

PUBLIC ADDRESS POWER AMPLIFIER

PA 2060 60W 100V

PA 2120 120W 100V

PA 2240 240W 100V

PA 2360 360W 100V

PA 2480 480W 100V

INSTRUCTION MANUAL

amperes ... the perfect paging companion

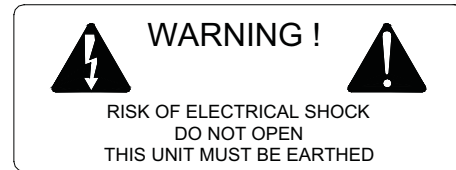


By AMPERES ELECTRONICS
www.ampereselectronics.com

IMPORTANT SAFETY INSTRUCTIONS

The lightning flash symbol with arrowhead within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure, that may be sufficient magnitude to be a risk of electric shock to person.

The exclamation mark within an equilateral triangle is intended to alert the user to the presence of important operating and



WARNING - When using electric products, basic precautions should always be followed including the followings :

1. Read all the SAFE INSTRUCTIONS before using the product.
2. This product must be earthed. If it should malfunction or breakdown, grounding provides a path of least resistance for electric current to reduce risk of electric shock.

This product is equipped with a cord having an equipment grounding conductor and a grounding plug.

The plug must be plugged into an appropriate outlet that is properly installed and earthed in accordance with all local codes and ordinance.

DANGER - Improper connection of the equipment-grounding connector can result in a risk of electric shock. Check with a qualified electrician or servicemen if you are in doubt as to whether the product is properly grounded. Do not modify the plug provided with the product, If it will not fit the outlet, have a proper outlet installed by a qualified electrician.

3. To reduce the risk of injury, close supervision is necessary when the product is used near children.
4. Do not use this product near water, for example, near a bathtub, washbowl, kitchen sink, in a wet basement or near a swimming pool or the like.
5. This product should be located so that its location or position does not interfere with its proper ventilation.
6. This product should be located away from heat sources such as radiators, heat registers or other products that produce heat.
7. This product should be connected to a power supply only of the type described on the operating instructions or as marked on the product.
8. This product may be equipped with a polarized line plug (one blade wider than the other). This is a safety feature. If you are unable to insert the plug into the outlet, contact an electrician to replace your obsolete outlet. Do not defeat the safety purpose of the plug.
9. The power supply cord of the product should be unplugged from the outlet when left unused for a long period of time. When unplugging the power supply cord, do not pull on the cord, but grasp it by the plug.
10. Care should be taken so that object do not fall and liquid are not spilled into the enclosure through openings.
11. The product should be serviced by a qualified service personnel when :
 - a. The power supply cord or the plug has been damaged or,
 - b. Objects has fallen, or liquid has been spilled into the product, or
 - c. The product has been exposed to rain, or
 - d. The product does not appear to operate normally or exhibits a marked change in performance, or
 - e. The product has been dropped or the enclosure damaged.
12. Do not attempt to service the product beyond that described in the user-maintenance instructions. All other serving should be referred to qualified service personnel.
13. **WARNING** - do not place objects on the products' power cord or place it in a position where alone could trip over, walk on or roll anything over it. Do not allow the product to rest on or to be installed over power cords of any type. Improper installations of this type create the possibility of fire hazard and / or personal injury.

THANK YOU ...

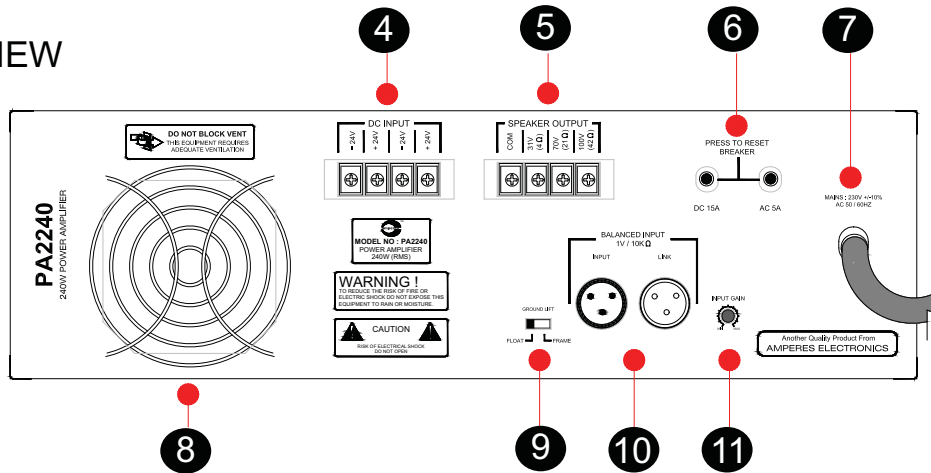
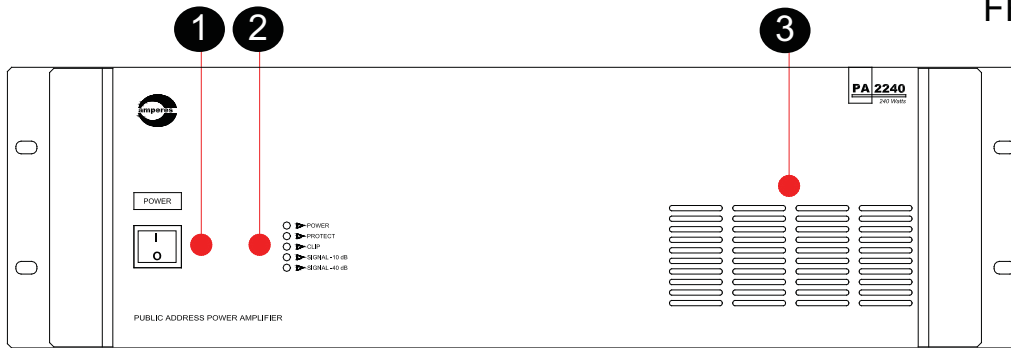
WE thank you for putting your trust on another products produced by Amperes Electronics. And yes, we went a long way to ensure that this unit is a reliable workhorse when it is rolled out from the production line. That includes tireless design improvements, vigorous testing and monitoring and not forgetting the long operational testing over time. All to ensure that you get the right product with minimal investment ... something worth the money spent.

Although these models of amplifiers look similar to any other conventional types available in market, we appreciate if you would spend some time reading through the manual to ensure the unit is properly installed in accordance to our recommendations. We believe that this habit shall ensure that the unit works perfectly beyond your expectations in years to come.

Please keep this manual for future reference.

SUMMARY OF FEATURES

THERMAL PROTECTION	Ensures the amplifier do not operate under thermal run-away state, which do not only distort the sound reproduction but could damage the components. Upon reaching a preset temperature, the amplifier would enter protect mode which would let the unit idle until the excessive heat is dissipated.
SHORT CIRCUIT PROTECTIONS	The amplifier shall enter into protection mode shall the speaker line is short circuit, which may cause overheating too. Please check the speaker line whenever the protection LED is on and remove any shorted cable as soon as possible. Permanent short circuit may cause permanent failure to the amplifier.
DUAL SPEED COOLING FAN	Heat dissipates by external air forced into the heat sink. Under extreme condition, the system shall detect the heat produced and if it exceeds the capacity of normal cooling system, the fan shall increase its speed automatically to ensure the amplifiers keep operating under optimum temperature.
MANUAL RESET CIRCUIT BREAKER	Manual reset circuit breakers are available for DC as well as AC mains inputs. This shall be more convenient for maintenance over conventional fuse replacements.
BALANCED INPUT WITH GAIN CONTROL	Input is via balanced signal and the gain control is available at the rear panel of the unit, which avoid unnecessary tampering of the volume by unauthorized personnel.
AC / DC OPERATION	The amplifiers operates using mains ac supply as well as 24V DC back up supply. This ensures continuous operation of your system whenever mains supply is interrupted or unavailable.



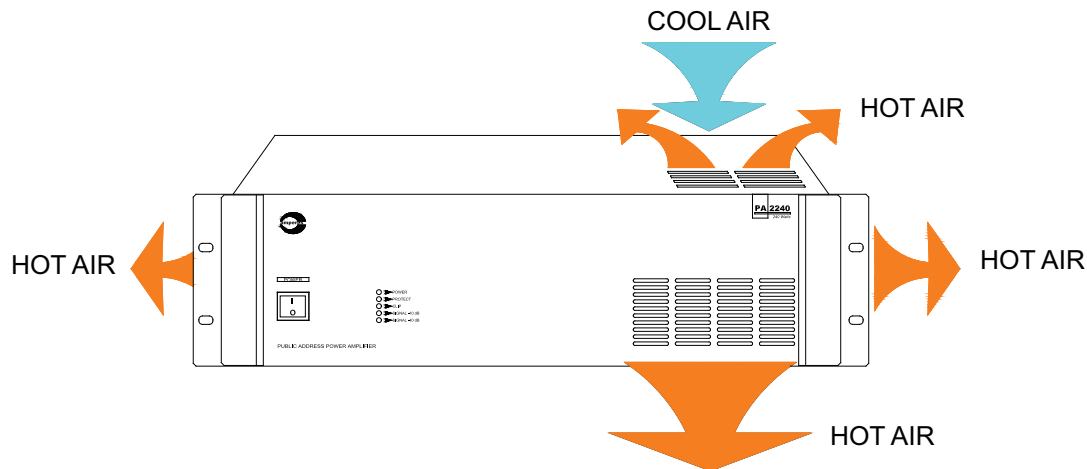
1. MAINS SWITCH For switching mains ac supply and the corresponding LED shall lit accordingly. Mains LED shall not lit if the back up DC supply is available.
2. INDICATION LEDs Mains LED for incoming mains supply and Protect LED is to indicate if the unit is switched to protection mode. Clip LED shall lit if the incoming signal is too high whereas others to indicate signal level in two level ie. -40 dB and -10 dB.
3. FRONT VENT Hot air inside the unit is blown out from these vent holes. Please ensure that there is sufficient clearance for ventilation.
4. DC SUPPLY For connection of back up 24V DC supply from batteries. Another two ports are parallel to the incoming and is used for connection to the next amplifier.
5. SPEAKER OUTPUT Outgoing terminals to speakers available in 4 Ohm, 70 and 100V line for usage with transformer coupled speakers. The total speakers combined should have impedance higher than stated in the corresponding output terminals to avoid overloading.

Loudspeakers with suitable matching transformer can be connected to the 25 or 70 or 100V line outputs in parallel. However the total load should not exceed the nominal power output rating of the amplifier.

Do not parallel two power amplifiers in order to gain higher power rating as this may cause overloading in the event that any one of them failed.

- | | |
|----------------------------------|--|
| 6. MANUAL RESET CIRCUIT BREAKERS | Manual reset circuit breakers replace the conventional fuse replacement, allowing easier maintenance. AC circuit breaker has the rating of 5 A whereas the DC with 15A rating. Simply press to reset when the failure is detected and removed. |
| 7. MAINS AC CORD | Mains ac cord comes with standard British 3 pin plug with fuse rating of 13A. |
| 8. VENT FAN | The vent fan draw external cool air to the internal heat sink. The fan has dual speed which is determined by the internal heat sink temperature. To allow proper cooling, please ensure that the ambient is properly ventilated. |
| 9. GROUND LIFT SWITCH | The sliding switch allows separation of body earthing from signal common to prevent hums noise. |
| 10. INPUT JACKS | Incoming signal to the unit is via 3 pin XLR female socket and the adjacent male jack is connected parallel for linkage to the next unit. |
| 11. VOLUME KNOB | Output volume is adjustable from -15dB to 0 dB. |

UNIT INSTALLATION



The above diagram depicts the air flow pattern for the amplifier cooling system. Cool air intake is sucked from outside via dual speed temperature dependent fan. Several outlets of the warm air dissipations can be found in front panel, sides as well as top cover.

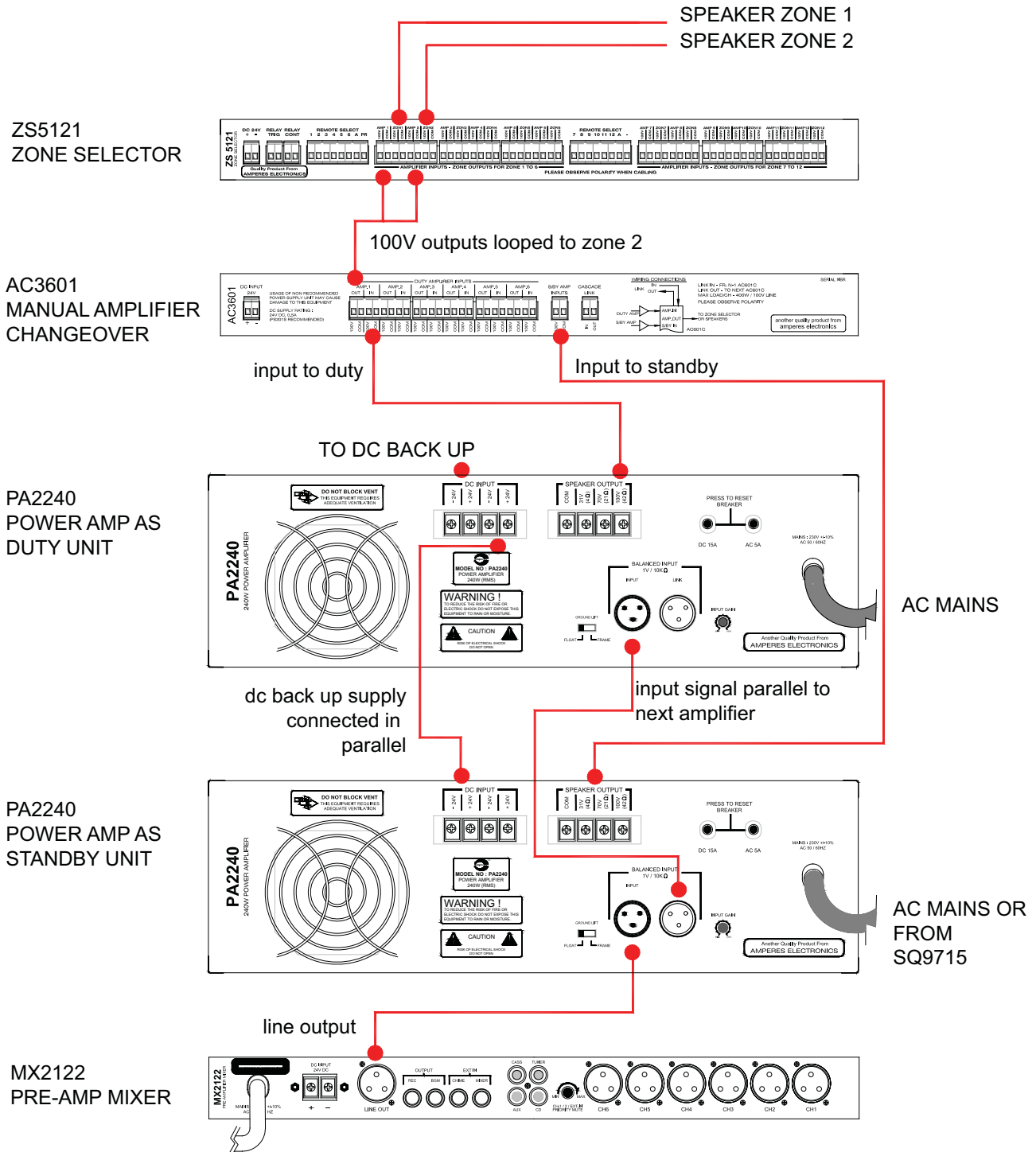
Please ensure these vent holes are not blocked in order to keep the operating temperature at optimum. Allow a breathing space of 100 mm for each vent outlet.

For installation in rack, we recommend that internal rack ventilation fans are installed, one for cool air intake and the other for heat dissipation.

The optimum operating temperature of the unit shall be kept at approximately 40 degree Celsius.

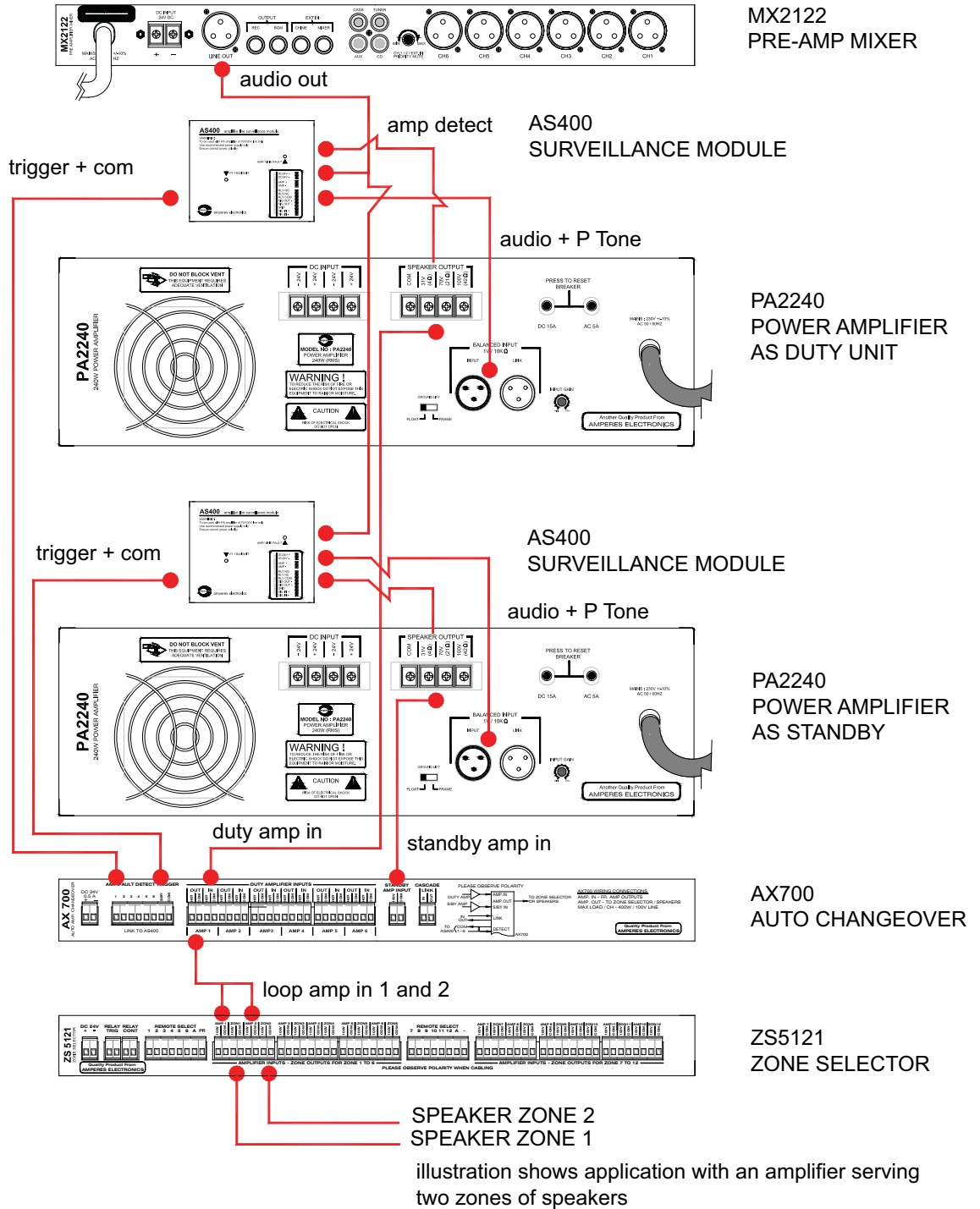
SYSTEM CONNECTIONS - NORMAL APPLICATIONS

Application example using one duty amplifier with one standby unit connecting to two zones of speakers.

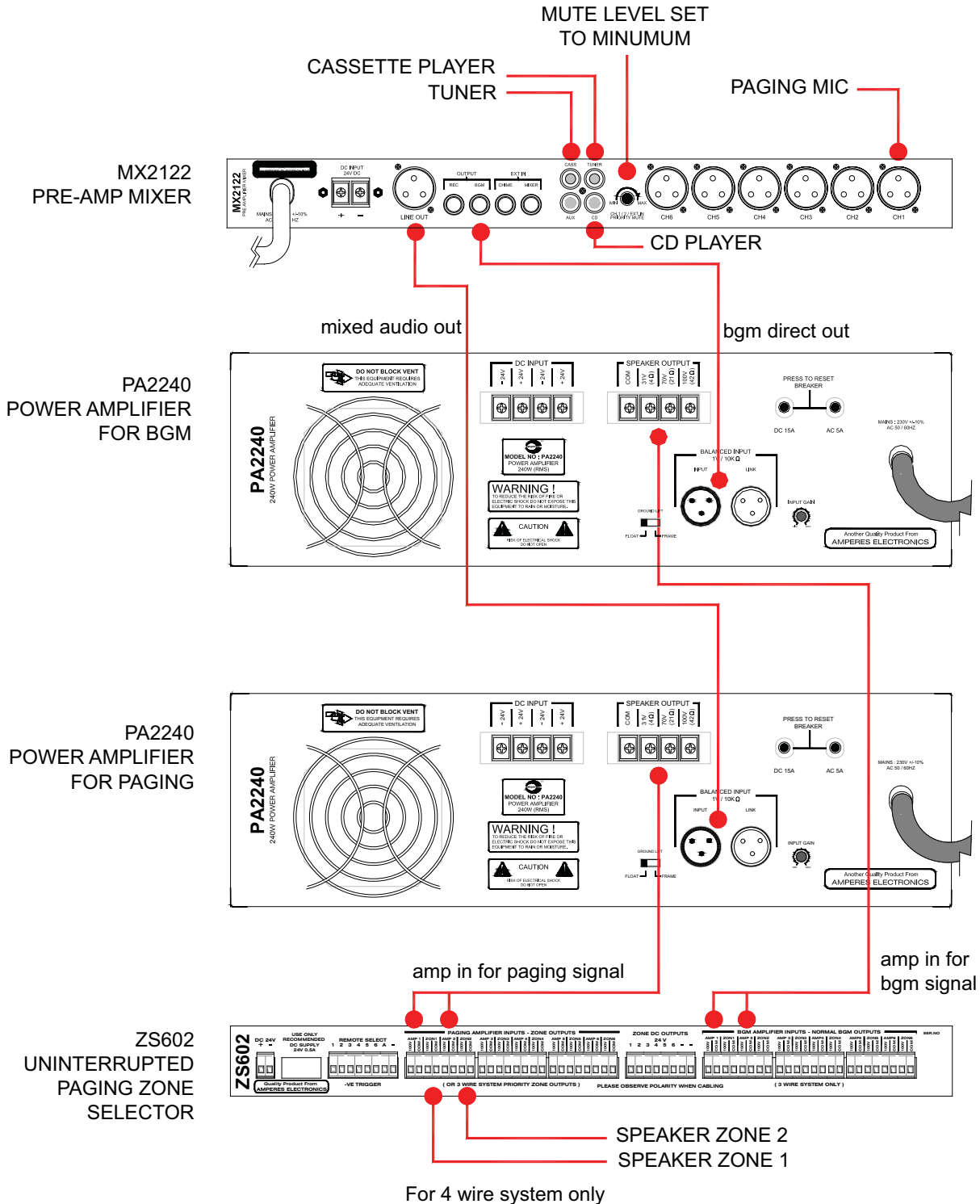


SYSTEM CONNECTIONS - WITH AUTO FAULT CHANGEOVER

Application with Amperes AS400 as auto fault sensor module and AX700 as auto changeover unit.
 24V DC power supply connections and incoming 240V ac mains not shown.

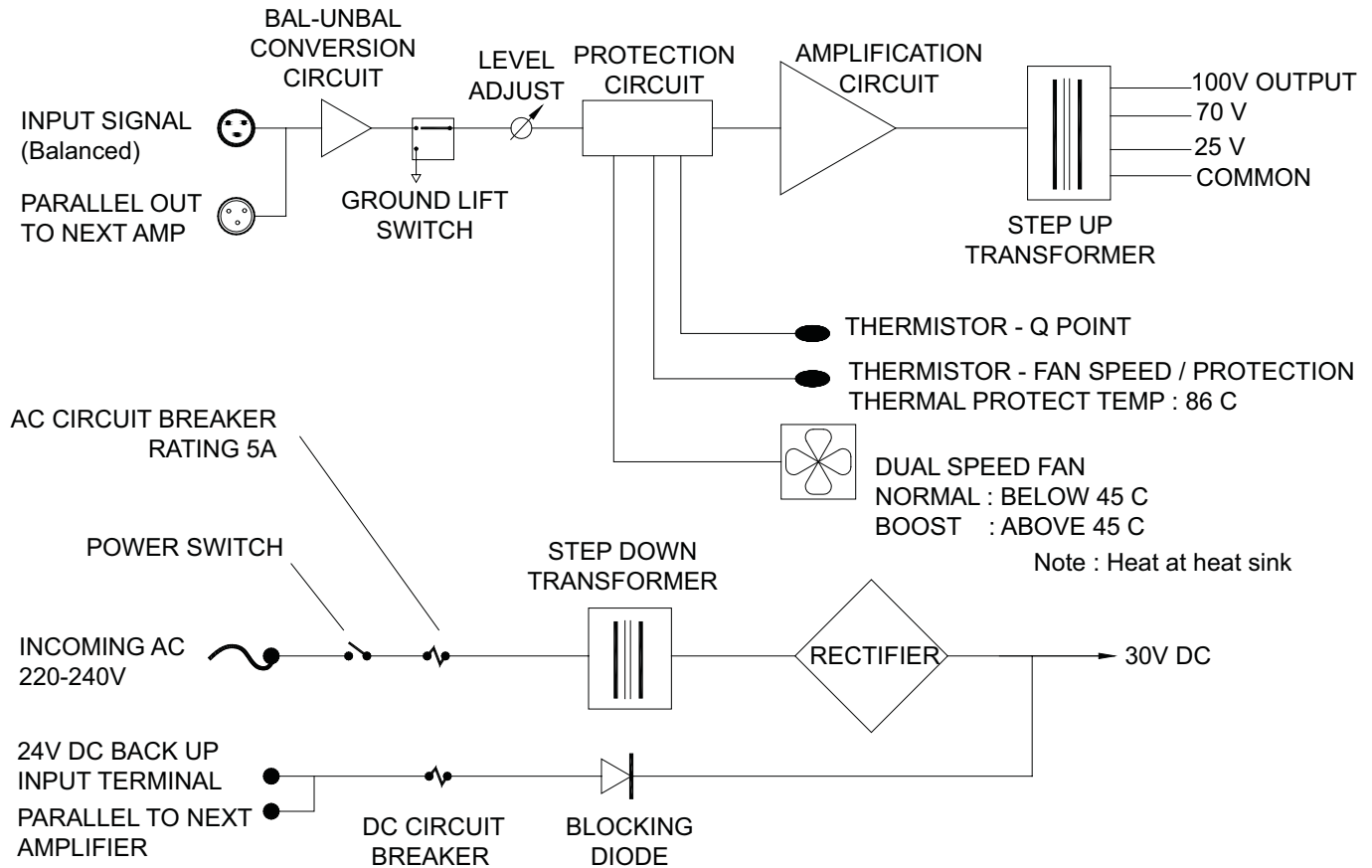


SYSTEM CONNECTIONS - UNINTERRUPTED PAGING SYSTEM



Application using ZS602 as uninterrupted paging system. 24V DC power supply connections and ac mains not shown. For manual or auto changeover, application with Amperes AC3601 or AX700 is possible. The above diagram shows application using a power amplifier serving 2 zones.

BLOCK DIAGRAM



The above block diagram illustrates the general block construction of the power amplifier. Detailed circuit can be obtained from our service department.

NOTES

- EARTH LOOP** To avoid hum or noise to the output, the chassis earth and the electrical earth should be separated. this can be done by switching the Ground Lift Switch. Refer Page 5.
- SPEAKER CONNECTIONS** Total speakers connected to the terminals should not exceed the rating specified. Connecting speakers to 100V line shall have load equivalent to the sum of all the rating of the speakers. Connecting the same loudspeakers to the 70V line shall only consume half of the power, thereby, twice the number of speakers of the said rating can be connected to 70V line terminal.
- SPEAKER POLARITY** Speakers with '+' terminal should be connected to 100V line output. Distortion sound clarity can occur when anti phase connections are made and is apparent when they are installed closed to each other.

TECHNICAL SPECIFICATIONS

ELECTRICAL

Power requirement	230 / 240 V ac : 50 / 60 Hz
Rated output	PA2060 : 60 W 100V line
	PA2120 : 120 W 100V line
	PA2240 : 240 W 100V line
	PA2360 : 360 W 100V line
	PA2480 : 480 W 100V line
Output impedance / line	PA2060 : 4 Ohm (15.5V) / 83 Ohm (70V) / 170 Ohm (100V)
	PA2120 : 4 Ohm (22V) / 42 Ohm (70V) / 83 Ohm (100V)
	PA2240 : 4 Ohm (31V) / 21 Ohm (70V) / 42 Ohm (100V)
	PA2360 : 4 Ohm (38V) / 13.6 Ohm (70V) / 27 Ohm (100V)
	PA2480 : 4 Ohm (44V) / 10 Ohm (70V) / 21 Ohm (100V)
Power consumption	PA2060 : No input - 20VA, Rated output - 120VA
	PA2120 : No input - 29VA, Rated output - 230VA
	PA2240 : No input - 35VA, Rated output - 720VA
	PA2360 : No input - 35VA, Rated output - 1080VA
	PA2480 : No input - 35VA, Rated output - 1180VA
Input sensitivity	1V / 10 K Ohm
Input gain control	-15 dB to 0 dB
Input connections	XLR balanced input
Frequency Response	80 - 17 kHz 0/-5 dB
Signal / Noise ratio (at 1 KHz, 0 dB)	> 80 dB
Protections	Thermal overload muting
	AC and DC manual reset circuit breaker
	Momentary short circuit
Indicators	Input Mains ; Clip ; Protect mode ; Input signal
Cooling system	Fan forced cooling with dual speed thermal controlled presets

Due to our continuous product improvement policy, we reserve the rights to change the above specifications, features and artwork without prior notice.

While every care was taken to ensure the data produced in this manual is correct at time of printing, we apologize if there were to be any error that may have been unintentionally presented or omitted.

PRODUCT RECORD

MODEL

DATE OF PURCHASE

WARRANTY EXPIRY DATE (12 MTHS)

SERIAL NUMBER

DEALER'S DETAILS

Should you encounter any problem on service, kindly contact us at : 603-5882 7757 / 58 or Fax to us at : 603-5882 7756
*terms and conditions on warranty applies.

WARRANTY CONDITIONS

Only Amperes Electronics Service Centres are allowed to make warranty repairs : a list of Amperes Electronics Service Centres may be asked for by the purchaser or send directly to Amperes Electronics Sdn Bhd or its authorized master distributor, Amperes Global Marketing. This warranty is not valid if repairs are performed by unauthorized personnel or service centres.

This warranty covers only repairs and replacement of defective parts ; cost and risks of transportation as well as removal and installation of the product from the main system are for the account of the purchaser. This warranty shall not extend to the replacement of the unit.

This warranty does not cover damages caused by misuse, neglect, accident of the product as well as using the product with power supply voltage other than shown on the product, or any other power supply source / adaptor not recommended by the manufacturer.

This warranty does not cover damages caused by fire, earthquakes, floods, lightning and every cause not directly related to the unit.

This warranty does not include any indemnity in favor of the purchaser or the dealer for the period out of use of the unit; moreover the warranty does not cover any damages which may be caused to people and things when using the product.

This warranty certificate is valid only for the described product, and is not valid if modifications are made on this certificate or on the identification label applied on the product.

This warranty covers all the material and manufacturing defects and is valid for a period of 12 months from the date of purchase or for a longer period in countries where this is stated by a national law. In this case, the extension is valid only in the country where the product is purchased.

Amperes Electronics Sdn Bhd is not obliged to modify previously manufactured products under warranty if the design changes or improvements are made.

DISCLAIMER

Information contained in this manual is subject to change without prior notice and does not represent a commitment on the part of the vendor. AMPERES ELECTRONICS SDN BHD shall not be liable for any loss or damages whatsoever arising from the use of information or any error contained in this manual.

It is recommended that all services and repairs on this product be carried out by AMPERES ELECTRONICS SDN BHD or its authorized service agents.

AMPERES series must only be used for the purpose they were intended by the manufacturer and in conjunction with this operating manual.

AMPERES ELECTRONICS SDN BHD cannot accept any liability whatsoever for any loss or damages caused by service, maintenance or repair by unauthorized personnel, or by use other than that intended by the manufacturer.

It is understood that the purchaser accepted and had read through the above terms and conditions of warranty and disclaimer upon unpacking and tested the product.





PA 2060 / 2120 / 2240 / 2360 / 2480 100V

PUBLIC ADDRESS POWER AMPLIFIERS

Another Quality Product From

Amperes Electronics Sdn Bhd

Co Reg : 509025-X

www.ampereselectronics.com

Made In Malaysia
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