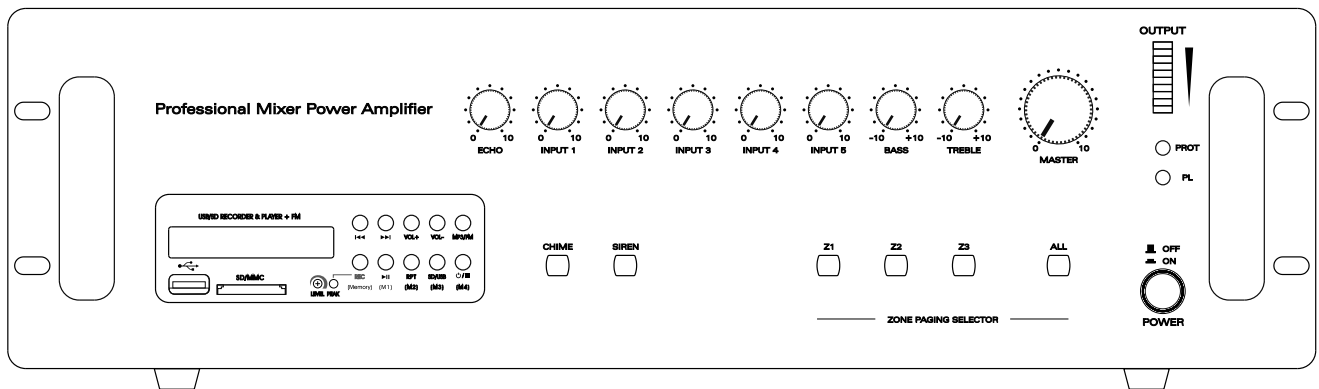


PROFESSIONAL MIXER POWER AMPLIFIER

User's Manual



PA-1400TM/PA-1680TM

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SAFETY RELATED SYMBOLS



The symbol is used to indicate that some hazardous live terminals are involved within this apparatus, even under the normal operating conditions.



The symbol is used in the service documentation to indicate that specific component shall be only replaced by the component specified in that Documentation for safety reasons.



Protective grounding terminal.



Alternating current /voltage.



Hazardous live terminal .

ON: Denotes the apparatus turns on.

OFF: Denotes the apparatus turns off, because of using the single pole switch, be sure to unplug the AC power to prevent any electric shock before you proceed your service.

WARNING: Describes precautions that should be observed to prevent the danger of injury or death to the user.



Disposing of this product should not be placed in municipal waste and should be separate collection.

CAUTION: Describes precautions that should be observed to prevent danger of the apparatus.

WARNING

• Power Supply

Ensure the source voltage matches the voltage of the power supply before turning ON the apparatus.

Unplug this apparatus during lightning storms or when unused for long periods of time.

• External Connection

The external wiring connected to the output hazardous live terminals requires installation by an instructed person, or the use of ready-made leads or cords.

• Do not Remove any Cover

There are maybe some areas with high voltages inside, to reduce the risk of electric shock, do not remove any cover if the power supply is connected.

The cover should be removed by the qualified personnel only.

No user serviceable parts inside.

• Fuse

To prevent a fire, make sure to use fuses with specified standard (current, voltage, type). Do not use a different fuse or short circuit the fuse holder.

Before replacing the fuse, turn OFF the apparatus and disconnected the power source.

• Protective Grounding

Before turning the product ON, make sure that it is connected to Ground. This is to prevent the risk of electric shock. Never cut internal or external Ground wires. Likewise, never remove Ground wiring from the Protective Ground Terminal.

Never cut off the internal or external protective grounding wire or disconnect the wiring of protective grounding terminal.

The apparatus shall be connected to a mains socket outlet with a protective earthing connection.

- **Operating Conditions**

This apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on this apparatus.

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

Do not use this apparatus near water. Install in accordance with the manufacturer's instructions. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat. Do not block any ventilation openings.

No naked flame sources, such as lighted candles, should be placed on the apparatus.

IMPORTANT SAFETY INSTRUCTIONS

- Read these instructions.
- Follow all instructions.
- Keep these instructions.
- Heed all warnings.
- Only use attachments/accessories specified by the manufacturer.

- **Power Cord and Plug**

Do not defeat the safety purpose of the polarized or grounding type plug.

The mains plug is used as the disconnect device, the disconnect device shall remain readily operable.

A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.

Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.

- **Cleaning**

When the apparatus needs a cleaning, you can blow off dust from the apparatus with a blower or clean with rag etc.

Don't use solvents such as benzol, alcohol, or other fluids with very strong volatility and flammability for cleaning the apparatus body. Clean only with dry cloth.

- **Servicing**

Refer all servicing to qualified personnel. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so .

Servicing is required when the apparatus has been damaged in any way , such as power supply cord or plug is damaged , liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture , does not operate normally, or has been dropped.

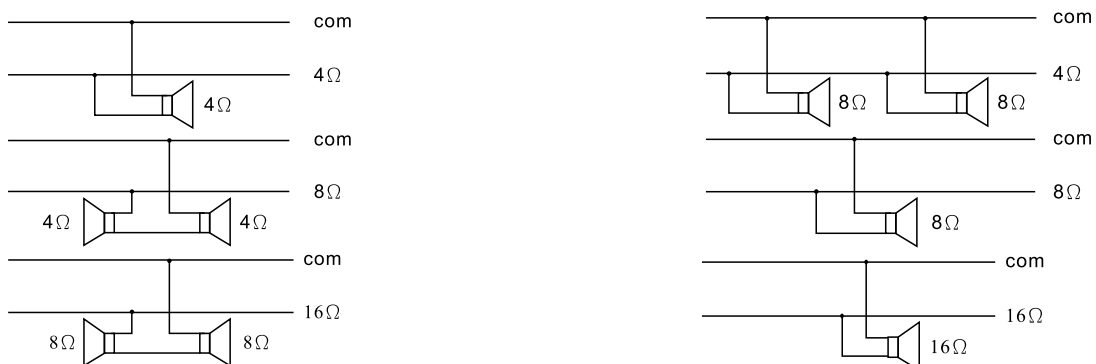
INTRODUCTION

I. Features

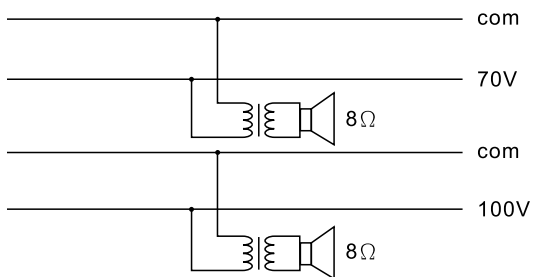
- Low resistance (4Ω , 8Ω , 16Ω) output
- Fixed voltage (70V and 100V) output
- Four paging broadcast systems
- Automatic broadcast function for emergency
- Call broadcast function
- Four chimes
- Four sirens
- Four groups of COMBO inputs with balanced PHONEX input
- RCA jack and PHONEX jack for input
- Pre-output
- Rear input
- MP3 Player + Digital tuner module
- Input I with mute function
- Bass and Treble control
- Master volume control for the unit, and individual volume control for each input
- ECHO Function
- 3H widened cabinet design
- Fan for heat dissipation
- Perfect circuit protection: over-load protection, over current protection, over voltage protection and short-circuit protection
- LED level indication

CONNECTION DESCRIPTION

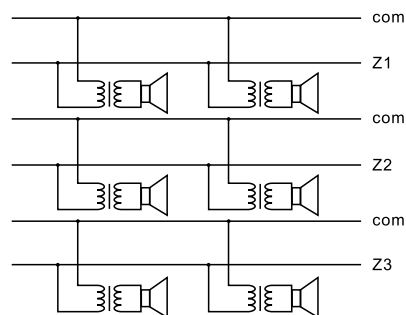
2.1 Low resistance (4Ω , 8Ω , 16Ω) output is for convenience of connecting low impedance speaker.



2.2 Fixed voltage (25V, 70V and 100V) output is for the convenience of connecting speaker in a long distance.



2.2 Fixed voltage

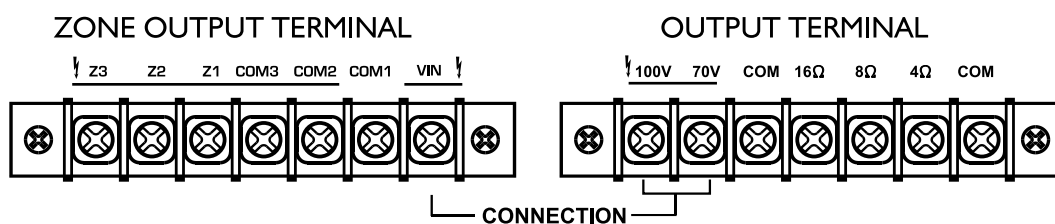


2.3 Paging broadcasting system

2.3 Four paging broadcasting system (paging 1, paging 2, paging 3 and all paging) are for the convenience fuse as various requirements.

2.4 ZONE OUTPUT CONNECTION

When use the Zone output, Be sure the "100V" or "70V" of the output terminal must be connect the "Vin" of the Zone output terminal, as following connection



2.5 Automatic broadcast function for emergency: when the urgent signal is input or siren starts, each paging will broadcast the signal automatically.

2.6 Call broadcast: the call broadcast jack provides balanced signal input and the balanced signal input can decrease HUM noise. It can mute signals from INPUT2, INPUT3, INPUT4, INPUT5.

2.7 Chime: when the chime starts, it can mute the background music. At this time, microphone can be used for speech and can mute signals from the following input of the microphone: INPUT2, INPUT 3, INPUT4 and INPUT5.

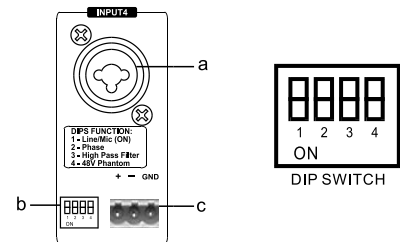
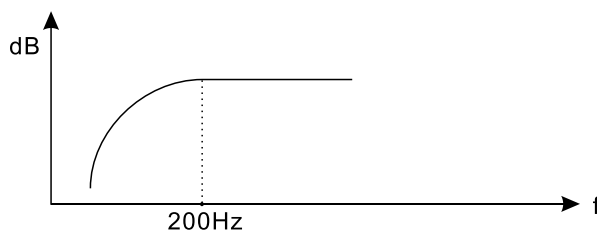
2.8 Sirens: when emergency happens, siren can be started.

2.9 The unit has four groups of COMBO inputs, balanced PHONEX input. Dip switch can be selected as requirement for the following purposes: LINE input, MIC input, reverse phase, hi-pass filter, 48V phantom power.

2.9.1 Combo jack input

2.9.2 Dip switch

- a. When the switch is set in the position ON, it inputs the high sensitive signal and the signal from microphone. When the switch is set in the position OFF, it is the LINE input, e.g. tuner, MP3, etc.
- b. When the switch is set in the position ON, its output reverses 180°.
- c. When the switch is set in the position ON, signals output will be processed by high pass filter. All frequencies under 200Hz will be deleted.

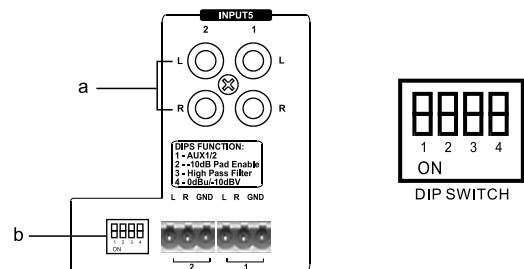


- d. When the switch is set in the position ON, it provides 48V phantom voltage to condenser microphone.

2.9.3 PHONEX inputs balanced signals.

2.10 The unit has two types of input jacks: RCA and PHONEX. Dip switch is equipped with four functions as following: Aux I input or Aux2 input selected as requirement. 10dB gain control Hi-pass filter 0dBu/-10dBv input sensitivity selection.

- a. RCA AUX signal input
- b. DIP switch for selecting functions:



- When the dip switch is set in the position ON, AUX2 inputs signals. When the dip switch is set in the position OFF, AUX I inputs signals.
- When the dip switch is set in the position ON, the input signals attenuate -10dB.
- When the dip switch is set in the position ON, signals output will be processed by high pass filter. All outputted frequencies under 200Hz will be attenuated.
- When the dip switch is set in the position ON, input sensitivity is -10dBv. When the dip switch is set in the position OFF, input sensitivity is 0dBv

2.11 PRE OUT function: the signal of pre-amplifier can be amplified by sending it to the power amplifier.

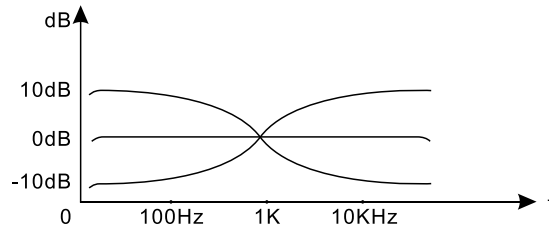
2.12 Rear input: the power amplifier can accept the signals of the pre-amplifiers.

2.13 Mp3 Player Module: with USB,SD/MMC card/FM interface

2.14 INPUT1 can mute INPUT2, INPUT3,INPUT4 and INPUT5.

2.15 INPUT1-5, MP3, TUNE all have ECHO function, adjust ECHO controller to control level.

2.16 BASS and TREBLE control: BASS 100Hz, ± 10 dB, TREBLE 10kHz, ± 10 dB.



2.17 Each input has volume control and the master volume control sets the volume of all inputs.

2.18 3H widened cabinet design.

2.19 Fan is for heat dissipation. The fan speed changes with the variation of temperature. When temperature is above 65°C , the fan works more quickly.

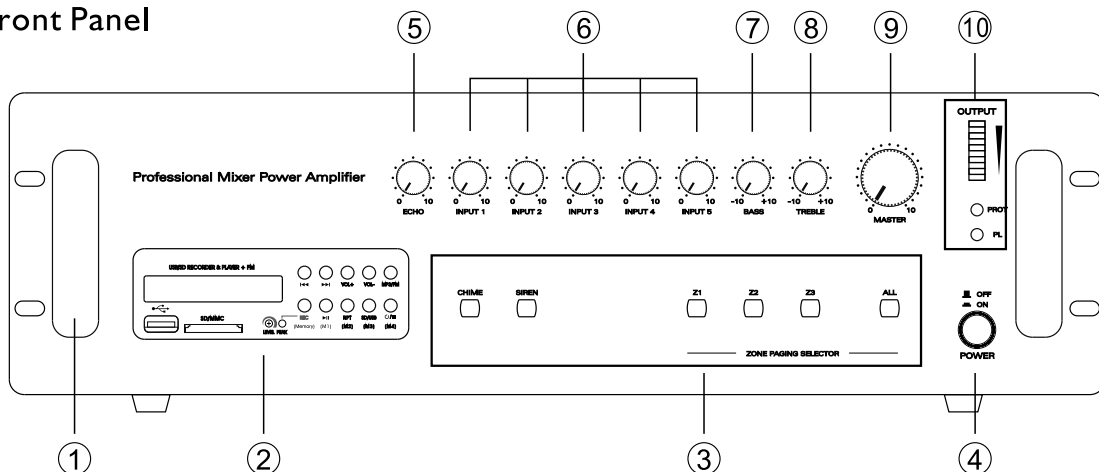
2.20 Perfect protection circuit: The circuit has the protective functions of over load, over current, over voltage and short-circuit.

2.21 LED level indication

CONTROL ELEMENTS

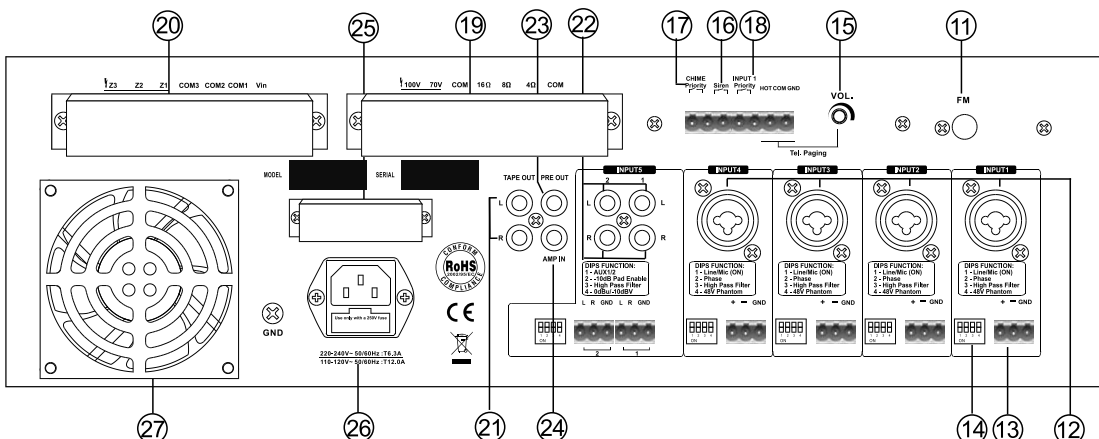
3. Front Panel and Rear Panel

3.1 The Front Panel



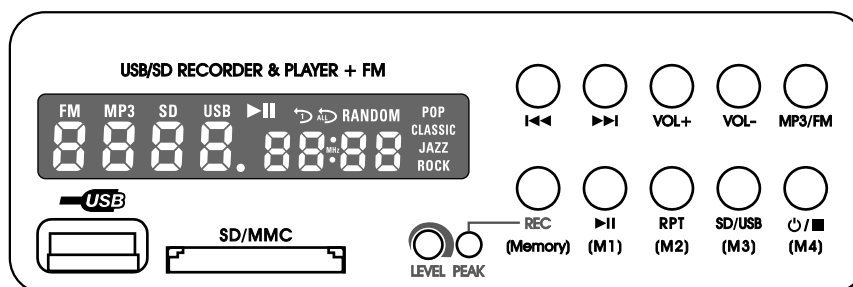
- ① **Handle**
It is used to carry the unit.
- ② **MP3 module**
Regarding its function and operation, please see the BGM module description in detail.
Note: MP3 player, recording, CD-201 are assembled to different units of the series.
- ③ **Zone paging selector**
There are four zone paging controls and one mains zone paging control. Press ZONE1-4 keys, the output terminals in front panel have respective output. And rotate the four knobs to control the volume by adjusting clockwise to boost the volume and adjusting counterclockwise to attenuate the volume. When the "all" key is switched on, the four zone paging controls work simultaneously and the volume is at the maximum value.
- ④ **Power switch**
The main power can be switched on or off with it.
- ⑤ **ECHO function**
It is used to control ECHO.
- ⑥ **Input 1-5 vol knobs**
The knobs are used to adjust the gain of input 1-5 respectively. Adjust clockwise to increase the volume while adjust counter-clockwise to decrease the volume.
- ⑦ **BASS**
Use the knob to control the low frequency at the range of ± 10 dB. Turn clockwise to boost and counter-clockwise to attenuate the treble response. Tone is flat at centre.
- ⑧ **TREBLE**
Use the knob to control the high frequency at the range of ± 10 dB. Turn clockwise to boost and counter-clockwise to attenuate the treble response. Tone is flat at centre.
- ⑨ **MASTER**
This knob is used to adjust the overall gain of the unit.
- ⑩ **Output level indicator and power LED.**

3.2 The Rear Panel



- ⑪ **FM antenna**
This antenna receives FM signals.
- ⑫ **Combo jack**
This jack inputs balanced and unbalanced signals.
- ⑬ **Phonex jack**
This jack inputs balanced signals.
- ⑭ **Dip switch**
- Set the switch in the position ON and it inputs the signals from MIC. Set it in the position OFF and it inputs the signals from LINE.
 - Set the switch in the position OFF and the signal keeps the same. Set the switch in the position ON and signals reverse 180°.
 - Set the switch in the position OFF, then signals will not go through the high pass filter. Set the switch in the position ON, then signals will go through the high pass filter.
 - Set the switch in the position OFF, then the phantom power is turned off. Set the switch in the position ON, then the phantom power is turned on.
- ⑮ **Call volume knob**
The knob can be used to set the input level of call and siren signals.
- ⑯ **Siren remote control switch**
This switch can be used to set the siren in a long distance.
- ⑰ **Priority remote control switch**
This switch can be used to set the priority function in a long distance.
- ⑱ **Urgent call jack**
It can be used to input urgent signals and call broadcast signals.
- ⑲ **Output terminal**
This terminal provides five groups of outputs: 4Ω, 8Ω, 16Ω, 70V and 100V.
- ⑳ **Paging broadcast terminal**
This terminal inputs and outputs the voltage of Z1, Z2 and Z3.
- ㉑ **TAPE OUT jack**
This jack outputs the recorded signals.
- ㉒ **AUX input jack**
This jack inputs AUX signals.
- ㉓ **PRE OUT jack**
This jack outputs pre-signals to other amplifiers.
- ㉔ **AMP IN jack**
This jack inputs the outer audio signals to the unit.
- ㉕ **Voltage switch**
This switch is used to select voltage (115V or 230V) as requirement.
- ㉖ **AC input**
This jack is used to input AC power and has a built-in fuse to prevent the unit from over current and over load.
- ㉗ **Fan**
Fan is for heat dissipation. The fan speed changes with the variation of temperature. When temperature is above 65°C, the fan works more quickly.

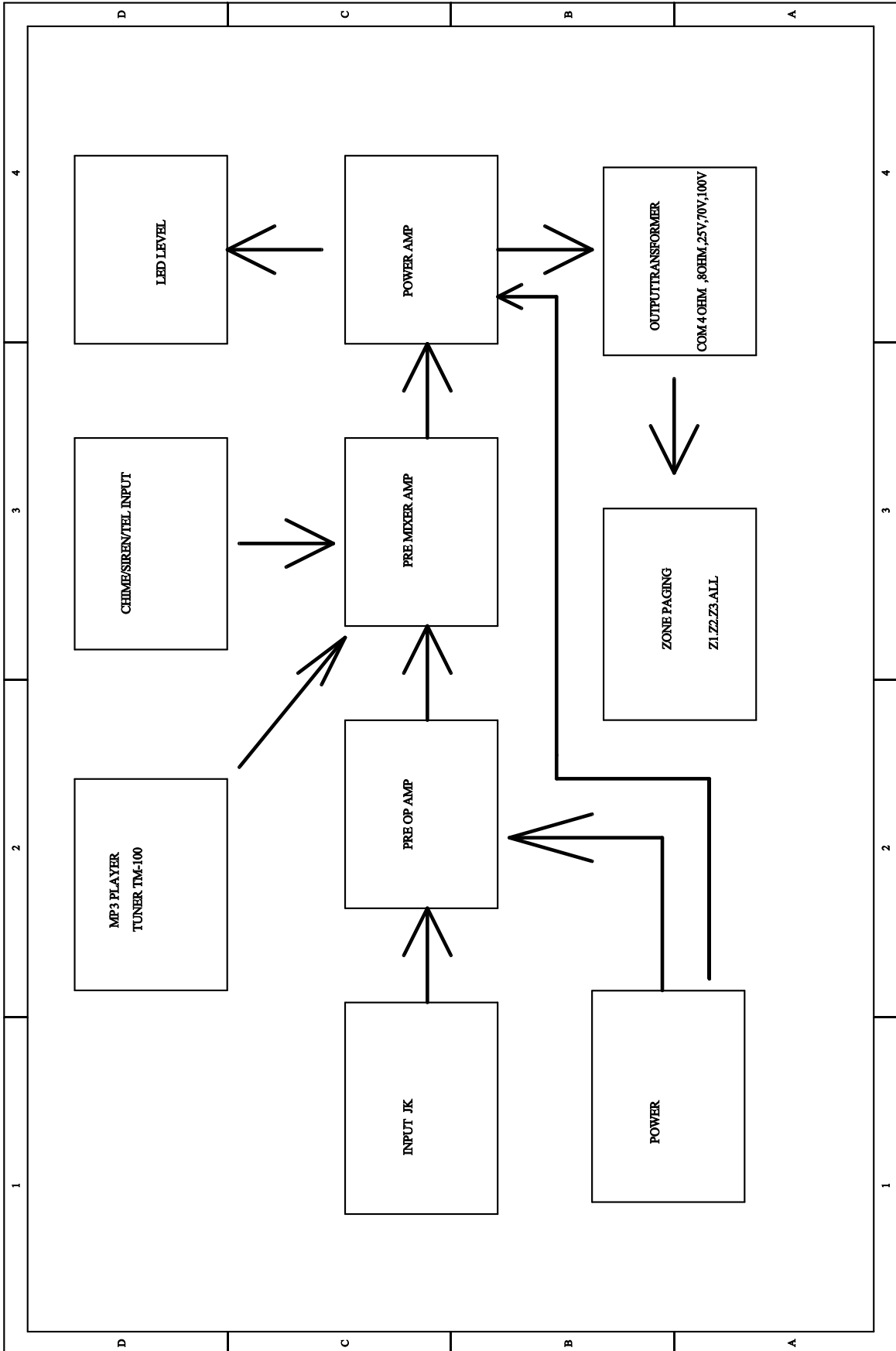
4. The front panel of MP3 player(MP3 PLAYER+ RECORDING+ FM)



MP3 MODE	FM/MP3	MP3 / FM mode exchange
(a)		USB interface
(b)	SD/MMC	SD/MMC hole
(c)	DISPLAY	Display operation status of MP3.
(d)	LEVEL	Control the volume of recording.
(e)	REC	After power on, press REC and prepare to record. Then select the save way with the USB/SD button .Press REC again. If "REC" lights about 3~4 times, record begins. During record, do not do other operations until press "STOP" to stop. If "Err" appears, press "STOP" to stop recording
(f)		If the model is connected to USB or SD clip, it can make a selective play automatically after powered on. And it plays the USB equipment prior. When the model is in waiting status, it plays automatically after inserting USB save equipment or SD clip. When it is in a stop or pause, begin to play after pressing PLAY/PAUSE.
(g)	RPT	After press REP, you can select the below four repeat mode: Play in order: no picture displays; Repeat single: REP I ; Repeat all: REP ALL; Random play: REP.
(h)	SD/USB	Select save device with the key USB/SD.
(i)		Hold POWER button for 3 seconds.When the display of mold lights, it means that the model is powered on. Hold the button for 3 seconds again. When the display of model goes out, it means it is powered off. Start to search playable equipments after powering on.
(j)	VOL-	Press VOL- to decrease the volume and press VOL+ to increase the volume. Factory default : 10.
(k)	VOL+	
(l)		In the status of play or pause, the model plays next song or previous one when press or , and the status has no change. It plays the next file or previous file when hold or for about 2 seconds, and the status is as before. When the current file is recording one, "FrE" appears in the display.
(m)		

FM MODE	FM/MP3	MP3 / FM mode exchange
Ⓐ	▶▶	Change frequency upward/downward(STEP= 100KHz) by pressing ▶▶ / ◀◀ button.
Ⓑ	◀◀	Search radio upward/downward automatically by holding ▶▶ / ◀◀ button for about 3 seconds
Ⓒ	M1	Change frequency upward/downward(STEP= 100KHz) by pressing PRE/NEXT button to the expected radio, press the “Memory” Key, then press one of M1 ~ M4 Key to save the radio. press one of M1 ~ M4 Key to recall save the radio.
Ⓓ	M2	
Ⓔ	M3	
Ⓕ	M4	
Ⓖ	Memory	
Ⓕ	VOL-	Control FM volume by pressed VOL+/VOL-, Press VOL- to decrease the volume and press VOL+ to increase the volume.
Ⓖ	VOL+	
Ⓙ	⏻/■	Hold POWER button for 3 seconds. When the display of mold lights, it means that the model is powered on. Hold the button for 3 seconds again. When the display of model goes out, it means it is powered off. Start to search playable equipments after powering on.

BLOCK DIAGRAM



TECHNICAL SPECIFICATION

MODEL	PA-1400/1680 SERIES
RMS /MAX POWER	PA-1400: 400W/450W PA-1680: 680W/720W
POWER INPUT	AC: 110-120V 50/60Hz AC: 220-240V 50/60Hz
FREQUENCY RESPONSE	50Hz~17kHz (± 3 dB)
INPUT /SENSITIVITY	MIC1: BAL: -51dBv/UNBAL : -45dBv LINE: BAL: -10dBv/UNBAL: -6dBv AUX: UNBAL 0dBv(DIP SWITCH IN OFF POSITION)
TONE CONTROL	BASS: ± 10 dBv (100Hz) TREBLE: ± 10 dBv (10KHz)
DISTORTION(THD)	<0.5%
S/N RATIO	AUX ≥ 70 dB MIC ≥ 65 dB LINE ≥ 75 dB MAIN IN ≥ 85 dB
CONTROLLING KEY	INPUT 1~5 LEVEL CONTROL ECHO CONTROL TIMBRE CONTROL (BASS, TREBLE) MASTER CONTROL SIREN SWITCH CHIME SWITCH AC SWITCH
OUTPUT IMPECANCE	4 Ω , 8 Ω , 16 Ω
LINE OUTPUT	70V, 100V
SIREN FUNCTION	YES
VU-METER(LED)	YES
TELEPHONE PAGING LELECT FUNCTION	YES
INPUT1 PRIORITY	YES
4-TONE CHIME	YES
TUNER	FM
MP3 PLAYER	MP3-500
WEIGHT	PA-1400: 20.10kg PA-1680: 22.4kg
DIMENSION	482mmx440mmx150mm
COLOR	BLACK

TROUBLE SHOOTING

Symptom	Likely Cause	What to do
No sound	Amplifier not connected	Verify that speaker is connected and that the circuit is on
	Power not switched on	Switch on power and verify that power Led is on
No sound, amplifier is connected	Amplifier power cable is faulty or improperly connected.	*Re-seat the power cable at both ends; *Substitute a known-good power cable
	Blown fuse	*Check fuse & replace with same type "spare fuse in holder"
No sound Speaker comes on	Signal source (mixer, Amp instrument) is not sending	*Check if the signal LED indicators are lit on *Verify that the tape or CD is playing; *Use headphones to verify that the instrument is actually sending an audio signal
	Faulty cables & connections	*Disconnect and re-seat signal cables; *Replace suspected cable with a known-good cable
No sound with microphone connected to MIC / LINE input	Microphone requires phantom power	The EON does not supply phantom power. Switch to a dynamic microphone, use a battery powered microphone (if possible), use an external phantom power supply for condenser type microphones.
Signal sounds distorted and very loud, LIMIT light is lit most of the time	Excessive input signal, trying to exceed the capabilities of the speakers	*Reduce the output level of the source; *Turn down the level controls on the speaker; *Use additional EON speakers
Lots of hiss in sound, mixer controls are at very low settings.	Improper gain adjustment or settings	*Make sure that the MIC / LINE switch is in the LINE(disengaged) position; *Reduce the level settings at speaker, Review the Owner's Manual for your mixer and adjust controls as needed; *Input sensitivity(gain); *Channel faders; *Master faders;
Hum or Buzz	Improper A/C grounding, ground loops	*"lift" audio ground by using XLR/F to XLR/M adapter on one end *Re-route audio cables away from AC power and lighting cables.
	Excessively long unbalanced cable run	*Use the balanced outputs(if available)of your mixer or source equipment to drive your EON speakers. *Use "DI"(direct injection) box to convert unbalanced equipment output to a balanced output.
	Improper system gain settings	Reduce the INPUT level controls and increase the output level of your source devices.
Speakers feed back and howl when the microphone volume is turned up	Microphone are pointed into the speakers	Move the speakers so they do not point at the microphone's pickup pattern.
	Incorrect Equalizer settings	Locate the feedback frequency and reduce it using the mixer EQ or an external equalizer.
	Excessive gain	Reduce the gain at the mixer and move the microphone closer to the sound source.