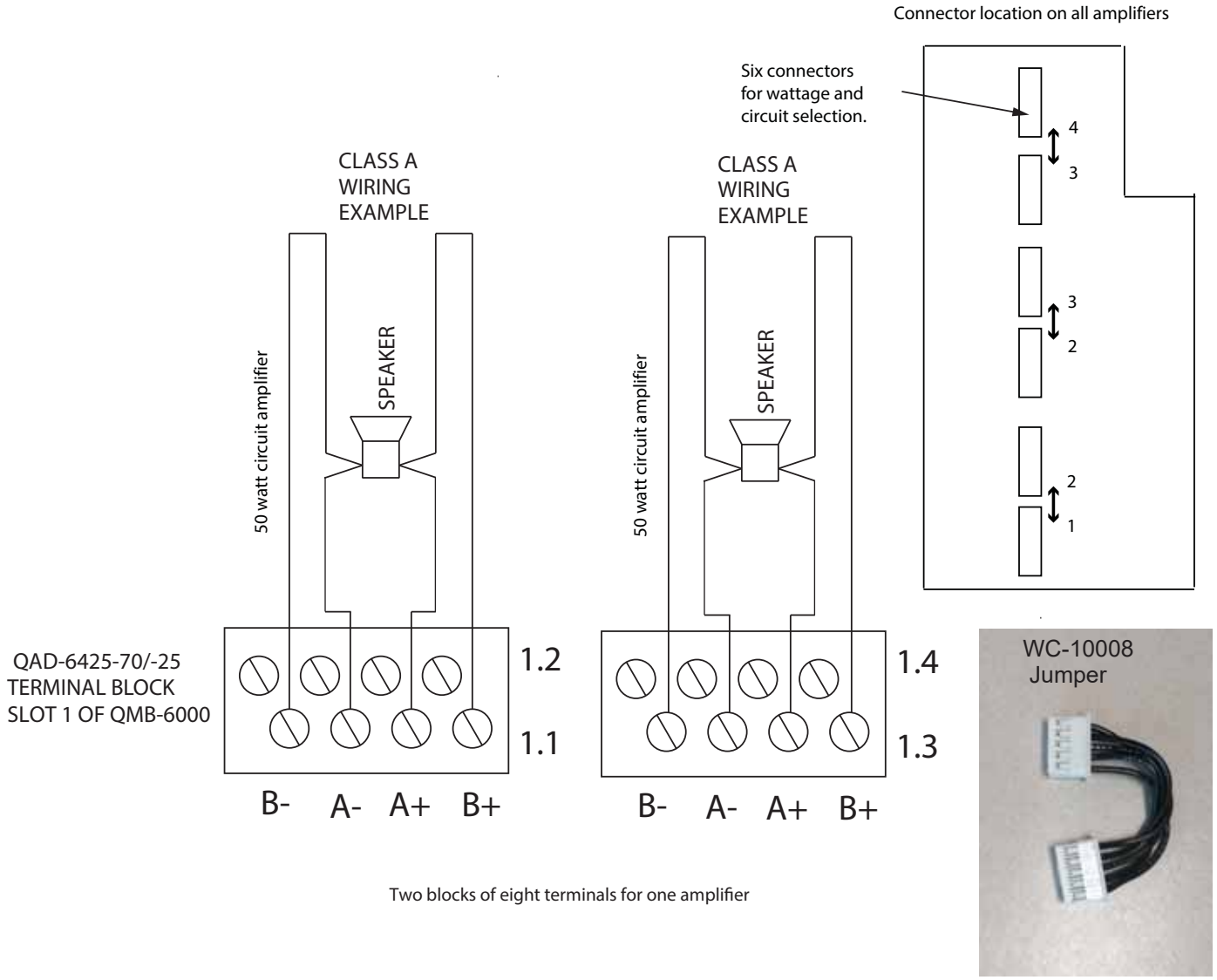

**Notes:**

- Use terminal block 1.1 for 75W circuit wiring
- For one 75W circuit and one 25W circuit place two jumpers (WC-10008) on the connectors marked 1 and 2, 2 and 3, and leave jumper 3 OFF the 3 to 4 connector.
- All circuits are power limited and supervised.
- See speaker wiring chart for wire gauge selection.
- Refer to Table 15 for proper end of line resistor value.

### 9.16.3 QAD-6425-25/-70 Amplifier Wiring (50W Circuits)

The QAD-6425-25/-70 amplifiers can be wired as two 50 Watt supervised speaker outputs. Each 50W circuit may be wired as Class A or Class B.

**Figure 68 Wiring for 50W Amplifier Circuits**



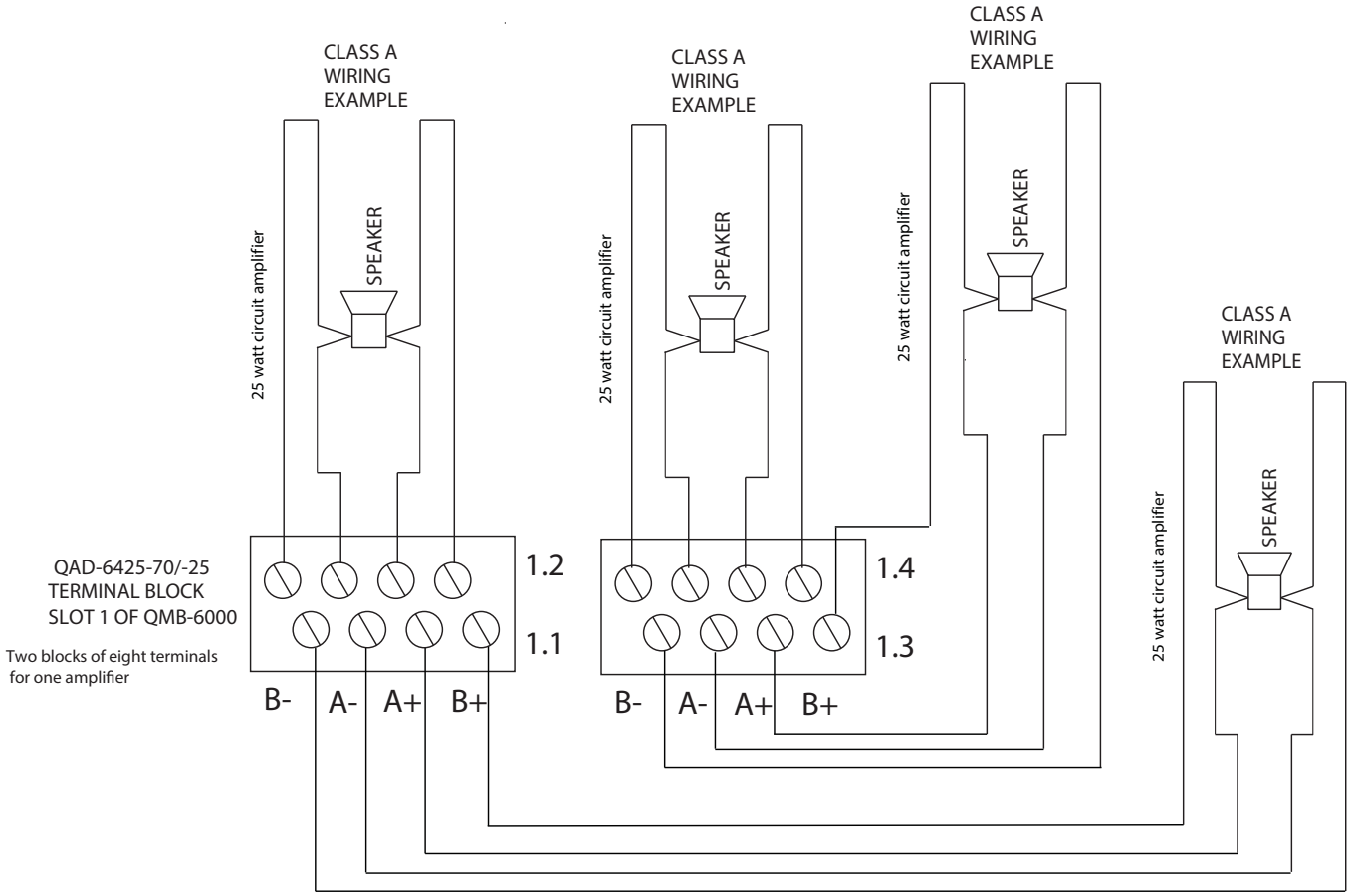

**Notes:**

- Use terminal block 1.1 and 1.3 for 50W circuit wiring
- For two 50W circuit place two jumpers (WC-10008) on the connectors marked 1 and 2, 3 and 4, and leave jumper 3 OFF the 2 to 3 connector.
- All circuits are power limited and supervised.
- See speaker wiring chart for wire gauge selection.
- Refer to Table 15 for proper end of line resistor value.

### 9.16.4 QAD-6425-25/-70 Amplifier Wiring (25W Circuits)

The QAD-6425-25/-70 amplifiers can be wired as four 25 Watt supervised speaker outputs. Each 25W circuit may be wired as Class A or Class B.

**Figure 69 Wiring for 25W Amplifier Circuits**




**Notes:**

- Use terminal block 1.1,1.2, 1.3 and 1.4 for four 25W circuit wiring.
- For four circuits of 25Watts, DO NOT use any of the jumpers (WC-10008) on the connectors on the amplifier.
- All circuits are power limited and supervised.
- See speaker wiring chart for wire gauge selection.
- Refer to Table 15 for proper end of line resistor value.

### 9.16.5 Backup Amplifier Wiring

Any amplifier may be designated (through configuration) as a backup amplifier per node when backup is required. Use of 25V or 70V must be restricted to one or the other per node. The backup amplifier can be any amplifier installed in any audio cabinet per each node.

The number of backup amplifiers is limited to one per node. Only the first failed amplifier gets the backup. The backup amplifier is set up by configuration. Select one amplifier on a backplate and it will be a backup for the other amplifier circuits on the QMB-6000. To backup any other amplifiers on the next backplate, the designated Backup Amplifier must be wired A+ and A- to the + and - terminals of the Backup Bus Supervision Continuation terminals and the other + and - terminals of this connector to the next backplate. The End of Line resistor for the backup amplifier should be connected at the last backplate.

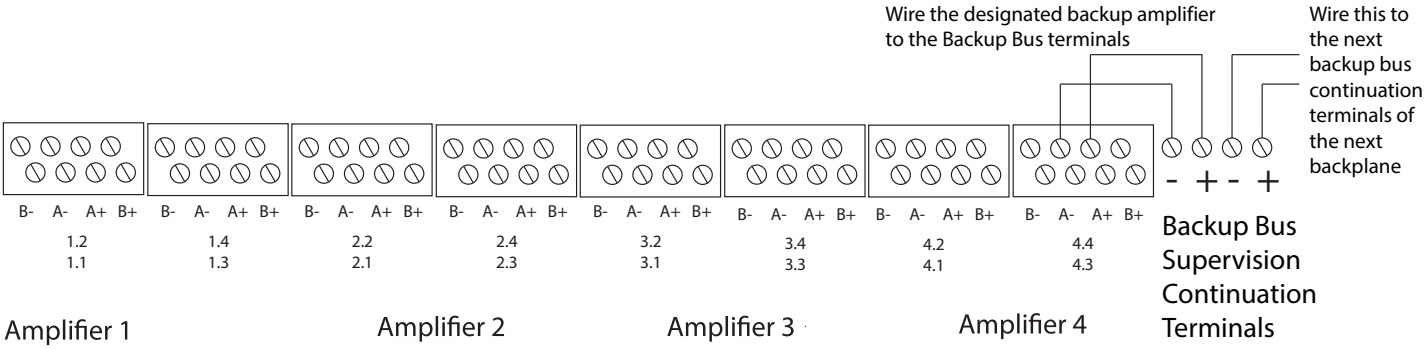



**Table 16 Wiring Chart for 70V Speakers**

| Total Power | Maximum Wiring Run To Last Device (ELR) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 18AWG | | 16AWG | | 14AWG | | 12AWG | |
| Watts | ft | m | ft | m | ft | m | ft | m |
| 25 | 1740 | 531 | 2966 | 841 | 4399 | 1342 | 6995 | 2132 |
| 50 | 970 | 266 | 1383 | 421 | 2200 | 671 | 3497 | 1066 |
| 75 | 580 | 177 | 922 | 280 | 1466 | 447 | 2332 | 711 |
| 100 | 435 | 133 | 691 | 210 | 1100 | 335 | 1749 | 533 |

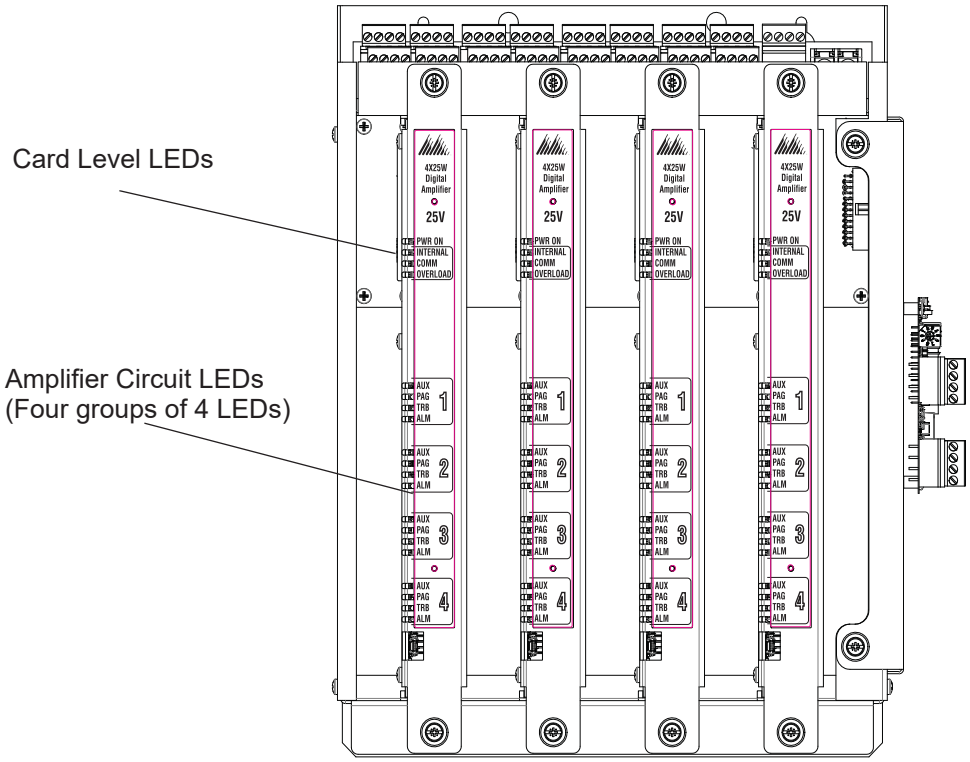
**Notes for Wiring Charts:** For each speaker zone, select the total zone power. Distance shown is calculated to the last speaker, based on the worst case with all speakers lumped at the end. Calculation is base on a 1db power loss (20%) and a source of 70V or 25V.

**Table 17 Wiring Chart for 25V Speakers**

| Total Power | Maximum Wiring Run To Last Device (ELR) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 18AWG | | 16AWG | | 14AWG | | 12AWG | |
| Watts | ft | m | ft | m | ft | m | ft | m |
| 25 | 218 | 66 | 346 | 105 | 550 | 168 | 875 | 267 |
| 50 | 109 | 33 | 173 | 53 | 275 | 84 | 437 | 133 |
| 75 | 73 | 22 | 115 | 35 | 183 | 56 | 292 | 89 |
| 100 | 54 | 17 | 86 | 26 | 138 | 42 | 219 | 67 |

# 10.0 Indication

**Figure 70 Audio Cabinet Displays and Controls**




There are 20 LEDs provided on each amplifier. The top group of 4 LEDs are for each terminal block (Card Level LEDS) and the 16 LEDs below are four groups of 4 LEDs used for the amplifier circuits.

## 10.1 Amplifier Displays

**FOUR CARD LEVEL LEDS**

Power

Internal Trouble

Common Trouble

Overload - power overload indication

**FOUR SETS OF FOUR LEDS FOR EACH CIRCUIT**

Auxiliary - solid blue for BG (background music) - blinking blue for startup

Paging - solid green, active page

Trouble - solid amber for amplifier trouble

Alarm - solid red for alarm condition, flashing red for alert condition

# 11.0 Audio Configuration

The configuration of the FX-MNS-6000 is accomplished via the MGC Network computer based Configurator Software.

# 12.0 System Checkout

## 12.1 Before Turning the Power On

1. To prevent sparking, *do not* connect the batteries. Connect the batteries after powering the system from the main AC supply.
2. Check that all modules are installed in the proper location with the proper connections.
3. Check all field (external) wiring for opens, shorts, and ground.
4. Check that all interconnection cables are secure, and that all connectors are plugged in properly.
5. Check all jumpers and switches for proper setting.
6. Check the AC power wiring for proper connection.
7. Check that the chassis is connected to EARTH GROUND (cold water pipe). Refer to NFPA 70.
8. Make sure to *close the front cover plate* before powering the system from main AC supply.

**Note:** When using Class A and isolators on an addressable loop, configure system as Class B, wire loops Class A, except do not connect the last device back to the panel. Do a system checkout. Then connect the return of the Class A circuit and configure as Class A.

## 12.2 Power-Up Procedure

1. After completing the above procedures, power up the panel (AC only). The green AC On LED and the Common Trouble LED should illuminate, and the buzzer should sound.
2. Press the System Reset button. Since the batteries are not connected, the Battery Trouble LED should illuminate, the trouble buzzer should sound intermittently, and the Common Trouble LED should flash.
3. Connect the batteries while observing correct polarity: the red wire is positive (+) and the black wire is negative (-). All indicators should extinguish except for the AC On LED and the LCD should show a normal status condition.
4. Auto-Configure or PC Configure the fire alarm control panel as described in the Configurator Guide.

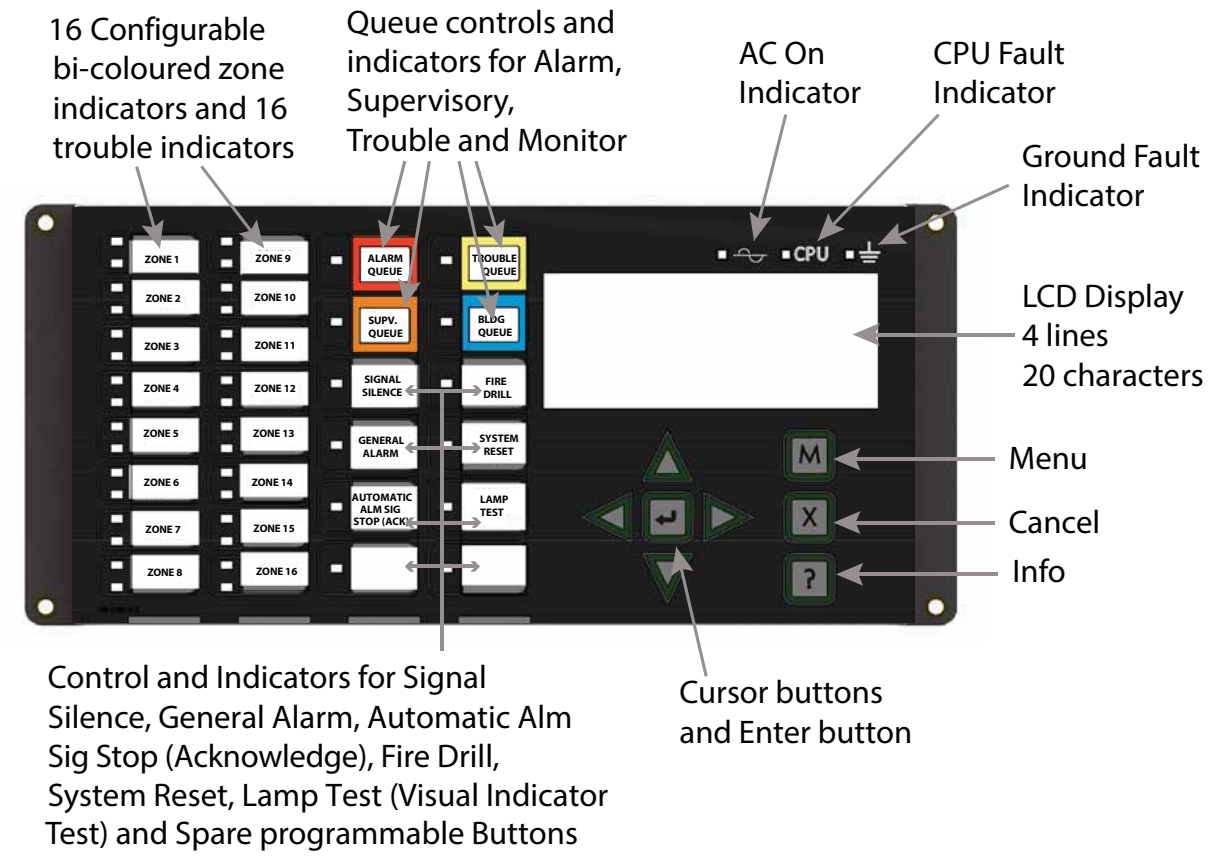
## 12.3 Troubleshooting

| Message | Description |
|---|---|
| Circuit Trouble | Normally when a circuit trouble occurs, its designated trouble indicator will be illuminated, as well as the Common Trouble indicator and Trouble buzzer. To correct the fault, check for open wiring on that particular circuit loop or see if the circuit disconnect switch is in the ON or CLOSED position. *Note: disconnecting a circuit will cause a system trouble (off-normal position).* |
| Ground Fault | The FX-2000N panel has a Common Ground Fault Detector. To correct the fault, check for any external wiring touching the chassis or other earth ground connection. |
| Battery Trouble | Check for the presence of batteries and their condition. Low voltage (below 20.4V) will cause a battery trouble. If battery trouble condition persists, replace the batteries as soon as possible. |

# 13.0 Indicators, Controls, and Operation

Refer to figure below for LED indicators, control buttons, and switches locations.

**Figure 71 Indicators and Control Location**




LED indicators are amber (trouble or supervisory), red (alarm), or green (AC On), and may illuminate continuously (steady) or at one of two flash rates:

- **Fast Flash:** 120 flashes per minute, 50% duty cycle.
- **Trouble Flash:** 20 flashes per minute, 50% duty cycle

**Note:** The General Alarm LED and pushbutton, and the Automatic Alm Sig Stop (Ack) LED and pushbutton, are active only on a system configured for “Two Stage.”

### Paper Labels for Buttons and Indicators

Buttons and indicators are supplied with paper labels. These labels slide into the plastic label templates on the face of the panel. Paper labels allow for easy English / French selection and custom-printed zone information.

## 13.1 Common Indicators

| Indicators | Description |
|---|---|
| Buzzer | The Buzzer is activated by any of the following:<br>Fire Alarm - Steady<br>Supervisory Alarm - Fast Rate<br>Trouble - Trouble Rate<br>Monitor - Configurable to sound at Trouble Rate<br>If the Buzzer is turned on in response to a Non-Latching Trouble or Supervisory, it will be turned off if the condition causing it goes away and there is no other reason for it to be on. |
| AC On LED | The AC On Indicator is activated steady green while the main AC power is within acceptable levels. It is turned off when the level falls below the power-fail threshold and the panel is switched to standby (battery) power. |
| Alarm Queue LED | The Common Alarm LED flashes red whenever the Panel is in Alarm. An alarm results from any alarm on any point or input programmed as Alarm or activation of the manual red General Alarm Button (if the Panel is set for Two Stage Operation). The Alarm Queue LED will go steady, once all alarms in the queue have been reviewed using the Alarm Queue button. Since all Alarms are latched until the Panel is reset, the Common Alarm LED will remain on until then. |
| Supervisory Queue LED | The Common Supv. (Supervisory) LED flashes amber at the Fast Flash Rate when there is a Supervisory Alarm in the Panel, as the result of any Latching or Non-Latching Supervisory Circuit. The LED turns off if all Non-Latching Supervisory Circuits are restored and there are no Latching Supervisory Circuits active. The Supv. Queue LED will go steady, once all supervisory alarms in the supervisory queue have been reviewed using the Supv. Queue button. Latching Supervisory Alarms remain active until the Panel is reset. |
| Trouble Queue LED | The Common Trouble LED flashes amber at the Trouble Flash Rate when there is any Trouble condition being detected on the panel. It is turned off when all Non-Latching Troubles are cleared. The Trouble Queue LED will go steady, once all troubles in the trouble queue have been reviewed using the Trouble Queue button. |
| BLDG Queue LED | The BLDG Queue LED flashes amber at the Trouble Flash Rate when there is any monitored building condition being detected on the panel. It is turned off when all building monitors are cleared. |
| CPU Fault LED | The CPU Fault Indicator is flashed yellow at the Trouble Flash Rate if the CPU is faulty. |
| Fire Drill LED | The Fire Drill Indicator turns on steady amber while Fire Drill is active. |
| Automatic Alm Sig Stop (Ack) LED | If the Panel is configured as Two Stage, the Automatic Alm Sig Stop (Ack) Indicator flashes amber at the Fast Flash Rate while the Auto General Alarm Timer is timing out. It turns on steady amber when that Timer is cancelled by activating the Automatic Alm Sig Stop (Ack) or Signal Silence buttons. If the Auto General Alarm Timer times-out and puts the Panel into General Alarm, the Indicator is turned off. |
| General Alarm LED | In Two Stage Operation only, the General Alarm LED is steady red when general alarm is activated due to the red General Alarm button being pushed, a General Alarm Initiating Circuit being activated, or the Auto General Alarm Timer timing out. Once the General Alarm LED has been turned on it will stay active until the Panel is reset. |
| Signal Silence LED | The Signal Silence indicator is flashed amber, at the trouble rate when Indication Circuits are Silenced either by the Signal Silence button, or by the Auto Signal Silence Timer. It is turned off when the Signals are re-sounded by a subsequent Alarm. |
| Ground Fault LED | The Ground Fault Indicator flashes amber at the Trouble Rate when the Ground Fault Detector detects a Ground Fault on any field wiring. It turns off immediately when the Ground Fault is cleared. |

## 13.2 Common Controls

### 13.2.1 LCD Display

The display is a large 4 line by 20 character back-lit alphanumeric LCD. It displays information on the panel and its devices. There are cursor buttons for menu selection and control. Information provided by the LCD display is an alarm log, an event log, current levels, device information, verification and maintenance reports.

### 13.2.2 Queue Buttons

Use the queue buttons to select a particular queue to review.

Press the **Alarm Queue** button to cycle through all the unacknowledged alarms. Press  and  to cycle through all the alarms, both acknowledged and unacknowledged. Press the right cursor button  to scroll up by 10 events at a time. Press the left cursor button  to scroll down by 10 events at a time.

Press the **Supervisory Queue** button to cycle through all the unacknowledged supervisory conditions. Press  and  to cycle through all supervisory conditions, both acknowledged and unacknowledged. Press the right cursor button  to scroll up by 10 events at a time. Press the left cursor button  to scroll down by 10 events at a time.

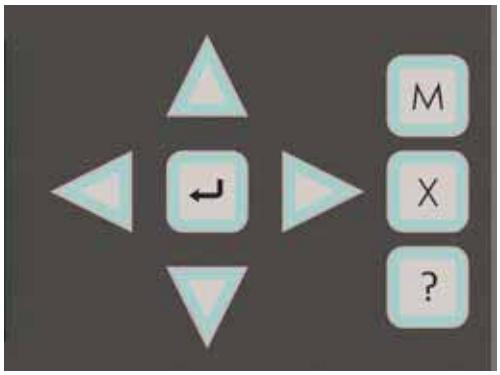
Press the **Trouble Queue** button to cycle through all the unacknowledged trouble conditions. Press  and  to cycle through all troubles, both acknowledged and unacknowledged. Press the right cursor button  to scroll up by 10 events at a time. Press the left cursor button  to scroll down by 10 events at a time.

Press the **Building Queue Button** to cycle through all the unacknowledged building (monitor) conditions. Press  and  to cycle through all queued monitor conditions, both acknowledged and unacknowledged. Press the right cursor button  to scroll up by 10 events at a time. Press the left cursor button  to scroll down by 10 events at a time.

Queues are displayed on the screen according to a priority sequence. Queue priority ranking from highest to lowest is as follows: alarm, supervisory, trouble, and monitor. If, for example, you are viewing a monitor queue and an alarm occurs, the display will immediately display the alarm condition. Also, if there is no activity on the system for 10 seconds after you have pressed a queue button, the display will switch to the highest priority condition.

### 13.2.3 Cursor Buttons

These four buttons around the Enter Button are used for up (previous), down (latest), left, and right selection of items on the LCD Display.




### 13.2.4 Enter Button

This button is used to select a displayed item on the LCD Display.

### 13.2.5 Cancel Button

This button is used to cancel an operation.

### 13.2.6 Menu Button

This button is used to initiate the FX-2000N Menu System.

### 13.2.7 Info Button

This button is used to get more details about a displayed item.

### 13.2.8 System Reset Button

The System Reset button causes the Fire Alarm Control Panel, and all Circuits, to be reset

- Resets all Latching, Trouble Conditions
- Resets all Initiating Circuits
- Resets 4-Wire Smoke Supply and Aux. Power Supply
- Turns off all NACs
- Turns off Signal Silence, Ack & GA Indicators
- Turns off Fire Drill
- Stops and resets all Timers
- Processes inputs as new events
- Aux Disconnect is not affected
- Reset cannot be activated until the Signal Silence Inhibit timer has expired.

### 13.2.9 Signal Silence Button

Activation of the Signal Silence button when the Panel is in Alarm, turns on the Signal Silence Indicator and deactivates any Silenceable NACs. Non-Silenceable Circuits are unaffected. Signals will re-sound upon any subsequent Alarm. This button does not function during any configured Signal Silence Inhibit Timer period. It also does not function if the NACs are active as the result of a Fire Drill. In a Two Stage System, if the Auto General Alarm Timer has timed out, this Signal Silence button also performs the same function as the Automatic Alm Sig Stop (Ack) button.

### 13.2.10 Fire Drill Button

The Fire Drill button activates all programmed and non-Disconnected NACs, but does not transmit any Alarms via the City Tie, or Common Alarm Relay. Fire Drill may be programmed to operate specific NACs. Fire Drill is cancelled by pressing the button again (toggle switch), or if the Panel goes into a real Alarm.

### 13.2.11 Automatic Alm Sig Stop (Ack) Button (Two Stage Only)

If the Panel is not configured for Two Stage Operation, this button does nothing. If the Panel is configured for Two Stage Operation, activation of the Automatic Alm Sig Stop (Ack) button while the Auto General Alarm Timer is timing (there is an Alarm in the Panel, but it is still in the First Stage), that timer is cancelled, and the Automatic Alm Sig Stop (Ack) Indicator is on steady amber.

### 13.2.12 General Alarm Button

Activation of the General Alarm button immediately sends the Panel into General Alarm. It will also re-activate the Signals if they have been Silenced during General Alarm. The General Alarm condition remains active until the Panel is reset.

### 13.2.13 Lamp Test Button

Activation of the Lamp Test button turns all front panel Indicators on steady in whichever colour they would normally be activated and turns the buzzer on steady. If Lamp Test is active for more than 10 seconds, Common Trouble is activated.

### 13.2.14 Emergency Voice Control

Request control, press button, Deny control by timeout, Grant press button to transfer control.

Each Node will have an assigned request control and grant button and LED (one button/LED per Node) to transfer emergency voice control. All Node Request/Grant button and LEDs will be available at all Nodes. For example if there are 3 Nodes, each Node will have 3 Request/Grant buttons and LEDs representing all the Nodes 1 to 3.

To gain immediate emergency voice control, press the Node Request/Grant button, LED will illuminate steady and voice control will be available at that physical Node.

Request Control - press the Request/Grant button at the Node that will be used to provide emergency voice. The associated Request/Grant button LED will flash at the Node which has control.

Grant Control - press the Request/Grant button of the requesting Node (flashing LED) to grant control.

If a Node has emergency voice control the LED will be ON steady.

Deny is achieved through a timeout, which is configurable.

## 13.3 Single Stage Operation

In a single stage system, all alarm inputs are treated in a similar manner. Alarm inputs include any of the following: non-verified alarm, verified alarm, sprinkler alarm, water-flow alarm, and general alarm circuits. Any of these alarm inputs occurring when the panel is not already in alarm cause the following:

- The buzzer sounds steadily
- If fire drill is active, it is cancelled
- The Common Alarm LED turns on
- The Common Alarm relay activates if Aux disconnect is not active
- The Auto Signal Silence timer, if configured, starts
- The Signal Silence Inhibit timer, if configured, starts
- All non-disconnected NACs programmed to the input are activated provided that Aux disconnect is not active
- Non-disconnected strobes associated with the input are activated
- Non-disconnected signals associated with the input are activated at the evacuation rate

Subsequent alarms when the panel is already in alarm, cause the following:

- The alert buzzer sounds steadily
- If Signals have been silenced, they are resounded, the Signal Silence LED turns off, and the Auto Signal Silence timer, if configured, is restarted
- Any additional non-disconnected strobes associated with the input are activated continuously
- Any additional non-disconnected signals associated with the new input are activated at the evacuation rate

## 13.4 Two Stage Operation

In a two stage system, alarm inputs are either first stage (alert) inputs or second stage (general alarm) inputs. First stage inputs include inputs from the following types of circuits: non-verified alarm, verified alarm, sprinkler alarm, and water-flow alarm. Second stage inputs include alarms on the general alarm circuits, activation of the General Alarm button, or expiration of the Auto General Alarm timer. Any of these alarm inputs occurring when the panel is not already in alarm cause the following:

- The buzzer sounds steadily.
- If fire drill is active, it is cancelled.
- The Common Alarm LED turns on.
- The Common Alarm relay activates if Aux disconnect is not active.
- The Auto Signal Silence timer, if configured, starts.
- The Signal Silence Inhibit timer, if configured, starts.
- All Non-disconnected indicating programmed to the input are activated provided that Aux disconnect is not active.

If the alarm is a second stage alarm,

- All non-disconnected strobe circuits are activated continuously.
- All non-disconnected signal circuits are activated at the evacuation rate.
- The General Alarm LED turns on.

If the alarm is a First Stage alarm,

- Non-disconnected strobe circuits programmed to that circuit are activated continuously.
- Non-disconnected signal circuits programmed to that circuit are activated with the alert code.
- The Auto General Alarm timer, if configured, starts.
- The Automatic Alm Sig Stop (Ack) LED starts flashing.

Subsequent First Stage alarms when the panel is already in alarm, cause the following:

- The buzzer sounds steadily.
- If signals have been silenced as a result of the silence button or the Auto signal silence timer, signals are resounded as they were before signal silence, the Signal Silence LED turns off, and the Auto Signal Silence timer, if configured, is restarted.
- If the panel is not already in General Alarm, additional non-disconnected signals programmed to the new input are activated with the Alert Code (s*ee* Indicating (Signal) Circuits Types on page 102).
- If the panel is not already in General Alarm and if the Automatic Alm Sig Stop (Ack) LED is on steady indicating that the Auto General Alarm timer has been Acknowledged the timer is restarted and the Automatic Alm Sig Stop (Ack) LED is extinguished.

A second stage alarm (general alarm) when the panel is already in alarm causes the following:

- The buzzer sounds steadily.
- All non-disconnected signals are activated at the evacuation rate.
- If the Signal Silence LED is on, it turns off and the Auto Signal Silence timer, if configured, is restarted.
- The Automatic Alm Sig Stop (Ack) LED if on, turns off.

Alarm inputs are latching: they remain active until system reset.

**Note:** If the system is configured for correlations, any second stage / general alarm condition activates all NACs whether they are correlated or not.

## 13.5 Pre-Signal Operation

To configure the panel for pre-signal, all alarm inputs must be correlated to one NAC circuit that is wired to a Notification Appliance in the Control Room that is constantly monitored by an Operator. Using the FX-2000N Configurator, “Subsequent Alarm” in “Common System Status” must be correlated to turn on the Remaining NAC circuits in the system. To confirm the alarm (i.e. subsequent alarm) the operator can press the “General Alarm” button on the panel or activate a Manual Station in the Control Room.

**Note: Pre-Signal is not permitted to be used in Canada, unless approved by the AHJ.**

## 13.6 Circuit Types

The term **circuits** refers to an actual electrical interface, either initiating (detection) or indicating (signal). The term **zone** is a logical concept for a fire alarm protected area, and will consist of at least one circuit. Often the terms zone and circuit are used interchangeably, but in this manual the term circuit is used.

### 13.6.1 Initiating (Detection) Circuit Type

| Initiating (Detection) Circuit Type | Description |
|---|---|
| Non-Verified Alarm | This is a "normal" type of alarm which may have pull stations, smoke detectors, or heat detectors attached. Any activation of these devices will immediately result in an alarm condition in the fire alarm control panel. An alarm condition causes the associated circuit Status LED and the Common Alarm LED to illuminate red. |
| Verified Alarm | These alarms are verified by a reset and timing procedure, and may have Manual Stations, smoke detectors attached. Any activation of Manual Stations will result in an alarm condition in the fire alarm control panel within four seconds. Smoke detectors will be verified for a real alarm within 60 seconds depending upon the start-up time of the smoke detectors being used. If four seconds is too long a response time for pull stations, then they should be wired separately on a non-verified alarm circuit. An alarm condition causes the associated circuit Status LED and the Common Alarm LED to illuminate red. Verified Alarm is not permitted for heat detectors, 4-wire smoke detectors and smoke detectors with built-in alarm verification. Refer to Appendix D Alarm Verification for details. |
| Water-Flow Alarm | An alarm for water-flow sensors. These alarms are identical to normal non-verified alarms except that any NACs programmed to these circuits (all are by default) are non-silenceable. Also, if water-flow retard operation is enabled, then these circuits are sampled every one second; if ten samples are active within any 15 second interval, the water-flow alarm is confirmed and processed. An alarm condition causes the associated circuit Status LED and the Common Alarm LED to illuminate red.<br>**Note: Do not use the retard operation with any external retarding device; maximum retard may not exceed 120 seconds.** |

| Initiating (Detection) Circuit Type | Description |
|---|---|
| Sprinkler Alarm | An alarm for sprinkler flow sensors. These alarms are identical to normal non-verified alarms unless the water-flow retard operation is enabled. If water-flow retard operation is enabled, then these circuits are sampled every one second; if ten samples are active within any 15 second interval, the sprinkler alarm is confirmed and processed. An alarm condition causes the associated circuit Status LED and the Common Alarm LED to illuminate red.<br>**Note: Do not use the retard operation with any external retarding device; maximum retard may not exceed 120 seconds.** |
| General Alarm | These alarms provide remote general alarm such as for remote key switches. In a two stage system, these inputs perform exactly the same function as the front panel or remote annunciator General Alarm button. In a single stage system, these inputs act the same as non-verified alarms, but if correlations are enabled, general alarm initiating circuits are correlated to *all* NACs. |
| Non-Latching Supervisory | These alarms are for supervisory devices. An activation on these circuits will cause the Circuit Status LED and the Common Supervisory LED to illuminate amber. The buzzer will sound continuously. If the circuit activation is removed, the supervisory condition will clear (so long as there are no other supervisory conditions in the system) and the circuit Status LED will extinguish. |
| Latching Supervisory | These alarms are for supervisory devices. An activation on these circuits will cause the Circuit Status LED and the Common Supervisory LED to illuminate amber. The buzzer will sound continuously. If the circuit activation is removed, the Supervisory condition will *not* clear. |
| Monitor (BLDG) | This is a supervised general purpose non-latching input used mainly for correlating to a relay circuit. No other system condition occurs as a result of its activation (short-circuit), although it is supervised for trouble (open-circuit). |
| Trouble-Only | This circuit is used for monitoring a trouble condition from an external device such as a Mircom Series 500 Audio System. Both open and short circuits generate a non-latching trouble condition. |

### 13.6.2 Indicating (Signal) Circuits Types

| Indicating (Signal) Circuit Type | Description |
|---|---|
| Silenceable Signal | For audible devices such as bells and piezo mini-horns that may be silenced either manually or automatically. While sounding, these follow the pattern appropriate for the condition: the configured evacuation code (default is temporal code) during single-stage alarm, or two stage general alarm, or the alert code during a two stage system's alert (first) stage. |
| Non-Silenceable Signal | For audible devices such as bells and piezo mini-horns that may not be silenced either manually or automatically. While sounding, these follow the pattern appropriate for the condition: the configured evacuation code (default is temporal code) during single-stage alarm, or two-stage general alarm, or the alert code during a two stage system's alert (first) stage. |
| Coded Signal | For audible devices such as bells and piezo mini-horns that may be activated in code. The code consists of 4 digits with each digit consisting of 1-15 pulses on the signals. Each coded circuit can sound the complete code 1 to 15 times after which signals go silent or revert to programmed General Alarm rate.<br>**Note: The NFPA-72 and ULC-S527 specify temporal tone. However, for retrofits of systems that were previously approved, coded signalling is allowed.** |
| Strobe | For visual devices such as strobes that use no code patterns (they are continuous). |

## 13.6.3 Evacuation Codes

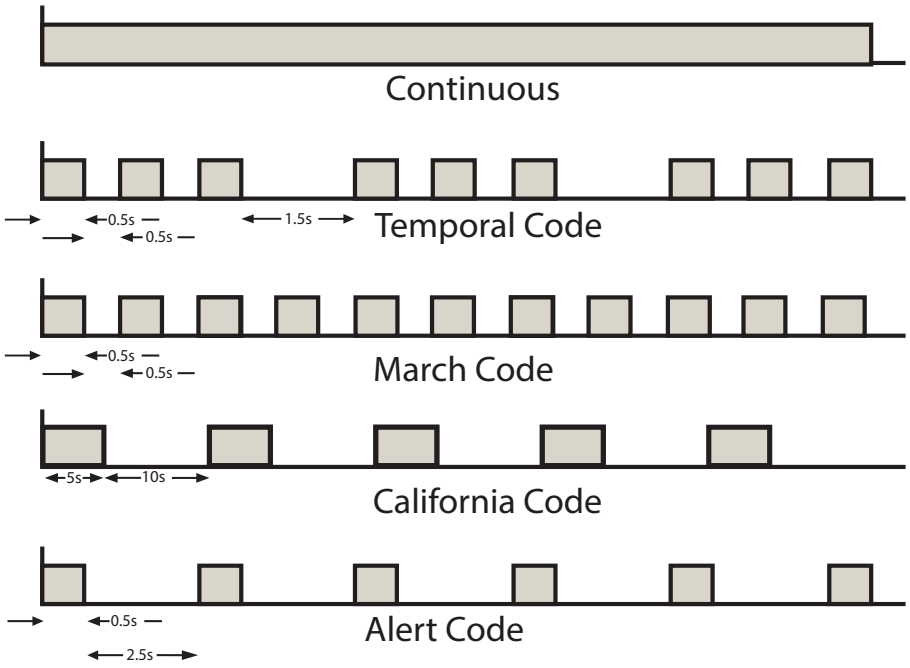
### Single stage codes

| | |
|---|---|
| **Continuous** | On 100% of the time |
| **Temporal Code** | 3 of 0.5 second on, 0.5 second off then, 1.5 second pause |
| **March Code** | 0.5 second on, 0.5 second off |
| **California Code** | 5 seconds on, 10 seconds off |

### Two-stage codes

| | |
|---|---|
| Alert Code | 0.5 second on, 2.5 seconds off |
| General Alarm | Evacuation code as selected from above. |

**Figure 72 Evacuation Codes**



# 14.0 Configuration

The FX-MNS-6000 network system is configured using MGC software MSW-036.

**NOTE:** When setting up a system to use the Request, Grant, Deny functionality, if any nodes within that system have annunciators attached, the controls must be disabled on those annunciators.

## 14.1 Configuration Backup, Query and Fast-Forward

The panel supports previous, current and next configuration. The panel can be load configured without taking the panel off-line. Configuration reverts back to previous or moves to future configuration through front-panel menu.

## 14.2 OPEN Graphic Navigator Software Package

This software package (OpenGN) allows 3D graphic display of premises and devices. It provides unlimited floor plans and events, node and job support. It supports input file formats for floors such as: .svg, .dxf, .pdf, .png, .wmf, .jpeg. Device icons and state animations can be customized.

## 14.3 Ethernet Port

Integrated TCP/IP Stack, Hardware based MAC address. Provides a fully configurable IP address. Use this Ethernet port to connect to OPEN graphics software. This port also provides web server for diagnostic and system report via LAN or WAN connection on-site or remotely.

## 14.4 Boolean Logic Engine

Boolean logic functions are now available within the configuration software. Sophisticated logic functions such as: AND, OR, NOT, ANY n of m, >, <, >=, <>

Built-in timers or user configurable timers and intervals and schedules available to support UUKL operations.

## 14.5 Multiple Configuration file support

This program (inherent in the configuration) provides leading technology that allows a choice of multiple configuration files to support site-specific requirements.

# 15.0 Appendix A: Specifications

## Main Fire Alarm Chassis (FX-6000MNS-CH)

### General

*Power limited:* 22 VDC, 400 mA max, max loop resistance 40 ohms

**4 Class B or A** Indicating Circuits; configurable as strobes or audibles. Terminals are labelled "IND".

*Power limited:* 24 VDC unfiltered, 1.7 A @ 49°C per circuit

**Displays (incl LCD) and Controls** for all Common Functions, and 16 Zone Displays.

**Optional PR-300 City Tie Module**.

**Aux. Power Supply** (for Remote Annunciators). Terminals are labelled "AUX PWR".

*Power limited:* 24 VDC unfiltered, 1.7 A @ 49°C

**Resettable 4-Wire Smoke Supplies.** Terminals are labelled "4-WIRE".

*Power limited:* 22 VDC, 425 mA max., 5mV ripple

**One RS-485 Connection** for Remote Annunciators or interface to Audio Systems. Terminals are labelled "RS485".

*Power Limited* to 300 mA.

**Auxiliary relays:** (resistive loads)

Must be connected to a Listed Power Limited Source of Supply. Terminals are labelled "ALARM, TROUBLE, SUPV".

Common Alarm: Form C, 1 Amp, 24 VDC
Common Supv: Form C, 1 Amp, 24 VDC
Common Trouble: Form C, 1 Amp, 24 VDC

Micro-controller based design. Fully Configurable with PC software. Full walk test function.

**Ground Impedance** 3k3 ohms

**Open Circuit Fault** 100k ohms or more

**Short Circuit Fault** 0.1 ohm or less

*For Indicating Circuits:* 24VDC, 1.7A per circuit

10 Amps max total shared between main board NACs and SGM-1004A NACs

FX-6000MNS Main Board:

*Current Consumption:* standby: 357 mA
alarm: 506 mA

## Quad Intelligent Analog Loop Module (ALCN-792MISO/D)

Quad Analog Loops with additional ALCN-792D daughter board capable of monitoring 636 AP Sensors and 636 AP Modules.

Power limited: 24 VDC, 400 mA max, 10kHz frequency
max loop resistance 40 ohms

*Current Consumption:* standby: 200 mA
alarm: 213 mA

## Detection Adder Module (DM-1008A)

Eight supervised Class B
initiating circuits; fully configurable. Terminals are labelled "INI".
Initiating circuits are Compatibility ID "A".

*Current Consumption:* standby: 80 mA
alarm: 1 zone active: 125 mA
2 zone active: 170 mA
4 zone active: 275 mA
6 zone active: 370 mA
8 zone active: 465 mA

## Signal Adder Module (SGM-1004A)

**Four Class B or A** indicating circuits; configurable as strobes or audibles. Terminals are labelled "IND".

*Power Limited:* 24 VDC unfiltered
max. 1.5 amps @ 49C per circuit

*Current Consumption:* standby: 60 mA
alarm: 258 mA

## Relay Adder Module (RM-1008A) (resistive loads)

Must be connected to a listed power limited source of supply.
Terminals are labelled "RLY".
Eight fully configurable Form C indicating.
Form C, 1 amp., 28 VDC (resistive loads)

*Current Consumption:* standby: 25 mA
alarm: 150 mA

## Polarity Reversal and City Tie Module (PR-300)

Supervised city tie--not power limited
24VDC unfiltered, 210 mA max., Trip coil: 14 ohms.
Terminals are labelled "City Tie".
Polarity reversal power limited
Terminals are labelled "Polarity Reversal".
24VDC open
12VDC @ 3.5 mA, 8 mA max. (shorted)

*Current Consumption:* standby: 35 mA
alarm: 300 mA

## FOM-2000-UM Fiber Optic Module

*Current Consumption:*
standby:16mA(singlemode)or42mA(multi-mode)
alarm: 6mA (single mode) or 42mA (multi-mode)

## FNC-2000 Network Controller Module

*Current Consumption:* standby: 190 mA
alarm: 190 mA

## ANC-6000 Audio Controller Module

*Current Consumption:* standby: 82 mA
alarm: 87 mA

## RAXN-LCDG Annunciator

24V DC nominal.
Standby: 117 mA Max., All LED's "On": 150 mA Max

## TNC-5000 Telephone Controller Module

*Current Consumption:* standby: 195 mA
alarm: 215 mA

## RAXN-LCD Annunciator

24V DC nominal, range of 20 to 39V DC.
Standby: 100 mA Max., All LED's "On": 150 mA Max

| DSPL-420DS and DSPL-2440DS Displays | Programmable Input Switches Module (IPS-2424DS) |
|---|---|
| *Current Consumption:* standby: 25mA and 30mA<br>alarm: 30mA and 35mA | *Current Consumption:* standby: 5 mA<br>alarm (one zone active): 22 mA |
| **Fan Damper Display Module (FDX-008W/KI)** | **Programmable Input Switches Module (IPS-4848DS)** |
| 24V DC nominal, range of 20 to 39V DC.<br>*Current Consumption:* standby: 15mA Max.<br>alarm (all LEDs ON): 35mA Max. | *Current Consumption:* standby: 10 mA<br>alarm (one zone active): 22 mA |
| **Digital Communicator Module (UDACT-300A)** | **Adder Annunciator Module RAX-1048TZDS** |
| Transmit alarm, supervisory, and trouble to a central monitoring station.<br>*Current Consumption:* standby: 45 mA<br>alarm: 120 mA | 48 Display Points<br>*Current Consumption:* standby: 139 mA<br>alarm: 1 zone LED active: 26 mA<br>2 zone LEDs active: 30 mA<br>3 zone LEDs active: 35 mA<br>4 zone LEDs active: 39 mA<br>48 zone LEDs active: 262 mA |

## Compliance

**System Model:** FX-6000MNS-CH

**System Type:** Local, auxiliary (using PR-300), remote protected premise station (using PR-300 or UDACT-300A), central station protected premises (using UDACT-300A). Proprietary Sytem (PPU) and Smoke Control

**Type of Service:** A, M, WF, SS (with PR-300 or UDACT-300A), PPU

**Type of Signalling:** Non-coded

**Applicable Standards:** NFPA 70 and 72, UL-864 R10, ULC S-524, ULC S527-11

## 15.1 FX-MNS-6000 Audio Specifications

**Note:** All circuits are power limited, unless specified otherwise.

**Table 18FX-MNS-6000 Audio Specifications**

| Model QPS-6650 Power Supply and Charger | Model FNC-2000 Fire Network Controller Module |
|---|---|
| • 0 to 49 degrees Celsius, 0 to 93 + or - 2% RH (non-condensing) operating range<br>• Power input: 120 VAC, 60Hz / 230 VAC, 50Hz<br>• Power supply ratings: 120 VAC, 6.1A, 732 Watts<br>230 VAC, 3.13A, 720 Watts<br>• Primary input is non-power limited<br>• Battery: 24VDC, Gel-Cell/Sealed Lead-Acid<br>• Charging for up to 80 AH batteries | • Current consumption: *standby:* 190mA<br>*alarm:* 190mA |
| **Model ANC-6000 Audio Network Controller Module** | **Model TNC-5000 Telephone Network Controller Module** |
| • Current consumption: *standby:* 82 mA<br>*alarm:* 87 mA | • Current consumption: *standby:* 195mA<br>*alarm:* 215mA |
| **Model QCC-6000 Communication Card** | **Model FOM-2000-UM Fiber Optics Module** |
| • Current consumption: *standby:* 71.4mA<br>*alarm:* 77mA | • Current consumption:<br>*standby:* 16mA (single mode) or 42mA (multi-mode)<br>*alarm:* 16mA (single mode) or 42mA (multi-mode) |
| **Model QAD-6425-70 (-25) Amplifier with 100 Watts** | **Model QMP-6101NV Paging Microphone** |
| • 70V or 25V constant voltage output<br>• One to four, fully supervised Class "A" or "B" speaker zones<br>• 100 Watts maximum per amplifier<br>• Freq. Response: UL bandwidth from 800 to 2800 Hz<br>ULC bandwidth from 400 to 4000 Hz<br>• Harmonic distortion less than 2.5% at 1 KHz<br>• Current consumption:<br>25V Model *standby:* 314mA, alarm: 5.62A<br>70V Model *standby:* 270mA, alarm: 5.97A | • Mounts in a BBX-FXMNS-6000 enclosure<br>• Current Consumption:*standby:* 20.5mA<br>*alarm:* 20.5mA |
| **Model QAZT-5348DS Paging or Telephone Selector Panel** | **Model QMT-5302NV Master Telephone** |
| • Mounts in a BBX-FXMNS-6000 enclosure<br>• Connects to QMP-6101NV to provide 48 zones of paging control<br>• Up to one per QMP-6101NV<br>• Current Consumption:*standby:* 10mA<br>*alarm:* 22mA | • Mounts in a BBX-FXMNS-6000 enclosure<br>• Current Consumption: *standby:* 1mA<br>*alarm:* 13mA |

# 16.0 Appendix B: Power Supply and Battery Calculations

| Model Number | Description | Qty | | Standby | Total Standby | Alarm | Total Alarm |
|---|---|---|---|---|---|---|---|
| FX-6000MNS-CH | Main Chassis (12 Amp) | | X | 0.357 | = | 0.506 | = |
| ALCN-792MISO | Dual Analog Loops | | X | 0.130 | = | 0.145 | = |
| ALCN-792MISO and ALCN-792D | Quad Analog Loops | | X | 0.130 | = | 0.145 | = |
| FNC-2000 | Fire Network Controller Module | | X | 0.190 | = | 0.190 | = |
| ANC-6000 | Audio Network Controller Module | | X | 0.082 | = | 0.087 | = |
| TNC-5000 | Telephone Network Controller Module | | X | 0.195 | = | 0.215 | = |
| FOM-2000-UM | Fiber Optics Module - single | | X | 0.016 | = | 0.016 | = |
| FOM-2000-UM | Fiber Optics Module - multi | | X | 0.042 | = | 0.042 | = |
| QMP-6101NV | Vertical Master Paging Module | | X | 0.0205 | = | 0.0205 | = |
| QCC-6000 | Communication Card | | X | 0.0714 | = | 0.077 | = |
| QAD-6425-70 | 100W Amplifier | | X | 0.270 | = | 5.97 | = |
| QAD-6425-25 | 100W Amplifier | | X | 0.314 | = | 5.62 | = |
| DM-1008A | 8 Initiating Circuit Module | | X | 0.080 | = | 1 zone active: 0.125<br>2 zone active: 0.170<br>4 zone active: 0.275<br>6 zone active: 0.370<br>8 zone active: 0.465 | = |
| SGM-1004A | 4 Indicating Circuit Module | | X | 0.060 | = | 0.258 | = |
| RM-1008A | 8 Relay Circuit Module | | X | 0.025 | = | 0.150 | = |
| FDX-008W/KI | Fan Damper Control Module | | X | 0.015 | = | 0.035 | = |
| DSPL-420DS | Narrow Display | | X | 0.025 | = | 0.025 | = |
| DSPL-2440DS | Graphic Display | | X | 0.029 | = | 0.035 | = |
| UDACT-300A | Dialer Module | | X | 0.045 | = | 0.120 | = |
| PR-300 | City Tie Module | | X | 0.035 | = | 0.300 | = |
| RAX-1048TZDS | Adder Annunciator Chassis | | X | 0.022 | = | 1 zone active: 0.026<br>2 zone active: 0.030<br>3 zone active: 0.035<br>4 zone active: 0.039<br>48 zone active: 0.262 | = |
| RAM-1032TZDS | Adder Annunciator Chassis | | X | 0.050 | = | 32 zone active: 0.300 | = |
| AGD-048 | Adder Graphic Driver Board | | X | 0.035 | = | __(#of LEDs) x 4mA<br>(Refer to LT-847 if using lamps) | = |
| IPS-4848DS/ **IPS-2424DS** | Programmable Input Switches Module | | X | 0.010/**0.005** | = | 0.022/**0.022** | = |
| Two-Wire Smoke Detectors | | | X | ♦ 0.00005 | = | *0.39 | = 0.39 |
| MIX-1251B/BA Analog Ion Smoke Detector | | | X | 0.0003 | = | 0.0065 | = |
| MIX-2251B/BA Analog Photo Smoke Detector | | | X | 0.0003 | = | 0.0065 | = |
| MIX-2251TMB/TMBA Analog Thermal Sensor | | | X | 0.0003 | = | 0.0065 | = |
| MIX-M500MB/MA, **MIX-M501MB/MA** Monitor | | | X | 0.0004 | = | 0.0051/**0.0055** | = |
| MIX-M500R(A)/MIX-M500S(A) Addressable Control Module | | | X | 0.0003 | = | 0.0051 | = |
| MIX-M500X(A) Fault Isolator Module | | | X | 0.00045 | = | 450µA | = |
| B224BI(A) Analog Base with Isolator | | | X | 0.00045 | = | 0.005 | = |
| Four-Wire Smoke Detectors | | | X | | = | | = |

| | | | | | |
|---|---|---|---|---|---|
| Signal Load (bells, horns, strobes, and etc.) | | X | | | = |
| Auxiliary Power Supply for **Remote Annunciators** | | | = | Alarm | = |
| Total currents (Add above currents) | | STANDBY | (**A**) | | (**B**) |

**Legend:** * Assuming three initiating circuits in alarm.

♦Using the **2W-B or C2W-BA** 2-wire smoke detector. See LT-1023 Compatibility List for other compatible smoke detectors.

**To Calculate Battery Size:**

Add all the alarm currents in column (B), and use this value to determine the battery capacity requirement.

**Total Current Requirement:** ALARM (total from column **B**)_____ Amps.

Use the total from column (A) as the standby current required. Multiple this value by 24 hours or 60 hours depending on AHJ. Add this total to the total of column (B) multiplied by the time in hours to sustain alarm.

♣ Use **0.084** for five minutes of alarm or **0.5** for thirty minutes of alarm as a multiplier figure.

**Battery Capacity Requirement:**

**(**[STANDBY (**A**) _____ ] X [(24 or 60 Hours) ___ ]**)** + **(**[ALARM (**B**) _____ ] X [♣Alarm in Hr.] _____**)** = (**C**) _____AH

**Battery Selection:** Multiply (total from column **C**) by 1.25 to derate battery.

**Batteries:** BA-12V55 (55AH) will fit in the BBX-FXMNS-6000 and QBB-6001.

Batteries larger than 55AH will fit into a BC-160(R) Battery Cabinet.

## 16.1 RAXN-LCD/RAXN-LCDG

The RAXN-LCD Remote Shared Display is a remote annunciator that provides the same functions as the main display on the fire alarm control panel, less 16 zone LEDs. The RAXN-LCDG is similar to the RAXN-LCD except its display is a graphical LCD. It is equipped with expanded memory of more than 18,000 system points, large 4 line x 20 character backlit alphanumeric LCD display (or for the RAXN-LCDG a graphical display) which uses a simple menu system complete with a directional key pad and switches for Enter, Menu, Cancel and Info. For more information see Mircom documents LT-895 and LT-6033.

### 16.1.1 Models

- **RAXN-LCD or RAXN-LCDG** Main Annunciator Chassis with Common Indicators and Controls.
- **RAX-1048TZDS:** Adder Annunciator Chassis with 48 Circuit Capacity.
- **IPS-4848DS:** Programmable Input Switches module with 48 display points and 24 buttons.

### 16.1.2 ENCLOSURES for RAXN-LCD and RAXN-LCDG

- **BB-1001D/R** With capacity for one Annunciator Chassis.
- **BB-1002D/R** With capacity for two Annunciator Chassis.
- **BB-1003D/R** With capacity for three Annunciator Chassis.
- **BB-1008D/R** With capacity for eight Annunciator Chassis.
- **BB-1012D/R** With capacity for twelve Annunciator Chassis.

- **Finish:** Painted, textured, off-white (standard) (for other paint available colours and finishes, please contact factory)
- **Material:**18 G.A. cold roll steel (CRS)

# 17.0 Appendix C: DIP Switch Settings

## 17.1 FX-6000MNS-CH Network Main Board Address Setting (DIP SWITCH SW2)

FX-2000N Network Main Board Address Setting

| Node Address | SW2 DIP SWITCHES | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | SW2-1 | SW2-2 | SW2-3 | SW2-4 | SW2-5 | SW2-6 | SW2-7 | SW2-8 |
| 1 | ON | OFF | OFF | OFF | OFF | OFF | Leave in "OFF" position as Factory Set. | Leave in "OFF" position as Factory Set. |
| 2 | OFF | ON | OFF | OFF | OFF | OFF | | |
| 3 | ON | ON | OFF | OFF | OFF | OFF | | |
| 4 | OFF | OFF | ON | OFF | OFF | OFF | | |
| 5 | ON | OFF | ON | OFF | OFF | OFF | | |
| 6 | OFF | ON | ON | OFF | OFF | OFF | | |
| 7 | ON | ON | ON | OFF | OFF | OFF | | |
| 8 | OFF | OFF | OFF | ON | OFF | OFF | | |
| 9 | ON | OFF | OFF | ON | OFF | OFF | | |
| 10 | OFF | ON | OFF | ON | OFF | OFF | | |
| 11 | ON | ON | OFF | ON | OFF | OFF | | |
| 12 | OFF | OFF | ON | ON | OFF | OFF | | |
| 13 | ON | OFF | ON | ON | OFF | OFF | | |
| 14 | OFF | ON | ON | ON | OFF | OFF | | |
| 15 | ON | ON | ON | ON | OFF | OFF | | |
| 16 | OFF | OFF | OFF | OFF | ON | OFF | | |
| 17 | ON | OFF | OFF | OFF | ON | OFF | | |
| 18 | OFF | ON | OFF | OFF | ON | OFF | | |
| 19 | ON | ON | OFF | OFF | ON | OFF | | |
| 20 | OFF | OFF | ON | OFF | ON | OFF | | |
| 21 | ON | OFF | ON | OFF | ON | OFF | | |
| 22 | OFF | ON | ON | OFF | ON | OFF | | |
| 23 | ON | ON | ON | OFF | ON | OFF | | |
| 24 | OFF | OFF | OFF | ON | ON | OFF | | |
| 25 | ON | OFF | OFF | ON | ON | OFF | | |
| 26 | OFF | ON | OFF | ON | ON | OFF | | |
| 27 | ON | ON | OFF | ON | ON | OFF | | |
| 28 | OFF | OFF | ON | ON | ON | OFF | | |
| 29 | ON | OFF | ON | ON | ON | OFF | | |
| 30 | OFF | ON | ON | ON | ON | OFF | | |
| 31 | ON | ON | ON | ON | ON | OFF | | |
| 32 | OFF | OFF | OFF | OFF | OFF | ON | | |
| 33 | ON | OFF | OFF | OFF | OFF | ON | | |
| 34 | OFF | ON | OFF | OFF | OFF | ON | | |
| 35 | ON | ON | OFF | OFF | OFF | ON | | |
| 36 | OFF | OFF | ON | OFF | OFF | ON | | |
| 37 | ON | OFF | ON | OFF | OFF | ON | | |
| 38 | OFF | ON | ON | OFF | OFF | ON | | |
| 39 | ON | ON | ON | OFF | OFF | ON | | |
| 40 | OFF | OFF | OFF | ON | OFF | ON | | |
| 41 | ON | OFF | OFF | ON | OFF | ON | | |
| 42 | OFF | ON | OFF | ON | OFF | ON | | |
| 43 | ON | ON | OFF | ON | OFF | ON | | |
| 44 | OFF | OFF | ON | ON | OFF | ON | | |
| 45 | ON | OFF | ON | ON | OFF | ON | | |
| 46 | OFF | ON | ON | ON | OFF | ON | | |
| 47 | ON | ON | ON | ON | OFF | ON | | |
| 48 | OFF | OFF | OFF | OFF | ON | ON | | |
| 49 | ON | OFF | OFF | OFF | ON | ON | | |
| 50 | OFF | ON | OFF | OFF | ON | ON | | |
| 51 | ON | ON | OFF | OFF | ON | ON | | |
| 52 | OFF | OFF | ON | OFF | ON | ON | | |
| 53 | ON | OFF | ON | OFF | ON | ON | | |
| 54 | OFF | ON | ON | OFF | ON | ON | | |
| 55 | ON | ON | ON | OFF | ON | ON | | |
| 56 | OFF | OFF | OFF | ON | ON | ON | | |
| 57 | ON | OFF | OFF | ON | ON | ON | | |
| 58 | OFF | ON | OFF | ON | ON | ON | | |
| 59 | ON | ON | OFF | ON | ON | ON | | |
| 60 | OFF | OFF | ON | ON | ON | ON | | |
| 61 | ON | OFF | ON | ON | ON | ON | | |
| 62 | OFF | ON | ON | ON | ON | ON | | |
| 63 | ON | ON | ON | ON | ON | ON | | |

## 17.2 ANC-6000 Audio Network Controller Board Address Setting (DIP SWITCH SW1)

ANC-6000

| ADDR | SW1-1 | SW1-2 | SW1-3 | SW1-4 | SW1-5 | SW1-6 | SW1-7 | SW1-8 |
|---|---|---|---|---|---|---|---|---|
| 1 | ON | OFF | OFF | OFF | OFF | OFF | OFF | OFF |
| 2 | OFF | ON | OFF | OFF | OFF | OFF | OFF | OFF |
| 3 | ON | ON | OFF | OFF | OFF | OFF | OFF | ON |
| 4 | OFF | OFF | ON | OFF | OFF | OFF | OFF | OFF |
| 5 | ON | OFF | ON | OFF | OFF | OFF | OFF | OFF |
| 6 | OFF | ON | ON | OFF | OFF | OFF | OFF | OFF |
| 7 | ON | ON | ON | OFF | OFF | OFF | OFF | OFF |

## 17.3 ACN-792MISO Loop Adder Module (CPU) Address Setting (DIP SWITCH SW1)

ALCN-792MISO

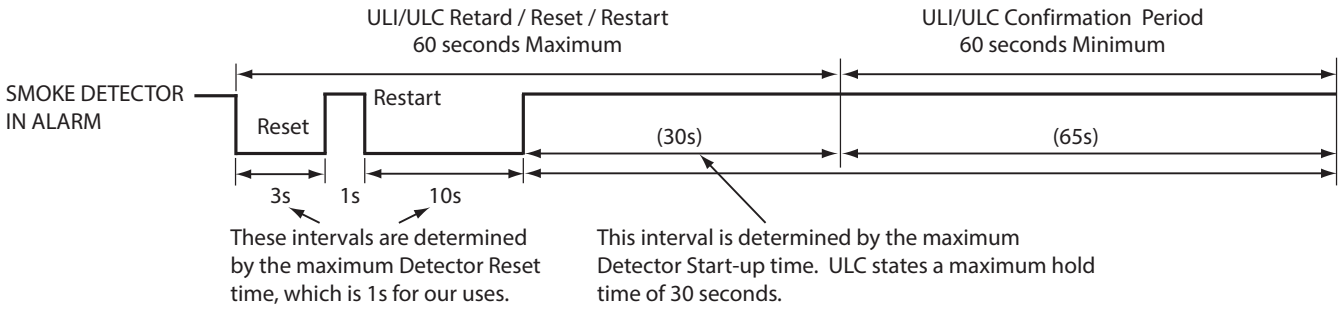
| ADDR | SW1-1 | SW1-2 | SW1-3 | SW1-4 | SW1-5 | SW1-6 | SW1-7 | SW1-8 |
|---|---|---|---|---|---|---|---|---|
| 1 | ON | OFF | OFF | OFF | OFF | OFF | OFF | Put in "ON" position for firmware restore to defaults during power up. At all other times put in "OFF" state. |
| 2 | OFF | ON | OFF | OFF | OFF | OFF | OFF | |
| 3 | ON | ON | OFF | OFF | OFF | OFF | OFF | |
| 4 | OFF | OFF | ON | OFF | OFF | OFF | OFF | |
| Refer to Network Fire Alarm Manual as to whether addresses 5, 6 and 7 are available | | | | | | | | |
| 5 | ON | OFF | ON | OFF | OFF | OFF | OFF | |
| 6 | OFF | ON | ON | OFF | OFF | OFF | OFF | |
| 7 | ON | ON | ON | OFF | OFF | OFF | OFF | |

## 17.4 RAXN-LCD/RAXN-LCDG Remote Annunciator Address Setting (DIP SWITCH SW1)

RAXN-LCD/G

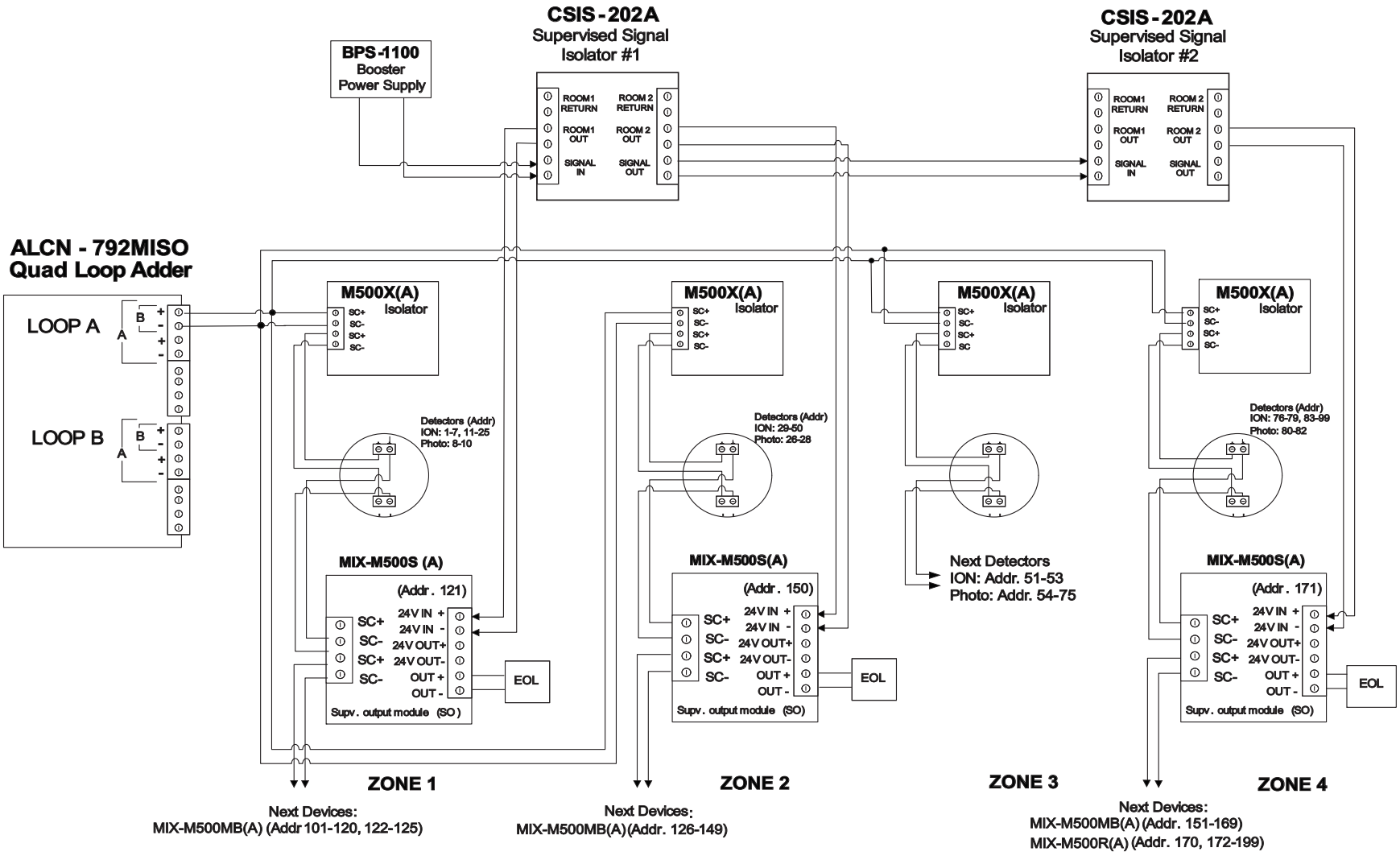
| ADDR | SW1-1 | SW1-2 | SW1-3 | SW1-4 | SW1-5 | SW1-6 | SW1-7 | SW1-8 |
|---|---|---|---|---|---|---|---|---|
| 33 | ON | OFF | OFF | OFF | OFF | ON | Leave in "OFF" position as Factory Set. | |
| 34 | OFF | ON | OFF | OFF | OFF | ON | | |
| 35 | ON | ON | OFF | OFF | OFF | ON | | |
| 36 | OFF | OFF | ON | OFF | OFF | ON | | |
| 37 | ON | OFF | ON | OFF | OFF | ON | | |
| 38 | OFF | ON | ON | OFF | OFF | ON | | |
| 39 | ON | ON | ON | OFF | OFF | ON | | |

# 18.0 Appendix D: Alarm Verification Timing




A Manual Station, or other contact-closure device, would remain shorted and be detected during the very short Zone Power burst within the first three seconds. A Smoke Detector will have been reset, and will require some minimum time to power-up, thus the Verification cycle will be entered.

# 19.0 Appendix E: Wiring For Addressable Supervised Output Module




**WIRING FOR ADDRESSABLE SUPERVISED OUTPUT MODULE TO COMPLY WITH UL 864 REV. 9**

# 20.0 Appendix F: Power Supply & Batteries for Audio Expansion Cabinet QBB-6001

Use the form below to determine the required main chassis and secondary power supply (batteries).

| IMPORTANT NOTICE |
|---|
| The main AC branch circuit connection for Fire Alarm Control Unit must provide a dedicated continuous power without provision of any disconnect devices. Use #12 AWG wire with 600-volt insulation and proper over-current circuit protection that complies with the local codes. Refer to Appendix A: Specifications on page 106 for specifications. |

| Model Number | Description | Qty | | Standby (Amps) | Total Standby (Amps) | Alarm (Amps) | Total Alarm (Amps) |
|---|---|---|---|---|---|---|---|
| QCC-6000 | Communication Card | | X | 0.0714 | = | 0.077 | = |
| QAD-6425-70 | 100W Amplifier | | X | 0.270 | = | 5.97 | = |
| QAD-6425-25 | 100W Amplifier | | X | 0.314 | = | 5.62 | = |
| Total audio power in watts | | | | | | 0.065/watt | = |
| Total currents (Add above currents) | | | | STANDBY | (**A**) | | (**B**) |

Total Current Requirement: ALARM (B)_____ Amps.

Battery Capacity Requirement

**(**[STANDBY (**A**) _____ ] X [(24 or 60 Hours) ___ ]**)** + **(**[ALARM (**B**) _____ ] X [♣Alarm in Hr.] _____**)** = (**C**) _____AH

Battery Selection: Multiply answer above (C) by 1.25 to derate battery.
**Batteries:** BAT-12V55(55AH).

♣ Use **0.084** for five minutes of alarm or **0.5** for thirty minutes of alarm as a multiplier figure.

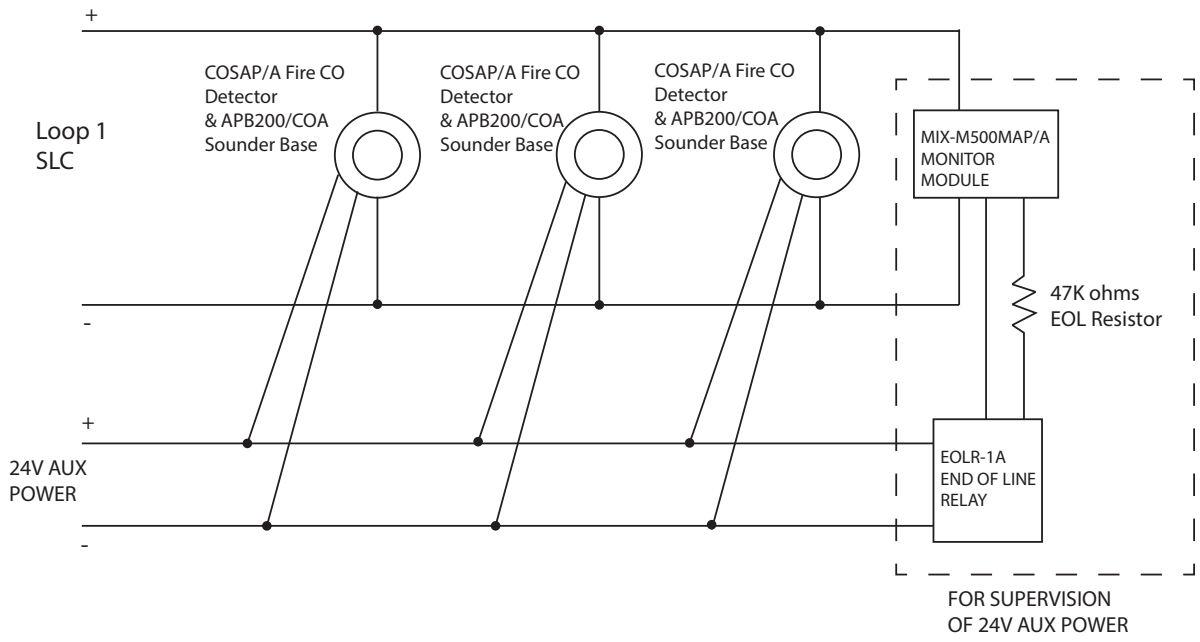
**Note:** Separate calculations must be completed for each QBB-6001.

# 21.0 Appendix G: APB-200/COA Sounder Bases

The FleX-Net™ Network Fire Alarm system can accommodate up to 32 APB-200/COA sounder bases per panel (node). The sounder base audio is synchronized on the same loop basis.

Below is a wiring diagram for connecting the sounder bases to auxiliary power with supervision.

**Sounder Base Wiring to Auxiliary Power Supply with Supervision (Class B only)**

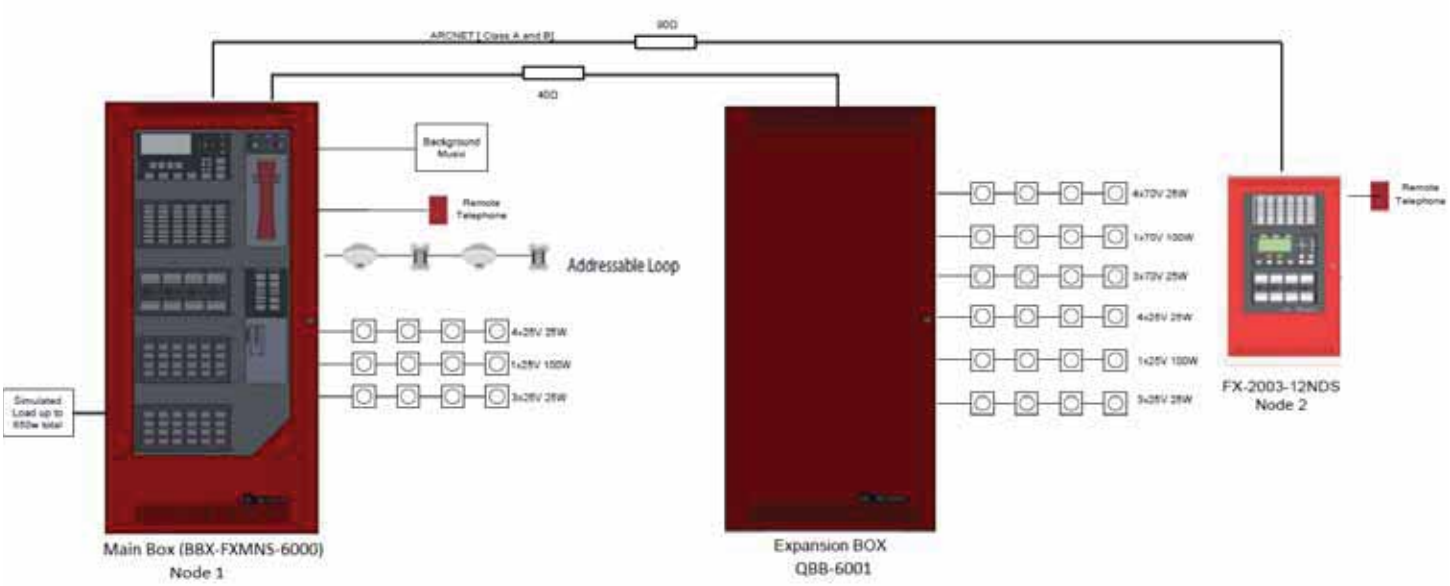



The monitor module (shown in the diagram above) should be set up in the configurator to report as a trouble input with the message tag “Sounder Base Fault”.

# 22.0 Appendix H: Configuration Example Setup

## Configuration Example Setup

Here is the drawing of a sample hardware setup that represents new components within the FX-MNS-6000 product and their connection with the existing FleX-Net system.



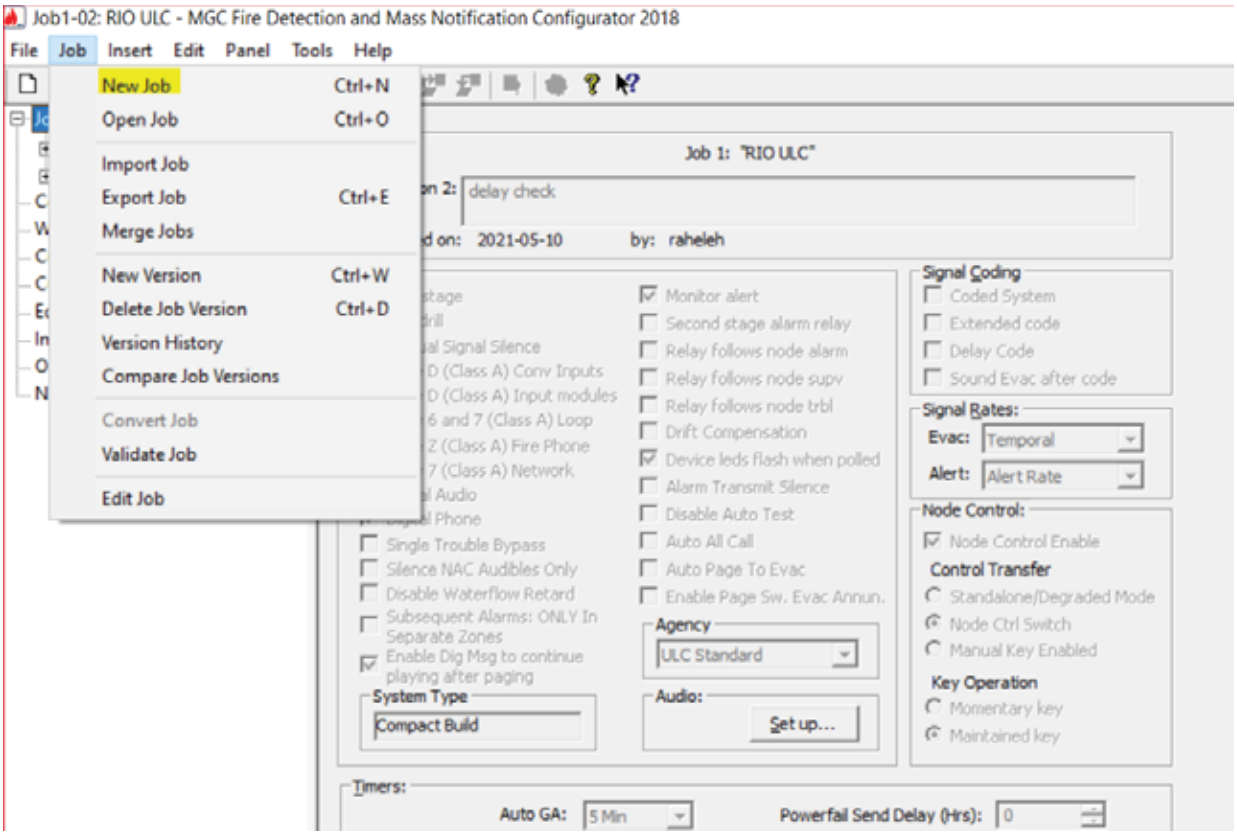

## Node Builds

| Description | Part Number | Qty |
|---|---|---|
| Node 1: MAIN PANEL | | |
| Main Box | BBX-FXMNS-6000 | 1 |
| Main board | MD-871A | 1 |
| Telephone network controller | TNC-5000 (MD-891) | 1 |
| Fire Network Controller | FNC-2000 (MD-881) | 1 |
| Vertical Master Paging Module | QMP-6101NV | 1 |
| Vertical Master Telephone Module | QMP-5302NV | 1 |
| Main Display | DSPL-420DS | 1 |
| Page Selector | QAZT-5302DS | 2 |
| Signal adder module | SGM-1004A | 1 |
| Audio Network Controller Module | ANC-6000 | 1 |
| Communication card | QCC-6000 | 1 |
| Power supply | QPS-6650 | 1 |
| 25V amplifier | QAD-6425-25 | 3 |
| Quad Analog Loops | ALCN-792M | 1 |
| Amplifier cage | QMB-6000 | 1 |
| 48 LED Adder (for UL tests) | RAX-1048TZDS | 1 |
| 48 Switch Adder (for ULC tests) | IPS-4848DS | 1 |

| Node 1: EXPANSION PANEL | | |
|---|---|---|
| Expansion Box | QBB-6001 | 1 |
| Amplifier cage | QMB-6000 | 2 |
| 25V amplifier | QAD-6425-25 | 3 |
| 70V amplifier | QAD-6425-70 | 3 |
| Communication card | QCC-6000 | 1 |
| Power supply | QPS-6650 | 1 |
| Node 2: FX-2003-12NDS | | |
| Enclosure | BBX-1024DS | 1 |
| Main board | MD-871A | 1 |
| Narrow Main Display | DSPL-420DS | 1 |
| Telephone network controller | TNC-5000 (MD-891) | 1 |
| Fire Network Controller | FNC-2000 (MD-881) | 1 |
| Audio Network Controller Module | ANC-6000 | 1 |

# Configuring the Hardware

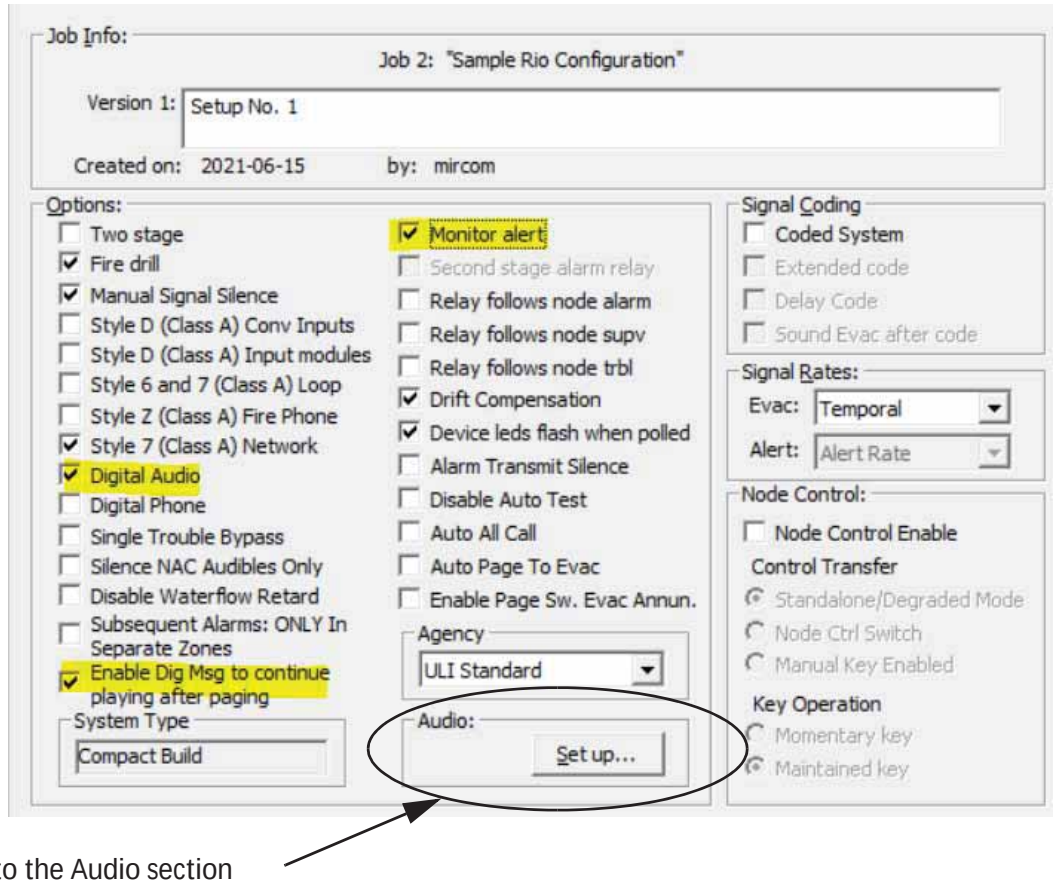
Create a new job



Enter in the description of the job and select the Agency Standard.

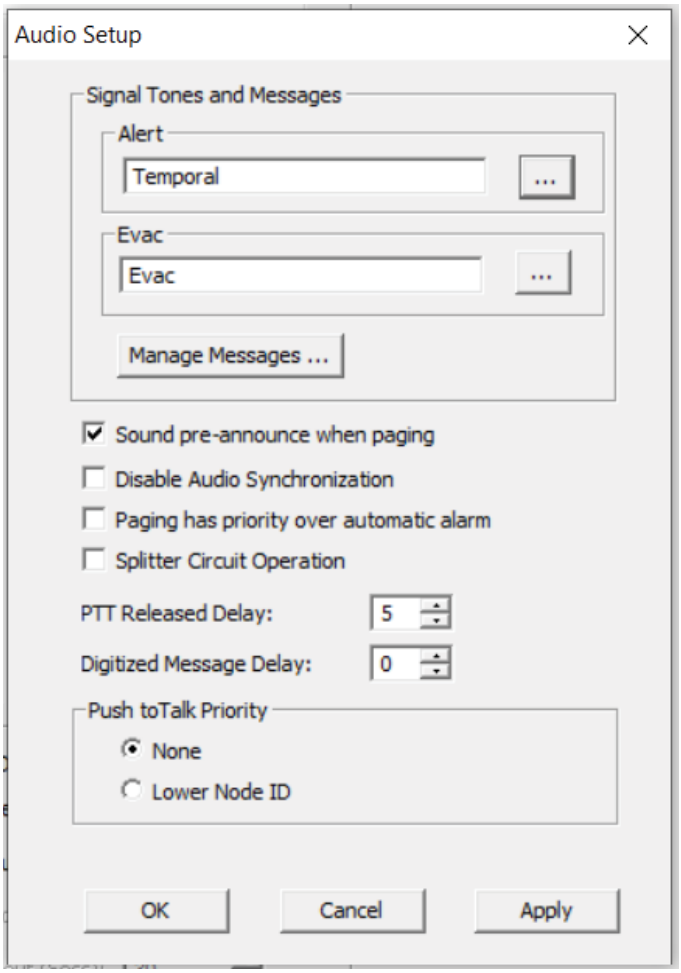
In the job info, select “Digital Audio”, select “enable dig msg to continue playing after paging”, and “monitor Alert”. The monitor alert allows the display and the buzzer ON THE DSPL-420DS AT THE AT NODE 1 AND 2? to respond to the addressable monitor circuit.

Selecting “Enable Dig Msg to continue playing after paging” makes sure that the audio reverts to the previously initiated recorded message prior to paging. If this box is unchecked, then the audio goes back to silence upon completing the page operation.

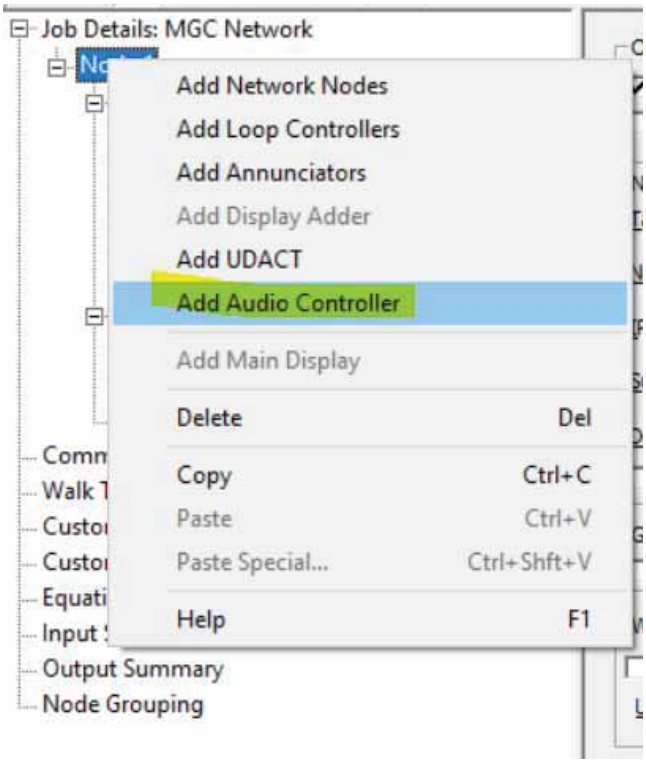



Next, go to the Audio section

Modify the Alert and Evac messages to any custom message. Messages can be imported or composed based on pre-existing messages

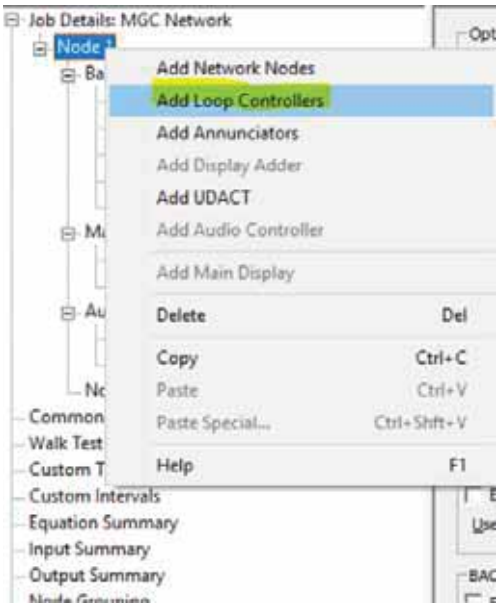


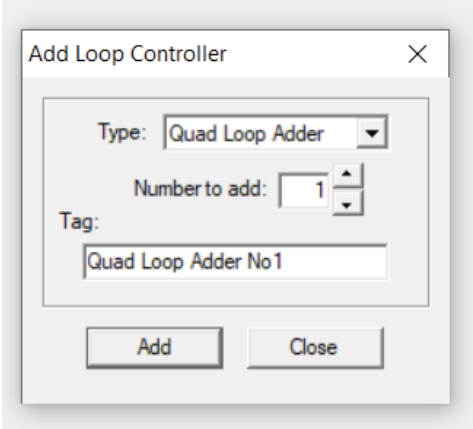
To add an audio controller (ANC-6000), right click on Node 1 and select “add audio controller”



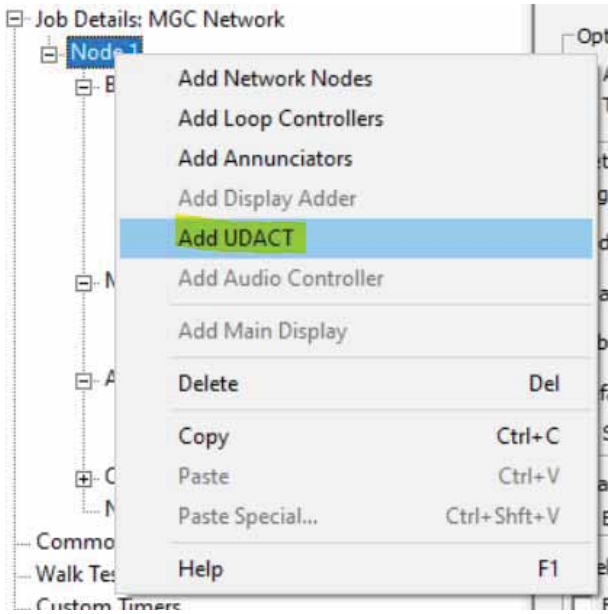

Select “Add” from the viewed window as shown below.

Next, add a quad loop adder (SLC loops) by following this capture below:

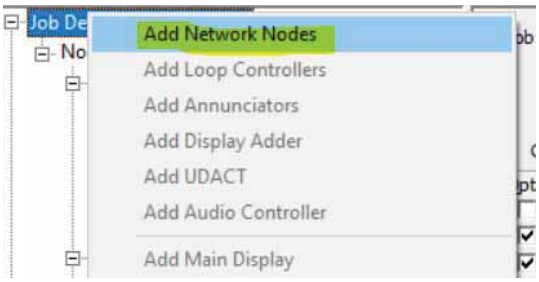


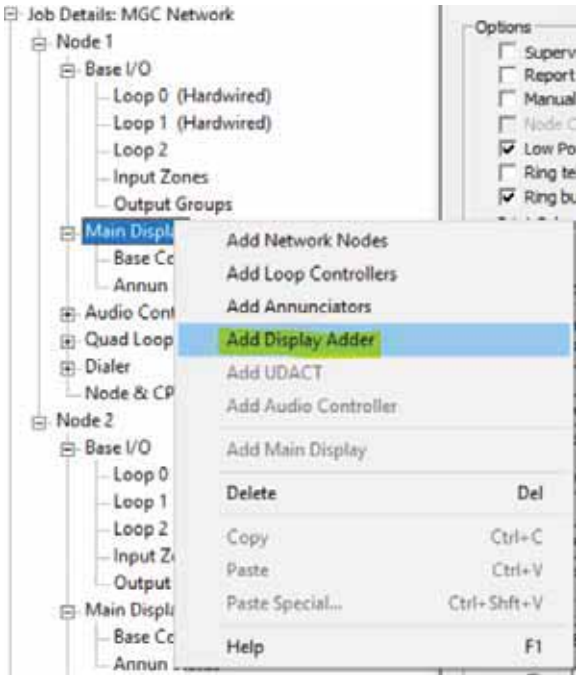

Next, add UDACT by following this capture below:



Add the second Node (Node 2) by following this capture:



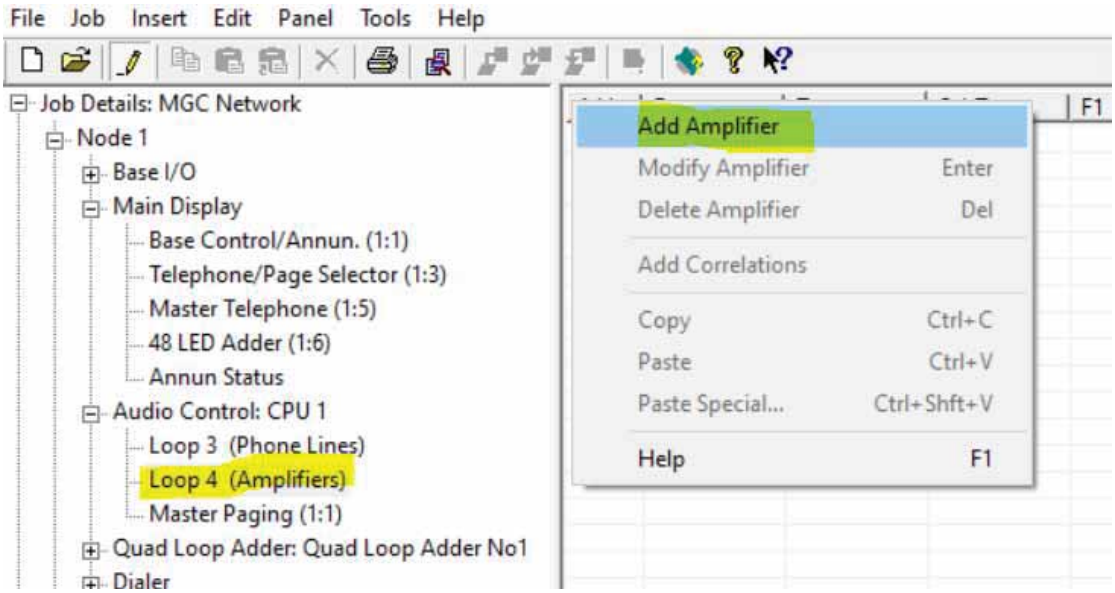

To Node 1 add a Display adder:



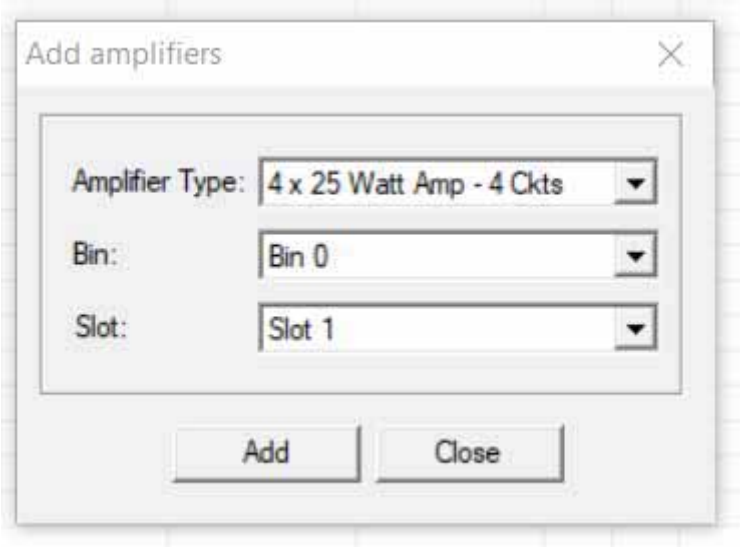

Add Telephone/Page selector as well as Master Telephone and 48 LED adder.

Add master paging under “Audio control” category. This is specific to FX-MNS-6000.

Next, add amplifiers by right clicking on Loop 4 (Amplifiers).



Select the type of the amplifier to add from the pop up window menu.




Add amplifiers based on the hardware configuration.

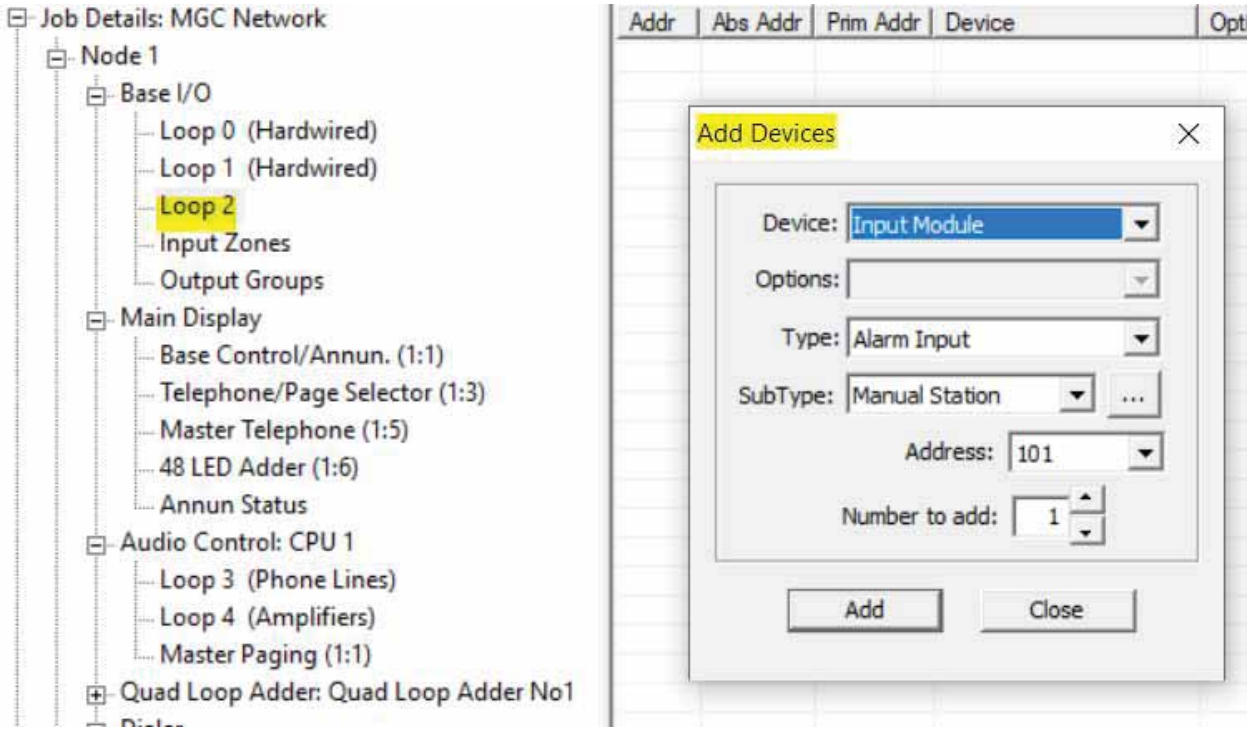
| Addr | Device | Type | SubType | F |
|---|---|---|---|---|
| 0.1.3 | 25 Watt ClassD | Signal | None | |
| 0.1.4 | 25 Watt ClassD | Signal | None | |
| 0.2.1 | 25 Watt ClassD | Signal | None | |
| 0.2.2 | 25 Watt ClassD | Signal | None | |
| 0.2.3 | 25 Watt ClassD | Signal | None | |
| 0.2.4 | 25 Watt ClassD | Signal | None | |
| 0.3.1 | 25 Watt ClassD | Signal | None | |
| 0.3.2 | 25 Watt ClassD | Signal | None | |
| 0.3.3 | 25 Watt ClassD | Signal | None | |
| 0.3.4 | 25 Watt ClassD | Signal | None | |
| 1.1.1 | 25 Watt ClassD | Signal | None | |
| 1.1.2 | 25 Watt ClassD | Signal | None | |
| 1.1.3 | 25 Watt ClassD | Signal | None | |
| 1.1.4 | 25 Watt ClassD | Signal | None | |
| 1.2.1 | 25 Watt ClassD | Signal | None | |
| 1.2.2 | 25 Watt ClassD | Signal | None | |
| 1.2.3 | 25 Watt ClassD | Signal | None | |
| 1.2.4 | 25 Watt ClassD | Signal | None | |
| 1.3.1 | 25 Watt ClassD | Signal | None | |
| 1.3.2 | 25 Watt ClassD | Signal | None | |
| 1.3.3 | 25 Watt ClassD | Signal | None | |
| 1.3.4 | 25 Watt ClassD | Signal | None | |
| 1.5.1 | 25 Watt ClassD | Signal | None | |
| 1.5.2 | 25 Watt ClassD | Signal | None | |
| 1.5.3 | 25 Watt ClassD | Signal | None | |
| 1.5.4 | 25 Watt ClassD | Signal | None | |
| 1.6.1 | 25 Watt ClassD | Signal | None | |
| 1.6.2 | 25 Watt ClassD | Signal | None | |
| 1.6.3 | 25 Watt ClassD | Signal | None | |
| 1.6.4 | 25 Watt ClassD | Signal | None | |
| 1.7.1 | 25 Watt ClassD | Signal | None | |
| 1.7.2 | 25 Watt ClassD | Signal | None | |

Different wattage combinations can be achieved by properly setting the AJ flag in F2 column.

Note: If the F2 column is hidden you can expand the line between F1 and F3 to reveal column 2.

| Addr | Device | Type | SubType | F1 | F2 | F3 |
|---|---|---|---|---|---|---|
| 0.1.1 | 25 Watt ClassD | Signal | None | | | |
| 0.1.2 | 25 Watt ClassD | Signal | None | | | |
| 0.1.3 | 25 Watt ClassD | Signal | None | | | |
| 0.1.4 | 25 Watt ClassD | Signal | None | | | |
| 0.2.1 | 100 Watt ClassD | Signal | None | | AJ | |
| 0.2.2 | | Signal | None | | AJ | |
| 0.2.3 | | Signal | None | | AJ | |
| 0.2.4 | | Signal | None | | | |

Add the following input devices to the configuration by right clicking on Loop 2 and adding the following input types:



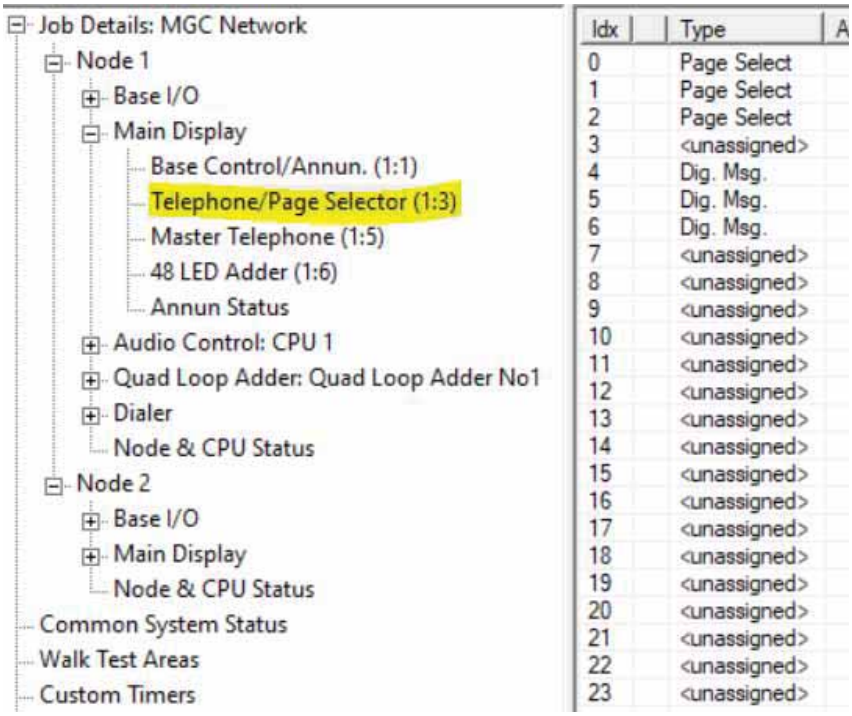

Here are the input devices that we added for the particular hardware setup

| Addr | Abs Addr | Prim Addr | Device | Options | Type | SubType |
|---|---|---|---|---|---|---|
| 101 | 161 | 101 | Input Module | | Alarm Input | None |
| 102 | 162 | 102 | Input Module | | Latched Supv | None |
| 103 | 163 | 103 | Input Module | | Monitor | None |

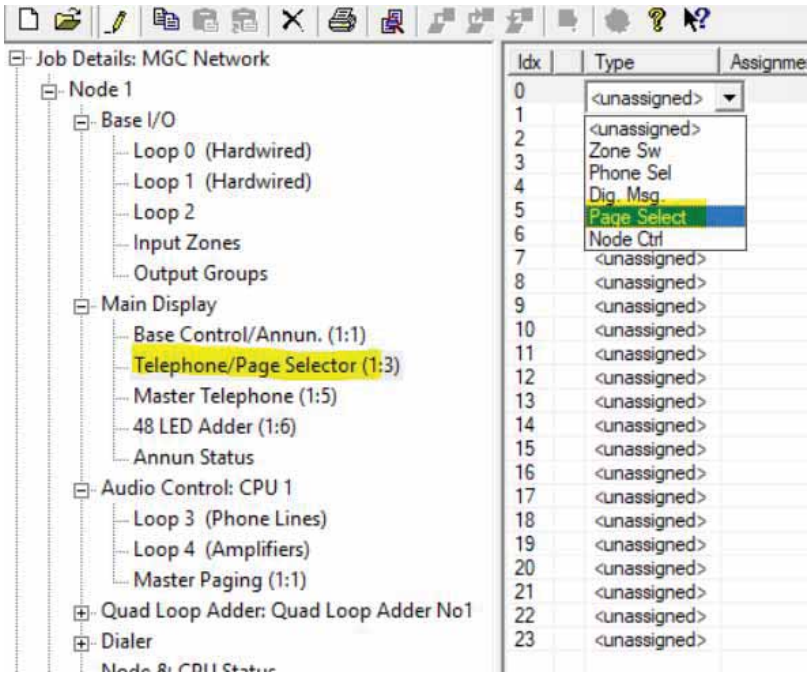
At this point, all the physical hardware configuration is captured.

## Button Assignments

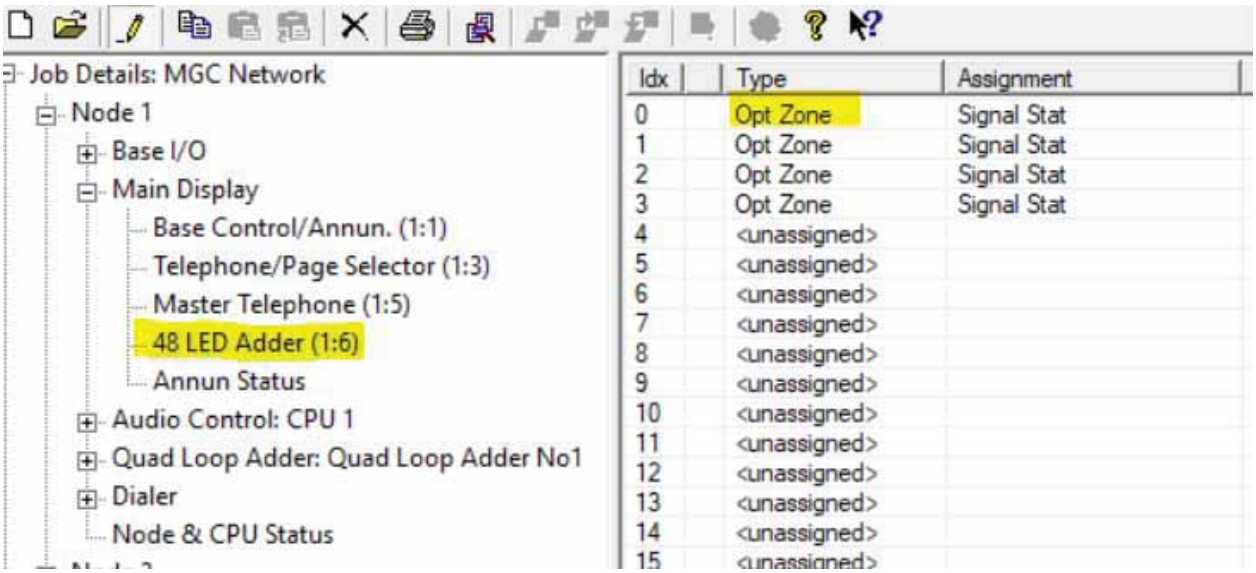
Assign the first 3 buttons to “Page Select” in order to correlate these buttons with different amplifiers. Additionally assign 3 digital message buttons.



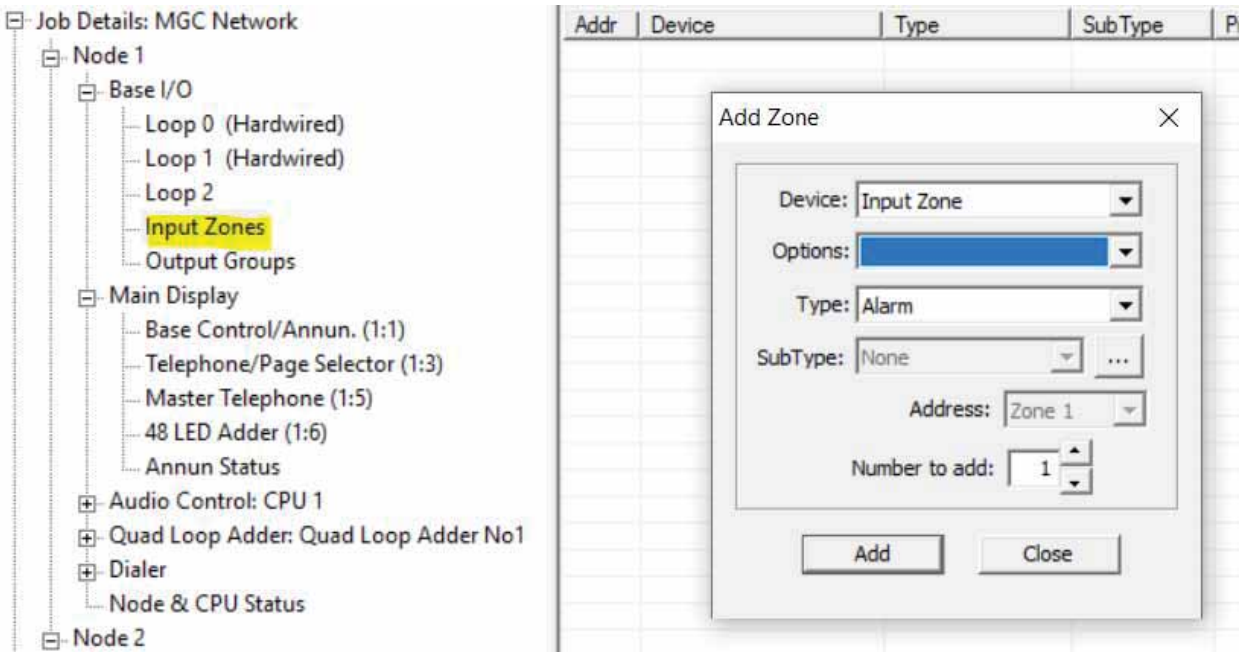

Below is the screen shot of the assigned telephone page selector after defining those buttons:



Assign some of the 48 LED adder indicators to show status of output zones (NACs and Speakers).



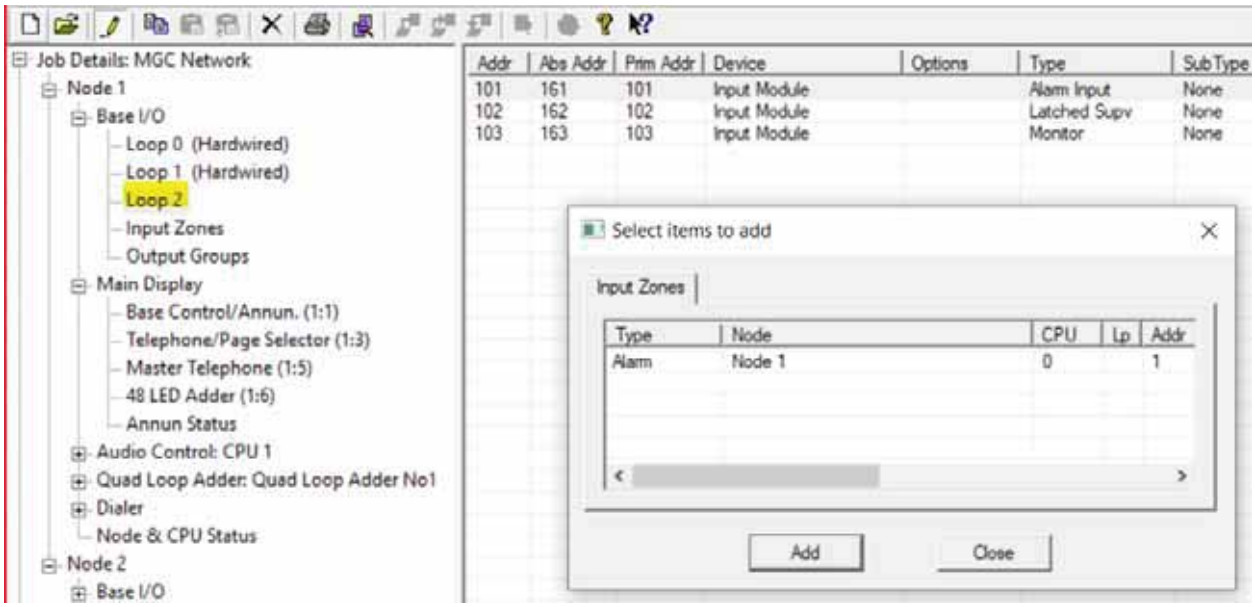

Next, add 3 input zones for each of Alarm, Supervisory and Monitor events by right clicking on Input Zones and adding zones.



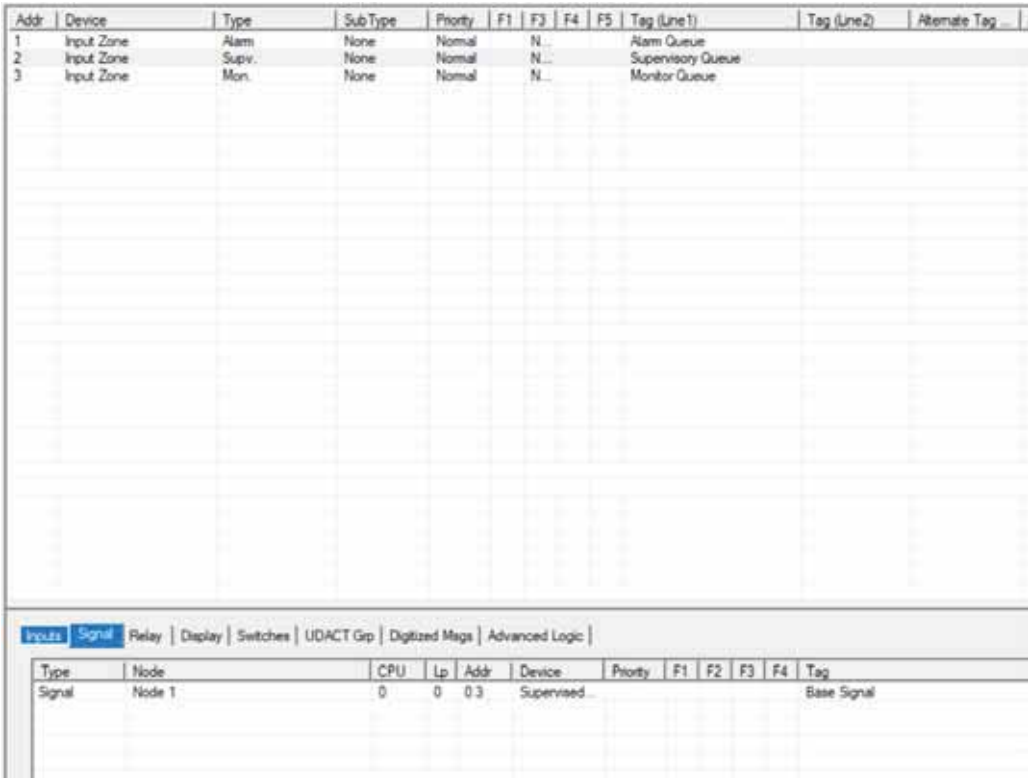

Here is the end result for the input zones:

| Addr | Device | Type | SubType | Priority | F1 | F3 | F4 | F5 | Tag (Line1) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | Input Zone | Alarm | None | Normal | | N... | | | Alarm Queue |
| 2 | Input Zone | Supv. | None | Normal | | N... | | | Supervisory Queue |
| 3 | Input Zone | Mon. | None | Normal | | N... | | | Monitor Queue |

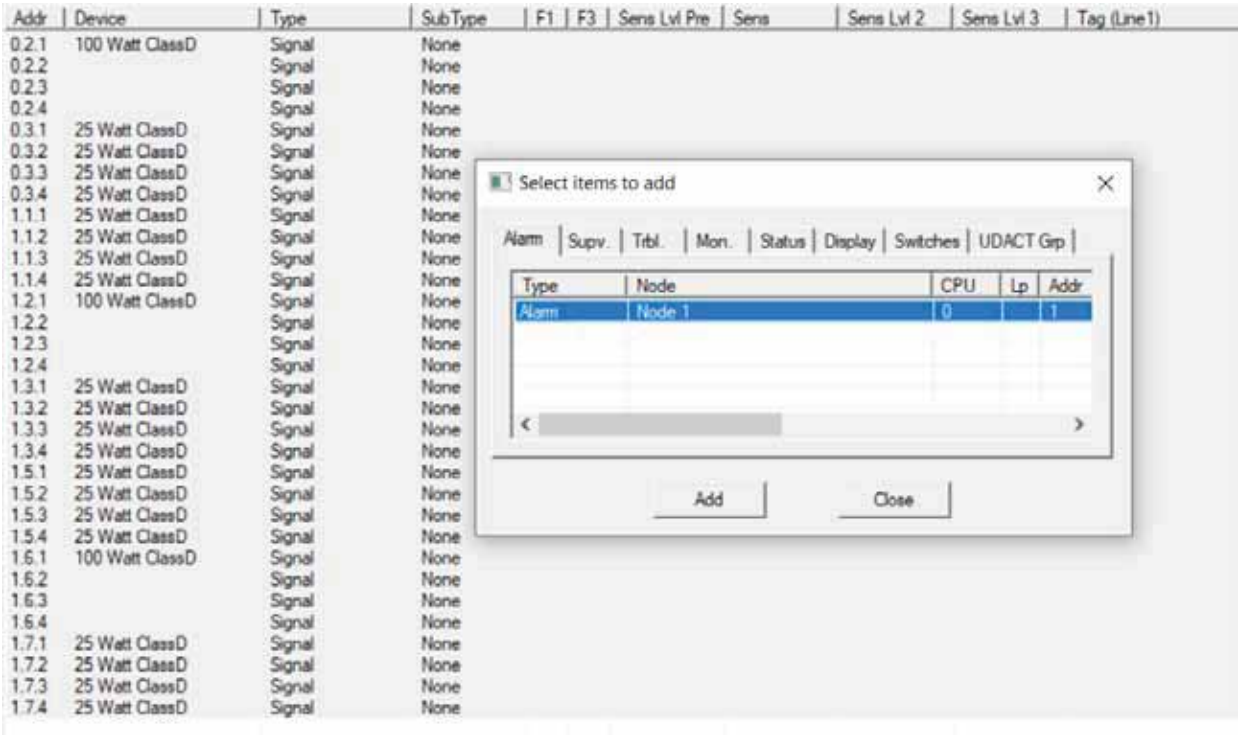
Next, go to Loop 2 and right click on any of the inputs and add correlations to input zones.



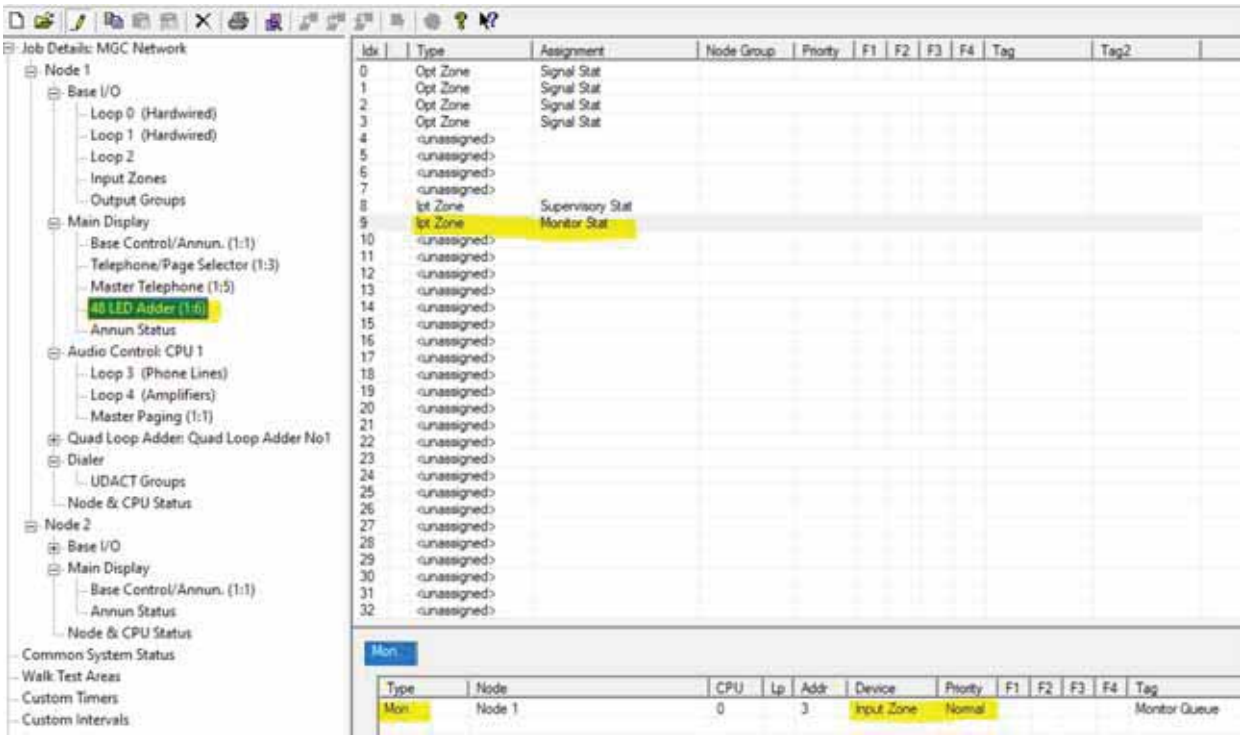

This becomes the end result of the correlations of the input zones.



Next, go to amplifiers, select all of them and create a correlation to input alarm zone 1.

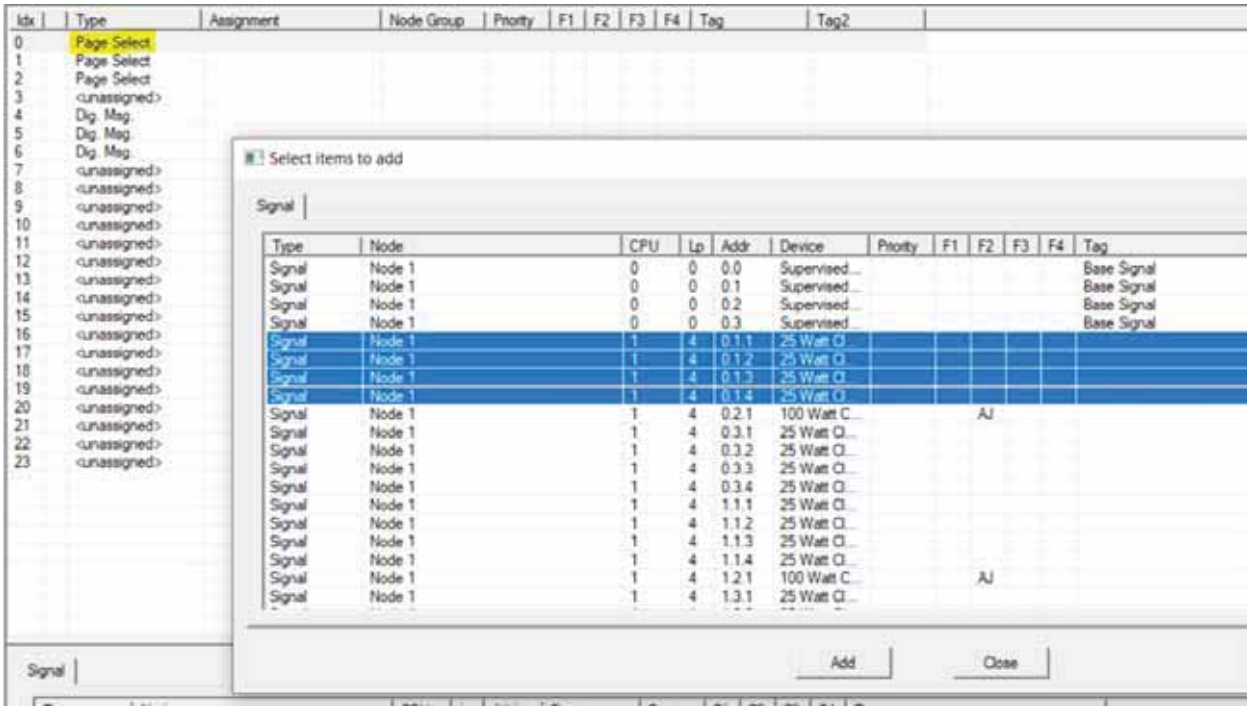



Next, go to the 48 LED adder and create buttons for input zones and create correlations to their respective zones.

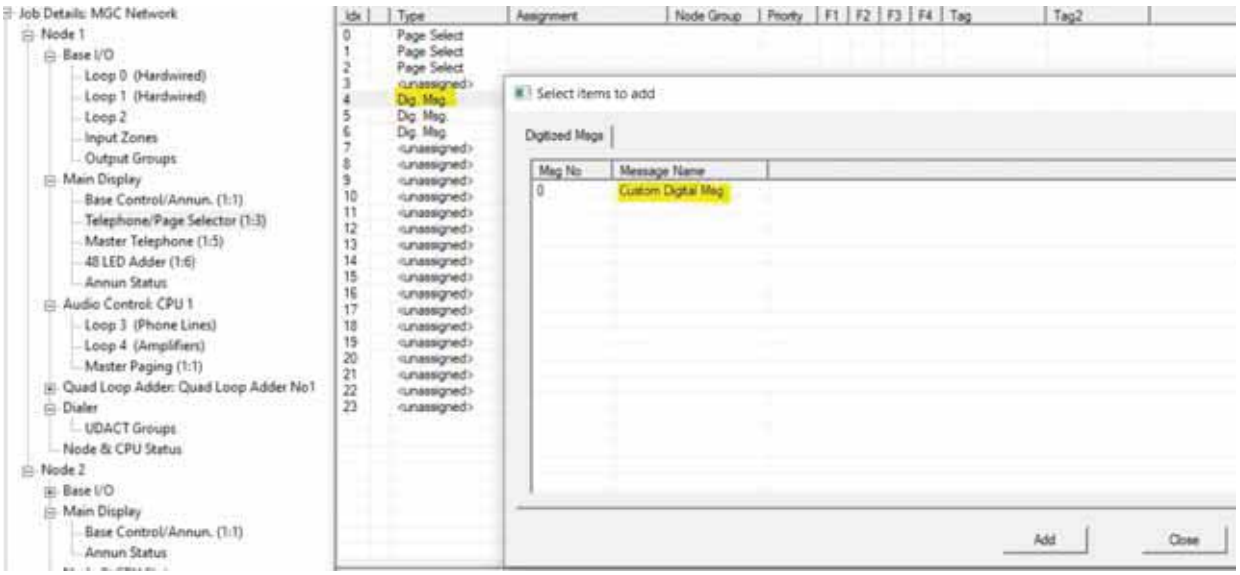


## Page Select Correlations

Go to Telephone/Page Selector under Main display and correlate the first “page select” button to the first amplifier card in the main panel. Below is a capture.

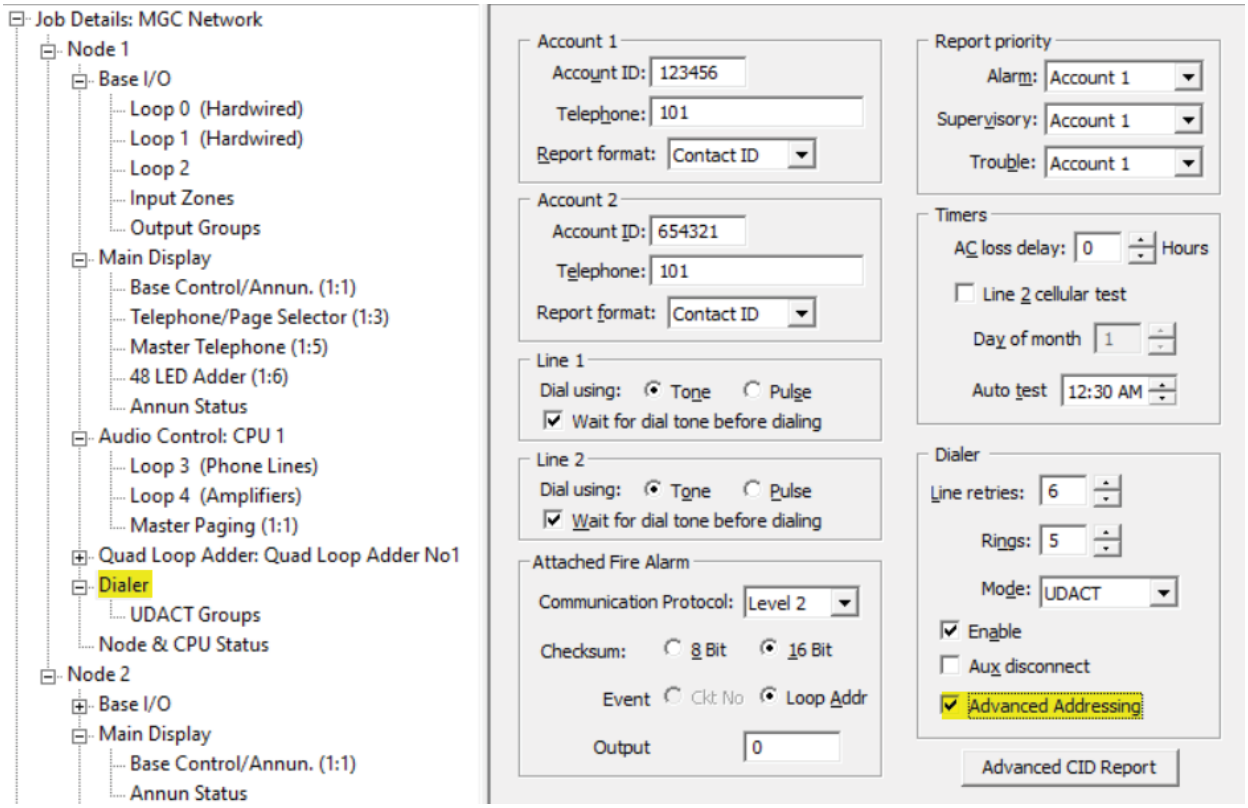



Next, create correlations for custom digital messages by following information on the screen below. If the digital msgs screen is empty, you need to add messages in the “Audio Setup” form the Job Details View.

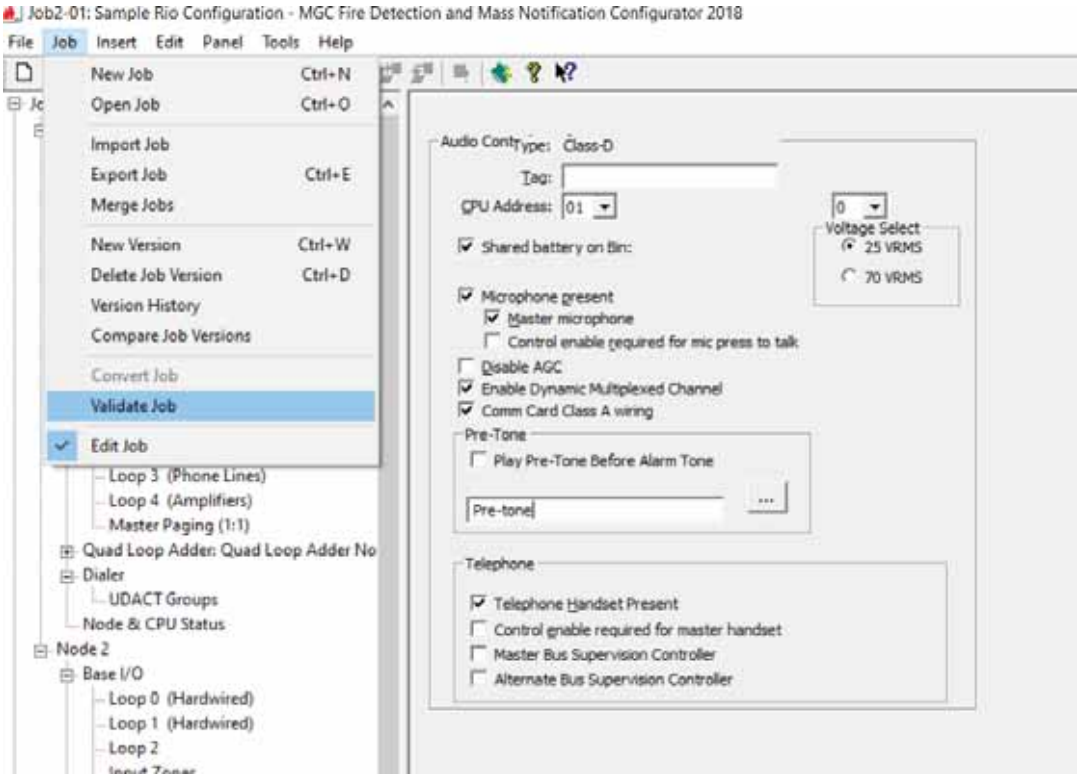


## Dialer Related Configurations

In the dialer related view, make sure “advanced addressing” is set. The rest of the information (account number…) is custom and depends on your central station requirements.



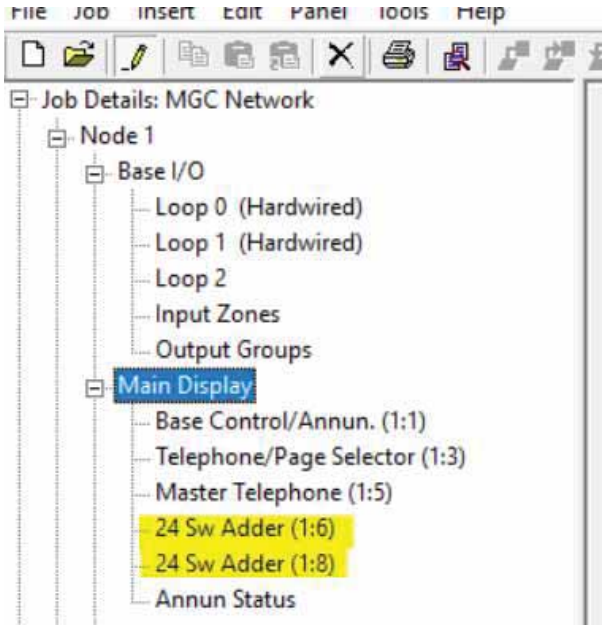

At the end of your configurations, validate the job by following sample capture below.



## ULC Configurations (changes to satisfy ULC requirements)

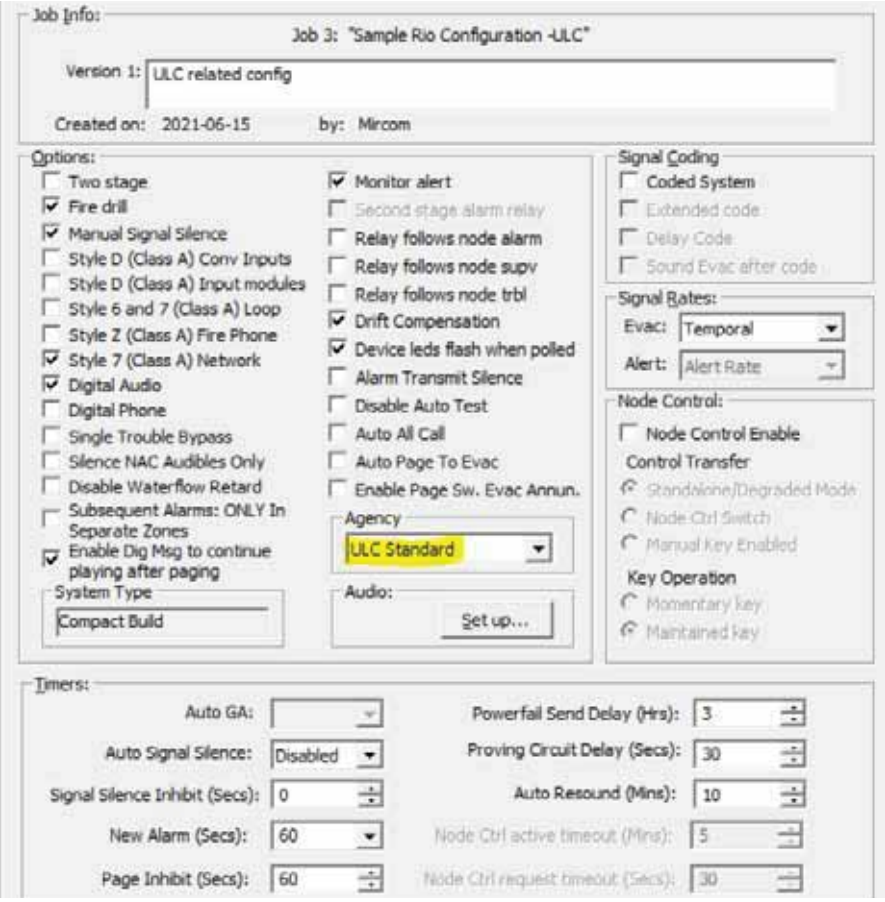
Hardware changes required for ULC compliance:

48 LED adder (RAX-1048TZDS) was changed to 48 switch adder (IPS-4848DS). The IPS-4848DS is represented by two 24 SW Adder in the configurator.

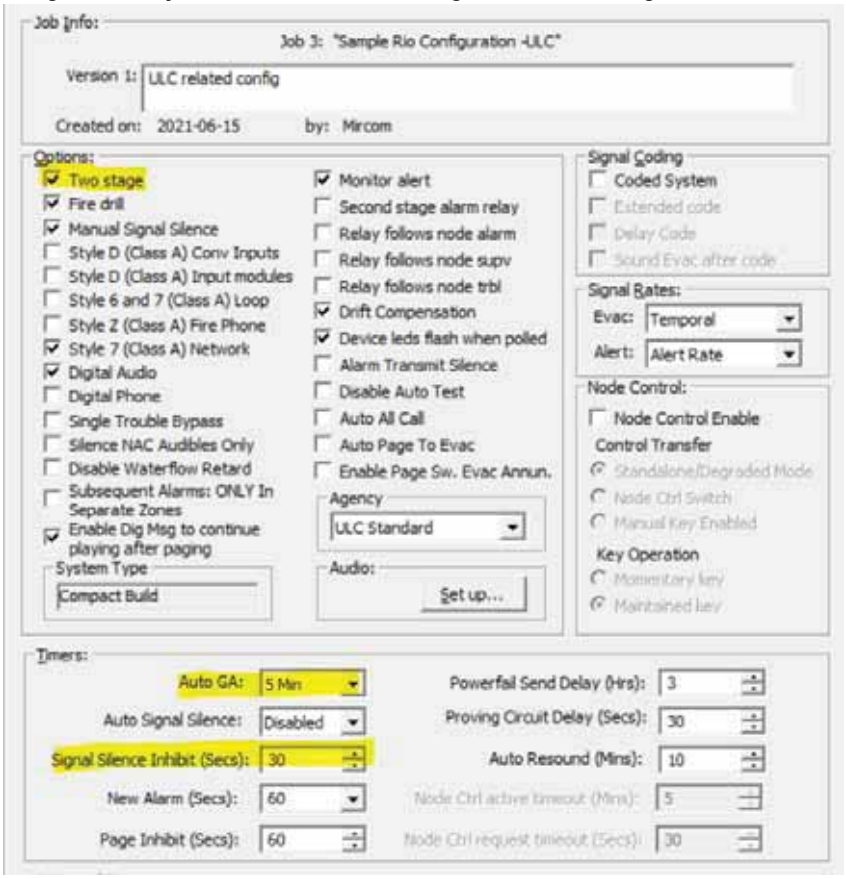



In order to modify an existing job for ULC, you can create a new job and change the agency to ULC and then copy current job date to it. Here is a capture.

Make sure the Agency selected in the job detail is ULC.

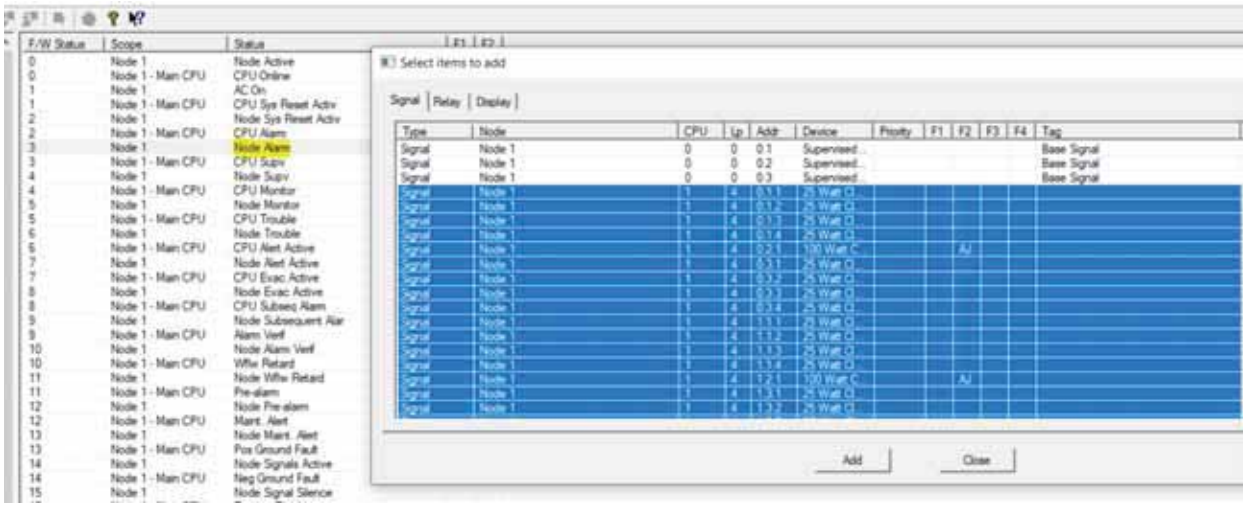



Make the following changes in the job details view to configure for two-stage.

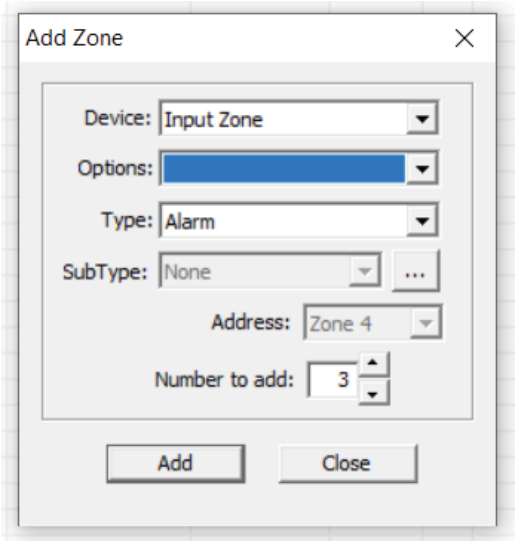


Having the “two stage” option checked, configures the system for a simple two-stage (the mall operation). The simple two stage puts all output zones into alert for the duration of the Auto GA. Upon expiring the Auto GA timer, all output zones go into Evac. Alternatively, a subsequent alarm puts all the output zones into Evac at any time prior to the expiry of the Auto GA timer.

In order to configure the system for a modified two stage, correlated the “Node alarm” status to all the amplifiers in the system. This will make sure all the amplifiers sound the Alert signal when an initial Alarm is present in the system. Ensure F2 flag remains blank.



Then, add input zones to represent physical floors of a building.



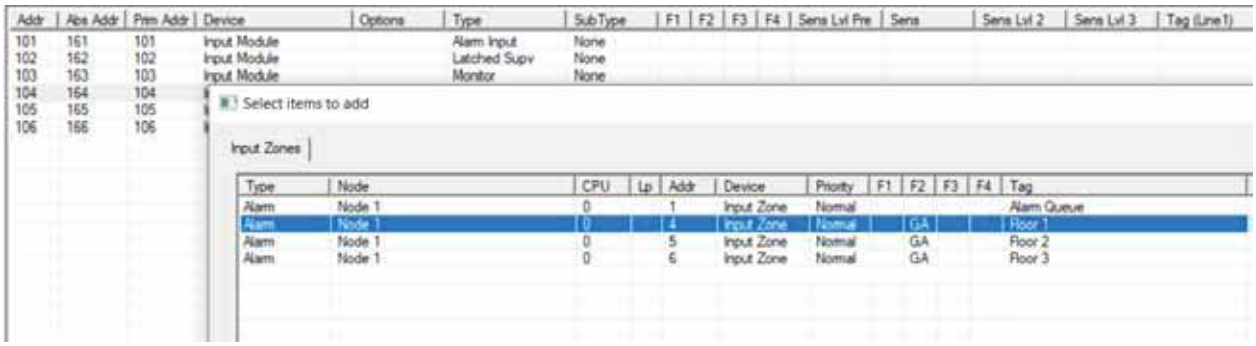

Ensure you enable the GA flag in the F2 column. This puts the specific zones into Evac upon activation.

| Addr | Device | Type | SubType | Priority | F1 | F2 | F3 | F4 | F5 | Tag (Line1) |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Input Zone | Alarm | None | Normal | | | N... | | | Alarm Queue |
| 2 | Input Zone | Supv. | None | Normal | | | N... | | | Supervisory Queue |
| 3 | Input Zone | Mon. | None | Normal | | | N... | | | Monitor Queue |
| 4 | Input Zone | Alarm | None | Normal | | GA | N... | | | Floor 1 |
| 5 | Input Zone | Alarm | None | Normal | | GA | N... | | | Floor 2 |
| 6 | Input Zone | Alarm | None | Normal | | GA | N... | | | Floor 3 |

Add 3 Manual Stations to Loop 2. Sample shown below.

| Addr | Abs Addr | Prm Addr | Device | Options | Type | SubType | F1 | F2 | F3 | F4 | Sens Lvl Pre | Sens | Sens Lvl 2 | Sens Lvl 3 | Tag (Line1) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | 161 | 101 | Input Module | | Alarm Input | None | | | | | | | | | |
| 102 | 162 | 102 | Input Module | | Latched Supv | None | | | | | | | | | |
| 103 | 163 | 103 | Input Module | | Monitor | None | | | | | | | | | |
| 104 | 164 | 104 | Input Module | | Alarm Input | Manual Sta... | | | | | | | | | Floor 1 Manual Stn |
| 105 | 165 | 105 | Input Module | | Alarm Input | Manual Sta... | | | | | | | | | Floor 2 Manual Stn |
| 106 | 166 | 106 | Input Module | | Alarm Input | Manual Sta... | | | | | | | | | Floor 3 Manual Stn |

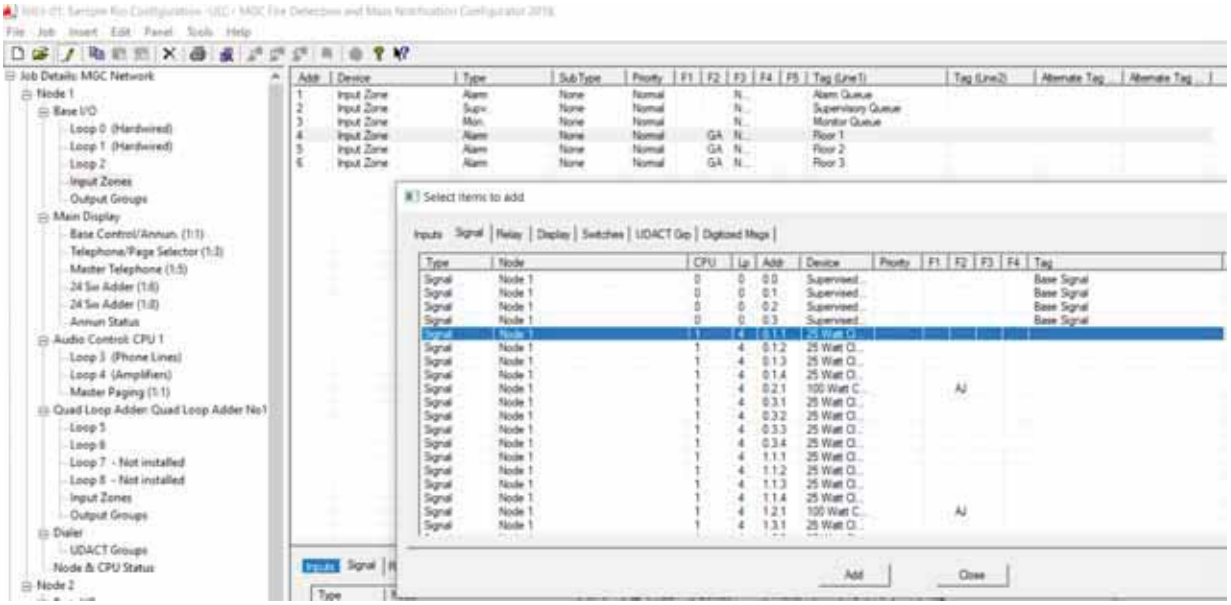
Then, correlate the manual stations to their respective input zones.



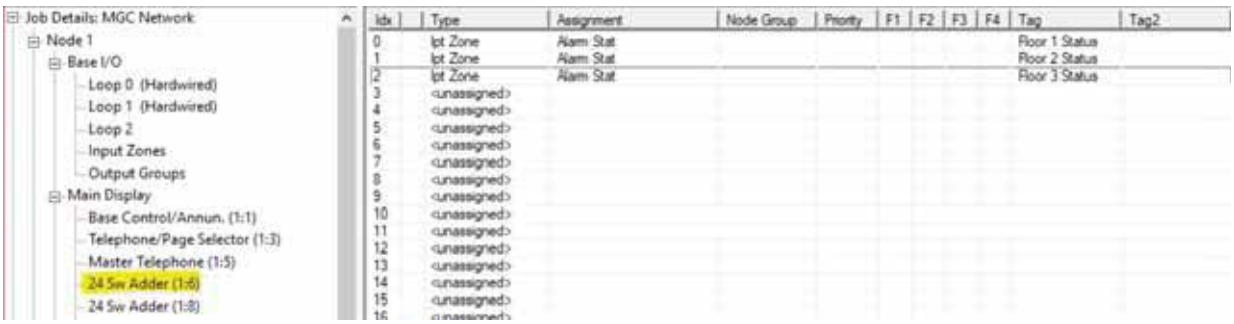

| Addr | Abs Addr | Prm Addr | Device | Options | Type | SubType | F1 | F2 | F3 | F4 | Sens Lvl Pre | Sens | Sens Lvl 2 | Sens Lvl 3 | Tag (Line1) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 101 | 161 | 101 | Input Module | | Alarm Input | None | | | | | | | | | |
| 102 | 162 | 102 | Input Module | | Latched Supv | None | | | | | | | | | |
| 103 | 163 | 103 | Input Module | | Monitor | None | | | | | | | | | |
| 104 | 164 | 104 | | | | | | | | | | | | | |
| 105 | 165 | 105 | | | | | | | | | | | | | |
| 106 | 166 | 106 | | | | | | | | | | | | | |

| Type | Node | CPU | Lp | Addr | Device | Priority | F1 | F2 | F3 | F4 | Tag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Alarm | Node 1 | 0 | | 1 | Input Zone | Normal | | | | | Alarm Queue |
| Alarm | Node 1 | 0 | | 4 | Input Zone | Normal | | GA | | | Floor 1 |
| Alarm | Node 1 | 0 | | 5 | Input Zone | Normal | | GA | | | Floor 2 |
| Alarm | Node 1 | 0 | | 6 | Input Zone | Normal | | GA | | | Floor 3 |

Next, correlate input zones to signals (amplifier circuits) based on your physical configuration. Below is an example:

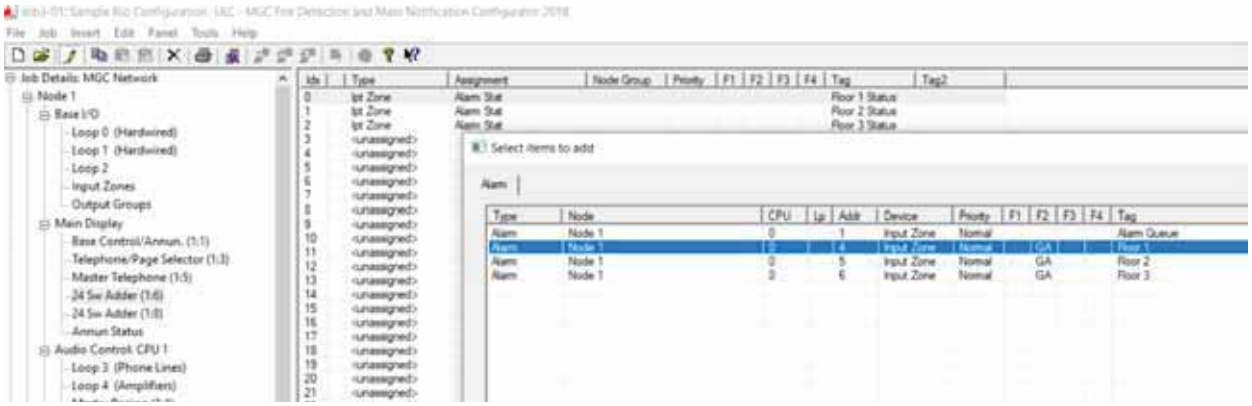



Next, assign 3 LED display points to indicate the Alarm statuses of the 3 input zones.

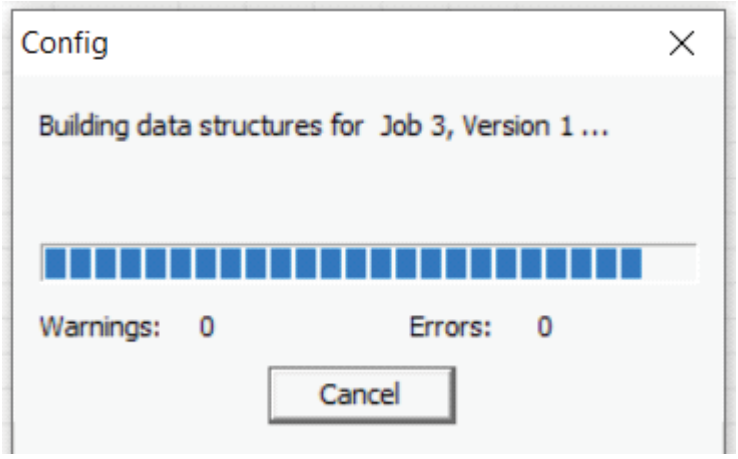



| Idx | Type | Assignment | Node Group | Priority | F1 | F2 | F3 | F4 | Tag | Tag2 |
|---|---|---|---|---|---|---|---|---|---|---|
| 0 | Ipt Zone | Alarm Stat | | | | | | | Floor 1 Status | |
| 1 | Ipt Zone | Alarm Stat | | | | | | | Floor 2 Status | |
| 2 | Ipt Zone | Alarm Stat | | | | | | | Floor 3 Status | |
| 3 | <unassigned> | | | | | | | | | |
| 4 | <unassigned> | | | | | | | | | |
| 5 | <unassigned> | | | | | | | | | |
| 6 | <unassigned> | | | | | | | | | |
| 7 | <unassigned> | | | | | | | | | |
| 8 | <unassigned> | | | | | | | | | |
| 9 | <unassigned> | | | | | | | | | |
| 10 | <unassigned> | | | | | | | | | |
| 11 | <unassigned> | | | | | | | | | |
| 12 | <unassigned> | | | | | | | | | |
| 13 | <unassigned> | | | | | | | | | |
| 14 | <unassigned> | | | | | | | | | |
| 15 | <unassigned> | | | | | | | | | |

Then correlated those display points to their respective input zones as shown below:



Finally, Validate the job by going to the job menu and selecting “validate.”



# 24.0 Warranty and Warning Information

## WARNING!

Please read this document **CAREFULLY**, as it contains important warnings, life-safety, and practical information about all products manufactured by the Mircom Group of Companies, including Mircom and Secutron branded products, which shall include without limitation all fire alarm, nurse call, building automation and access control and card access products (hereinafter individually or collectively, as applicable, referred to as "**Mircom System**").

### NOTE TO ALL READERS:

1. **Nature of Warnings.** The within warnings are communicated to the reader out of an abundance of caution and create no legal obligation for Mircom Group of Companies, whatsoever. Without limiting the generality of the foregoing, this document shall NOT be construed as in any way altering the rights and obligations of the parties, governed by the legal documents that apply in any given circumstance.
2. **Application.** The warnings contained in this document apply to all Mircom System and shall be read in conjunction with:
    a. the product manual for the specific Mircom System that applies in given circumstances;
    b. legal documents that apply to the purchase and sale of a Mircom System, which may include the company's standard terms and conditions and warranty statements;
    c. other information about the Mircom System or the parties' rights and obligations as may be application to a given circumstance.
3. **Security and Insurance.** Regardless of its capabilities, no Mircom System is a substitute for property or life insurance. Nor is the system a substitute for property owners, renters, or other occupants to act prudently to prevent or minimize the harmful effects of an emergency situation. Building automation systems produced by the Mircom Group of Companies are not to be used as a fire, alarm, or life-safety system.

### NOTE TO INSTALLERS:

All Mircom Systems have been carefully designed to be as effective as possible. However, there are circumstances where they may not provide protection. Some reasons for system failure include the following. As the only individual in contact with system users, please bring each item in this warning to the attention of the users of this Mircom System. Failure to properly inform system end-users of the circumstances in which the system might fail may result in over-reliance upon the system. As a result, it is imperative that you properly inform each customer for whom you install the system of the possible forms of failure:

4. **Inadequate Installation.** All Mircom Systems must be installed in accordance with all the applicable codes and standards in order to provide adequate protection. National standards require an inspection and approval to be conducted by the local authority having jurisdiction following the initial installation of the system and following any changes to the system. Such inspections ensure installation has been carried out properly.
5. **Inadequate Testing.** Most problems that would prevent an alarm a Mircom System from operating as intended can be discovered by regular testing and maintenance. The complete system should be tested by the local authority having jurisdiction immediately after a fire, storm, earthquake, accident, or any kind of construction activity inside or outside the premises.

The testing should include all sensing devices, keypads, consoles, alarm indicating devices and any other operational devices that are part of the system.

## NOTE TO USERS:

All Mircom Systems have been carefully designed to be as effective as possible. However, there are circumstances where they may not provide protection. Some reasons for system failure include the following. The end user can minimize the occurrence of any of the following by proper training, testing and maintenance of the Mircom Systems:

6. **Inadequate Testing and Maintenance.** It is imperative that the systems be periodically tested and subjected to preventative maintenance. Best practices and local authority having jurisdiction determine the frequency and type of testing that is required at a minimum. Mircom System may not function properly, and the occurrence of other system failures identified below may not be minimized, if the periodic testing and maintenance of Mircom Systems is not completed with diligence and as required.
7. **Improper Operation.** It is important that all system users be trained in the correct operation of the alarm system and that they know how to respond when the system indicates an alarm. A Mircom System may not function as intended during an emergency situation where the user is unable to operate a panic or emergency switch by reason of permanent or temporary physical disability, inability to reach the device in time, unfamiliarity with the correct operation, or related circumstances.
8. **Insufficient Time.** There may be circumstances when a Mircom System will operate as intended, yet the occupants will not be protected from the emergency due to their inability to respond to the warnings in a timely manner. If the system is monitored, the response may not occur in time enough to protect the occupants or their belongings.
9. **Carelessness or Safety Hazards.** Moreover, smoke detectors may not provide timely warning of fires caused by carelessness or safety hazards such as smoking in bed, violent explosions, escaping gas, improper storage of flammable materials, overloaded electrical circuits or children playing with matches or arson.
10. **Power Failure.** Some Mircom System components require adequate electrical power supply to operate. Examples include: smoke detectors, beacons, HVAC, and lighting controllers. If a device operates only by AC power, any interruption, however brief, will render that device inoperative while it does not have power. Power interruptions of any length are often accompanied by voltage fluctuations which may damage Mircom Systems or other electronic equipment. After a power interruption has occurred, immediately conduct a complete system test to ensure that the system operates as intended.
11. **Battery Failure.** If the Mircom System or any device connected to the system operates from batteries it is possible for the batteries to fail. Even if the batteries have not failed, they must be fully charged, in good condition, and installed correctly. Some Mircom Systems use replaceable batteries, which have a limited life-span. The expected battery life is variable and in part dependent on the device environment, usage and type. Ambient conditions such as high humidity, high or low temperatures, or large temperature fluctuations may reduce the expected battery life. Moreover, some Mircom Systems do not have a battery monitor that would alert the user in the event that the battery is nearing its end of life. Regular testing and replacements are vital for ensuring that the batteries function as expected, whether or not a device has a low-battery monitor.
12. **Physical Obstructions.** Motion sensors that are part of a Mircom System must be kept clear of any obstacles which impede the sensors' ability to detect movement. Signals being communicated by a Mircom System may not reach the receiver if an item (such as metal, water, or concrete) is placed on or near the radio path. Deliberate jamming or other inadvertent radio signal interference can also negatively affect system operation.

13. **Wireless Devices Placement Proximity.** Moreover all wireless devices must be a minimum and maximum distance away from large metal objects, such as refrigerators. You are required to consult the specific Mircom System manual and application guide for any maximum distances required between devices and suggested placement of wireless devices for optimal functioning.
14. **Failure to Trigger Sensors.** Moreover, Mircom Systems may fail to operate as intended if motion, heat, or smoke sensors are not triggered.
    a. Sensors in a fire system may fail to be triggered when the fire is in a chimney, walls, roof, or on the other side of closed doors. Smoke and heat detectors may not detect smoke or heat from fires on another level of the residence or building. In this situation the control panel may not alert occupants of a fire.
    b. Sensors in a nurse call system may fail to be triggered when movement is occurring outside of the motion sensors' range. For example, if movement is occurring on the other side of closed doors or on another level of the residence or building the motion detector may not be triggered. In this situation the central controller may not register an alarm signal.
15. **Interference with Audible Notification Appliances.** Audible notification appliances may be interfered with by other noise sources such as stereos, radios, televisions, air conditioners, appliances, or passing traffic. Audible notification appliances, however loud, may not be heard by a hearing-impaired person.
16. **Other Impairments.** Alarm notification appliances such as sirens, bells, horns, or strobes may not warn or waken a sleeping occupant if there is an intervening wall or door. It is less likely that the occupants will be alerted or awakened when notification appliances are located on a different level of the residence or premise.
17. **Software Malfunction.** Most Mircom Systems contain software. No warranties are provided as to the software components of any products or stand-alone software products within a Mircom System. For a full statement of the warranties and exclusions and limitations of liability please refer to the company's standard Terms and Conditions and Warranties.
18. **Telephone Lines Malfunction.** Telephone service can cause system failure where telephone lines are relied upon by a Mircom System. Alarms and information coming from a Mircom System may not be transmitted if a phone line is out of service or busy for a certain period of time. Alarms and information may not be transmitted where telephone lines have been compromised by criminal tampering, local construction, storms or earthquakes.
19. **Component Failure.** Although every effort has been made to make this Mircom System as reliable as possible, the system may fail to function as intended due to the failure of a component.
20. **Integrated Products.** Mircom System might not function as intended if it is connected to a non-Mircom product or to a Mircom product that is deemed non-compatible with a particular Mircom System. A list of compatible products can be requested and obtained.

# Warranty

**Purchase of all Mircom products is governed by:**

https://www.mircom.com/product-warranty

https://www.mircom.com/purchase-terms-and-conditions

https://www.mircom.com/software-license-terms-and-conditions

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