



**QX-5000 SERIES
EMERGENCY ZONED AUDIO
SYSTEM**

SINGLE STAGE OPERATION

ENGINEERING SPECIFICATIONS

**Mircom Technologies Limited
Printed in CANADA
LT-626**

PART 1 - GENERAL

DESCRIPTION 1.1

The emergency voice/audio tone system shall include, but not be limited to, a Mircom QX-5000 series voice system consisting of system cabinets, audio amplifiers, audio interface and control , audio system power supply and batteries, microphone assembly, paging circuit selector switches, speaker signalling devices, and miscellaneous peripheral devices that may be required. The audio system shall integrate fully with a Fire detection system (such as the Mircom FA-100 or FA-1000 series) to provide a fully functional, fire detection/single stage, dual channel voice and tone alarm system. The system shall enable the operator to perform paging from a centralized microphone to speaker devices on a per circuit or "all-call" basis; these same speakers will also be used to transmit a fire alarm evacuation signal. The system may also include the QX series handset master, zoned handset selector and a number of field handsets in order to provide a zoned Firefighter's handset communication system. The system and all associated equipment shall be fully approved and listed by both Underwriter's Laboratories (UL) and Underwriter's Laboratories Canada (ULC).

PART 2 - EQUIPMENT

EMERGENCY VOICE ALARM COMPONENTS 2.1

.1 Amplifiers

The audio amplifiers shall be Mircom models QAA-5415 (four 15 watt speaker zones), QAA-5230S (two 30 watt zones wired as four 15 watt circuits), QAA -5230 (two 30 watt zones) ,or QAA-5160 (one 60 watt zone) selected in combination as needed to meet the requirements of the plans and specifications. Each circuit as stipulated shall be a supervised 70 volt audio circuit (class B for models QAA-5415 and QAA-5230S ; class B or A for models QAA-5230 and QAA-5160). The amplifier shall have removable terminal blocks for ease of installation and troubleshooting.

.2 QIF-5000 Interface Card

The QIF-5000 (one only required) shall provide the control for the audio amplifiers and act as an interface between the fire panel and the audio system and the microphone assembly and audio system. It shall also act as a pre-amp and provide a choice of Slow Whoop (20 or 120 SPM) or Bell simulation (20 or 120 SPM) alarm signal tones (other tone types may be requested).

.3 QPS-5000 Audio Power Supply

The QPS-5000 power supply shall be required for every 420 watts of amplifier power.

.4 QBC-5000 Audio Battery Charger

The QBC-5000 shall be required for each QPS-5000 power supply in the system and shall charge up to 40 AH batteries.

.5 QMB-5000 Audio Mother Board and Card Cage

The QMB-5000 shall allow the mounting of the QIF-5000 interface card, and up to seven of the QAA amplifier units.

.6 QBB-5001 Audio Backbox/Enclosure

The Mircom QBB-5001 Backbox/enclosure shall provide space for one QMB-5000 audio card cage (along with its installed amplifiers, etc.), one QPS-5000 power supply, and one QBC-5000 battery charger.

.7 QMP-5100 Microphone Unit

The Emergency Voice System microphone shall be capable of allowing “all-call” paging to the speaker zones or, when used in conjunction with the page selector switches, to individual speaker zones. In addition to the “all-call” control and indicator, the microphone shall include “Warden page”(page through handset system), and “all-call minus” (page to all zones not currently selected for page) controls and indicators. Other controls shall include “reset”, “buzzer silence”, and “lamp test” while other indicators shall include “AC on”, “mic. level”, “mic. trouble”, “amplifier trouble”, “circuit trouble”, “common trouble”, and “remote fail”. The QMP-5100 shall occupy one space in a Mircom BB-1000 series enclosure and connects to the QIF-5000 interface card via a 24VDC pair, a twisted shielded audio pair, and an RS-485 data communication twisted shielded pair.

.8 QZP-5101 Zoned Paging Select Panel

The QZP-5101 shall be used in conjunction with the QMP-5100 microphone in order to provide zoned speaker selection for paging. The unit shall provide 24 zone selector switches , 24 “select” LEDS and 24 “trouble” LEDS. A maximum of six QZP-5101 units shall be capable of being installed for a total of 144 zones; each unit occupying one BB-1000 enclosure space.

.9 QMT-5300 Master Firefighter’s Telephone Module

The QMT-5300 shall be required if the project plans call for a Firefighter’s handset system. The unit shall occupy one BB-1000 enclosure space and shall provide the main communication handset. In addition, the unit shall provide “call-in” and “connect” controls and indicators as well as “master telephone” and “common trouble” indicators. The unit shall be used in conjunction with remote field handsets wired in a single pair class B manner for unzoned operation or, in conjunction with the telephone zone selector panel for multiple zone operation.

.10 QZT-5301 Zoned Telephone Select Panel

The QZT-5301 shall be used in conjunction with the QMT-5300 master telephone module in order to provide zoned firefighter's handset call-in selection. The unit shall provide 12 call-in selector switches, 12 "call-in" LEDs and 12 "trouble" LEDs. A maximum of ten QZT-5301 units shall be capable of being installed for a total of 120 zones; each unit occupying one BB-1000 enclosure space.

Single Stage Operation

Emergency Voice Alarm System 2.2

- .1 In normal mode, only the green "AC on" indicators at the QIF-5000 interface card and QMP-5100 microphone shall be lit.
- .2 Upon alarm operation of the fire detection system (and its appropriate resulting actions and zone annunciation) the Mircom QX-5000 series voice alarm system shall:
 - .a Light the red evac leds at the amplifier units.
 - .b Cause the alarm speaker devices to sound the Evac tone throughout the building until silenced.
- .3 The audible speaker appliances shall continue to sound during alarm until manually or automatically silenced. The manual silencing shall be delayed during the first minute of alarm. The automatic silencing shall be set to "infinite" (i.e. signal appliances will NOT silence automatically) unless specified otherwise.
- .4 Silencing of signals shall cause the amplifier's red evac leds to extinguish. A subsequent alarm shall cause all speaker devices to sound again.
- .5 The system operator shall be able to page to the audible speaker devices by simply keying the microphone and by also selecting either "all-call" (to page to all speaker zones) or one or more zone select switches at the paging selector panel (to page to particular zones). This operation shall be inhibited during the first minute of alarm. While paging, the Evac alarm tone shall be suppressed only on those zones receiving the page announcement. The "mic level" indicator on the microphone shall flash in response to the voice paging level. When page is completed, the Evac tone shall return to the appropriate speaker zones unless previously silenced. There shall also be provision for "all-call minus" paging; allowing the operator to page all zones not currently manually selected.
- .6 The alarm condition shall be cleared only upon reset of the fire detection system.
- .7 Activation of a remote firefighter's handset (i.e. handset taken off hook) shall cause a call-in buzzer to sound at the master handset module. If the system is not zoned, the common

“incoming call” LED will flash to indicate the call; operation of the incoming select switch shall put the operator in communication with the field handset user. If the system is zoned, the appropriate zone LED shall flash at the selector panel; operation of the corresponding zone switch shall establish communication. In this manner, up to six remote handsets in total may be connected to the master at one time. There shall also be provision for “warden page” operation; allowing the field or master handset operator to use the telephone handset system as the “paging microphone” for the voice page system.

- .8 An audio system trouble condition shall :
 - .a Light the amber common trouble indicator at the QIF-5000 interface card and at the microphone panel and sound the system trouble buzzer.
 - .b Cause the audio trouble condition to annunciate at the fire detection panel.
- .9 Depending upon the nature of the trouble, cause the appropriate additional trouble indicators to light as described below:
 - .a Open circuit fault in the field wiring of a speaker zone or a short on a speaker zone: appropriate amplifier circuit indicator and “circuit trouble” indicator on microphone.
 - .b Failure of a supervised component of the amplifier: appropriate amplifier fault indicator and “amplifier trouble” indicator on microphone.
 - .c Disconnection or failure of the battery pack(s) of the QX-5000 series: battery trouble indicator at QIF-5000 interface card.
 - .d A ground condition on a field wire of the QX-5000 system: ground fault indicator at QIF-5000 interface card.
 - .e Failure of the main 120vac power: extinguish the green AC power indicators.
 - .f A fault on the paging microphone or its wiring: Mic trouble indicator at microphone panel.
 - .g An internal fault of the QIF-5000 pre-amp: Pre-amp Trouble indicator at QIF-5000.
 - .h An internal tone generator fault on the QIF-5000: Tone Gen. Trouble indicator at QIF-5000.
 - .i Open or short on communication lines between microphone panel and QIF-5000: Remote failure indicator at microphone panel.
- .10 A firefighter’s handset system trouble shall cause:
 - .a A “telephone system trouble” to annunciate at the fire detection panel.

- .b The “common telephone trouble” indicator to light at the master handset if the trouble is field wiring related.
 - .c The “master telephone trouble” indicator to light at the master handset if the trouble is related to an internal fault.
 - .d The appropriate zone trouble indicator to light if the fault is related to the field wiring of a zoned handset circuit.
- .11 The trouble buzzer shall be silenced by operation of the buzzer silence switch on the microphone panel. The trouble conditions shall clear from the system when the cause is rectified.
- .12 Control Switches:
- .a Buzzer silence---- Silences trouble buzzer.
 - .b Lamp test ---- Tests operation of related LED indicators.
 - .c All-call --- Allows microphone paging to all speaker circuits.
 - .d All-call minus --- In a zoned voice system, allows paging to all speaker zones not currently selected for paging.
 - .e Warden page --- Allows use of the handset system as a paging source.
 - .f Page switches --- In a zoned voice system, allow selection of individual speaker zones for page.
 - .g Incoming call --- Connects incoming handset call to master handset in a non-zoned system.
 - .h Tel. Switches --- Connects incoming handset call to master handset in a zoned system.



**QX-5000 SERIES
EMERGENCY ZONED AUDIO
SYSTEM**

TWO STAGE OPERATION

ENGINEER SPECIFICATIONS

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PART 1 -GENERAL

DESCRIPTION 1.1

The emergency voice/audio tone system shall include, but not be limited to, a Mircom QX-5000 series voice system consisting of system cabinets, audio amplifiers, audio interface and control, audio system power supply and batteries, microphone assembly, paging circuit selector switches, speaker signaling devices, and miscellaneous peripheral devices that may be required. The audio system shall integrate fully with a Fire detection system (such as the Mircom FA-100 or FA-1000 series) to provide a fully functional, fire detection/two stage, dual channel voice and tone alarm system. The system shall enable the operator to perform paging from a centralized microphone to speaker devices on a per circuit or "all-call" basis; these same speakers will also be used to transmit fire alarm first stage alert and second stage evacuation signals. The system may also include the QX series handset master, zoned handset selector and a number of field handsets in order to provide a zoned Firefighter's handset communication system. The system and all associated equipment shall be fully approved and listed by both Underwriter's Laboratories (UL) and Underwriter's Laboratories Canada (ULC).

PART 2 -EQUIPMENT

EMERGENCY VOICE ALARM COMPONENTS 2.1

.1 Amplifiers

The audio amplifiers shall be Mircom models QAA-5415 (four 15 watt speaker zones), QAA-5230S (two 30 watt zones wired as four 15 watt circuits), QAA -5230 (two 30 watt zones) ,or QAA-5160 (one 60 watt zone) selected in combination as needed to meet the requirements of the plans and specifications. Each circuit as stipulated shall be a supervised 70 volt audio circuit (class B for models QAA-5415 and QAA-5230S; class B or A for models QAA-5230 and QAA-5160). The amplifier shall have removable terminal blocks for ease of installation and troubleshooting.

.2 QIF-5000 Interface Card

The QIF-5000 (one only required) shall provide the control for the audio amplifiers and act as an interface between the fire panel and the audio system and the microphone assembly and audio system. It shall also act as a pre-amp and provide a choice of Slow Whoop (20 or 120 SPM) or Bell simulation (20 or 120 SPM) alarm signal tones (other tone types may be requested).

.3 QPS-5000 Audio Power Supply

The QPS-5000 power supply shall be required for every 420 watts of amplifier power.

.4 QBC-5000 Audio Battery Charger

The QBC-5000 shall be required for each QPS-5000 power supply in the system and shall charge up to 40 AH batteries.

.5 QMB-5000 Audio Mother Board and Card Cage

The QMB-5000 shall allow the mounting of the QIF-5000 interface card, and up to seven of the QAA amplifier units.

.6 QBB-5001 Audio Backbox/Enclosure

The Mircom QBB-5001 Backbox/enclosure shall provide space for one QMB-5000 audio card cage (along with its installed amplifiers, etc.), one QPS-5000 power supply, and one QBC-5000 battery charger.

.7 QMP-5100 Microphone Unit

The Emergency Voice System microphone shall be capable of allowing “all-call” paging to the speaker zones or, when used in conjunction with the page selector switches, to individual speaker zones. In addition to the “all-call” control and indicator, the microphone shall include “Warden page”(page through handset system), and “all-call minus” (page to all zones not currently selected for page) controls and indicators. Other controls shall include “reset”, “buzzer silence”, and “lamp test” while other indicators shall include “AC on”, “mic. level”, “mic. trouble”, “amplifier trouble”, “circuit trouble”, “common trouble”, and “remote fail”. The QMP-5100 shall occupy one space in a Mircom BB-1000 series enclosure and connects to the QIF-5000 interface card via a 24VDC pair, a twisted shielded audio pair, and an RS-485 data communication twisted shielded pair.

.8 QZP-5101 Zoned Paging Select Panel

The QZP-5101 shall be used in conjunction with the QMP-5100 microphone in order to provide zoned speaker selection for paging. The unit shall provide 24 zone selector switches , 24 “select” LEDS and 24 “trouble” LEDS. A maximum of six QZP-5101 units shall be capable of being installed for a total of 144 zones; each unit occupying one BB-1000 enclosure space.

.9 QMT-5300 Master Firefighter’s Telephone Module

The QMT-5300 shall be required if the project plans call for a Firefighter’s handset system. The unit shall occupy one BB-1000 enclosure space and shall provide the main communication handset. In addition, the unit shall provide “call-in” and “connect” controls and indicators as well as “master telephone” and “common trouble” indicators. The unit shall be used in conjunction with remote field handsets wired in a single pair class B manner for unzoned operation

or, in conjunction with the telephone zone selector panel for multiple zone operation.

.10 QZT-5301 Zoned Telephone Select Panel

The QZT-5301 shall be used in conjunction with the QMT-5300 master telephone module in order to provide zoned firefighter's handset call-in selection. The unit shall provide 12 call-in selector switches, 12 "call-in" LEDs and 12 "trouble" LEDs. A maximum of ten QZT-5301 units shall be capable of being installed for a total of 120 zones; each unit occupying one BB-1000 enclosure space.

Two Stage Operation

Emergency Voice Alarm System 2.2

- .1 In normal mode, only the green "AC on" indicators at the QIF-5000 interface card and QMP-5100 microphone shall be lit.
- .2 Upon alarm operation of the fire detection system (and its appropriate resulting actions and zone annunciation) the Mircom QX-5000 series voice alarm system shall:
 - .a Light the red evac leds at the amplifier units.
 - .b Cause the alarm speaker devices to sound the 1st stage alert tone throughout the building until silenced.
- .3 Five minutes after activation of the first stage signal, or if a 2nd stage is manually activated at the fire detection panel, the speaker devices shall sound the 2nd stage evacuation signal.
- .4 An "alarm acknowledge" performed at the fire detection panel during the 1st stage shall cause the speakers to remain in alert mode and not to change to 2nd stage evacuation after 5 minutes. A manual 2nd stage operation shall then be required to cause the speakers to sound in evacuation mode.
- .5 The audible speaker appliances shall continue to sound during alarm (1st or 2nd stage) until manually or automatically silenced. The manual silencing shall be delayed during the first minute of alarm. The automatic silencing shall be set to "infinite" (i.e. signal appliances will NOT silence automatically) unless specified otherwise.
- .6 Silencing of signals shall cause the amplifier's red evac leds to extinguish. A subsequent alarm shall cause all speaker devices to sound again.
- .7 The system operator shall be able to page to the audible speaker devices by simply keying the microphone and by also selecting either "all-call" (to page to all speaker zones) or one or more zone select switches at the paging selector panel (to page to particular zones). This operation shall be inhibited

during the first minute of alarm. While paging, the alarm tone (1st stage alert or 2nd stage evac) shall be suppressed only on those zones receiving the page announcement. The “mic level” indicator on the microphone shall flash in response to the voice paging level. When page is completed, the alarm tone shall return to the appropriate speaker zones unless previously silenced. There shall also be provision for “all-call minus” paging; allowing the operator to page all zones not currently manually selected.

- .8 The alarm condition shall be cleared only upon reset of the fire detection system.
- .9 Activation of a remote firefighter’s handset (i.e. handset taken off hook) shall cause a call-in buzzer to sound at the master handset module. If the system is not zoned, the common “incoming call” LED will flash to indicate the call; operation of the incoming select switch shall put the operator in communication with the field handset user. If the system is zoned, the appropriate zone LED shall flash at the selector panel; operation of the corresponding zone switch shall establish communication. In this manner, up to six remote handsets in total may be connected to the master at one time. There shall also be provision for “warden page” operation; allowing the field or master handset operator to use the telephone handset system as the “paging microphone” for the voice page system.
- .10 An audio system trouble condition shall :
 - .a Light the amber common trouble indicator at the QIF-5000 interface card and at the microphone panel and sound the system trouble buzzer.
 - .b Cause the audio trouble condition to annunciate at the fire detection panel.
- .11 Depending upon the nature of the trouble, cause the appropriate additional trouble indicators to light as described below:
 - .a Open circuit fault in the field wiring of a speaker zone or a short on a speaker zone: appropriate amplifier circuit indicator and “circuit trouble” indicator on microphone.
 - .b Failure of a supervised component of the amplifier: appropriate amplifier fault indicator and “amplifier trouble” indicator on microphone.
 - .c Disconnection or failure of the battery pack(s) of the QX-5000 series: battery trouble indicator at QIF-5000 interface card.
 - .d A ground condition on a field wire of the QX-5000 system: ground fault indicator at QIF-5000 interface card.
 - .e Failure of the main 120vac power: extinguish the green AC power indicators.

- .f A fault on the paging microphone or its wiring: Mic trouble indicator at microphone panel.
 - .g An internal fault of the QIF-5000 pre-amp: Pre-amp Trouble indicator at QIF-5000.
 - .h An internal tone generator fault on the QIF-5000: Tone Gen. Trouble indicator at QIF-5000.
 - .i Open or short on communication lines between microphone panel and QIF-5000: Remote failure indicator at microphone panel.
- .12 A firefighter's handset system trouble shall cause:
- .a A "telephone system trouble" to annunciate at the fire detection panel.
 - .b The "common telephone trouble" indicator to light at the master handset if the trouble is field wiring related.
 - .c The "master telephone trouble" indicator to light at the master handset if the trouble is related to an internal fault.
 - .d The appropriate zone trouble indicator to light if the fault is related to the field wiring of a zoned handset circuit.
- .13 The trouble buzzer shall be silenced by operation of the buzzer silence switch on the microphone panel. The trouble conditions shall clear from the system when the cause is rectified.
- .14 Control Switches
- .a Buzzer silence ---- Silences trouble buzzer.
 - .b Lamp test ---- Tests operation of related LED indicators.
 - .c All-call --- Allows microphone paging to all speaker circuits.
 - .d All-call minus --- In a zoned voice system, allows paging to all speaker zones not currently selected for paging.
 - .e Warden page --- Allows use of the handset system as a paging source.
 - .f Page switches --- In a zoned voice system, allow selection of individual speaker zones for page.
 - .g Incoming call --- Connects incoming handset call to master handset in a non-zoned system.
 - .h Tel. Switches --- Connects incoming handset call to master handset in a zoned system.