



MILLBANK



THE INTELLIGENT USE OF SOUND

JustiFire

Installation, Operation and Service Guide

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1. The JustiFire System

1.1 Introduction

JustiFire provides a single channel, six zone voice evacuation system. It has been designed as the integral part of a BS5839 Part 8 (and BS EN 60849) compliant system suited to use in small to medium size offices, industrial facilities or similar establishments. Compact, wall mounted and self-contained with a 24 hour battery back up, JustiFire utilises a Windows-based configuration program to provide ease of use in setting up the system to meet individual requirements.

Flexibility is designed into the equipment allowing larger installations to be catered for.

The main features are:

- Proven software package
- Designed for BS5839 Part 8 and EN 60849 compliance
- Six zone, for paging / music distribution / evacuation
- Single channel
- 4 Message store (40s per message)
- Four analogue inputs for 0dB or 100V line
- Modular design
- 85% efficient 250W class-D amplifiers
- Silent DC monitoring of loudspeaker circuits
- CE compliance

1.2 Overview

The following chapter provides an overview of the JustiFire system breaking it down into the main elements which are described and specified in general terms only. It is necessary to consult the remaining chapters to enable installation and configuration. With reference to the block diagram in figure 1 the JustiFire system can be divided into the following sections:

1.2.1 The Audio Inputs.

1.2.2 The Fire Panel Interface.

1.2.3 The Digital Signal Processor (DSP) and Digital Message Stores.

1.2.4 The Power Amplifiers.

1.2.5 The Audio Output Zones and the Loudspeaker Circuit Fault Detector.

1.2.6 The Fault Reporting System.

1.2.7 The Battery Charger.

1.2.8 The Power Supply

1.2.9 The Cabinet

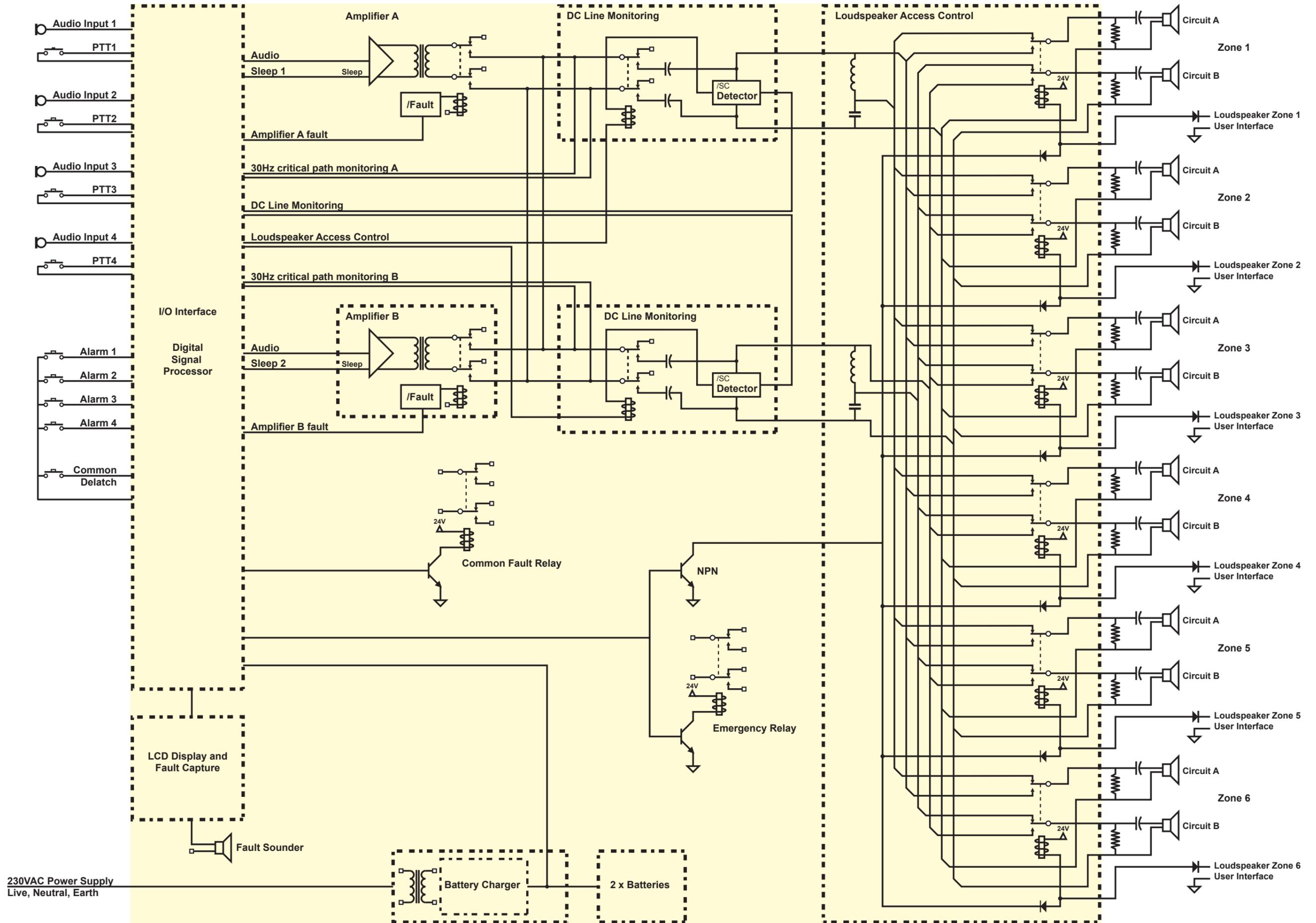


Figure 1. JustiFire Block Diagram

1.2.1 The Audio Inputs (Input pre-amplifier/router)

This provides an interface with external signal sources. A variety of different inputs are catered for, including microphone, music source and 100V line systems. When interfacing with 3rd party equipment the required methods of fault monitoring will vary, so the equipment has the flexibility to cope with all of the most common variations:

Audio Input Specifications

- The input interface has four line level galvanically isolated inputs.
- An option is provided to fit attenuation for connection to 100V line systems.
- Each audio input can expect a nominal 0dBu input with a maximum headroom of 12dB, any required limiting or compression will be done at source.
- Each audio input has an input access control: Press To Talk (PTT). These can be configured via a PC Mimic program to be normally open or normally closed. The user will be required to provide a volt-free contact for this operation.
- Each audio input has one or two associated outputs, to indicate the availability of that input (a “System Busy” signal and a “Talk Now” signal) as shown in the table of figure 2.

<i>PTT switch</i>	<i>Busy 1</i>	<i>Busy 2</i>	<i>Busy 3</i>	<i>Busy 4</i>	<i>Talk Now 1</i>	<i>Talk Now 2</i>	<i>Talk Now 3</i>	<i>Talk Now 4</i>
PTT1	N/A	ON	ON	ON	ON	OFF	OFF	OFF
PTT2	N/A	OFF	ON	ON	OFF	ON	OFF	OFF
PTT3	N/A	OFF	OFF	ON	OFF	OFF	ON	OFF
PTT4	N/A	OFF	OFF	OFF	OFF	OFF	OFF	ON

Figure 2. The System Busy and Talk Now Signals

- Audio input 1 is the default fireman’s microphone and has the highest priority (non-configurable), hence there is no requirement for a Busy 1 output.
- Audio inputs 2 – 4 have configurable priority and hence require a Busy output.
- Each audio input has a configurable chime (Bing Bong etc.) and configurable fault monitoring options, which are selectable via the PC Mimic program. A link is provided on the DSP card (JP1, 2 and 3 for audio inputs 2, 3 and 4) to allow the installer to disable fault monitoring for any input with the exception of input 1, which will always be monitored.
- PC Mimic selection of fault monitoring modes:
 - 30Hz.
 - 20kHz. (18kHz – 22kHz).
 - Wide Band (30Hz – 22kHz).
- Using the PC Mimic program a cascade priority can be set-up. The equipment is shipped with a factory default priority structure. This is loaded on power up if link JP8 on the DSP card is fitted. Further information on this is provided in the section on the DSP card.

1.2.2 The Fire Panel Interface

Five Fire Panel Interface connections are provided. These are designated as shown in the table of figure 3.

Figure 3. Fire Panel Input Designations

<i>JustiFire Terminations PCB Identification</i>	<i>Function</i>
Alarm 1	Message store latch 1*
Alarm 2	Message store latch 2
Alarm 3	Message store latch 3
Alarm 4	Message store latch 4
Delatch	Common de-latch

*See Appendix A for message definitions

- Each input is provided with a choice of two connection types: These are by Voltage Reversal or by Dry Contact. This option is set by links on the PCB. The message can be active closed or active open, this option being set using the PC Mimic program.
- As default, the messages have cascade priority over each other (lowest number, highest priority) but this can be changed using the PC Mimic program, and message priorities may be interleaved with audio input priorities.
- Each alarm input is latching and will not de-latch until the common de-latch is active.
- If the common de-latch is active, any message will start and continue whilst the input is active.
- A set of relay contacts are provided to indicate emergency conditions. Each input to the system (PTT or Fire Panel) can be set up via the PC Mimic program to activate this emergency relay. The relay is fail-safe, such that failure of the power supply or the control system will be indicated as an emergency.

1.2.3 The Digital Signal Processor (DSP) and Digital Message Stores

The Digital Signal Processor and the four Digital Message Stores are contained on the same PCB.

The DSP handles all signal routing, fault detection and playback of messages.

- On power up the DSP enters fallback mode, completes a self-diagnostic routine and looks for a link (JP8) set on the PCB indicating that the factory default is required or that the configuration EEPROM is not valid. If either of these conditions is true the DSP will load the configuration EEPROM with the factory default configuration. A link on the PCB will allow write enable to the EEPROM.
- There are four message stores each with configurable priority and chime.
- Each message store can store a message of up to 40 seconds in length.
- Each message has three configurable playback options: one-shot; continuous; or intermittently repeating. A non-latching option is also provided but should not be used for compliant systems.
- The factory default configuration is shown in the table of figure 26 in section 6.6.2 “Changing the PTT2-4 Options”.
- The Fault Detection Messages are shown in the table of figure 4.

<i>Component</i>	<i>Fault Message.</i>
AMPLIFIER A	POWER FAIL
AMPLIFIER A	SIGNAL FAIL
AMPLIFIER A	30Hz FAIL
AMPLIFIER B	POWER FAIL.
AMPLIFIER B	SIGNAL FAIL
AMPLIFIER B	30Hz FAIL
LS CIRCUIT A	SHORT
LS CIRCUIT A	OPEN
LS CIRCUIT A	EARTH
LS CIRCUIT B	SHORT
LS CIRCUIT B	OPEN
LS CIRCUIT B	EARTH
AUDIO INPUT 1	FAIL
AUDIO INPUT 2	FAIL
AUDIO INPUT 3	FAIL
AUDIO INPUT 4	FAIL
MESSAGE 1	FAIL
MESSAGE 2	FAIL
MESSAGE 3	FAIL
MESSAGE 4	FAIL
MAINS SUPPLY	FAIL
BATTERY	LOW or DISCONNECTED
BATTERY	HIGH
CHARGER	FAIL
SERIAL COMMS	FAIL
DSP RESET	OCCURRED
DISPLAY RESET	OCCURRED

Figure 4. The Fault Detection Messages

- Any detected fault causes the common fault relay to de-energise (energised healthy), this may be used to indicate a fault to external equipment.
- Activation of any message store or input designated as an “Emergency Broadcast” causes the Emergency relay to de-energise (energised – no emergency signal being used). This may be used to mute external equipment, if required.
- The DSP looks for the presence of a fault monitoring tone (default 30Hz) superimposed on the audio input signals and audio output signals, as set via the PC Mimic program and in hardware. Any fault detected will be reported to the fault reporting system within 100s of occurrence.
- The DSP scans the message store and PTT inputs. On receipt of a valid route request, the DSP connects the input or message to the audio output provided no higher priority request exists. A talk now signal will be given, associated with the active audio input.
- The DSP is able to accept configuration data from a PC Mimic program which is connected via a RS232 serial line, (using the same port as for communications with the LCD).
- A write protect link is provided and should be removed whilst in normal operation to prevent corruption of the flash memories.

1.2.4 The Power Amplifiers

Limitations of the power supply and batteries dictate that the maximum audio power available is 250 watts per channel. If the system is supplied from an auxiliary power supply, higher ratings are possible. Consult the factory for more information.

1.2.5 The Audio Output Zones and the Loudspeaker Circuit Fault Detector

Audio output is arranged to provide six user selectable zones as shown in figure 5. PTT1 always has the highest priority and automatically selects all zone outputs where as if PTT1 is not active the highest priority audio source can be routed to the required zones.

Figure 5. The Audio Output Zones

PTT1-4	ZA1- ZA6	Zone 1A	Zone 1B	Zone 2A	Zone 2B	Zone 3A	Zone 3B	Zone 4A	Zone 4B	Zone 5A	Zone 5B	Zone 6A	Zone 6B
1000	XXXXXX	T*	T	T	T	T	T	T	T	T	T	T	T
0XXX	000000	-	-	-	-	-	-	-	-	-	-	-	-
0XXX	100000	T	T	-	-	-	-	-	-	-	-	-	-
0XXX	010000	-	-	T	T	-	-	-	-	-	-	-	-
0XXX	001000	-	-	-	-	T	T	-	-	-	-	-	-
0XXX	000100	-	-	-	-	-	-	T	T	-	-	-	-
0XXX	000010	-	-	-	-	-	-	-	-	T	T	-	-
0XXX	000001	-	-	-	-	-	-	-	-	-	-	T	T
0XXX	010101	-	-	T	T	-	-	T	T	-	-	T	T
0XXX	111111	T	T	T	T	T	T	T	T	T	T	T	T

* 'T' = Audible tone, '-' = No tone

The loudspeaker circuit fault detection works on a DC monitoring principle. An end-of-line resistor must be fitted at the end of each loudspeaker circuit and the loudspeakers must be fitted with a de-coupling capacitor. Please note "Emergency Broadcasts" will automatically go to ALL zones.

1.2.6 The Fault Reporting System

The fault indicator is integrated with a Liquid Crystal Display (LCD). The LCD module communicates with the DSP and reports any fault detected. These faults are stored in a log; the operator can then retrieve the log and inspect the last 100 logged faults.

The fault reporting system provides the following:

- On detecting any fault the LCD or DSP activates a sounder, the sounder provides a minimum of 50dBa SPL at any point one metre around the cabinet in normal operating conditions i.e. cabinet door closed.
- On receiving a fault the System Fault LED begins to flash.
- On receiving a fault the LCD indicates the nature of the fault or faults received. If more than 1 fault is present the display will show the first fault, 1 of n (n is the number of faults received).
- The sounder and LED continue to be active until all the faults have been accepted. The fault report will not re-set itself in the case of intermittent faults.
- On choosing the fault accept option (password protected), the sounder ceases and the fault LED changes to an illuminated state. Any further new faults received cause the sounder to re-start, the LED to flash and the new fault to be placed in the fault log.
- If a fault has been logged and accepted (not reset), further occurrences of the same fault do not cause the sounder to re-start.
- Once a fault has been rectified it can then be cleared. When ALL faults have been cleared the System Fault LED will be turned off and the LCD will return to "System Healthy".
- Any new detected fault causes the sounder to activate and the System Fault LED to flash.
- A connection is provided to a PC Mimic program to allow changes to the system configuration.

1.2.7 The Battery Charger

A battery charger system is provided which is monitored in accordance with the requirements of BS5839 part 8.

1.2.8 The Power Supply

The power supply for the unit is a 2 Amp (350W) nominal rating at 220/240V AC (4A at 110V AC). This is adequate to supply the system and the amplifiers (at the rated 250-Watts load) and also to provide battery charging capacity in accordance with the requirements of BS5839.

The power supplied to peripheral equipment (such as microphone stations) may have a substantial effect on the sizing of batteries and power supply. Advice should be sought from the factory if peripherals are to be powered from the main unit.

1.2.9 The Cabinet

The equipment complete with batteries is mounted in an IP63 rated wall cabinet with a swing door which is key locked. The user terminations are all made onto 2 PCBs in the back of the box with the batteries located in the bottom of the box. The modules for the system are mounted on a swing frame. Only the LCD and keys can be accessed with the front door closed together with the LEDs which provide a backup function in the event of a failure of the LCD.

2. Unpacking

The JustiFire unit is packed in 5 main parts:

JustiFire cabinet complete with internal sub-rack

Amplifiers x 2

Module extraction key

12V batteries x 2

Battery termination and clamping kit consisting of:

- One x Interconnecting bus bar
- Four x M6 x 12mm bolts
- One x Clamping bar

Check that the JustiFire packaging/unit components are undamaged and complete. In case of damaged or missing components inform your supplier immediately and do not proceed with installation. To minimise handling weight it is not recommended to assemble the unit prior to mechanical installation.

<p><i>IMPORTANT:</i> Do not attempt installation or operation of the JustiFire unit before reading the following installation guide and Fire Detection and Alarm Systems for Buildings BS5839 parts 1, 4 & 8 thoroughly. For further information or support contact your supplier.</p>

3. Mechanical Installation

Installation of the JustiFire unit should only be undertaken by personnel with the appropriate electrical and mechanical qualifications.

When selecting a suitable mounting point consider the following points:

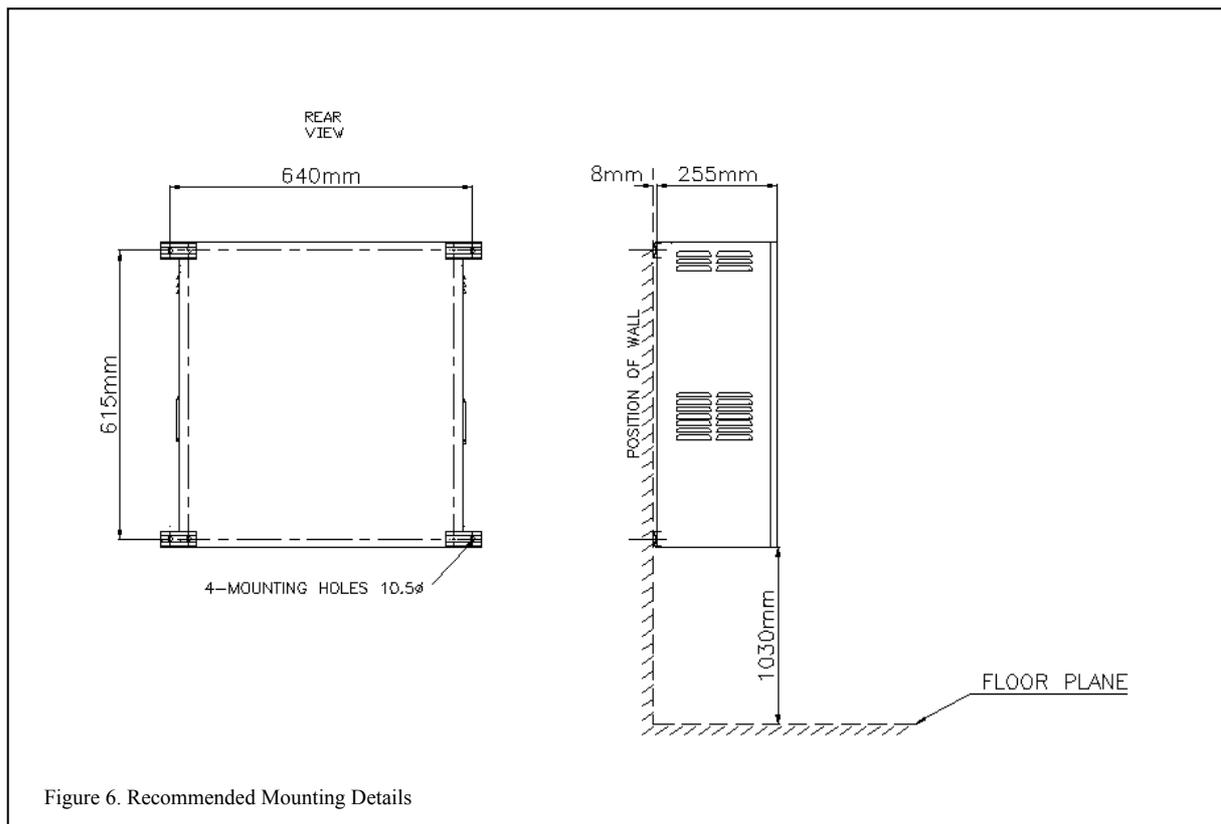
The JustiFire unit is IP63 rated and must be mounted in a suitable environment area out of direct sunlight, and not directly exposed to heat or sources of ignition. The unit should have free ventilation around it and the ventilation openings in the case should not be blocked or restricted.

Ensure that the wall is physically strong enough to bear the unit and suitable mounting bolts are used to secure it. Avoid metal swarf or dust from entering the unit when drilling the wall for mounting.

WARNING: *The weight of the JustiFire unit with batteries fitted is 70Kg. Extreme care should be taken when lifting the unit to avoid personal injury.*

The mounting location should be chosen to provide convenient routing of mains and signalling cables to the top of the JustiFire cabinet.

Refer to figure 6. for the recommended mounting position. The unit should be mounted so that the front door display is at eye level.



4. Electrical Installation

4.1 Connection of mains power

The power supply required is a clean 110 - 240 Volt, 50/60Hz. The unit is provided with three terminals for incoming power, live (Brown), neutral (Blue) and earth (Green), located in the top of the box in the centre of the back panel.

A domestic 13 Amp, 3-core cable is suitable. A dedicated 3 Amp spur should be used for the supply and it may be preferred to use a fire resistant cable for this purpose. Ensure that the cable is disconnected from the mains before beginning termination. The cable should be brought into the cabinet through a suitable gland or grommet mounted in the top face, ensuring that the cable will not chafe on the side of the entry.

It should be noted that due to the comprehensive self-monitoring functions of JustiFire (both internally and for the connected peripherals) if the unit is powered up with the associated field equipment connections incomplete, the unit will immediately generate one or more alarms.

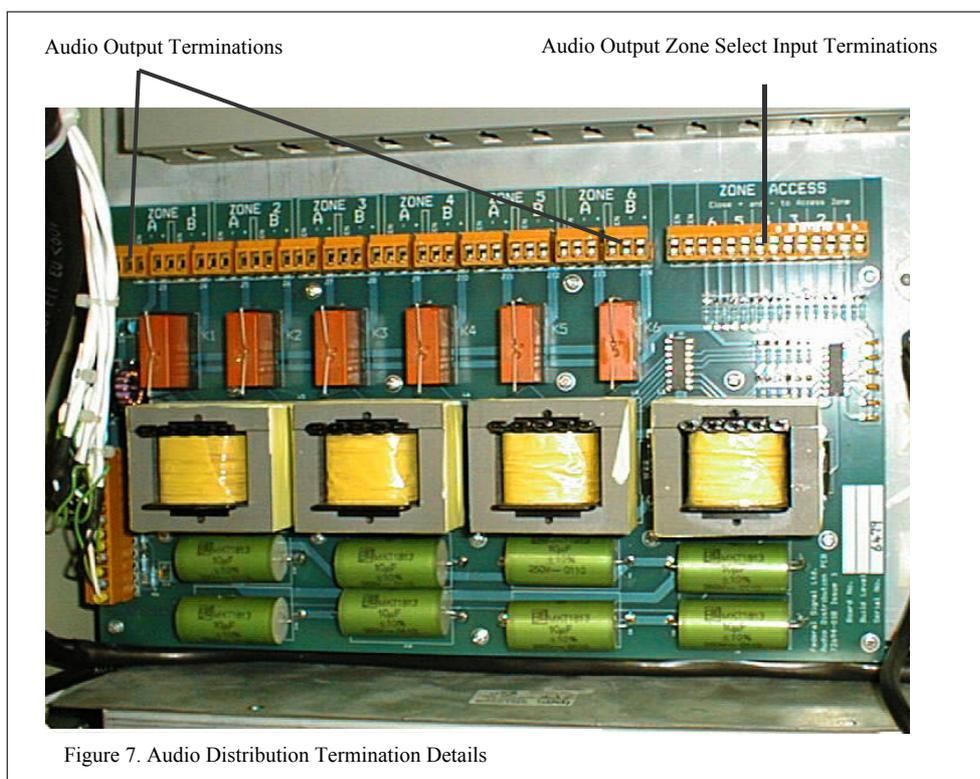
IMPORTANT: *Ensure the unit is properly earthed.*

4.2 Connection of peripherals

All external signal connections are made to the Audio distribution PCB (see figure 7.) and the Termination PCB (see figure 9.).

4.2.1 Connecting to the Audio Outputs

The JustiFire system provides terminations for 6 audio output zones with each zone having an 'A' and 'B' audio output pair. The position of these audio outputs on the audio distribution PCB are shown in figure 7. Each pair of terminals is suitable for connecting a loudspeaker spur, so each amplifier can drive a minimum of one and a maximum of 6 zones. *It is recommended that loudspeaker layout and connection to the JustiFire unit is made in accordance with BS5839 parts 1, 4 & 8.*



WARNING:

When the JustiFire unit is operational 100V AC audio signals may be present on the audio output terminals. Always ensure the JustiFire unit is isolated from the mains and battery supply at all times when connecting to the audio outputs or making adjustments to the external wiring.

It is recommended that loudspeaker cables are fully tested before connection to the JustiFire unit. The cables should be free from open-circuit, short-circuit and earth faults. The impedance of each loudspeaker spur should be measured and recorded.

All external loudspeaker connections are monitored for fault conditions using DC so each loudspeaker requires a suitable blocking capacitor fitting locally and EOL resistor fitted across the last loudspeaker on the connected spur. Note: Recommended resistor value = 56kOhms 0.5W.

Excessive loudspeaker loading will not damage the unit, but it will mean that the battery and power supply capacity is no longer adequate to conform with the requirements of BS5839.

4.2.2 Connecting to the Audio Output Zone Select Inputs

The position of the audio zone select inputs are shown in figure 7. Each audio zone output is individually selectable via a volt free contact. Closing the appropriate contact pair will switch through the highest priority audio to the matching 'A' and 'B' outputs as figure 5.

4.2.3 Connecting to the Fire Panel Inputs

The fire panel input terminals are located on the termination PCB as shown in figure 9. Five channels are provided each configurable for two different modes of operation, volt free and voltage reversal. The fifth channel operates as a de-latch control for momentary input signals.

The operating sense of these inputs may be configured using the Mimic software see section 6, 'Software configuration using the Mimic'.

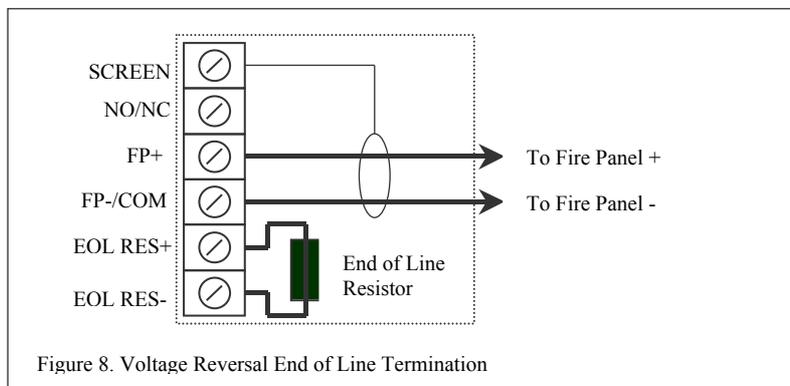
Option A - 24V Voltage reversal mode

This wiring method is necessary for the system to be compliant with BS5839 Pt 8.

For this mode of operation, ensure the links listed in the table of figure 11 are removed.

WARNING: *Failure to set these links correctly will result in system malfunction and may result in system damage.*

Connect the Fire Panel + / - leads to the FP+ and FP- / Com terminals on the appropriate JustiFire 5 pin block. If the JustiFire unit is the last device on this loop from the fire panel, connect an End-Of-Line resistor as shown in figure 8 (see fire panel documentation for details of resistor value).



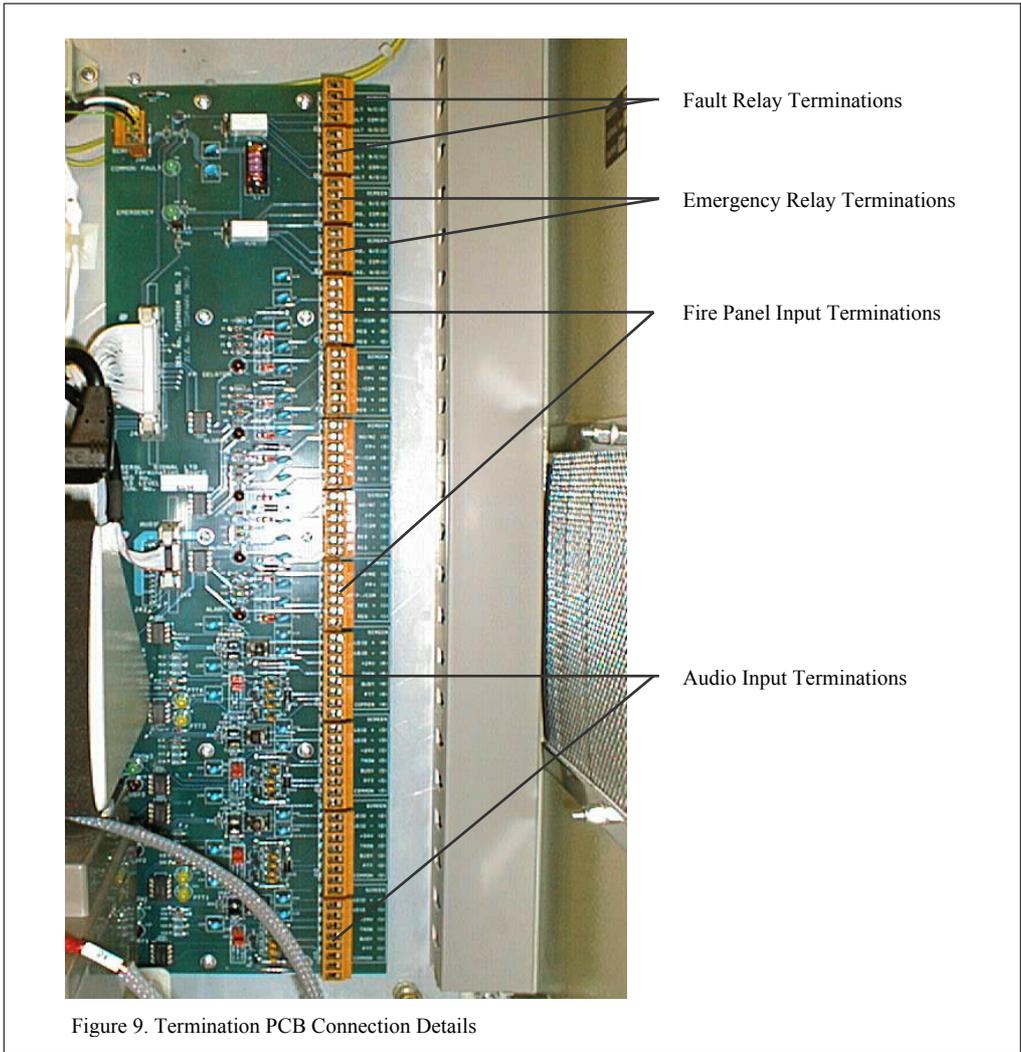


Figure 9. Termination PCB Connection Details

If there are other devices (e.g. sounders) further along this loop after the JustiFire unit, then connect a continuing wire as shown in figure 10.

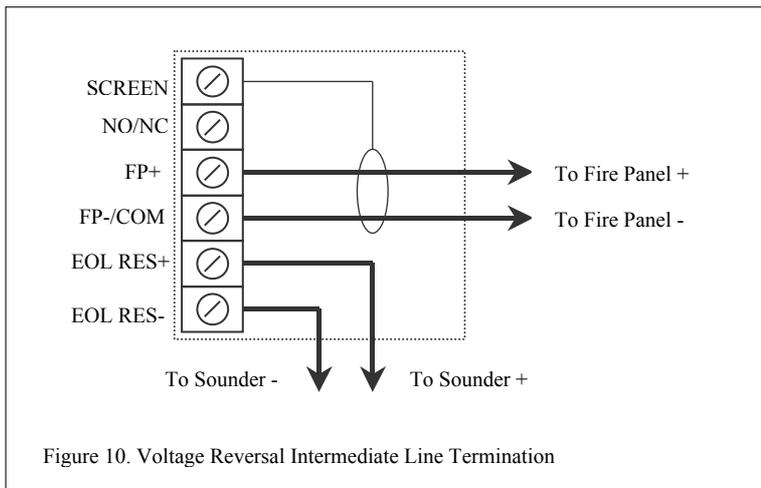


Figure 10. Voltage Reversal Intermediate Line Termination

Fire Panel Input Channel	Termination PCB Version 72694004 Volt free Operation	Termination PCB Version 72694004 Voltage Reversal Operation	Termination PCB Version 5173031 Volt free Operation	Termination PCB Version 5173031 Voltage Reversal Operation
	Fit links:	Remove links:	Fit links:	Remove links:
1	J14, J15	J14, J15	JP9, JP10	JP9, JP10
2	J16, J17	J16, J17	JP7, JP8	JP7, JP8
3	J18, J19	J18, J19	JP5, JP6	JP5, JP6
4	J20, J21	J20, J21	JP3, JP4	JP3, JP4
5	J22, J23	J22, J23	JP1, JP2	JP1, JP2

Figure 11. Fire panel input configuration links

Option B – Volt Free mode

For volt free connections, the links listed in the table of figure 11 require fitting. Connect the contact between the NO / NC and the FP- / COM terminals as shown in figure 12.

WARNING: Failure to set these links correctly will result in system malfunction and may result in system damage.

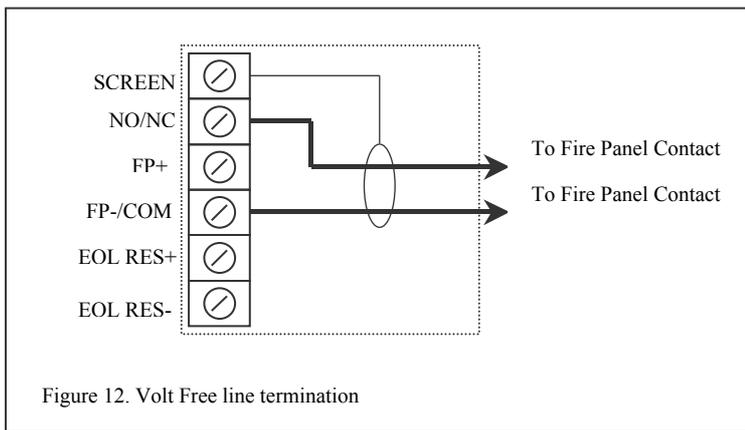


Figure 12. Volt Free line termination

4.2.4 Connecting to the Audio Inputs

The position of the audio inputs on the termination PCB is shown in figure 9. The JustiFire system provides four audio inputs each individually selectable for 0db or 100V line input signals. These must be configured using the table of figure 13 depending on the required input level.

WARNING: Failure to set these links correctly will result in system malfunction and may result in system damage.

Audio Input Channel	Termination PCB Version 72694004 0dB Operation	Termination PCB Version 72694004 100V Operation	Termination PCB Version 5173031 0dB Operation	Termination PCB Version 5173031 100V Operation
	Fit links:	Fit links:	Fit links:	Fit links:
1	J36 (1-2), J37 (1-2)	J36 (2-3), J37 (2-3)	JP25 (1-2), JP26 (1-2)	JP25 (2-3), JP26 (2-3)
2	J32 (1-2), J33 (1-2)	J32 (2-3), J33 (2-3)	JP23 (1-2), JP24 (1-2)	JP23 (2-3), JP24 (2-3)
3	J28 (1-2), J29 (1-2)	J28 (2-3), J29 (2-3)	JP21 (1-2), JP22 (1-2)	JP21 (2-3), JP22 (2-3)
4	J24 (1-2), J25 (1-2)	J24 (2-3), J25 (2-3)	JP19 (1-2), JP20 (1-2)	JP19 (2-3), JP20 (2-3)

Figure 13. Audio input configuration links

Each of the audio input channels provides a 'Press to talk' (PTT) switch input, a "Talk now" (Tnow) input, a "Busy" input and a 24Vdc supply output. These may be used to power and support external audio equipment such as a microphone as shown in figure 15. The Tnow and "Busy" inputs are suitable for driving an LED with a suitable dropping resistor. To power external equipment with 24Vdc use the table of figure 14 to fit the appropriate links.

The operating sense of the PTT switch inputs may be configured using the Mimic software see section 6, 'Software configuration using the Mimic'.

Audio Input Channel	Termination PCB Version 72694004 24Vdc active	Termination PCB Version 72694004 24Vdc inactive	Termination PCB Version 5173031 24Vdc active	Termination PCB Version 5173031 24Vdc inactive
	Fit links:	Remove links:	Fit links:	Remove links:
1	J38, J39	J38, J39	JP17, JP18	JP17, JP18
2	J34, J35	J34, J35	JP15, JP16	JP15, JP16
3	J30, J31	J30, J31	JP13, JP14	JP13, JP14
4	J26, J27	J26, J27	JP11, JP12	JP11, JP12

Figure 14. Audio input 24Vdc configuration links

4.2.5 Connecting to the Emergency Relay

A set of volt free relay contacts are provided on the termination PCB, see figure 9, to allow external monitoring of an emergency condition. Two isolated contacts are supplied each with a normally open, normally closed and a common terminal connection. Check the electrical specification (section 10.) before connecting external equipment to these contacts.

4.2.6 Connecting to the Fault Output Relay

A set of volt free relay contacts are provided on the termination PCB, see figure 9, to allow external monitoring of fault conditions. Two isolated contacts are supplied each with a normally open, normally closed and a common terminal connection. Check the electrical specification (section 10.) before connecting external equipment to these contacts.

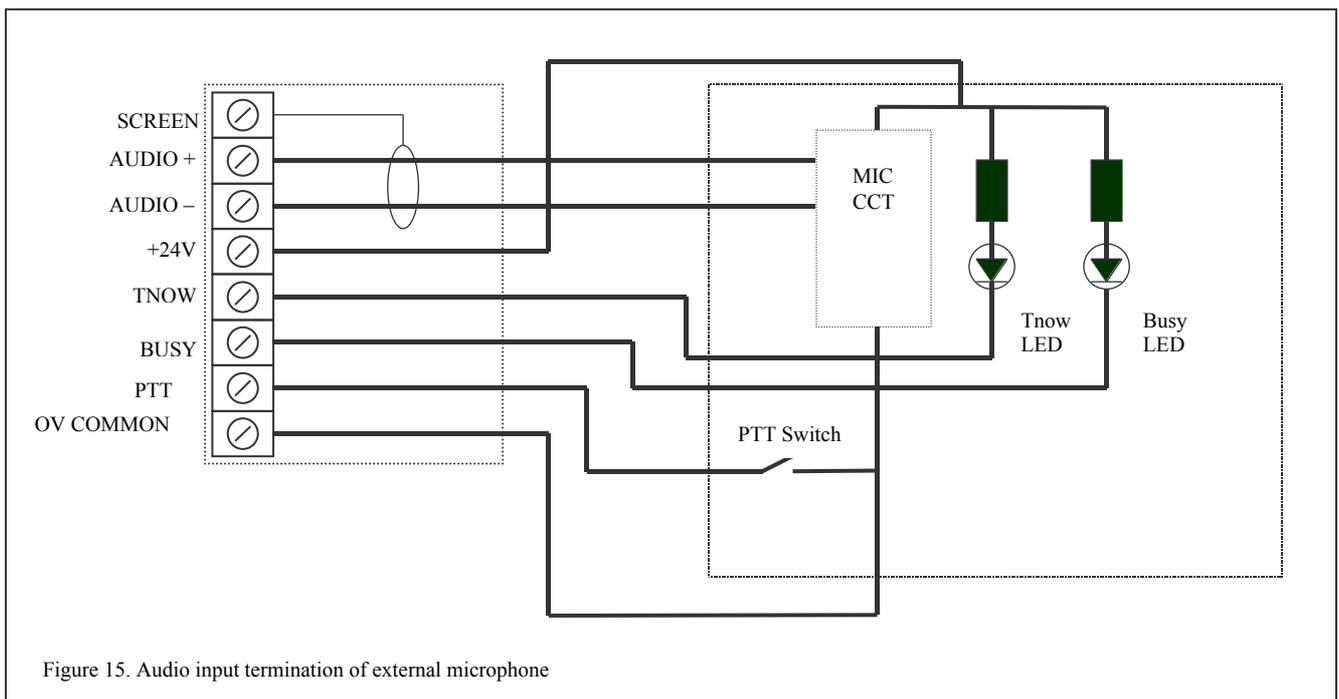


Figure 15. Audio input termination of external microphone

4.3 Connection of the Lead Acid Batteries

Two 12V lead acid batteries are supplied to provide a 24Vdc battery backup facility. These are packed separately and require both mechanical and electrical installation. The batteries locate into the bottom of the JustiFire cabinet and are held in position with the retaining clamp and nut supplied as shown in fig. 16.

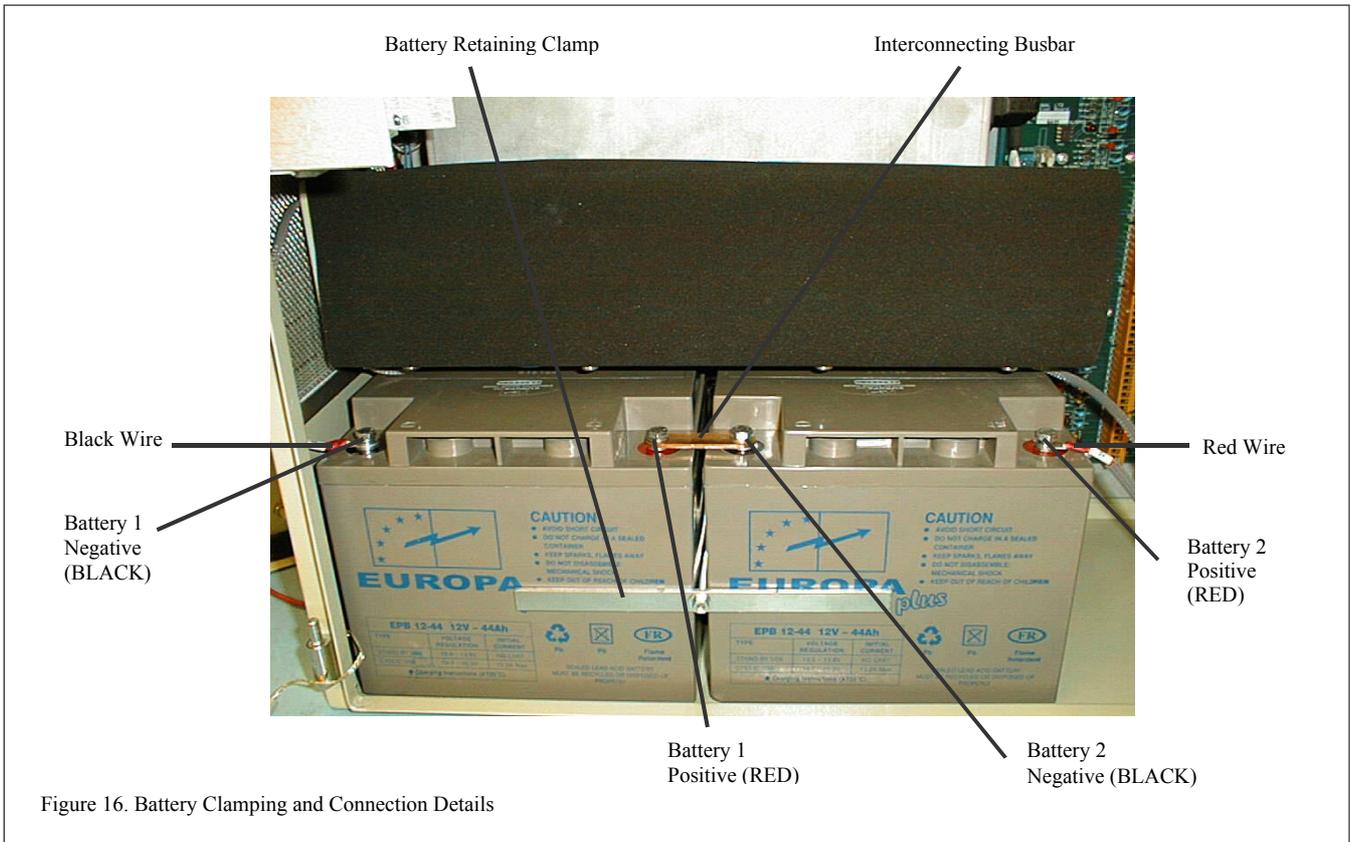


Figure 16. Battery Clamping and Connection Details

WARNING: Before making any of the battery connections careful note should be made of the polarity of the individual batteries relative to each other and the battery charging leads, see figure 16. Extreme care should be taken not to short the battery terminals to each other or the JustiFire chassis.

Connect the two batteries together “in series” with the interconnecting bus bar and bolts supplied. Ensure the JustiFire circuit breakers CB1-CB4 are all OFF and connect the red battery lead first followed by the black. If the batteries require disconnecting at any time during installation ensure the reverse sequence is adopted i.e. disconnect the black battery lead first. After connection, the batteries should be covered with the cloth cover to protect the battery connections from external electrical shorts.

5. Powering up the JustiFire for the first time

Before applying power to the JustiFire unit some final assembly is required. Insert the two amplifier modules into the card frame behind the door. The amplifier modules are heavy and should be handled with care to avoid mechanical damage. The modules should slide freely in the mounting rails of the frame and only require slight pressure to finally locate enabling each module to be secured via the four fixing screws.

INFORMATION: To remove any of the sub-rack modules, slacken the module retaining screws and pull out the module using the module extraction key provided.

Apply mains power to the unit and switch on the four circuit breakers in quick succession. The JustiFire unit should adopt a standby status as defined in the table of figure 17. If the unit adopts a none standby status and registers one or more alarms then refer to section 7 “*Operation*” to proceed with processing and clearing them.

Figure 17. Standby Indication.

<i>Module</i>	<i>Standby Indication Status</i>
LCD Indicator Panel	LCD displays “System Healthy”, correct date & time. “POWER ON” LED illuminated*.
Amplifier Module A (TOP)	“POWER ON”, “ACCESS” and “SELECT” LEDS illuminated
Amplifier Module B (BOTTOM)	“POWER ON”, “ACCESS” and “SELECT” LEDS illuminated
CFM Module	All Indicators off
Termination PCB	“COMMON FAULT”, “FP DELATCH”, “ALARM 1-4” and “PTT1-4” illuminated**

*Note: All other module LEDS off unless stated otherwise, **Standby indication may change with software configuration

When the unit has adopted a standby status for the first time it is recommended to set up the current date, time and user password via the front panel keypad (see “*Operation*” section).

6. Configuration Using the MIMIC Software

6.1 General

The Mimic software is a PC based set-up program, which provides a quick tool for both configuration of the user-defined parameters and monitoring of the JustiFire system. The mimic program will run on a Pentium based PC with a 9-pin serial port and the Windows (95 or later) operating system.

6.2 Set-up

With the JustiFire unit powered down, configure the jumper J17 on the DSP card to "PC RS232", and fit jumpers JP10 ("CONFIG EEPROM WRITE") and JP9 ("FLASH WRITE") and then replace in the rack. Alternatively, if the DSP has "RUN/CONFIG" switch, set it to the "CONFIG" position and the "KEYPAD/PC" switch to the "PC" position. Connect the PC serial port to the serial connector on the front of the JustiFire DSP card using a 9-pin "one-to-one, straight through" male/female serial lead. Power up the JustiFire unit and run the Mimic program.

INFORMATION: Set Jumper J17 to "PC RS232" on the DSP card (or the switch to "PC") to allow mimic configuration, or "KEYPAD TTL" (switch to "KEYPAD") for normal operation. Fit jumper JP10 (or switch to "CONFIG") to change the configuration and fit JP9 to change the message store. Remove both JP10 (or switch to "RUN") and JP9 for normal operation.

Note: During communications with the Mimic software the JustiFire keypad and fault relay will register a system fault which may be ignored.

6.3 Operation

On running the Mimic program the user will be presented with the option to run the Mimic in Real or Dummy mode as figure 18. In "Real" mode the Mimic software has control over the JustiFire configuration parameters and will display real time information where as "Dummy" mode is a standalone presentation of the Mimic screens with prefixed data. To continue with system configuration select "Real" and press the "OK" button.



Figure 18. Mimic mode dialogue box

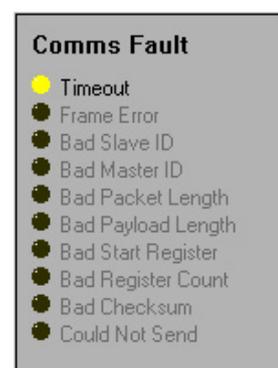


Figure 19. Display of Communication Errors

6.4 The Main Screen

After selection of the Mimic mode the user will be presented with the main Mimic screen as shown in figure 20. This gives a system over-view and provides access to the main user configurable options in the system. General Mimic information and set-up is accessed through the top menu where as specific JustiFire parameters are accessed by clicking on the appropriate symbol in the main area of the screen. Alternatively if communications with the JustiFire rack is not established the user will be presented with the display of figure 19. In this case check the PC COM port configuration and the serial lead connections.

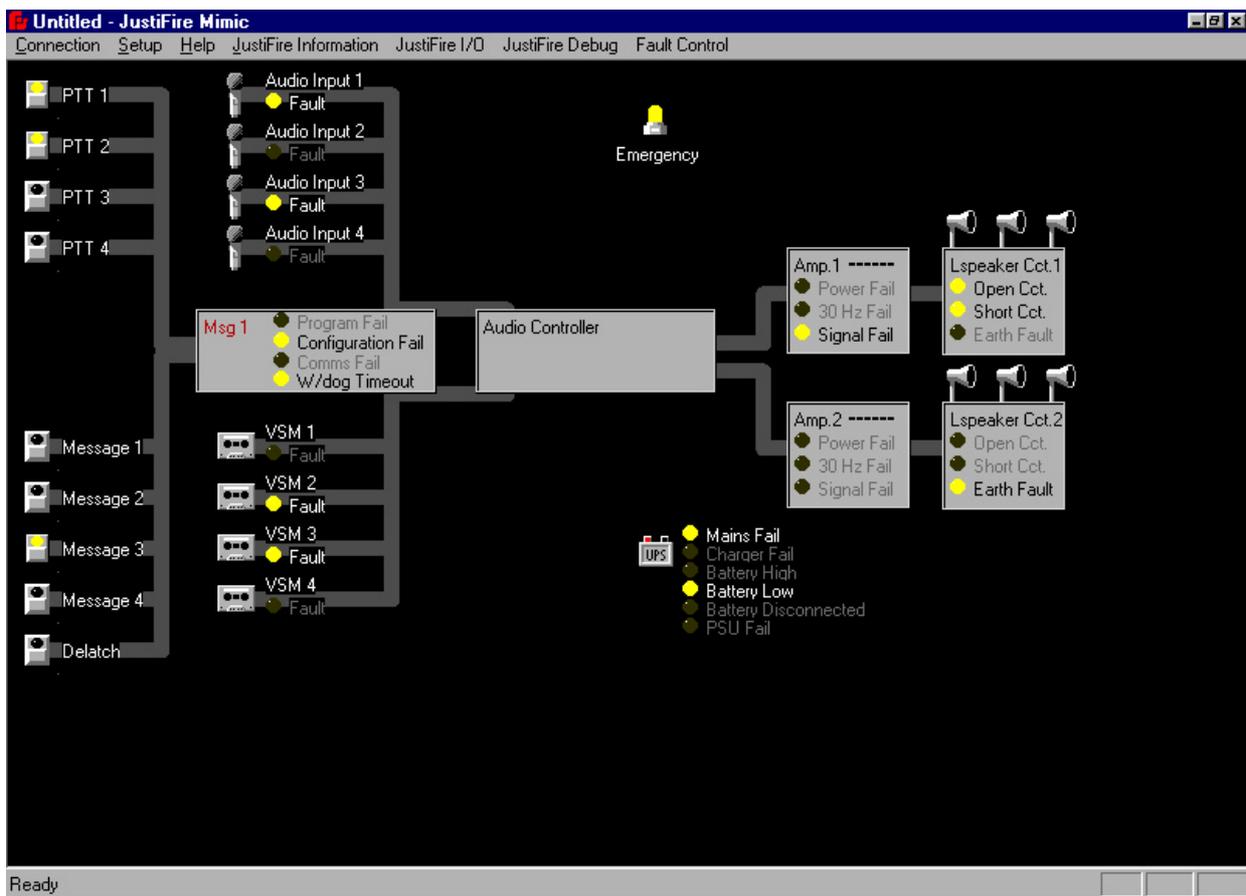


Figure 20. The main Mimic screen

6.5 The Menu Options

6.5.1 "Connection Settings"

If the PC serial COM port will not support the default settings of COM1 and 19200 Baud rate then these may be changed to those shown in figure 21. Press the "OK" button to confirm the new settings.

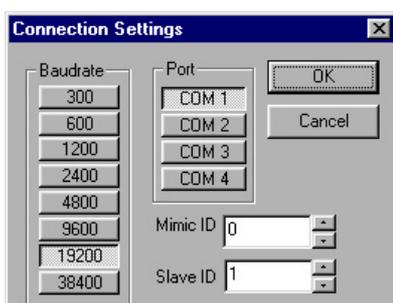


Figure 21. The Connections settings dialogue box

6.5.2 "Allow Set-up"

To gain access to and change the JustiFire configuration settings the user must first enable this option by clicking on the "Allow Set-up" menu option. When active a tick will appear when this menu option is viewed.

6.5.3 "Change Password"

The password function is currently inoperable.

6.5.4 "About JustiFire Mimic"

This option displays the Mimic software version number.

6.5.5 "JustiFire Information"

This option displays further Mimic software release information.

6.5.6 "JustiFire IO"

This option displays a mixture of user and diagnostic information as shown in figure 22 and described as follows:

- Reset count:* The number of times the DSP IC has been reset by the system watchdog.
- Input Low:* Diagnostic Information.
- Input High:* Diagnostic Information.
- Links:* The current DSP links, which are fitted.
- FPGA:* The version of the FPGA IC fitted to the DSP card.
- ADC A:* Diagnostic Information.
- ADC B:* Diagnostic Information.

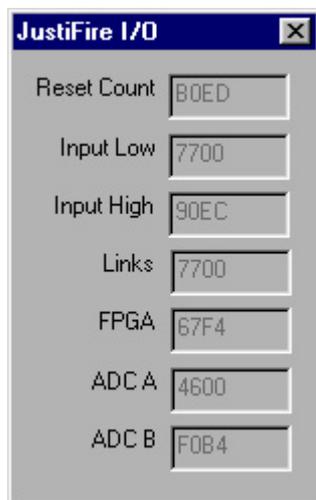


Figure 22. JustiFire IO information

6.5.7 "Fault Control"

Selecting this menu option displays 2 options as shown in figure 23 which allow the user to override the normal fault handling procedures of the JustiFire system.



Figure 23. Fault control dialogue box

The fault control parameters are:

- All faults Accepted:* allows the user to take all outstanding unaccepted alarms to an accepted state and silence the JustiFire buzzer.
- All faults Cleared:* allows the user to clear all accepted alarms.

6.6 Changing the JustiFire Parameters

When the JustiFire is first installed the Mimic software can be used for configuration of all the JustiFire parameters. A limited number of these non-emergency based parameters may also be configured directly through the JustiFire keypad (see “Operation” section) where indicated.

WARNING: When the JustiFire unit is powered up, if jumper JP8 is fitted the unit will adopt the factory default parameters. After any of the parameters have been changed ensure that the jumper JP8 on the DSP card has been removed before cycling the power, otherwise the new settings will be overwritten by factory defaults.

6.6.1 Changing the PTT1 Options

Clicking on the PTT1 icon displays an options box as shown in figure 24.



Figure 24. PTT1 options dialogue

The individual PTT parameters are:

- Priority:** The priority of the PTT1 input is fixed at the highest level as this is reserved for use with the fireman’s microphone.
- Sense:** The sense of the PTT1 input can be selected to be active high or low.
- Silence Sounder:** This option will cause an active PTT1 input signal to silence the JustiFire buzzer.
- Emergency Broadcast:** This option will cause an active PTT1 input signal to generate an emergency broadcast.
- Chime:** This allows for the selection of various pre-announcement chimes.

6.6.2 Changing the PTT2-4 Options

Clicking on the PTT2-4 icons give a similar set of options to that for PTT1 except the user has access to set the input priority but not the Silence Sounder option as shown in figure 25.

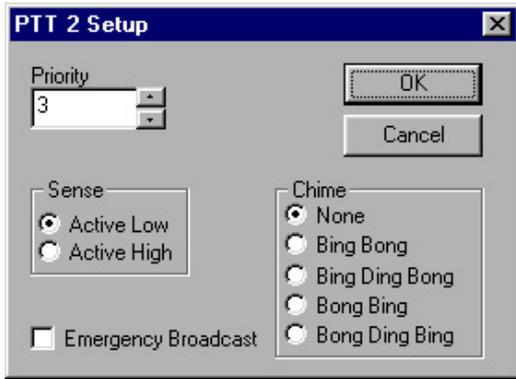


Figure 25. PTT2 dialogue box.

The default parameters for the PTT Inputs, the Alarm Inputs and the Monitoring are shown on figure 26

<i>Input Type</i>	<i>Emergency Broadcast</i>	<i>Silence Sounder</i>	<i>Default Priority</i>	<i>Monitoring</i>	<i>Chime</i>
Audio Input 1/PTT1	On	On	1 (Fixed)	30 Hz	None
Message Input 1	On	-	2	-	None
Audio Input 2/PTT2	Off	-	3	30 Hz	None
Message Input 2	Off	-	4	-	None
Audio Input 3/PTT3	Off	-	5	30 Hz	None
Message Input 3	Off	-	6	-	None
Audio Input 4/PTT4	Off	-	7	30 Hz	None
Message Input 4	Off	-	8	-	None

Figure 26. The default parameter settings for PTT1-4 and Message 1-4 inputs.

6.6.3 Changing the Message Input 1-4 Options

Clicking on any of the Message icons displays an options box as shown in figure 27.



Figure 27. PTT1 options dialogue box

The individual message input parameters are:

- Priority:** The priority of this Message input relative to the other 3 and also the PTT1-4 inputs may be selected.
- Sense:** The sense of the Message input can be selected to be active high or low.
- Emergency Broadcast:** This option will cause an active Message 1 input signal to generate an emergency broadcast.
- Chime:** This allows for the selection of various pre-announcement chimes.

6.6.4 Changing the Audio Input 1-4 Options

Clicking on any of the Audio input icons displays an options box as shown in figure 28. Each audio input is equipped with the option to select the fault monitoring method and a gain control allowing the volume level to be set/adjusted. Selection of the required fault monitoring tone will bring up a further window to allow the fault monitoring to be set-up as shown in figure 29.

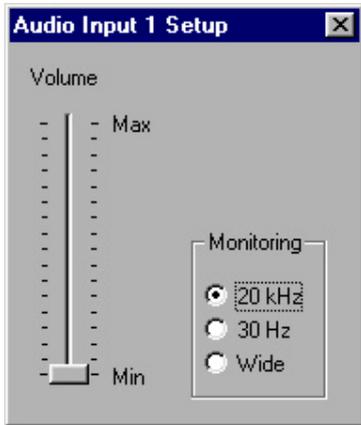


Figure 28. Audio input options dialogue box

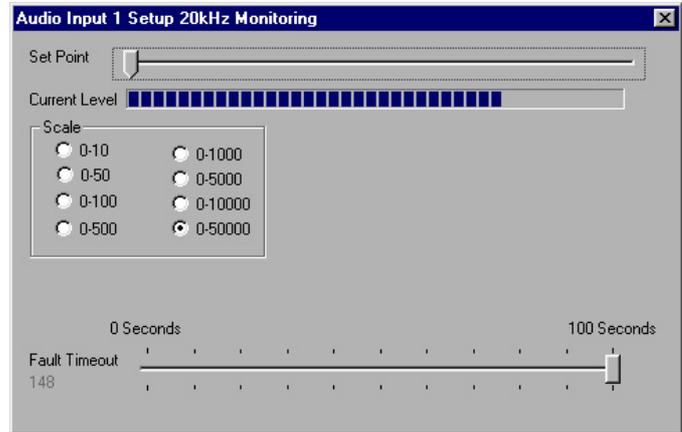


Figure 29. Audio input monitoring options dialogue box

The individual monitoring parameters are:

- Set Point:** This slider sets the trip point below which a monitoring failure alarm will be raised subject to the Fault Timeout option setting.
- Scale:** The current level of the monitoring tone can be measured by selecting each scale option in turn until the peak of the signal is displayed.
- Fault Timeout:** This option sets the time the monitoring level must remain below the trip point before a monitoring failure alarm will be raised.

6.6.5 Changing the Voice Storage Options

Clicking on any of the four VSM (Voice Stored Message) icons displays a dialogue box as shown in figure 30. The primary slider option allows for the volume of the individual message to be adjusted while the buttons on this window also allow for message recording and functionality options. Clicking the "Message" button produces a dialogue box as shown in figure 31.

INFORMATION: Fit jumper JP9 to enable the overwriting of the existing messages by the downloading of a "*.wav" file.
Remove JP9 for normal operation thus eliminating memory corruption

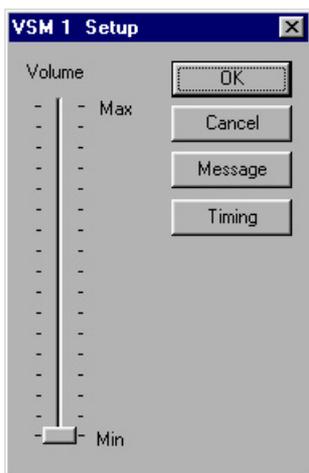


Figure 30. VSM options dialogue box



Figure 31. VSM set-up options dialogue box

The individual message functions are:

- Load Sound From File:* This feature allows the loading of a new message, in *.wav format from a file of the users choice, to overwrite the existing message.
- Save Sound To File:* This feature allows the existing message to be saved *.wav format to a file of the users choice.
- Play Sound File:* This feature allows the user to play/review *.wav sound files.
- 1Khz Tone:* This feature replaces the current message with a constant 1Khz tone.
- Intermittent 1Khz Tone:* This feature replaces the current message with a continuous cycle of 1Khz tone for 1 second followed by 1 second of silence.
- Bell:* This feature replaces the current message with a bell tone.

Clicking the “Timing” button produces a dialogue box as shown in figure 32:

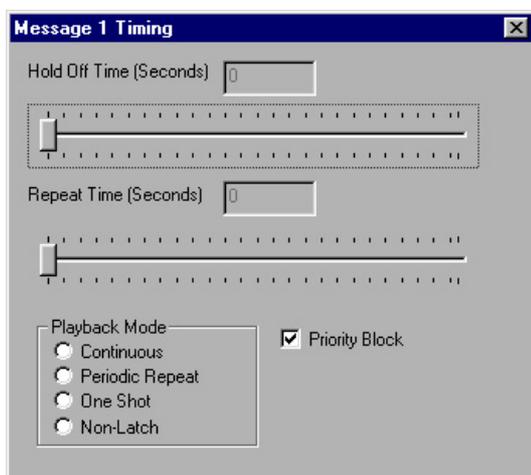


Figure 32. VSM timing options dialogue box

The individual timing functions are:

- Hold Off Time:* This parameter controls the delay in seconds (0-255) after the message input becomes active before the message starts to play regardless of the Playback mode.
- Repeat Time:* This parameter controls the delay in seconds (0-255) before the message repeats during Periodic Repeat Playback mode.

The Playback Mode options are:

- Continuous:* This mode causes the message to play continuously with no inter message delay.
- Periodic Repeat:* This mode causes the message to play continuously with an inter- message delay set by the Repeat Time setting.
- One Shot:* This mode causes the message to play once only.
- Non-Latch:* This mode activates the message during an active input only.

The *Priority Block* feature inhibits the playing of lower priority messages whilst a higher priority message is inactive (pausing) during the repeat time.

6.6.6 Changing the Input Controller Options

Clicking on the left-hand box of the two boxes displayed centrally in the main screen produces the Controller Set-up dialogue box as shown in figure 33. This dialogue box provides an overall summary of all the system input priorities previously defined and allows the priority of each to be changed.

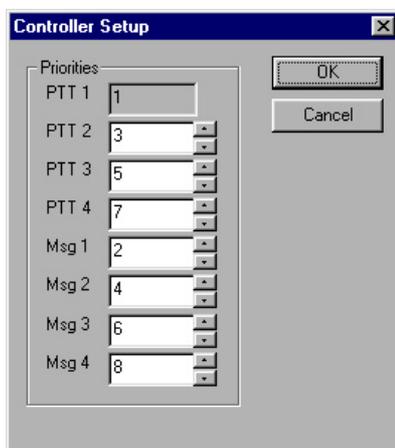


Figure 33. Controller Set-up dialogue box

6.6.7 Changing the Audio Controller Options

Clicking on the right-hand box of the two boxes displayed centrally in the main screen produces the Audio Controller Set-up dialogue box as shown in figure 34. This dialogue box provides access

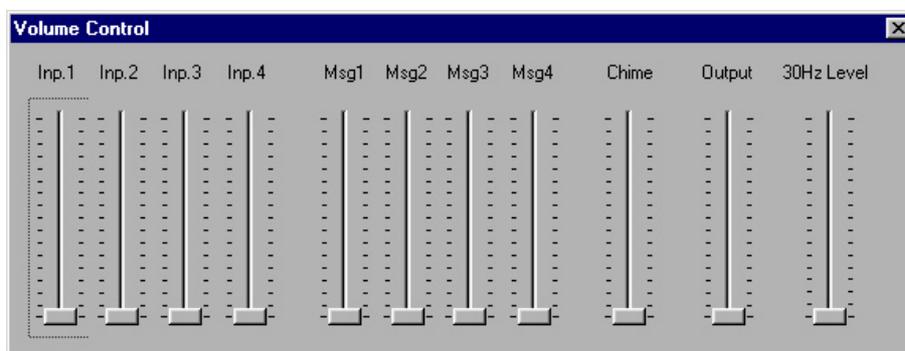


Figure 34. Audio Controller Set-up dialogue box

to all the volume control settings for the system components. These are:

- Inp1-4:* The input levels of the audio inputs 1-4.
- Msg1-4:* The output levels of the messages 1-4.
- Chime:* The output level of the pre-announcement and pre-message chimes.
- Output:* The output level of the selected system audio output (audio input or message).
- 30Hz level:* The output level of the 30 Hz monitoring signal.

6.6.8 Changing the Amplifier Options

Clicking on one of the amplifier rectangles on the main display produces the dialogue box as shown in figure 35. This dialogue box allows adjustment of the parameters controlling the 30 Hz monitoring for the chosen amplifier. The individual monitoring parameters are:

- Set Point:* This slider sets the trip point below which a monitoring failure alarm will be raised subject to the Fault Timeout option setting.
- Scale:* The current level of the monitoring tone can be measured by selecting each scale option in turn until the peak of the signal is displayed.
- Fault Timeout:* This option sets the time the monitoring level must remain below the trip point before a monitoring failure alarm will be raised.

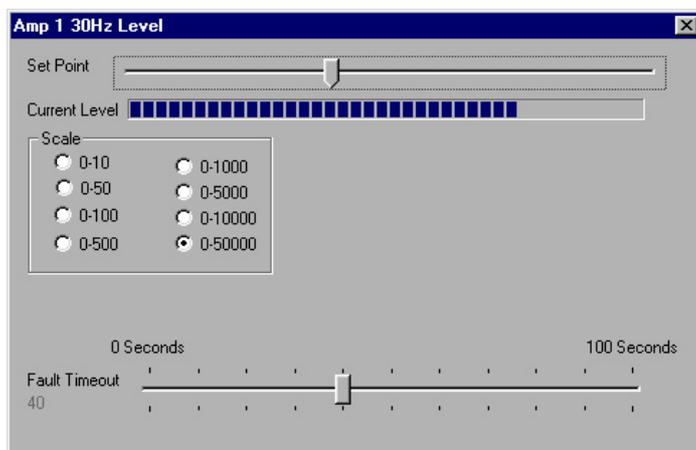


Figure 35. Amplifier 1 Set-up dialogue box

6.6.9 Changing the Emergency Options

Clicking on the “Emergency” icon displays the Emergency dialogue box as shown in figure 36. This dialogue box provides an overall summary of which inputs to the system have been classified with an “Emergency” status and allows this status to be changed.

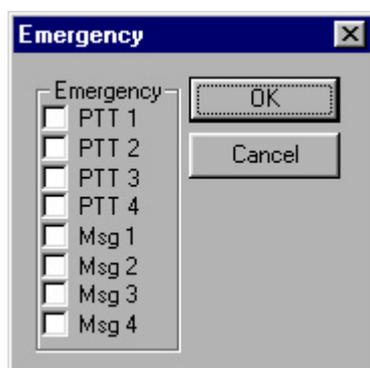


Figure 36. Emergency Set-up dialogue box

7. Operation

The JustiFire is operated using the 3 keys on the front of the unit, '▲' (SCROLL UP), '▼' (SCROLL DOWN) and 'ENTER', together with a 4 line Liquid Crystal Display (LCD).

There are also four indicators (LEDs) on the front of the unit, which together with a buzzer indicate the current status of the system in compliance with BS5839 Part 8.

7.1 The Status Indicators

7.1.1 'SYSTEM FAULT' (Yellow LED)

If the system is healthy (fault free) the 'SYSTEM FAULT' indicator will be unlit. In this case the LCD will also normally be unlit and the buzzer will be silent.

If the system has an unaccepted fault the 'SYSTEM FAULT' indicator will flash. In this case the LCD will be lit showing the current fault(s) and the buzzer will sound.

If the system has faults which are then all accepted then the 'SYSTEM FAULT' indicator will change from flashing to being constantly lit. In this case the LCD will remain lit showing the accepted fault(s) and the buzzer will be silenced.

7.1.2 'DISPLAY FAULT' (Yellow LED)

In normal operation the 'DISPLAY FAULT' indicator will be unlit. If however the display loses communications with the Digital Signal Processor (DSP), then it will become lit. In this case the LCD will be lit showing a 'Comms Error', the 'SYSTEM FAULT' indicator will also be lit and the buzzer will sound.

7.1.3 'POWER ON' (Green LED)

The JustiFire requires a constant 24 Volt DC supply to operate. This is provided by the power supply unit in normal operation, whilst in the event of a mains failure or a power supply problem the 24 Volts is provided by the battery backup (two 12 Volt batteries). So, in normal operation (or whilst using battery backup), the 'POWER ON' indicator will be illuminated.

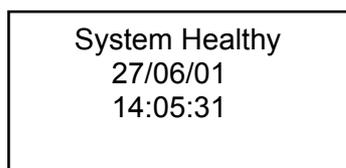
7.1.4 'FALLBACK' (Yellow LED)

In normal operation the 'FALLBACK' indicator should be unlit. If however the DSP (which contains the main control software) fails, in compliance with BS5839 Part 8, the Fireman's microphone can still be used and in this case the 'FALLBACK' indicator will be illuminated.

Note that whilst in the 'FALLBACK' mode, only the Fireman's microphone is operative.

7.2 Normal Operation (Healthy State)

On power-up, assuming the system is fault-free the LCD will be unlit and will display the current healthy status together with the current date and time, which updates every second, as shown in figure 37.



```
System Healthy
27/06/01
14:05:31
```

Figure 37. System Healthy Status

Also, whilst healthy, the 'SYSTEM FAULT', 'DISPLAY FAULT' and 'FALLBACK' indicators will all be unlit and the buzzer will be silent. The 'POWER ON' indicator will be the only LED which is lit.

7.3 On Receipt of a Fault

If a fault is received whilst the system is in a healthy state, the 'SYSTEM FAULT' indicator will start to flash and the LCD will become lit showing details of the current fault(s) as shown in figure 38. The first two lines show the type of fault, the third line shows the current status of the fault (On, Latched or Accepted), whilst the last line shows the number of current faults, i.e. the first number shows the index of this particular fault while the second number shows the total number of current faults. To view the other current faults, use the '▲' and '▼' keys to scroll through the list.

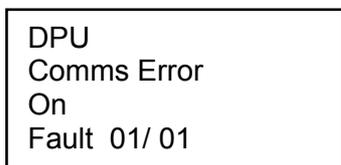


Figure 38. Display of Fault condition

Faults which have come and gone without being accepted are designated as being 'Latched'. Also note that whilst the system has an unaccepted fault the buzzer will sound.

7.4 Password Protected Mode

The ability to accept or clear a fault, to look at historical data or to change the date, time or password can only be done in protected mode, which is protected by use of a password.

From either the 'System Healthy' display or the 'Current Fault' display pressing the 'ENTER' key will then illuminate the display which will then ask for a 3 number password as shown in figure 39. The password is user configurable and is initially set at the factory as 09: 09: 09.

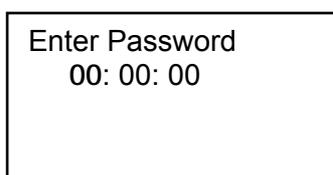


Figure 39. Display of Password Entry

The password consists of three numbers with each number having a value between '00' and '09'. Set the first, highlighted number by using the '▲' and '▼' keys to alter the number between '00' and '09'. Once the first number is set press the 'ENTER' key to highlight the second number. Likewise set the second and third numbers and after the third number is selected and the 'ENTER' key pressed if a valid password has been entered a key symbol will appear in the bottom right hand corner signifying protected mode. The display will now show a list of options available with the '◀' symbol indicating the current choice as shown in figure 40.

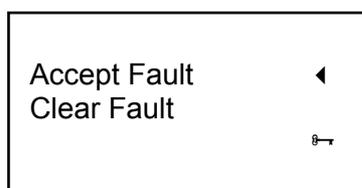


Figure 40. Display of Top Level Menu

Other options in the list include *Event Log*, *Set Date*, *Set Time*, *Accept Timeout*, *New Password*, *DSP Links*, *DSP Resets* and *Exit*.

The '▲' and '▼' keys are used to scroll up and down the list of options and the 'ENTER' key is used to select the chosen option.

If a valid password is entered the system will remain in protected mode for two minutes without the need to re-enter the password. After the two minutes have elapsed the system will automatically return to the original 'System Healthy' or 'Current Fault' display and the key symbol will disappear.

Likewise if an invalid password is entered the system will also return to the original 'System Healthy' or 'Current Fault' display.

7.5 Accepting a Fault or 'What to do when the fault buzzer sounds'

- Read the details on the display and make a note of the fault description.
- If there is more than one fault, then scroll through the faults using the '▲' and '▼' keys.
- Display the fault that is to be accepted.
- Enter protected mode and choose the 'Accept Fault' option as described in section 7.4. The display will then ask whether the fault is to be accepted (Y/N) as shown in figure 41.



Figure 41. Display of Accept Options

- Press the '▲' or '▼' key to accept the fault or not. The display will then return to the list of current faults. If the fault has been successfully accepted the third line on the current fault display for that particular fault will now read 'Accepted'. If all the current faults have been accepted the buzzer will now stop and the 'SYSTEM FAULT' indicator will change from flashing to being continually lit. If they do not, then there is still a fault to be accepted, so continue to scroll through the list to find this unaccepted fault.
- Arrange for appropriate repair / maintenance of the system.
- Once all faults have been accepted the system allows up to 24 hours for the faults to be rectified. The default setting for this 'Accept Timeout' is 24 hours, so in this case, when the 24 hours have elapsed the 'Accepted' faults are reset to 'On' and the buzzer sounded again.

7.6 Clearing a Fault or 'What to do when a fault has been fixed'

- Accept the fault as described in section 7.5.
- Display the fault that is to be cleared.
- Enter protected mode and choose the 'Clear Fault' option as described in section 7.4. The display will then ask whether the fault is to be cleared (Y/N) as shown in figure 42.
- Press the '▲' or '▼' key to clear the fault or not. The display will then return to the list of current faults. If the fault has been successfully cleared the fault should no longer appear in the list of current faults. If all the faults have been cleared the 'SYSTEM FAULT' indicator and the LCD will in normal operation be unlit and the LCD will display 'System Healthy'.
- If the fault is still present, the buzzer will sound, and the fault should be accepted again.

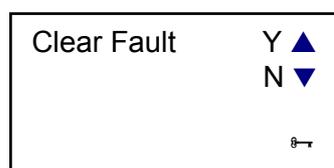


Figure 42. Display of Clear Options

7.7 Viewing the Event Log

- Enter protected mode and choose the 'Event Log' option as described above in section 7.4.
- The Event Log contains the 100 most recent events and these can be displayed in turn by using the '▲' and '▼' keys to scroll through the list. Each event is given a time stamp when the event occurred and is also given an index number in the list of 100 events as shown in figure 43.

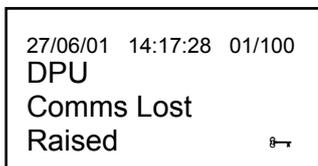


Figure 43. Display of Log

The first line shows the date and time at the moment the event occurred together with the index number. The second and third lines show the event type and the last line shows the status of the event.

- Pressing the 'ENTER' key will exit from the 'Event Log' to the previous menu display.

7.8 Setting the Date and Time

- Enter protected mode and choose either the 'Date' or 'Time' option as described in section 7.4.
- If the 'Date' option is chosen the current system date is displayed e.g. 29/ 06/ 01 and likewise the 'Time' option will display the current system time e.g. 14: 25: 31. As described previously in section 7.4, each number can be set (when it is highlighted) by using the '▲' and '▼' keys while the 'ENTER' key is used to move from day to month to year or from hours to minutes to seconds. Once either the year or the seconds have been set and the 'ENTER' key pressed the operator is asked whether any changes are to be saved as shown in figure 44.

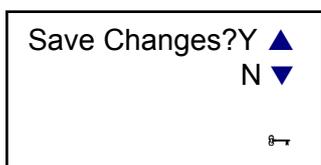


Figure 44. Display of Save Date/Time

- Press the '▲' or '▼' key to set the Date/Time or not. If 'Y' is selected the display will confirm if the Date/Time has been saved OK. The display will then return to the protected mode menu.

7.9 Changing the Timeout for the resetting of Accepted Faults

- Enter protected mode and choose 'Accept Timeout' as described above in section 7.4.
- The first number displays the current setting for the Timeout in hours (the minutes and seconds are not currently used) as shown in figure 45. The hours can be set from 0-24 by using the '▲' and '▼' keys. Note: A setting of 0 disables resetting, while the factory default setting is 24 hours, i.e. the 'Accepted' faults will be reset to 'On' after 24 hours and the buzzer re-sounded.

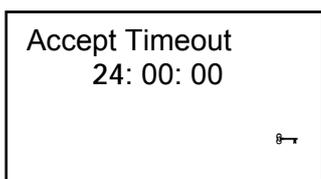


Figure 45. Display of Accept Timeout

- Press 'ENTER' to save this new setting.

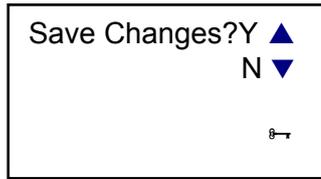


Figure 46. Display of save Accept Timeout

- Press the '▲' or '▼' key to save the new Timeout or not as shown in figure 46. If 'Y' is selected the display will confirm if the Timeout has been saved OK as shown in figure 47. Upon pressing 'ENTER' (or if 'N' had been previously selected) the display will return to the previous protected mode menu.

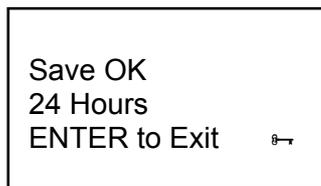


Figure 47. Display of Save OK message

7.10 Changing the User Password

- Enter protected mode and choose 'New Password' as described in section 7.4.
- As described previously in section 7.4, the password consists of three numbers and each number can be set in turn (when it is highlighted) by using the '▲' and '▼' keys and once set the 'ENTER' key is used to move on to the next number as shown in figure 48.
- When the third number is set and the 'ENTER' key is pressed the display will return to the previous protected mode menu.

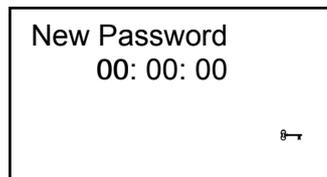


Figure 48. Display of New Password Entry

- The new password then needs to be confirmed before it is saved in the system memory. To confirm the new password select the 'New Password' option again but this time it will ask for the password to be confirmed as shown in figure 49.

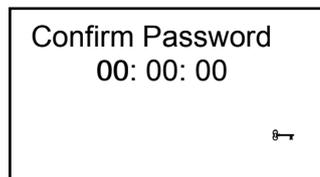


Figure 49. Display of Confirm Password Option

- Enter the same password as before and this time if the two password entries match the new password will be committed to the system memory.
- Again, when the third number is set and the 'ENTER' key is pressed the display will return to the previous protected mode menu.

7.11 Viewing the DSP Links information

- Enter protected mode and choose the 'DSP Links' option as described in section 7.4.
- The display will now show details of the eight DSP configuration links (JP1 – 8). If the link is fitted there is a 'Y' beneath the appropriate number and 'N' if it is not fitted as shown in figure 50.

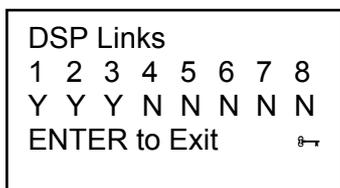


Figure 50. Display of DSP Link Information

DSP Links JP1 – JP8

These links are inputs to the DSP and are used to control various software functions as described in the table in figure 51.

- When the 'ENTER' key is pressed the display will return to the previous menu.

<i>Link Ref</i>	<i>Function</i>
JP1	Enable monitoring on audio input 2 (FITTED for standard JustiFire operation)
JP2	Enable monitoring on audio input 3 (FITTED for standard JustiFire operation)
JP3	Enable monitoring on audio input 4 (FITTED for standard JustiFire operation)
JP4	200W option enables extra PSU faults (UNFITTED for standard JustiFire operation)
JP5	FITTED = VeriFire, UNFITTED = JustiFire
JP6	Enable fallback mode (UNFITTED for standard JustiFire operation)
JP7	Enable message synchronisation (UNFITTED for standard JustiFire operation)
JP8	Cold start (resets config. EEPROM to factory defaults and disables watchdog reset) (UNFITTED for standard JustiFire operation)

Figure 51. DSP link details.

7.12 Viewing the Number of DSP Resets

- Enter protected mode and choose the 'DSP Resets' option as described above in section 7.4.
- In order to comply with BS5839 Part 8 the system indicates how many times the DSP has been internally reset since it was last powered up as shown in figure 52.

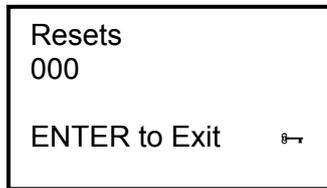


Figure 52. Display of DSP Reset Count

- When the 'ENTER' key is pressed the display will return to the previous menu.

7.13 Exiting the Protected Mode Menu

From the protected mode menu upon choosing the 'Exit' option as described in section 7.4, the system will return to the original 'System Healthy' or 'Current Fault' display.

7.14 Keypress Timeout

Whilst in protected mode if a key is not pressed within 30 seconds the system will automatically return to the original 'System Healthy' or 'Current Fault' display.

8. Service & Maintenance

The JustiFire unit requires little maintenance but for total system integrity the following service schedule, in accordance with BS5839 : Part1 : 1998, is recommended at the stated intervals.

8.1 Daily Checks

- Check the unit gives the correct standby indication and status as described in section 5 and figure 17. Check the “System Fault” LED, see section 7.1.1, the LCD display and any external fault indication equipment if connected and if any fault is present, investigate and remedy as required.

8.2 Weekly Checks

- Activate the system via the fire detection system and check for the correct output from all loudspeaker zones. If any loudspeaker or zone proves inoperable or sub standard, investigate and remedy as required.
- Perform a visual inspection of the batteries and the associated connections and ensure they are in good condition. Remedy any defect as required.

8.3 Quarterly Checks*

- Check the JustiFire cabinet/seals for damage/wear, which may affect the units IP rating and overall immunity to the ingress of contaminants. Ensure any ingress of contaminants is cleaned away and any damaged or worn seals are replaced.
- Check the JustiFire cabinet ventilation apertures are not blocked so as to maintain adequate ventilation for system cooling and battery charging.

*Note: Testing of the batteries at this interval is not required as the JustiFire system performs it's own periodic battery test.

8.4 Five Yearly Maintenance

- All wiring to/from the JustiFire cabinet should be inspected/checked as part of the buildings overall IEEE inspection and test requirement.
- Change both lead acid batteries ensuring the replacements are of a similar specification.
- Change the audio distribution PCB relays K1-K6 ensuring the replacements are of a similar specification.

9. Troubleshooting

The following section describes remedies to installation and configuration issues. If the fault is not listed or remains active, contact your supplier for further assistance.

9.1 No Audio Output from the System

9.1.1 No Microphone Audio

- If the microphone requires power from the JustiFire rack ensure the appropriate Field Power links are fitted, see section 4.2.4 and figure 14.
- Ensure the appropriate PTT input is active and changes in this input can be seen with the appropriate PTT LED on the termination PCB. Also ensure the PTT set-up is correct paying particular attention to the signal sense, see sections 6.6.1 and 6.6.2.
- Check the audio input level links are set correctly, see section 4.2.4 and figure 13.
- Check the microphone volume setting is adequate, see sections 6.6.4 and 6.6.7.
- If other audio channels are active check the overall priority structure, see section 6.6.6.
- Check the target loudspeaker zone is selected via the audio distribution inputs, see section 4.2.2 and figure 5.
- If any amplifier or loudspeaker circuit alarms are present clear them down and review the microphone audio again, see section 7.3.

9.1.2 No Message Audio

- Ensure the appropriate fire panel input is active and changes in this input can be seen with the appropriate Alarm LED on the termination PCB. Also ensure the fire panel input set-up is correct paying particular attention to the mode of operation, see sections 4.2.3.
- Check the message volume setting is adequate, see sections 6.6.5 and 6.6.7.
- If other audio channels are active check the overall priority structure, see section 6.6.6.
- Check the target loudspeaker zone is selected via the audio distribution inputs, see section 4.2.2 and figure 5.
- If any amplifier or loudspeaker circuit alarms are present clear them down and review the message audio again, see section 7.3.

9.2 Alarm Messages

9.2.1 Circuit Fault Monitoring Alarms

- **Amp 1 Short CCT:** Check all external “A” loudspeaker circuits for short circuits between the two signal conductors and check for correct termination to the JustiFire rack.
- **Amp 2 Short CCT:** Check all external “B” loudspeaker circuits for short circuits between the two signal conductors and check for correct termination to the JustiFire rack.
- **Amp 1 Open CCT:** Check all external “A” loudspeaker circuits for open circuits on either of the two signal conductors and check for correct termination to the JustiFire rack. Ensure the correct termination resistors are fitted to the loudspeaker circuits.
- **Amp 2 Open CCT:** Check all external “B” loudspeaker circuits for open circuits on either of the two signal conductors and check for correct termination to the JustiFire rack. Ensure the correct termination resistors are fitted to the loudspeaker circuits.
- **Amp 1 Earth Leak:** Check all external “A” loudspeaker circuits for short circuits between either of the two signal conductors and screen or the earthed building metalwork. Also check for correct termination to the JustiFire rack.
- **Amp 2 Earth Leak:** Check all external “B” loudspeaker circuits for short circuits between either of the two signal conductors and screen or the earthed building metalwork. Also check for correct termination to the JustiFire rack.

9.2.2 System Fault Monitoring Alarms

- **Audio Input 1-4 Alarms:** Check the audio 1-4 monitoring alarm set points, see section 6.6.4.
- **Amp 1 Power/Signal Fault:** Check circuit breaker CB2 is closed and amplifier power lead (TB4) is plugged into sub-rack motherboard.
- **Amp 2 Power/Signal Fault:** Check circuit breaker CB3 is closed and amplifier power lead (TB6) is plugged into sub-rack motherboard.
- **Amp 1/2 Audio Fault:** Check both the amplifiers monitoring alarm set points, see section 6.6.8.
- **PSU Mains/Charger Fail:** Check the mains supply to the JustiFire rack and any associated fusing.
- **Battery Low/Disconnected:** Check circuit breaker CB4 is closed and the battery leads are connected correctly, see section 4.3.

10. Specification

Cabinet Dimensions: Height x Width x Depth	650 x 600 x 255mm
Weight	70Kg
Mains Supply Voltage	Voltage range: 90-264V AC Frequency range: 47-63Hz Current: 0.75A Standby, 2.5A with 250W load
Battery Supply	2 x 12V 44Ah (dimensions: 200x170x165mm)
Fire Panel Inputs	4 Channels + delatch: Support for volt free contact or 24Vdc voltage reversal.
Audio Inputs	4 Channels: Support for 0db or 100V line audio input + 24Vdc@ 100ma field power+ PTT input accepts volt free contact
Zone Select Inputs	6 Inputs: Accepts volt free contact.
Audio Outputs	6 Zones: Dual 100V line outputs per zone + support for O/C, S/C & earth fault detect
Emergency Relay Contacts	2A @ 30V DC, 0.5A @ 125V AC Max switch voltage: 220V DC, 240V AC
Fault Relay Contacts	2A @ 30V DC, 0.5A @ 125V AC Max switch voltage: 220V DC, 240V AC
Audio Distribution Relays K1-K6	Shrack RTE24024 DPCO 8A/24V
Certifications	EN50130-4: 1995 EN55022: 1998 Class B EN50081-1:1992 EN61000-3-3: 1995 EN61000-3-2: 1995 + A1 + A2 Complies to BS5839 Parts 1, 4 & 8

11. Appendix A: Message Definitions

Evacuation Message D1VM0005: -*“Tone. Attention please. This is a fire emergency, please evacuate the building by the nearest available exit. Do not use the lifts, go to the assembly area.”*

System message store 1, DSP IC ref J1, csum: 05BAC67A

Alert Message D1VM0006: - *“Tone Tone Tone. Attention please. We are investigating an alarm condition. It may be necessary to evacuate the building. Please stay on alert and await further information.”*

System message store 2, DSP IC ref J2, csum: 04A3C0C4

All Clear Message D1VM0003: -*“Bing Bong. May I have your attention please, may I have your attention please. The safety systems are now back to normal. Thank you for your co-operation and we apologise for any inconvenience.”*

System message store 3, DSP IC ref J3, csum: 059E0E88

Test Message D1VM0004: - *“Bing Bong. This is a test of the public address system. This is a functional test for operation, loud loudspeaker coverage, signal level and speech intelligibility.”*

System message store 4, DSP IC ref J4, csum: 06467B84

Format: wav file, 12kHz, Mono, wave-signed 16 bit, maximum length 40 seconds.