

USER MANUAL



Controller of Wall Mounted EVAC System

Model: VA-2240WM

Before using the system, please read this manual carefully

Notification

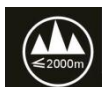


WARNING

To ensure the reliability of the equipment and the safety of personnel, please observe the following when installing, using and maintaining:

- If any of the following conditions are found, please immediately turn off the power, plug out and quickly contact your nearest dealer. Do not continue using this unit, which may cause a fire or electric shock.
 - If you find smoke or have a strange taste from the machine.
 - If water or metal falls into the machine.
 - If the unit is dropped or the case is damaged.
 - If the wire is damaged (wire core exposure, broken wire, etc.).
- If the machine contains high-pressure parts, in order to avoid the fire or electric shock, absolutely don't open the case, if any questions please inform your nearest dealer.
- Do not place cups, bowls, vases or metal and other water-filled substances on the unit. Serious spilled liquid may cause a fire or electric shock.
- Never expose the unit to rain and any moisture or water, which may cause electric shock or fire.
- Do not place metal objects or flammable materials from the vents on the machine cover, nor place coins, which may cause fire or electric shock.
- Do not place heavy objects on the unit to avoid personal injury or property damage when the unit is slipping.
- Make sure that the volume is turned on at the beginning of the boot, and the high volume of the boot may cause hearing problems.
- Make sure that the volume is turned on at the beginning of the boot, and the high volume of the boot may cause hearing problems.
- For long-term accumulation of dust to be cleaned, please inform your dealer to regularly clean the machine, so as to avoid damage to the machine or cause a fire.
- The battery must be replaced with the same type of product and the correct installation should be made in order to avoid electrical damage and explosion hazard.
- The product is a Class I device. The device must be well connected to ground. The power plug must be connected to a power outlet with a grounding device to ensure that the equipment is fully grounded.

- This product uses a power plug or appliance input socket as a disconnecting device with the power supply, and must be disconnected if necessary for safety reasons.



- This equipment is only suitable for safe use at altitudes under 2000 meters.

Precautions

1. The installation environment

When installing the unit, in order to ensure the normal cooling of the host, should avoid the poor ventilation of the place or high temperature environment, to avoid direct sunlight.

Recommend to install cabinet or other well-ventilated place indoor. If you use the machine in the outdoors, please pay attention to waterproof, moisture, lightning protection measures.

Avoid installing in a violent place of vibration; do not place other equipment on the machine.

2. To avoid electric shock and fire

Do not touch the hands and the source with wet hands

Do not spill liquid on the machine, so as to avoid short-circuit or fire inside the machine.

Do not place other equipment directly on the top of the unit.



Non-professional service personnel Do not disassemble the unit yourself to avoid damage and electric shock.

3. Transport and handling

The packaging of the machine is designed and tested to ensure that the host will not be accidentally damaged during transport. It is best to use the original packaging when handling the unit.

Do not move the host device between the place or cold or over hot to avoid condensation inside the machine, affecting equipment life.

4. Please follow the warning instructions on this product, the warning signs on behalf of:

	Applicable to 2000 meters above sea level and below safe use
	Safe use only in non-tropical climates

5. Agreement

Please strictly follow the instructions in this manual. The software, hardware and appearance of this product will be upgraded and updated continually. The above changes will be made without notice.

Non-professional maintenance personnel, do not remove the product, to avoid damage and electric shock.

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1. Product Design Sketch

VA-2240WM design sketch:

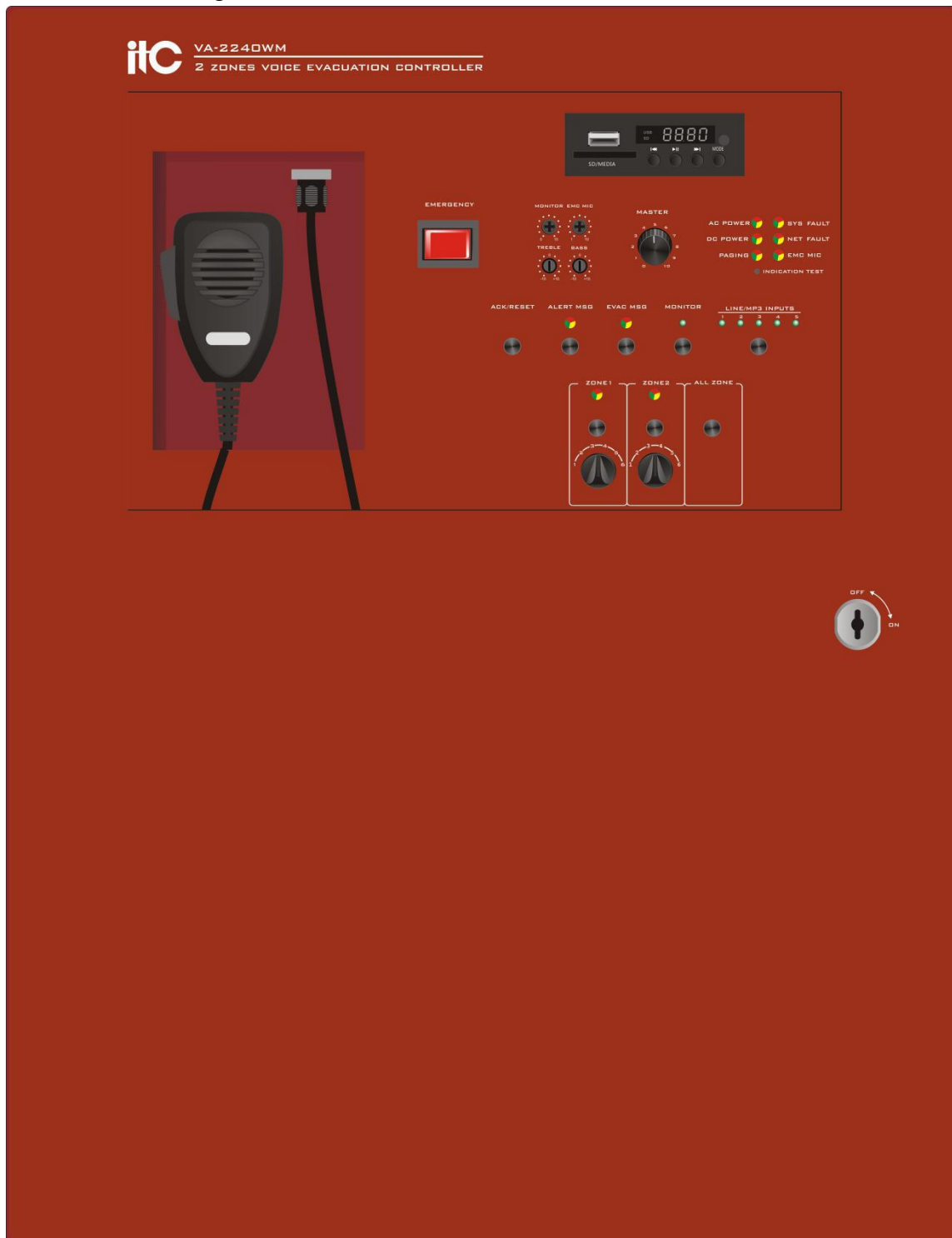


Image1- 1 VA-2240WM Design Sketch

2. VA-2240WM Main Function Introduction

- Built-in 240W high-efficiency digital power amplifier, integrated 2 power A + B independent dual-speaker loop zone output, each zone has independent LED indicator, independent output control buttons and volume adjustment;
- 4 audio balanced input interfaces for playing any audio source in the zones
- Local emergency PTT microphone input and emergency voice can be configured by PC software to be played in specific zone.
- Integrated independent MP3 module, support USB, SD card and radio functions;
- Automatically detect the working status of each zone loop (fault, normal)
- The 4-channel trigger input/output port can trigger the emergency voice preset by the PC software to the specified zone or the corresponding external power source to the corresponding event warning;
- Support third-party emergency audio input (user-defined emergency audio source)
- Integrated independent EVAC/ALERT voice information player;
- The remote paging microphone / fireman microphone online interface can connect with remote paging microphone and fireman microphone, each paging station connection uses standard RJ-45 network port and standard CAT-5 network cable, voice transmission uses balanced transmission mode for long-distance transmission;
- Controller online interface can be connected to the slave unit, it uses standard RJ-45 network port and standard CAT-5 network cable;
- communication interface, supports visual interface operation based on Window platform, and the system status can be automatically synchronized.
- Support DC24V battery backup power supply;
- With power amplifier monitoring function;
- Support PTT recording function, no external equipment required;
- System fault, dry contact output for emergency status, dry contact input for emergency status reset
- The zone output has three-wire and four-wire over-riding adjustment functions;
- With IP address reset function and impedance calibration function;
- The master-slave unit is integrated, and the device can be used as a controller or a slave unit by setting code address, and the maximum of 19 slaves can be simultaneously online;
- The system can extend the number of the zones by slave units, it support 40 zones maximum.

3 Main Technical parameters of the equipment

3.1 Electrical indicators

- ① Power supply
 - ◆ Voltage ~ 220-240V±20%, 50-60Hz
 - ◆ Fuse specifications : 2A slow breaking type

3.2 Performance Indicators

- ① Analog audio
 - ✧ MIC input
 - Sensitivity ±2.5mV
 - Frequency response 200Hz~10KHz
 - Input impedance 1KΩ
 - Signal to noise ratio >65dB
 - ✧ Balanced line input
 - Sensitivity ±385mV
 - Frequency response 80Hz~16KHz
 - Input impedance 10KΩ
 - Signal to noise ratio >70dB
- ② Communication
 - ✧ RS485 interface
 - Slave RS485 interface
 - Supports the highest baud rate of 38400bps
 - Support up to 19 expansion machines
 - ✧ CAN interface
 - Remote MIC console CAN interface
 - Baud rate 50Kbps
 - Supports up to 28 remote Microphone and 4 Fireman Remote Microphone
- ③ Trigger input
 - Trigger mode: short circuit trigger and level trigger
- ④ Trigger output
 - Output mode: relay short circuit output

⑤ Mechanical Indicators

- Size (L×W×H): 570×440×186mm
- Net weight: 17Kg
- Installation: Wall Mounted
- Color: Fireman's Red

⑥ Environmental Requirements

- Operating temperature +5℃~+40℃
- Storage temperature -20℃~+70℃
- Relative temperature <95%

4. Device Function Description

4.1 VA-2240WM Sketch



Image4- 1 VA-2240WM Sketch of Front Panel

4.2 Function Description of Front Panel

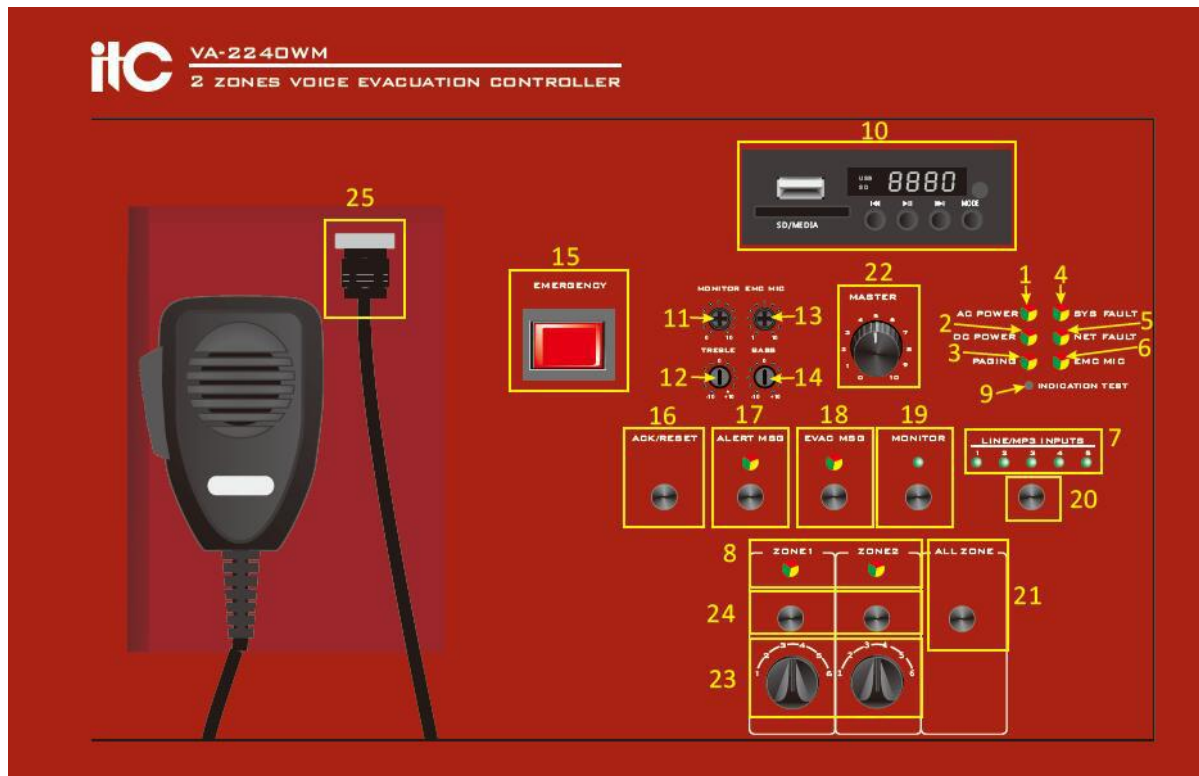


Image 4-2 VA-2240WM Sketch of Front Panel

■ Indicator and status description:

- ①AC POWER: AC indicator, green on means normal, yellow on means AC power off.
- ②DC POWER: DC power indicator light, green on means 24V power connected, yellow on means out of connect to DC 24V, light off means without configuration for DC power.
- ③PAGING: remote control microphone indicator, green light means that the remote control microphone is paging the zone from the host.
- ④SYS FAULT: yellow indicates the host is faulty, flashing indicates that the host has a new fault.
- ⑤NET FAULT: green means the network is normal, yellow means the network is with failure.
- ⑥EMC MIC: Red means PTT is paging, yellow means PPT is with failure. light off means normal, standby status, red light flashing means there is EMC Mic PPT is paging in system.
- ⑦Local line input 1 ~ 4 and MP3 indicator, the 5th channel is MP3 source
- ⑧ZONE 1~ZONE 2 Indicator

If indicator is green, means the zone is playing local line input, MP3 or remote microphone is paging;

If indicator is red, means the zone is playing emergency voice, Alarm Mic paging or PTT paging.

If indicator is yellow, means the zone is short circuit or open circuit failure

If indicator is off, means the zone status is normal;

- ⑨System self-test button: The system self-test performs sound and light indication check on all equipment of the system;
- ⑩MP3 independent play module: support USB, SD card reading and radio function, with control panel;



Image4-3 MP3 Independent MP3 Play Module

- a、USB port.
- b、Digital tube: display playback mode, total number of songs, play MP3 progress time, radio frequency band, etc.
- c、SD Card port.
- d、Short press to jump to the previous song, long press to decrease the volume.
- e、Play/Pause.
- f、Short press to jump to the next song, long press to increase the volume.
- g、Play mode switching.

■ Volume potentiometer:

- MONITOR: Monitor volume adjustment, 0~10 volume increase step by step, 0 is off
- TREBLE: Treble adjustment, 0~10 volume increase step by step, 0 is no gain
- EMC MIC: PPT microphone volume adjustment.
- BASS: Bass adjustment, 0~10 volume increase step by step, 0 is no gain.

- ⑮EMERGENCY: emergency broadcast button, press to select PTT broadcast or play fire alarm message. After starting, press this button to exit emergency mode. EVAC and ALERT can be operate only when emergency button is open.
- ⑯ACK/RESET: machine fault alarm reset button.
- ⑰ALERT MSG: Play emergency evacuation voice.
- ⑱EVAC MSG: Play fire alarm alert voice.
- ⑲MONITOR :buttons to switch on and off monitor.
- ⑳Button to select or switch the source.
- ㉑ALL ZONE: button to select open or close all zone.
- ㉒Mater volume adjustment button.
- ㉓Zone volume adjustment button.
- ㉔Zone open and close button.

4.3 Function Description of Rear Panel

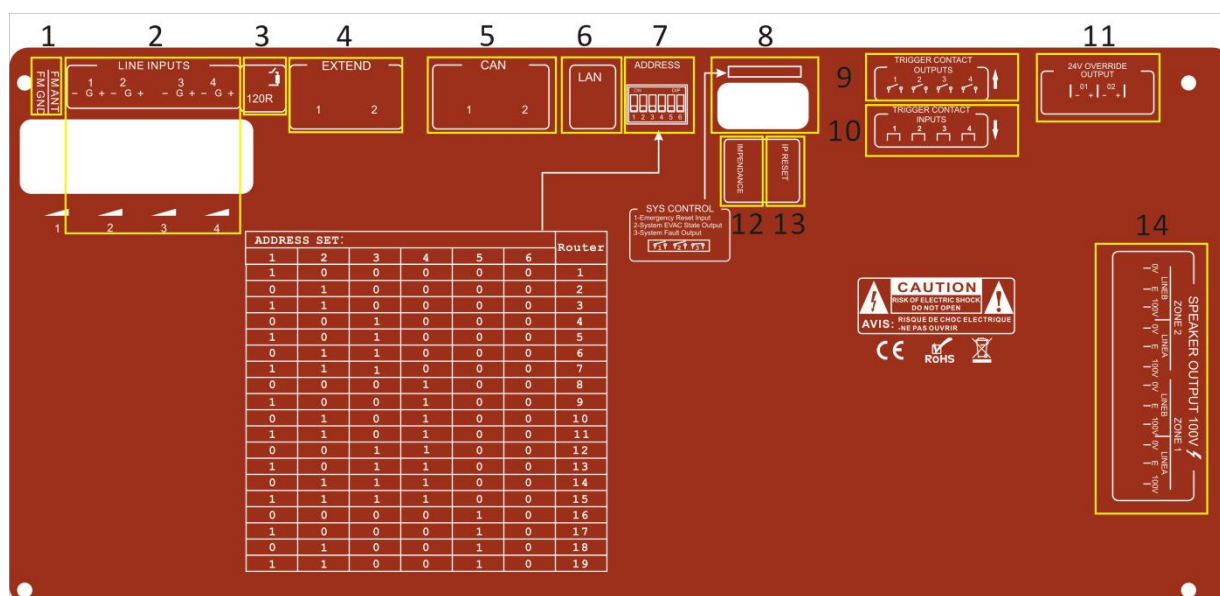


Image4- 4 VA-2240WM Design Sketch of Rear Panel

- ①Radio antenna interface;
- ②Local line balance audio input connectors 1~4, and its input volume adjustment knob. (Note: Host line 3 can be used as an emergency source to trigger the output);
- ③Expands the slave connector matching resistor. When the master-slave is connected to the long distance, the slave needs to press the switch at the end;
- ④EXTEND: Connect to the expansion port, independent interface, can be connected to the slave respectively;

-
- ⑤CAN: Connect remote microphone / fire MIC connection port;
 - ⑥LAN: Connect to the switch network, computer online port;
 - ⑦Device address selection dial switch, 000000 for the host, 000001-010011 for the slave 1-19;
 - ⑧SYS CONTROL:
 - System Fault Output—When the system is running normally, the system fault output is turned off; after the fault and power is cut off, the system fault output is turned on;
 - System EVAC Output—Fire alarm output, this port will close when a fire alarm is triggered;
 - Emergency Rest Input—Emergency reset input, short-circuit this interface, will reset the fire emergency state.
 - ⑨TRIGGER CONTACT OUTPUTS: Output short-circuit interface after fire alarm;
 - ⑩TRIGGER CONTACT INPUTS: fire alarm trigger input interface;
 - ⑪24V OVERRIDE OUTPUT: 4-wire tone-controlled strong-cut relay control interface;
 - ⑫TF: TF card interface, TF card stores emergency audio source and recording files.
 - ⑬IMPEDANCE: Impedance calibration button, press this button, the system will automatically calibrate and record the current impedance;
 - ⑭IP REST: IP address reset button, press this button, the system will automatically reset all the expander addresses;
 - ⑮SPEAKER OUTPUT 100V: With 24V strong cut relay control interface;
 - ZONE 1~2: Partition 1~2;
 - LINE A: Zone A;
 - LINE B: Zone B;
 - 100V: Speaker positive;
 - E: three-wire strong cut interface;
 - 0V: Speaker negative.

5. Operation Instructions

5.1 Self-test function

1. Power-on self-test:

- ① Connect to AC power supply.
- ② Turn the power switch to the ON position.
- ③ When the host is power-on, can hear the relay sounds in turn(Self-test).
- ④ Panel indicator will show the system's current status.

2. Manual self-test:

- ① Press INDICATION TEST on the front panel.
- ② There are three colors on the panel-----green, red and yellow light in turn, other lights are turn on, monitor is turn on, the relay sounds in turn to finish the system self-test.

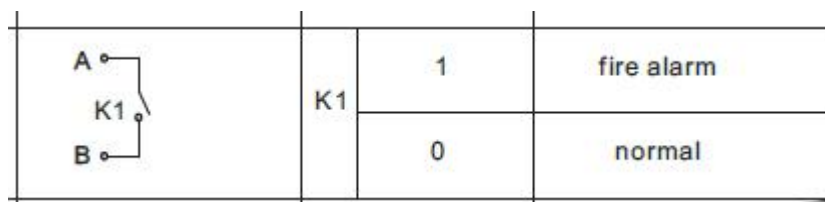
5.2 Emergency function

1. Emergency voice function

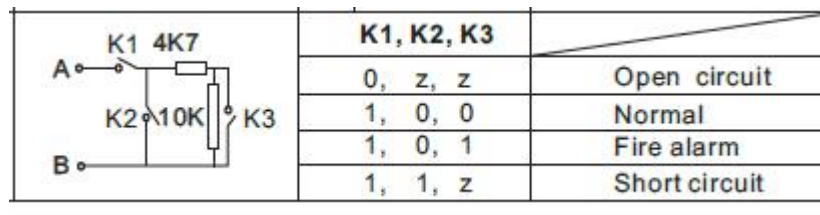
- ① Manually press the EMERGENCY button, red light flashes;
- ② Press alert msg button on host panel to play alert voice language information, the response is decided by the PC configuration. Can turn on or turn off the zones which don't need alarm in the system device.
- ③ Press the EVAC msg button on host panel to play EVAC Msg voice language information, the response is decided by the PC configuration. When playing EVAC Msg voice language information, can select turn on or turn off the zones which do not need alarm in host.

2. Trigger emergency function

1. Wiring diagram of short circuit mode:



2. Wiring diagram of level trigger mode:



3. The way of exit emergency mode--fire alarm reset

1. By press red with a large button on host panel
2. By fire linkage node input control, As shown in Image5-1:

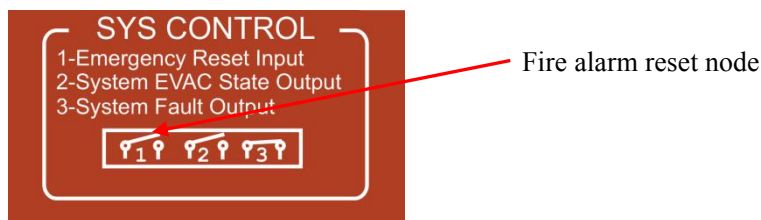
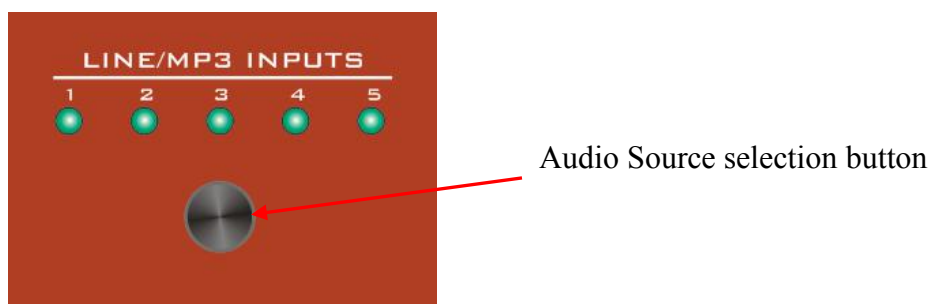


Image5-1 Fire alarm reset node schematic

5.3 Local audio source play

■ Audio source selection



Press the audio source selection button to select the source channel. The corresponding indicator light will indicates the currently selected audio source. For example, LINE5 indicator correspond to MP3.

1. Zones Audio source playback

- a. If you select MP3,then it will play MP3 source when turn on zones , press all zone button, all zones will play MP3. the zone which is turned on,the status light is normally in green.
- b. If you select background music, press zone 1 ~ 8 button to turn on or turn off current zone.

Turn on or turn off the monitoring function through the MONITOR button,Ensure the

monitor volume and main volume must be moderate , ensure at least one zone open.

5.4 PTT Paging



Press the EMERGENCY button, then press the button on the PTT microphone to turn on the corresponding zone paging (Require to configure on PC). You can speak after the reminder tone. Please do not release the button during the speaking or it will automatically turn off paging and make a tone. In emergency mode PTT paging will automatically record and save the audio in the TF card.

(Note: PTT has the highest priority in the system, but the host MP3 shared source is a separate module, not subject to its intervention.)

5.5 Line detection

Detection accuracy: 15%、20%、25%、30%、35% optional

Minimum detection power: 10W

Maximum detection power: 240W

Installation of the new device requires sampling the speaker impedance, the specific operation is as follows:

1. Install new equipment , connect speakers for each zone.
2. Press impedance detection button on the rear panel, the system will be connected to each zone to sample the load, during sample period can hear during the relay inhalation of the

sound, when the lights all off, indicating that the load sampling success.

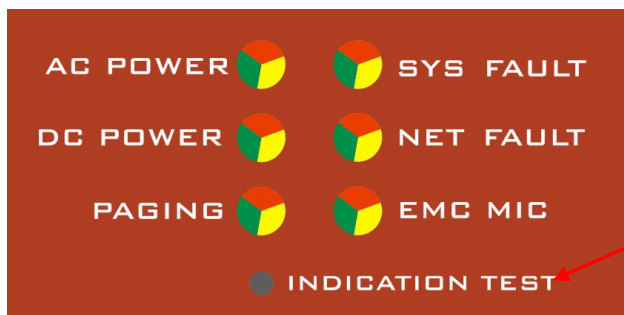
3. Verify the impedance detection is valid or not:

① Open circuit detection-----disconnect any zone output, press system fault self-test button in the front panel until the sound and light self-test is completed, the indicates is orange and computer state is open (open) then connected to the speaker, press the self-test switch, and returned to normal state.

② Short circuit test-----Short circuit any zone output, do not need to press system fault self-test button on the front panel, Indicates light is orange and computer status fault. then connected to the speaker, press the self-test switch, and returned to normal state.

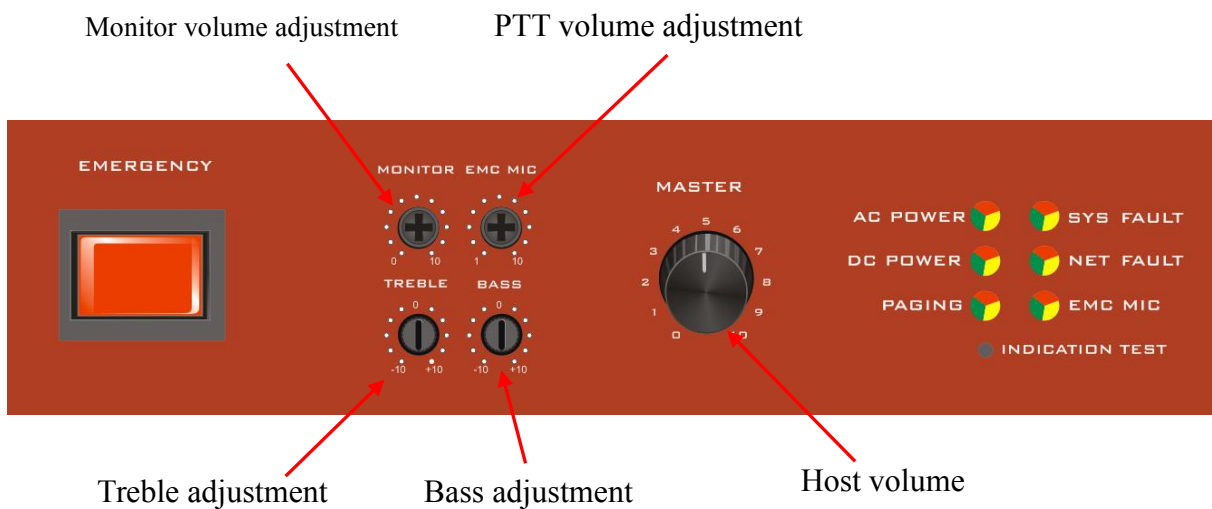
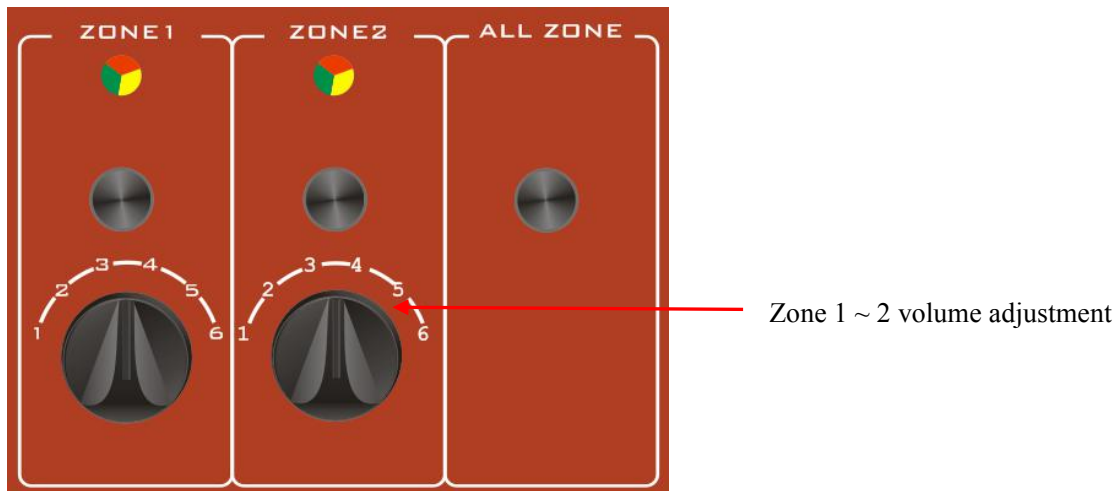
③ Impedance 15% change detection-----sampling 30W speaker impedance, plus or minus 4.5W, press system fault self-test button on the front panel, the indicate light is orange and computer status is fault. Then connected to the 30W speaker, press the self-test switch, and returned to normal state.

Impedance detection button



System fault self test button

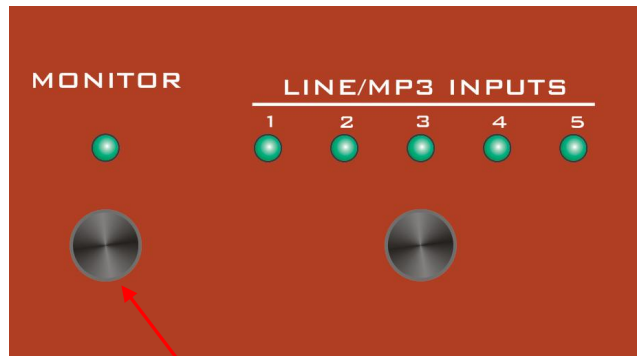
5.6 Volume control



1. Host volume control is control the volume of the entire machine, the adjustment will affect the 1 ~ 2 zone volume. Zone volume adjustment only adjusts the corresponding zone volume, does not affect other zones.

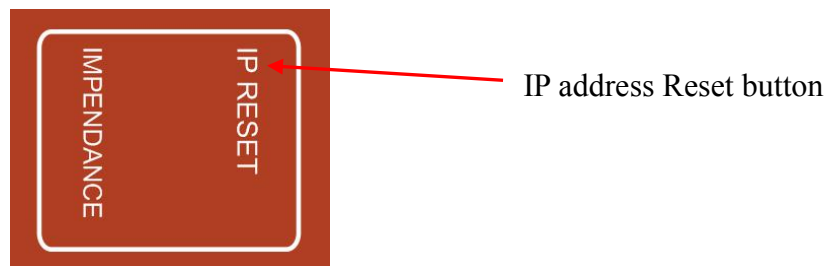
2. Amplifier output monitor

Press the MONITOR button to turn on or off the monitor, Light on means amplifier monitor is turn on, light off means amplifier monitor is turn off.



Monitor on/off button

5.7 IP address Reset



Press the IP reset button to reset the host IP address: 192.168.14.49.

5.8 Impedance detection function of zone output circuit

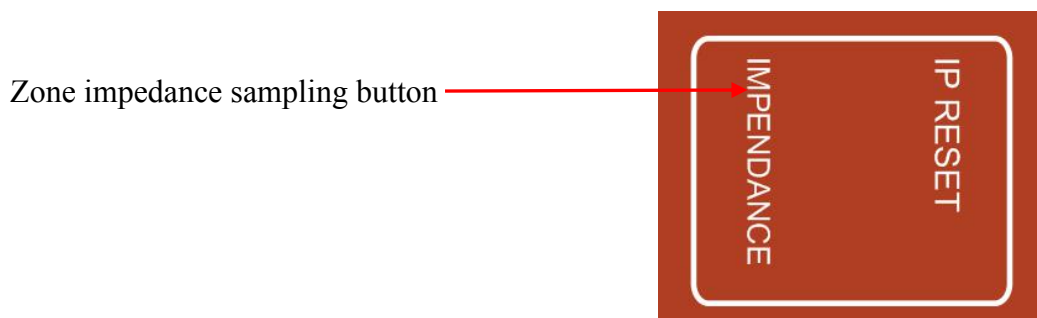


Image5-8 Impedance sampling schematic

Calibrate current line impedance before do the line detection, connect the speaker circuit then press impedance detection calibrate button,the host will perform impedance calibration of the speaker circuit.Speaker circuit status(open circuit or short circuit) depends on the contrast value of current speaker circuit impedance and the sampling value of speaker circuit. If $(\text{current speaker line impedance} - \text{speaker line sampling value}) / \text{speaker line sampling value}$ is

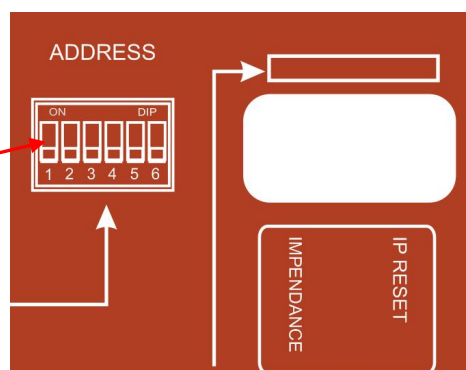
higher than setting value, then it is open circuit. If (speaker line sampling value - current speaker line impedance) / speaker line sampling value is higher than setting value, then it is short circuit. (Default its test every 2 minutes, the default impedance error is 15%, Impedance error and detection interval can be set by PC software) When tested the speaker circuit impedance value is less than 30Ω is overload, automatically disconnect the corresponding circuits

5.9 Spare 24V Accumulator Switching Function

When connecting to at least 24V/20AH battery, and the PC software is configured with 24V DC, the indicator light will turn green. When the mains plug is unplugged, it will automatically switch to the 24V power supply mode.

5.10 Extended Host Address Setting

DIP Switch of Extended Host Address



Extended machine address comparison table:
(Address Code Explanation: Up:1 Down:0)

DIP Switch Setting:						Extended Host Address
1	2	3	4	5	6	
1	0	0	0	0	0	1
0	1	0	0	0	0	2
1	1	0	0	0	0	3
0	0	1	0	0	0	4
1	0	1	0	0	0	5
0	1	1	0	0	0	6

1	1	1	0	0	0	7
0	0	0	1	0	0	8
1	0	0	1	0	0	9
0	1	0	1	0	0	10
1	1	0	1	0	0	11
0	0	1	1	0	0	12
1	0	1	1	0	0	13
0	1	1	1	0	0	14
1	1	1	1	0	0	15
0	0	0	0	1	0	16
1	0	0	0	1	0	17
0	1	0	0	1	0	18
1	1	0	0	1	0	19

5.11 Set the Device to Slave Mode

When the device is set to slave, that is, the device is used as an extended partition, the slave part function cannot be used.

1. Functions are invalid when as slave: panel independent MP3 module, panel PTT microphone and PTT volume potentiometer, panel emergency switch, panel EVAC/ALERT button and indicator light, CAN port in the cabinet, LAN port in the cabinet and IP reset button , antenna port.
- 2, EXTEND expansion port: can be hand-in-hand cascaded to the next slave;
- 3, MP3 audio source playback comes from the host MP3 audio source;
- 4, EVAC / ALERT / custom LINE3 emergency audio source comes from the host alarm source.





5.12 Alarm voice replacement of wall-mounted system

1. Remove the TF card from the host and use a specialized card reader.
2. Plug in the computer, open the U disk, there are several folders.
3. Folder definition:
 - (1) ALERT: warning voice folder
 - (2) EVAC0: evacuation voice folder
 - (3) PROMT: prompt voice folder
 - (4) Other folders: ...

4. Put the voice file that needs to be replaced into the corresponding folder, delete the original voice file.

Note: The replaced voice file must be in .MP3 format, with a code rate $\leq 192\text{kbps}$, named after English characters.

5.13 Indicator Lights Status Comparison Table

	 (Yellow)	 (Green)	 (Red)	 (Extinguish)
AC POWER Indicator Light	AC Malfunction	Normal Power Supply	×	×
DC POWER Indicator Light	DC 24V Malfunction	DC 24V Power Normal	×	No Configuration
PAGING Indicator Light	×	Remote Mic is paging	×	Normal
SYS FAULT Indicator Light	Always-on: System Fault Flicker: New fault appears	×	×	Normal
NET FAULT Indicator Light	Network Malfunction	Network Normal	×	×
EMC MIC Indicator Light	PTT Malfunction	×	PTT is paging	Normal
Zone Status Indicator Light	Zone Malfunction	The zone is playing a normal audio or the remote mic is paging.	Playing emergency audio or PTT/fire mic is paging.	Normal

Note: “×” in the table means no related status exists.

The zone status indicator light is displayed in green to indicate that the zone is on the local line, MP3 or remote mic paging, and the zone status indicator light is red to indicate that the zone is playing emergency voice (PTT/Fire MIC/EVAC/HOST__LINE3/ALERT), and the zone status light is displayed in Yellow indicates a short circuit or open circuit fault in the zone.

AC POWER: Green indicates that the AC power supply is normal, and yellow indicates AC power is faulty.

DC POWER: Green indicates that the DC 24V power supply is normal, yellow indicates DC24V fault, and extinguish indicates no configuration;

PAGING : Green indicates that the VA-6200RM is paging the host/extension zone;

SYS FAULT: Yellow indicates that the system has failed. Flicker indicates a new fault in the system. Off indicates normal.

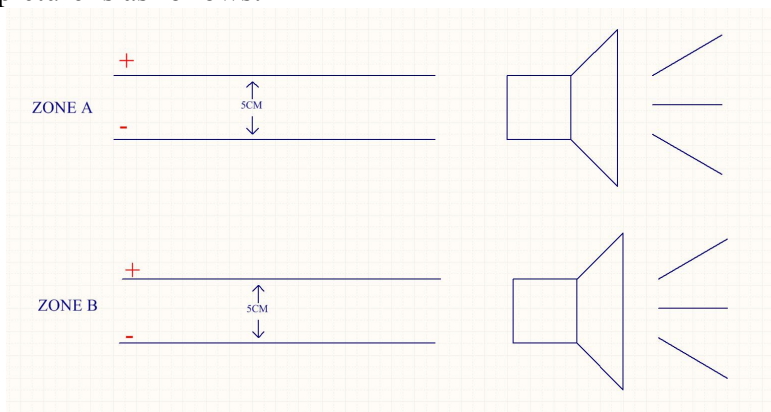
NET FAULT: Green indicates that the network communication is normal, and yellow indicates that the network communication is faulty;

EMC MIC: Red indicates that PTT is paging, yellow indicates PTT malfunction, extinguish indicates normal, red flicker indicates PTT is occupied by fire MIC, and paging cannot be initiated;

Other notes:

1. When using for long distances, please use the standard HSYV;
2. Using remote MIC and fire MIC, you need to connect to the power adapter;
3. When the long cable is used, the shielded wire needs to be in good contact with the equipment.
4. When wiring at the scene, the positive and negative poles of the speaker need to be separated from 5CM to ensure the line impedance accuracy. Note: For single zone, not A and B partitions.

The illustration picture is as follows:



5. Long-distance wiring can not realize real-time short-circuit detection, and can only report fault indication during timing detection.
6. The same zone needs to connect the same type of speaker, in order to achieve 15% impedance detection accuracy; If the speakers of the same section are in different models, it may not achieve 15% impedance detection accuracy.
7. At one time, there can only be one audio source in the system, that is, playing emergency audio source, PTT paging, remote MIC calling, and the host pushes the MP3 audio source to be turned off.

6. Product Installation diagram

Open wall hole according to the size marked on the side.

And punch the 8*29 expansion screw into the wall until it is tight.

Then hang up the wall-mounted cabinet towards the hole.

