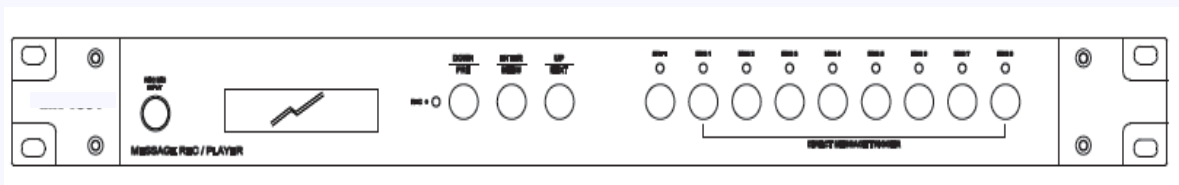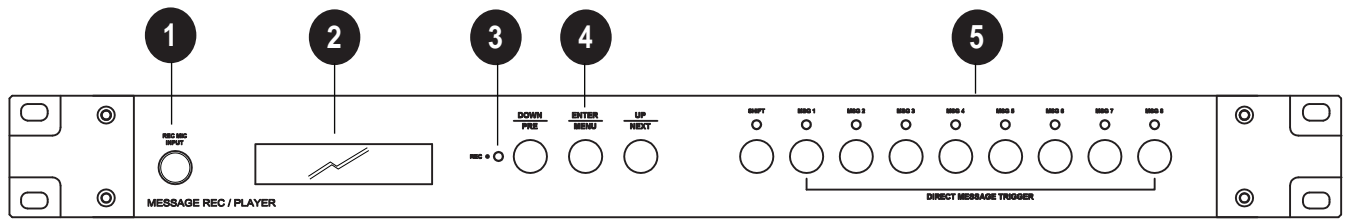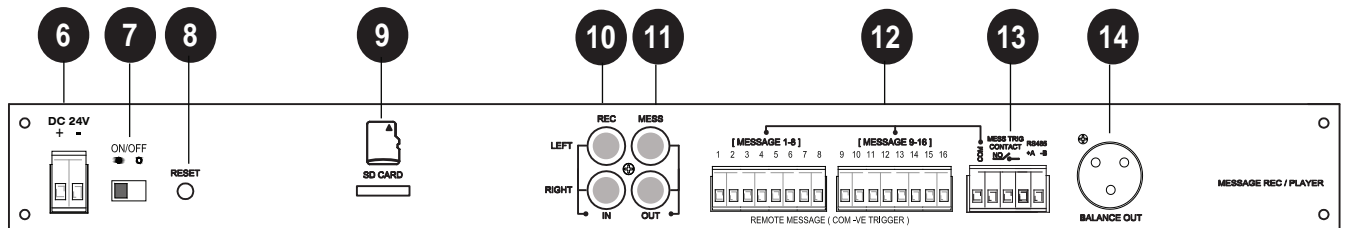# INSTRUCTION MANUAL

DM-5104
Message Recorder / Player

Parts Identification

Front View

Rear View

1. 1/4" STEREO PHONE JACK

Stereo phone jack for microphone inputs with balanced input signal. Used for recording voice to the unit. It accepts recording via dynamic microphone.

2. LCD DISPLAY

2 X 18 character LCD displaying units parameters and programming instructions.

3. RECORD LED

In recording mode, the red LED shall flash.

4. CONTROL BUTTONS

Buttons for Menu, various playback, recording and volume controls

5. FRONT MESSAGE ACTIVATION SHORT KEY

8 front short key for direct message activation ; MES 1 to MES 16 with LED indicators. Shift button is available for triggering message 9 to 16.

6. POWER CONNECTORS

24V DC input for power, use only regulated power supply or Amperes PS5424 power supply unit.

7. POWER SWITCH

Power switch for the unit.

8. RESET BUTTON

Button for resetting the unit to factory default. Use only when required as settings done previously would be lost. Voice files stored in the SD card shall not be affected.

Parts Identifications (continued)

9. MICRO SD CARD SLOT

SD card slot, up to 32 GB capacity is supported by the unit (Standard supplied card is 8GB)

10. LINE INPUTS

RCA jack for recording from external source with line output, such as CD, MP3 players, etc

11. LINE OUTPUTS

Unbalanced line output for message playback.

12. EXTERNAL TRIGGER PORT

Dry contacts to trigger the stored messages 1 to 16. Only voltage free contact is allowed to avoid damage.
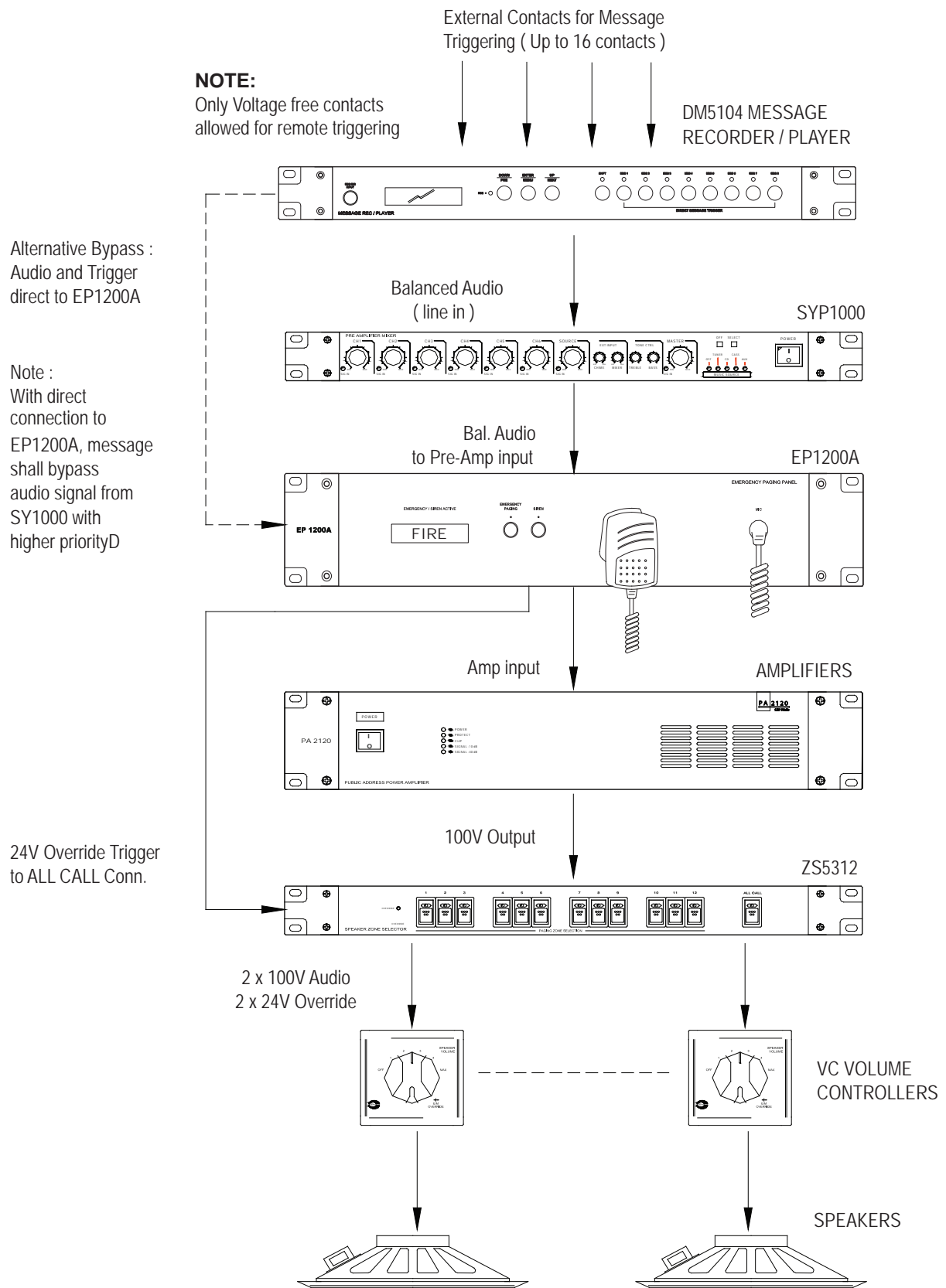
13. DRY CONTACT

Dry contact is available whenever a message is activated. Can be used to interface with other devices such as volume controllers, zone selectors, etc.

14. XLR BALANCED OUTPUT

Balanced line output with XLR female connector.

Schematic Diagram

External Contacts for Message
Triggering (Up to 16 contacts)

NOTE:
Only Voltage free contacts
allowed for remote triggering

DM5104 MESSAGE
RECORDER / PLAYER

Alternative Bypass :
Audio and Trigger
direct to EP1200A

Balanced Audio
(line in)

SYP1000

Note :
With direct
connection to
EP1200A, message
shall bypass
audio signal from
SY1000 with
higher priorityD

Bal. Audio
to Pre-Amp input

EP1200A

FIRE

Amp input

AMPLIFIERS

PA 2120

24V Override Trigger
to ALL CALL Conn.

100V Output

ZS5312

2 x 100V Audio
2 x 24V Override

VC VOLUME
CONTROLLERS

SPEAKERS

The above diagram shows typical schematic using DM5104 as message player, either for general repetitive message playback or for emergency voice evacuation purpose.

Connecting the Unit

DM5104 can be used as :

- Source playback unit, for delivering pre-recorded messages or songs, and if repetitive playback at certain times is required, it can be used together with a timer.

- Emergency broadcast message playback unit, which is linked to external triggering devices or systems, such as alarm, BAS or emergency push button.

Connections of both applications are shown in the diagrams below.

Option A :
Using DM5104 for Normal Message Source
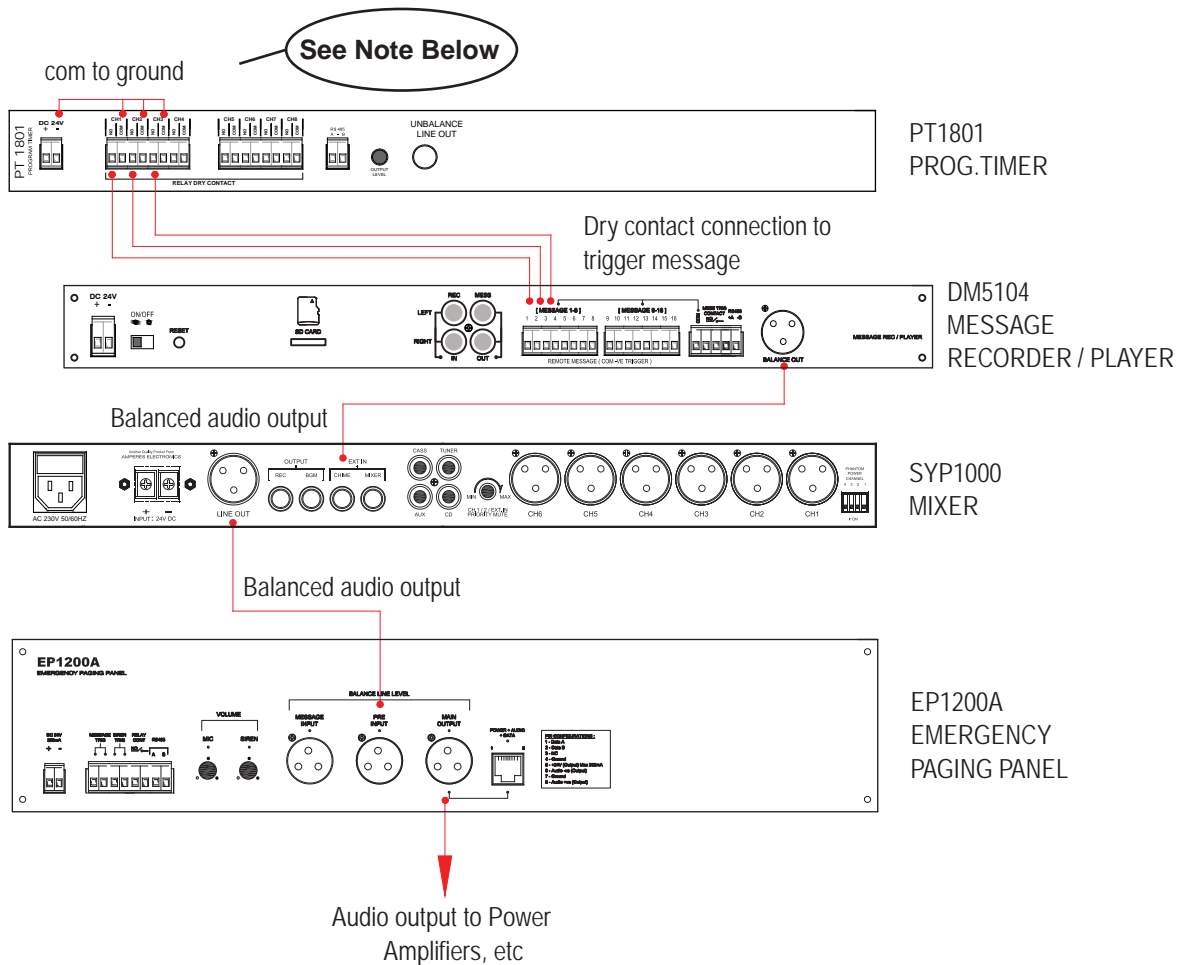
Stored messages can be played either from the front buttons or via the remote triggering ports.

The above diagram shows connections of 3 output channels of PT1801 connected to 3 individual triggering ports of DM5104. It is intended to perform 3 different times to playback 3 different messages. Activation of each message is via negative grounding.

Output from DM5104 can be unbalanced using RCA jack, or balanced signal using XLR jack. Both outputs are in mono mode, with line level signal.
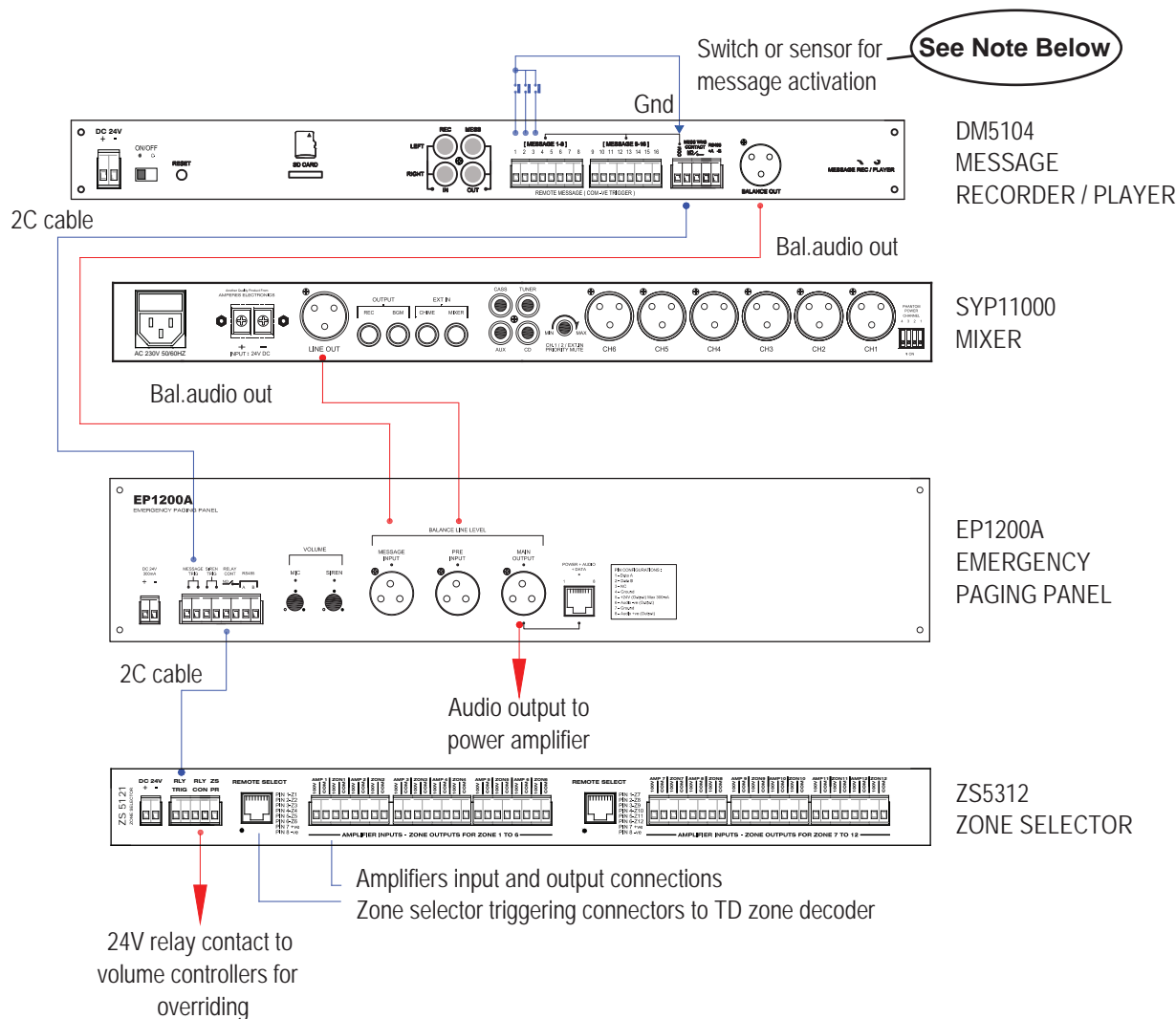
Note :

Activation of a stored message shall can be either momentarily or pulse contact to ground. To activate from PT1801 timer, we recommend that the contact option at the channel output to be set to Pulse. A pulse shall not be more than 3 secs, otherwise it shall be regarded as a momentary latched contact.

Connecting the Unit

Option B :

Using DM5104 for Emergency Announcement

DM5104 can be used as essential message source to PA system, linked to external activation device such as BAS system, emergency push button, etc.

Switch or sensor for message activation — **See Note Below**

DM5104 MESSAGE RECORDER / PLAYER

SYP11000 MIXER

EP1200A EMERGENCY PAGING PANEL

ZS5312 ZONE SELECTOR

2C cable
Bal.audio out
Bal.audio out
2C cable
Audio output to power amplifier
Amplifiers input and output connections
Zone selector triggering connectors to TD zone decoder
24V relay contact to volume controllers for overriding

The dry contact at the DM5104 is used to trigger EP1200A, thus overriding the normal audio source for priority paging. It is then connected to the Emergency Relay trigger at the Zone Selector, providing a dry contact for connecting 24V DC to override external volume controllers.

Note:

By default, the mode of activation is momentary. For this configuration, set it to momentary, and the dry contact shall be closed for the duration of the playback. This shall perform bypass of mixer audio output at EP1200A until the message is stopped.

Triggering Pre Recorded Message via UART (RS485)

DM5104 allows remote message activation via RS485 through the port available at the rear panel. To use this feature, please enquire from us for further technical details.

Connecting the Unit

Option C :
Using BAS to control DM5104

In cases where Building Control System or BAS to be the domain controller including emergency voice annoucement, it can be used to activate particular pre-recorded messages at DM5104.

The BAS would provide a close dry contact, which would activate mixer audio bypass at EP1200A, as well as triggering   a message at DM5104.

The typical connection diagram is illustrated below :
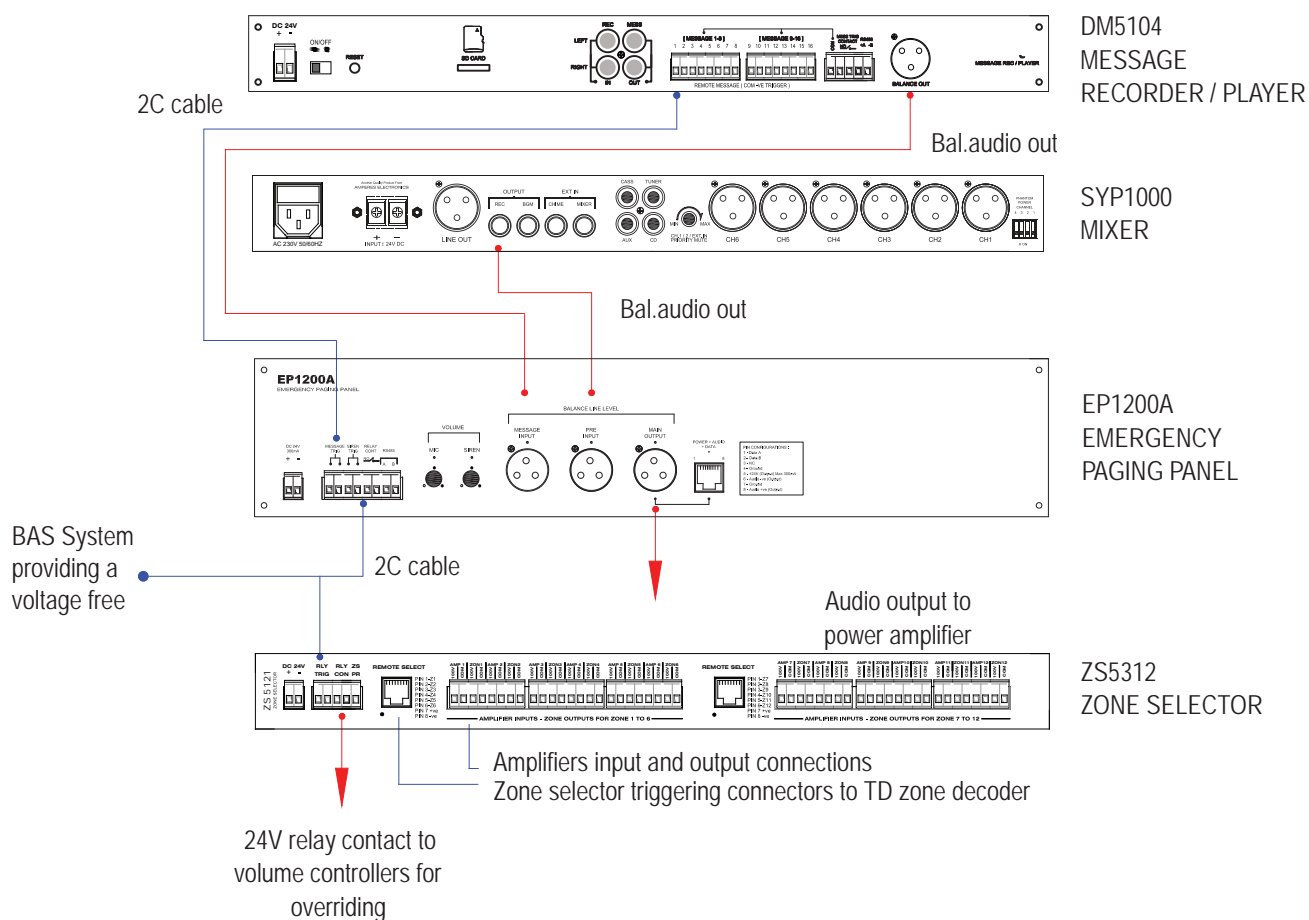
As EP1200A requires a latched contact to bypass the mixer output audio, BAS system should be able to provide a latched contact for the duration of the event.
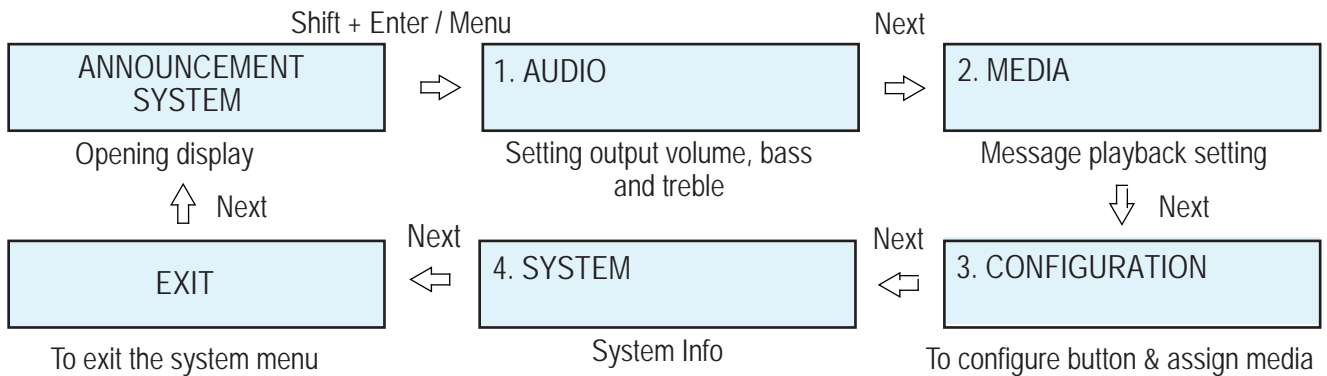
Example, a fire sensor is activated and the BAS pick up the distress signal, it then provides a close contact, which is then required to mute normal BGM through EP1200A. In the same time, activate a warning message via DM5104.
The message shall be repeated until inspection is done and distress status is removed.
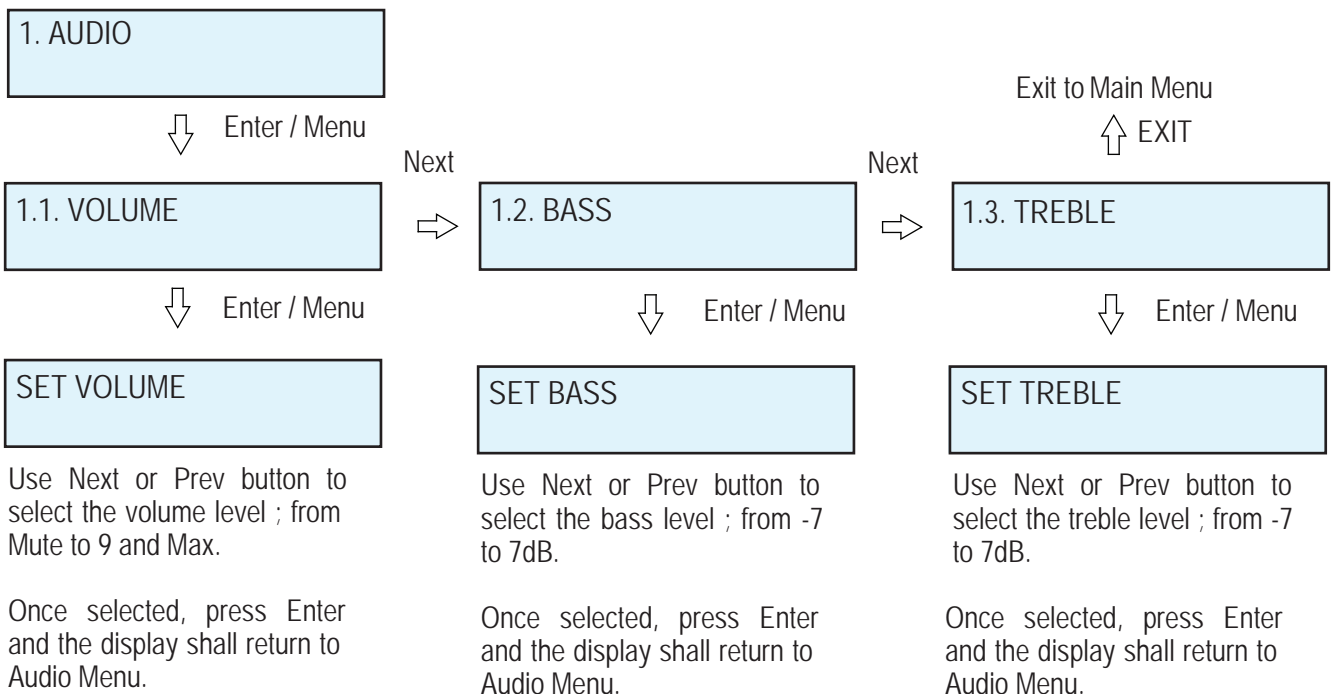
Setup Menu

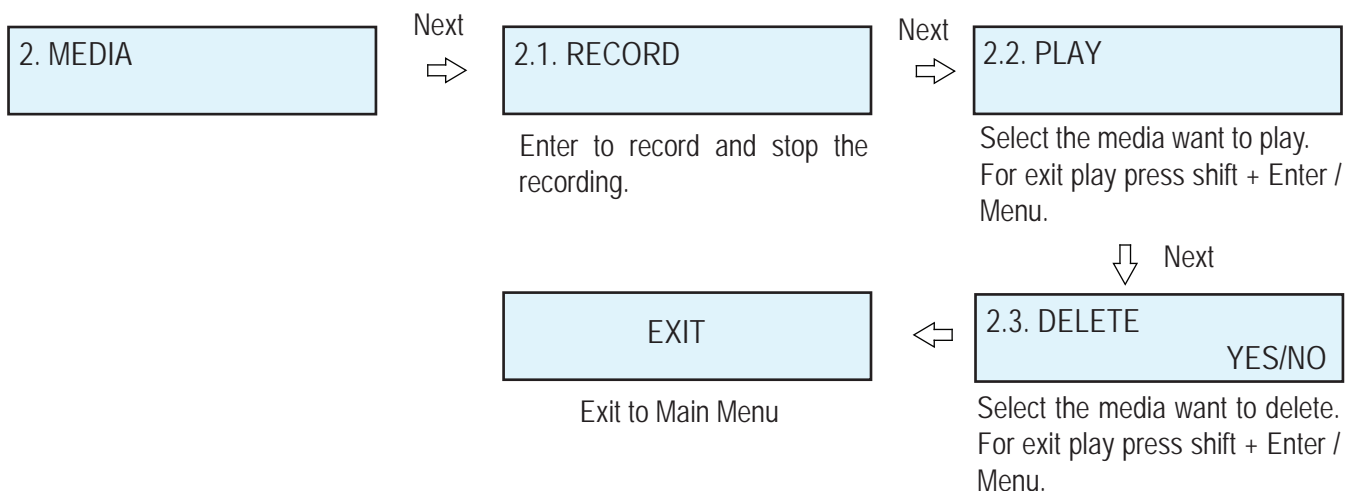## Setting Up Via Front Panel Menu :

The Menu Flowchart :

	Shift + Enter / Menu		Next	
ANNOUNCEMENT SYSTEM	⇨	**1. AUDIO**	⇨	**2. MEDIA**
Opening display		Setting output volume, bass and treble		Message playback setting

⇧ Next (below ANNOUNCEMENT SYSTEM)

⇩ Next (below 2. MEDIA)

	Next		Next	
EXIT	⇦	**4. SYSTEM**	⇦	**3. CONFIGURATION**
To exit the system menu		System Info		To configure button & assign media

1. Audio

It is used to set the output volume, bass and treble of pre-recorded messages.

1. AUDIO

⇩ Enter / Menu

1.1. VOLUME	⇨ (Next)	**1.2. BASS**	⇨ (Next)	**1.3. TREBLE**

Exit to Main Menu — ⇧ EXIT (above 1.3. TREBLE)

⇩ Enter / Menu (under each)

SET VOLUME	**SET BASS**	**SET TREBLE**
Use Next or Prev button to select the volume level ; from Mute to 9 and Max.	Use Next or Prev button to select the bass level ; from -7 to 7dB.	Use Next or Prev button to select the treble level ; from -7 to 7dB.
Once selected, press Enter and the display shall return to Audio Menu.	Once selected, press Enter and the display shall return to Audio Menu.	Once selected, press Enter and the display shall return to Audio Menu.

2. Media

To record live voice file and to play recorded media in the SD Card.

2. MEDIA	⇨ (Next)	**2.1. RECORD**	⇨ (Next)	**2.2. PLAY**

2.1. RECORD: Enter to record and stop the recording.

2.2. PLAY: Select the media want to play. For exit play press shift + Enter / Menu.

⇩ Next (below 2.2. PLAY)

EXIT	⇦	**2.3. DELETE** YES/NO

EXIT: Exit to Main Menu

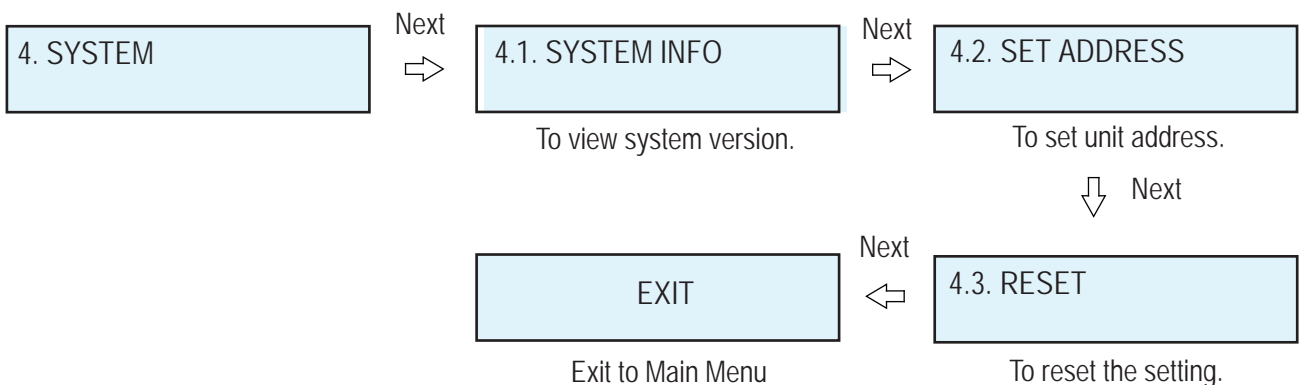2.3. DELETE: Select the media want to delete. For exit play press shift + Enter / Menu.

Setup Menu

3. Configuration

To configure a button, assigning media to respective buttons, inserting delay between messages & repeats of messages.

| 3. CONFIGURATION | Next ⇨ | 3.1. SELECT BUTTON | Next ⇨ | 3.2. EXIT |

For assign Message 1-8 press button Message 1-8, for assign Message 9 - 16 press shift + button Message 9 - 16.

Exit to Main Menu

⇩ Enter / Menu

Use Next / Prev button to select the media.

| 3.1.1. ASSIGN MEDIA | Next ⇨ | REPEAT |

Use Next / Prev button to select the repeat number, from 1 to 50.

⇩ Next

Use Next / Prev button to select the delay number, from 1 to 99 sec.

3.1.2. ADD DELAY

⇩ Next

To add media in the playlist. Use Next / Prev button to select the media.

3.1.3. ADD MEDIA

⇩ Next

View output task list via serial output.

3.1.4. VIEW TASK

⇩ Next

Use Next / Prev button to select either to delete or keeping the media.

3.1.5. CLEAR BUTTON
YES / NO

⇩ Next

Exit to Main Menu.

3.1.6. SAVE & EXIT

4. System

System Information.

| 4. SYSTEM | Next ⇨ | 4.1. SYSTEM INFO | Next ⇨ | 4.2. SET ADDRESS |

To view system version.

To set unit address.

⇩ Next

| EXIT | ⇦ Next | 4.3. RESET |

Exit to Main Menu

To reset the setting.

Setup Via PC

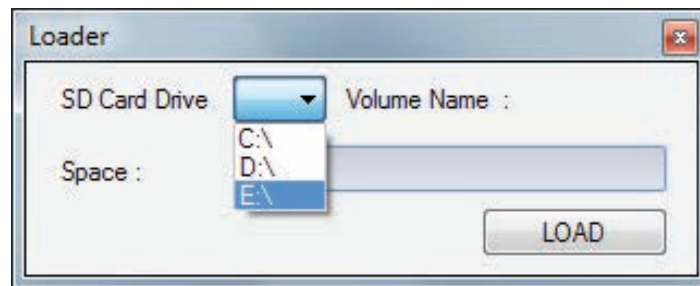Follow the following steps in setup the button via PC :

Insert SD Card to PC

Open the SD Card and find 'DM5104 Configuration Folder'

Open application 'DM5104 SDCard Config'

Select SD Card Drive before starting. After select press 'LOAD'

(1) Select message button

(2) Select file to store in SD Card

(3) Add next file if required

(4) Repeat a playback

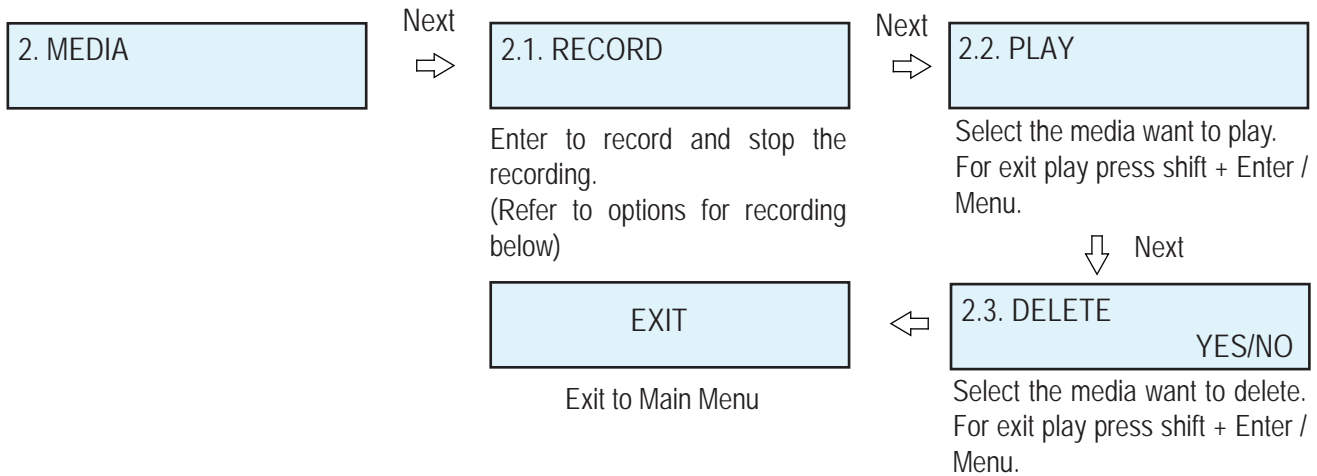(5) Add a delay between to another

(6) Save the configuration

Setting the button 1-16 via this configurator. (Add Media, Repeat and Delay)

After completion of the settings, eject the SD Card and insert it to DM5104.
The new configuration would automatically operational upon activation of the unit.

Recording a Voice File

To record live voice file and to play recorded media in the SD Card. Press "shift + Enter/ Menu" and go to MENU number " 2. MEDIA ".

2. MEDIA

Next ⇨

2.1. RECORD

Enter to record and stop the recording.
(Refer to options for recording below)

Next ⇨

2.2. PLAY

Select the media want to play.
For exit play press shift + Enter / Menu.

⇩ Next

EXIT

Exit to Main Menu

⇦

2.3. DELETE
YES/NO

Select the media want to delete.
For exit play press shift + Enter / Menu.

Recording a voice file can be done in two ways, being
1. Direct voice recording microphone / line input from music player and
2. Saving a voice file directly into SD card and the saved message shall be assigned with an unique message number.
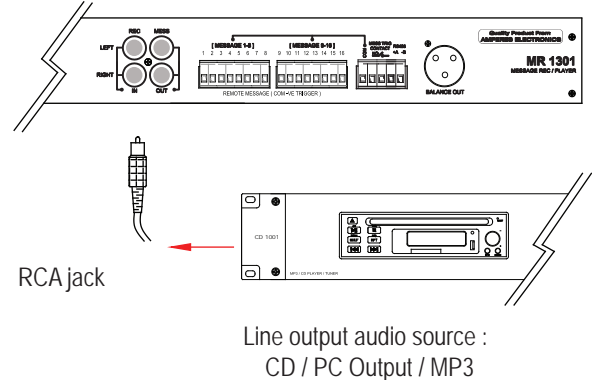
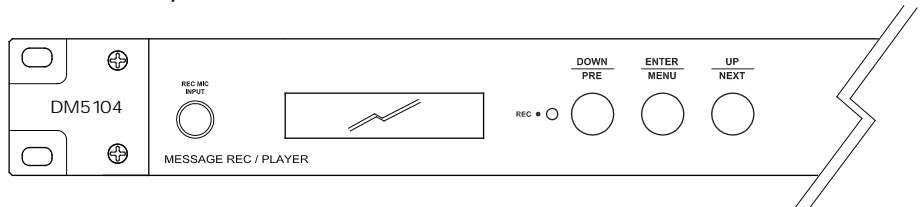## Recording a Voice File

Option A : Direct voice recording

1/4" stereo phone jack

Dynamic microphone
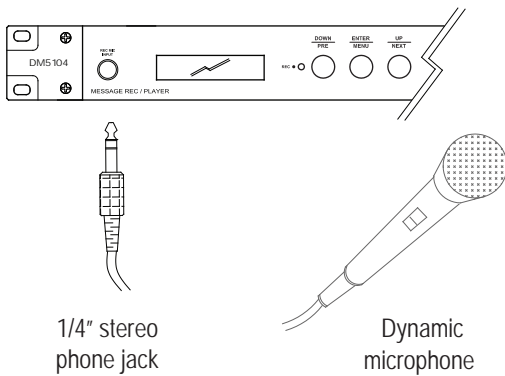
Recording using dynamic microphone through front panel phone jack.

Option B : Recording via external player

RCA jack

Line output audio source : CD / PC Output / MP3

Recording using external line audio source with RCA jack at rear of the unit

The direct recording of voice shall be saved into the SD card through PCM coding. The quality is best for voice and it is less favourable for music. To obtain a high quality music playback, we recommend using the direct file transfer method, which is explained in the next section.

The saved file can be renamed to easier message identification. Plug the USB Card into your PC and rename them with your own file name.

Saving Files Directly Into SD Card

DM5104 allows various format of files for playback, such as MP3, WMA and etc. Saving a high quality of audio format, such as MP3 would produce better sound output,especially for music files.

As currently DM5104 only peform PCM coding for direct recording, we recommend that music file to be directly stored into the SD card, in order to obtain a reasonable quality of audio output.

A few simple steps to save files into SD Card :

1. Insert a SD card provided into Card Reader which is connected to your PC via USB port.

2. From source window, drag the audio files to destination folder in the SD card.
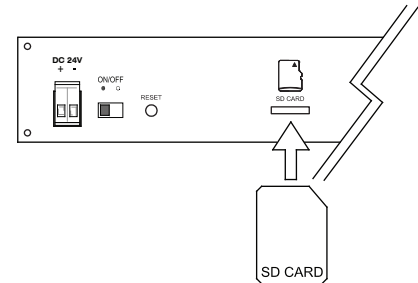
Slot for SD Card at the
rear of the unit

Note :

1. The number of files (songs) that can be saved to a SD Card is subjected to the capacity of the storage space.

2. Typical, the following rules can be applied for MP3 format file:

Bit rate Quality	File size / minute	8 Gb SD Card	Bit rate Quality
128 Kbps	840 Kb	9500 min	19,000 min
192 Kbps	44 Mb	5500 min	11,000 min
320 Kbps	2.4 Mb	3300 min	6600 min

3. Each memory bank can store multiple files, for case of message grouping under same nature of message broadcast. Example, greeting on opening of business, all languages of the greetings can be stored in one memory bank.
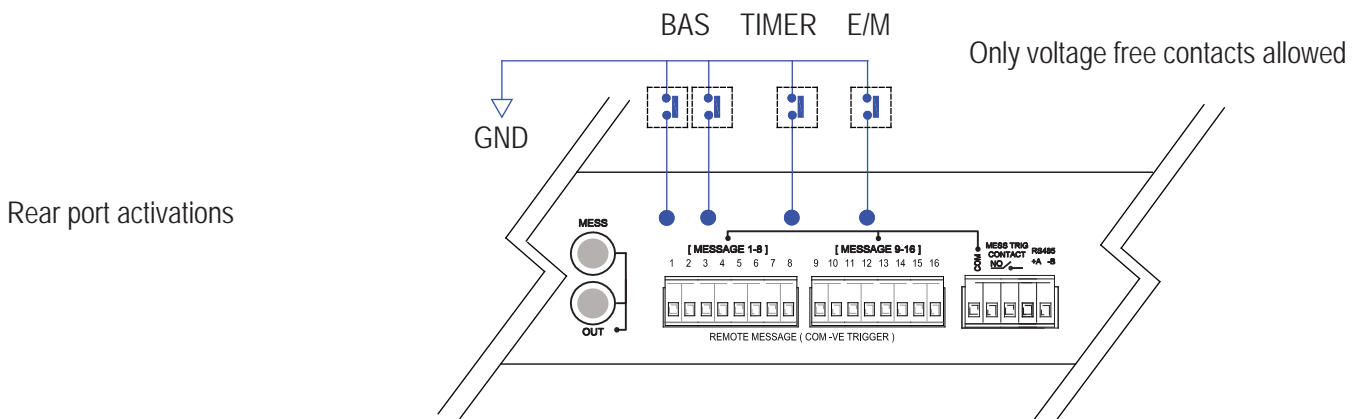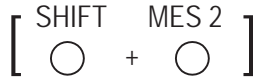
Message Playback

Stored voice file can be played by using the front direct switches (Message 1 to 16) or via the remote triggering ports.

Front switch activation
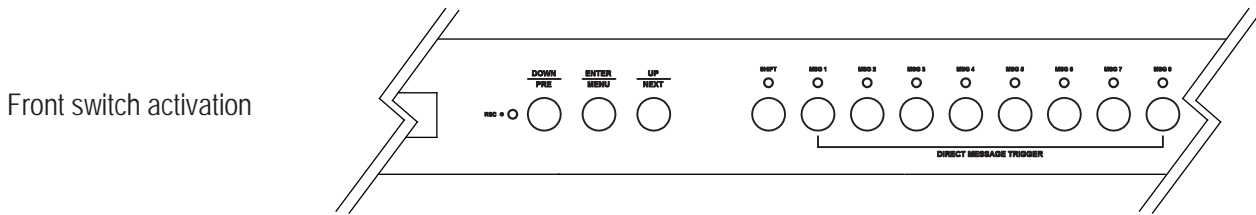
For message 9 to 16, press shift + the required button to trigger the message.

e.g: No 10, Press shift + message 2

[SHIFT   MES 2
  ○   +   ○   ]

Rear port activations

Activation via rear port can be from any external device or system providing a voltage free contact.

To activate a message, the relevant port shall be grounded and the type of activation can be either pulse contact or latch.

For pulse contact (momentarily), a close circuit will activate the message, and while the message is being played, another incoming pulse shall deactivate the announcement.
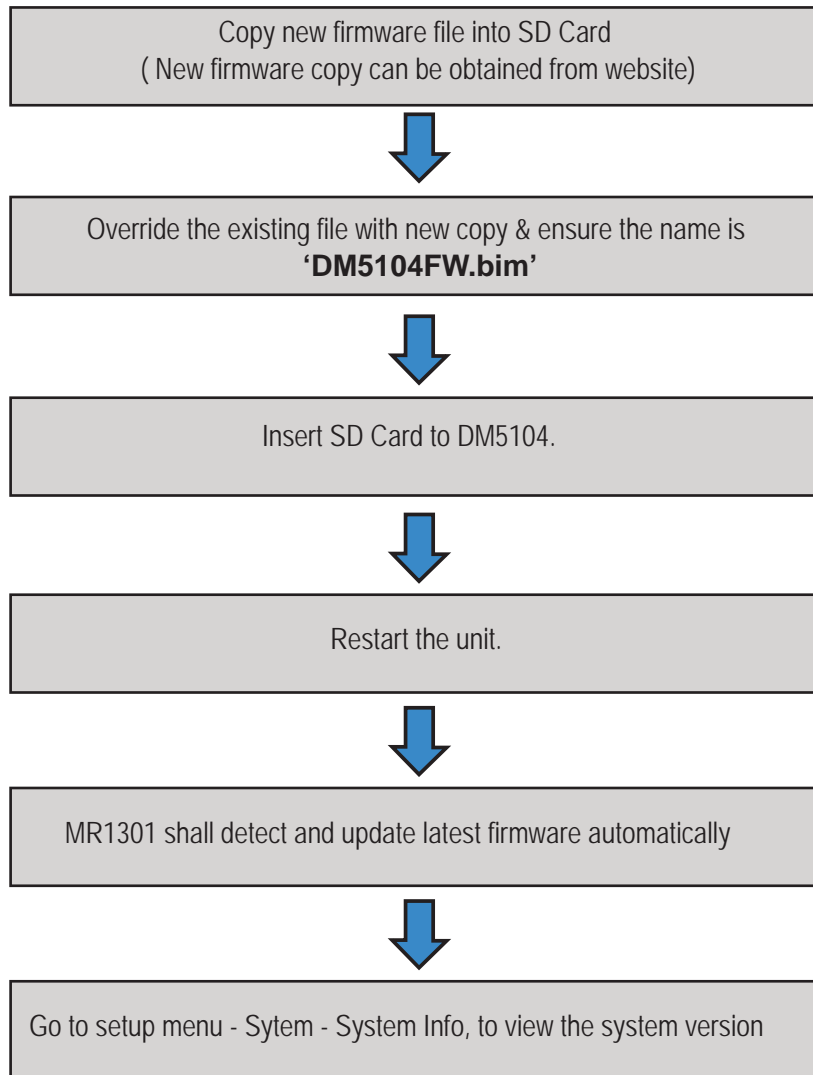
In cases where a latched contact is provided, the message will be played for as long as the closed contact remained as such.

The priority rule shall be the same for rear activation. Message 1 shall have highest priority.

Bootloading Via SD Card

A prominent feature in this upgraded version is the bootloading (Firmware upgrade) method. Direct PC connection is not required and the whole process shall be done automatically. once a new firmware is detected in the SD Card upon power up.

Follow the following steps in firmware update:

Copy new firmware file into SD Card
(New firmware copy can be obtained from website)

⬇

Override the existing file with new copy & ensure the name is
'DM5104FW.bim'

⬇

Insert SD Card to DM5104.

⬇

Restart the unit.

⬇

MR1301 shall detect and update latest firmware automatically

⬇

Go to setup menu - Sytem - System Info, to view the system version

Summary of Features

- 32 bit ARM chip for faster and multitasking processing of data
- Up to 16GB of memory space using Micro SD card
- Message playback via front direct access button and rear remote triggering
- High quality MP3 playback of up to 320 kbps
- 64 kbps IMA ADPCM voice recording for better clarity
- Flexible message configuration in every memory bank eg. Multiple files in a single button
- Priority message playback with dry contact activation
- Playback controls ie. Volume, Repeat, Bass and Treble
- RS485 output with PC link for remote monitoring or using iPX5500 UART-IP converter for monitoring and control via LAN. (Application software : PMX II LAN)
- Auto firmware update / detection upon power up.

Technical Specifications

Operating Voltage	24V DC
Power Comsumption	1W
Data Communication	RS485 at 19.2 kbps
Inputs	Line inputs; unbalanced via RCA jack Microphone input; via front phone jack
Processor	32 bit ARM
Message trigger	16 front and rear message
File format	MP3, WMA, WAV
MP3, WMA, PCM, WAV	320 kbps
Voice recording	IMA ADPCM 16 KHz Sampling Rate Bit Rate : 64 kbps
Files in single bank	Up to 20 per message / button
Delay set up in playback	Yes
Priority message cut	Yes
Software interface	Yes
Remote view / control	Yes
Indicators	LED at switches, LCD display
Memory	MicroSD input 4 GB (up to 16 GB)
Dimension	482 x 44 x 130 mm
Weight	2 kg