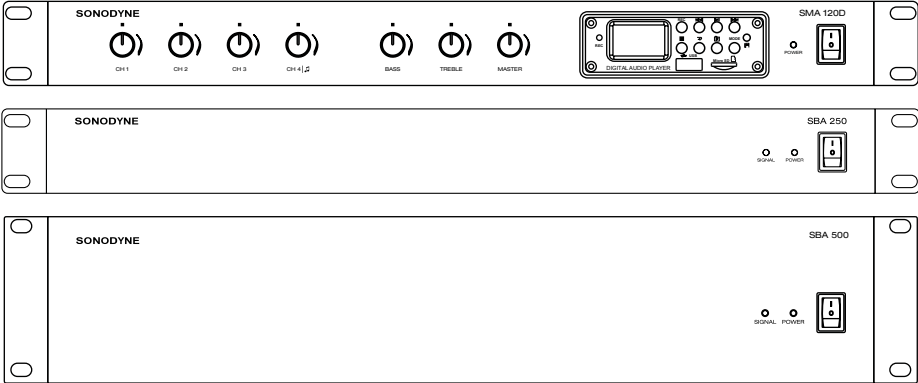


SONODYNE

SMA D SERIES
SBA SERIES

power amplifiers • owners manual



MADE IN INDIA
since 1970

CONTENTS

IMPORTANT SAFETY INFORMATION	page 1
INTRODUCTION	page 2
FEATURES	page 3
FIG. 1: FRONT PANEL LAYOUT	page 4
FRONT PANEL CONTROLS	page 5
FIG. 2: REAR PANEL LAYOUT	page 6
REAR PANEL CONTROLS	page 7~8
INSTALLATION	page 9~10
OPERATION	page 11
MAINTENANCE	page 12
FIG. 3: BLOCK DIAGRAM: SMA 120D/250D	page 13
FIG. 4: BLOCK DIAGRAM: SBA 500	page 14
SPECIFICATIONS	page 15~16

IMPORTANT SAFETY INFORMATION

This operation manual contains important information regarding safety precautions, installation, performance, operation and maintenance of your SMA120D/ SMA 250D/ SBA 120/ SBA 250/SBA 500 power amplifiers. You should familiarize yourself with the contents of this manual before operating your amplifier.

1. Save the carton and packing material even if the equipment has arrived in good condition. Should you ever need to ship the unit, use only the original factory packing.
2. Read all documentation before operating your equipment. Retain all documentation for future reference.
3. Follow all instructions printed on unit chassis for proper operation.
4. Do not spill water or other liquids into or on the unit, or operate the unit while standing in liquid.
5. Make sure power outlets conform to the power requirements listed on the back of the unit.
6. Do not use the unit if the electrical power cord is frayed or broken. The power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords and plugs, convenience receptacles, and the point where they exit from the appliance.
7. Always operate the unit with the AC ground wire connected to the electrical system ground. Precautions should be taken so that the means of grounding of a piece of equipment is not defeated.
8. Mains voltage must be correct and the same as that printed on the rear of the unit. Damage caused by connection to improper AC voltage is not covered by any warranty.
9. Have gain controls on amplifier turned down during power-up to prevent speaker damage if there are high signal levels at the inputs.
10. Power down and disconnect units from mains voltage before making connections.
11. Never hold a power switch in the "ON" position if it won't stay there itself!
12. Do not use the unit near stoves, heat registers, radiators, or other heat producing devices.
13. Do not block fan intake or exhaust ports. Do not operate equipment on a surface or in an environment which may impede the normal flow of air around the unit, such as a bed, rug, weather sheet, carpet, or completely enclosed rack. If the unit is used in an extremely dusty or smoky environment, the unit should be periodically "blown free" of foreign matter.
14. Do not remove the cover. Removing the cover will expose you to potentially dangerous voltages. There are no user serviceable parts inside.
15. Do not drive the inputs with a signal level greater than that required to drive equipment to full output.
16. Do not connect the inputs / outputs of amplifiers or consoles to any other voltage source, such as a battery, mains source, or power supply, regardless of whether the amplifier or console is turned on or off.
17. Do not run the output of any amplifier channel back into another channel's input. Do not parallel- or series-connect an amplifier output with any other amplifier output. Sonodyne is not responsible for damage to loudspeakers for any reason.
18. Do not ground any ("hot") terminal. Never connect a "hot" output to ground or to another "hot" output!
19. Non-use periods. The power cord of equipment should be unplugged from the outlet when left unused for a long period of time.
20. Service Information Equipment should be serviced by qualified service personnel when:
 - A. The power supply cord or the plug has been damaged.
 - B. Objects have fallen, or liquid has been spilled into the equipment
 - C. The equipment has been exposed to rain
 - D. The equipment does not appear to operate normally, or exhibits a marked change in performance
 - E. The equipment has been dropped, or the enclosure damaged.

THIS SAFETY INFORMATION IS OF A GENERAL NATURE AND MAY BE SUPERSEDED BY INSTRUCTIONS CONTAINED WITHIN THIS MANUAL

INTRODUCTION

Congratulations on choosing Sonodyne for your professional amplification requirements.

The design of our SMA D/ SBA Series power amplifiers embraces all the aspects of a well designed amplifier. The visual design, mechanical, electrical and sonic parameters, along with our dedicated manufacturing process, have all been optimized to provide a professional tool that exhibits quality, reliability and longevity.

The SMA D, SBA 120, SBA 250 Series amplifiers are 1 unit (1.73") high, 19" wide, rack mountable units, and the SBA 500 amplifiers are 2 unit (3.50") high, 19" wide, rack mountable units

Each channel of SMA 120D/ 250D comprises a balanced active input and an unbalanced input with a buffered attenuator. (Media Player USB, BT, SD, FM) module summed with CH-4 input. All the individual attenuators are then summed and fed to the tone control stage driving a differential class A drive stage thru a Master control which in turn drives a fan-cooled (only for SMA 250D/ SBA 250), class D. The SBA 120/ 250/ 500 have a single balanced active input and a balanced active link output. These amplifiers operate from a switching power supply source.

These amplifiers have been specifically designed to deliver their high power output with minimal distortion, and provide the critical degree of control required by your speakers, at high duty cycles for extended periods.

EXPLANATION OF GRAPHICAL SYMBOLS



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of un-insulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product

CAUTION:

To prevent electric shock do not use this (polarized) plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure. To prevent electric shock, match wide blade of plug to wide slot, fully insert.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE

FEATURES

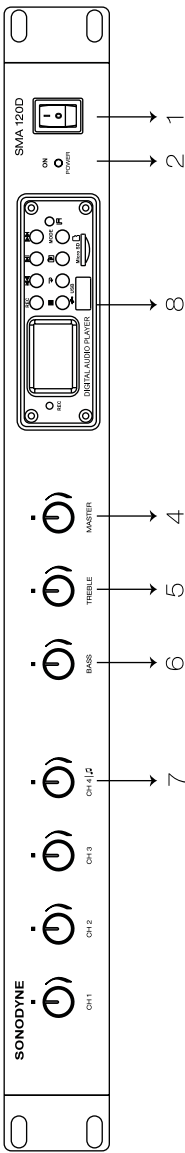
- Custom designed, heavy-duty steel chassis
- Front rack mount ears
- Symmetrical layout - even weight distribution
- Efficient power supply
- Efficient right to left cooling
- Thermally controlled axial fans (excluding SMA 120D)
- Balanced and unbalanced inputs and buffered attenuators.
- Input signal strapping (loop through) connectors
- Phantom power / Priority switch (selectable)
- Output through an Approved Terminal strip on the rear panel.
- High-quality, close-tolerance components throughout
- Signal LED for status indication.
- Power ON indication

PROTECTION FEATURES

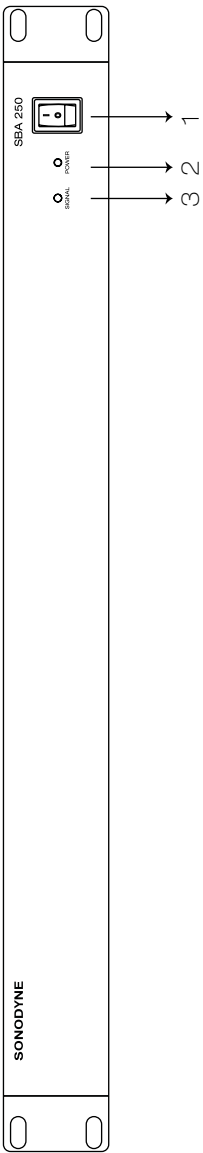
- Radio-frequency interference suppression
- Short-circuit over load protection and indication
- High overload mains fuse
- Layout, grounding, decoupling and componentry have been optimized to provide the user with stability, reliability and longevity

FIG. 1: FRONT PANEL LAYOUT

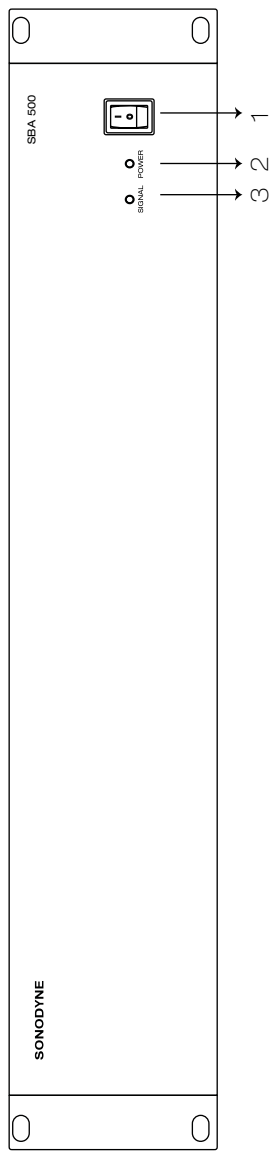
SMA 120D/ 250D FRONT PANEL



SBA 120/ 250 FRONT PANEL



SBA 500 FRONT PANEL

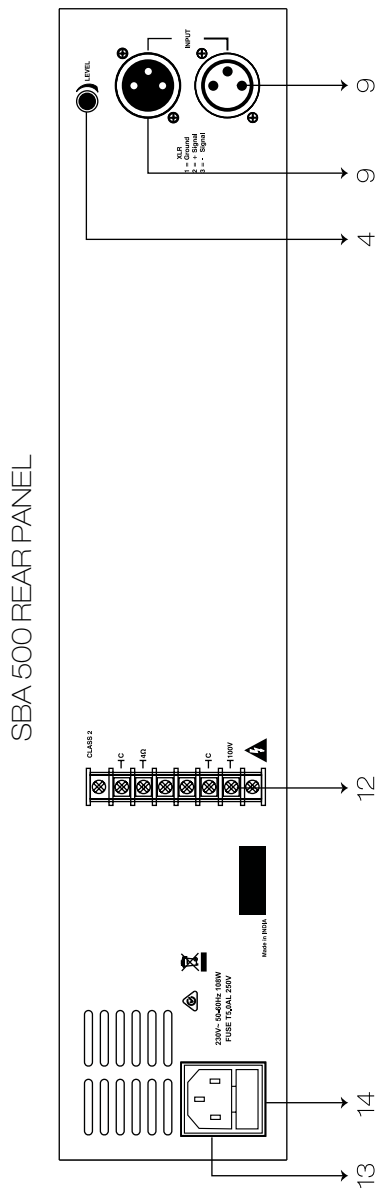
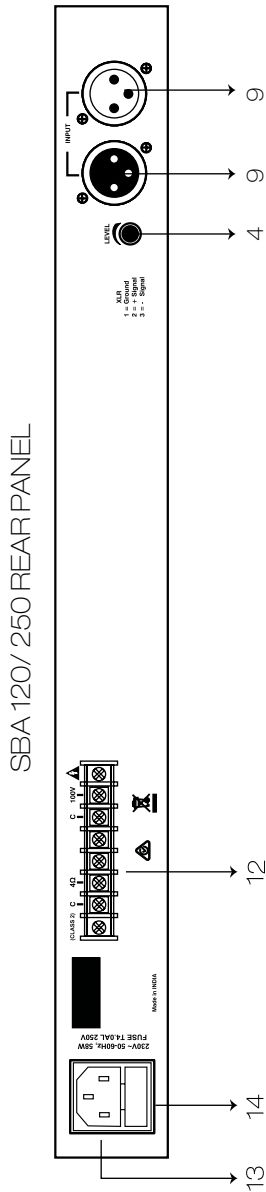
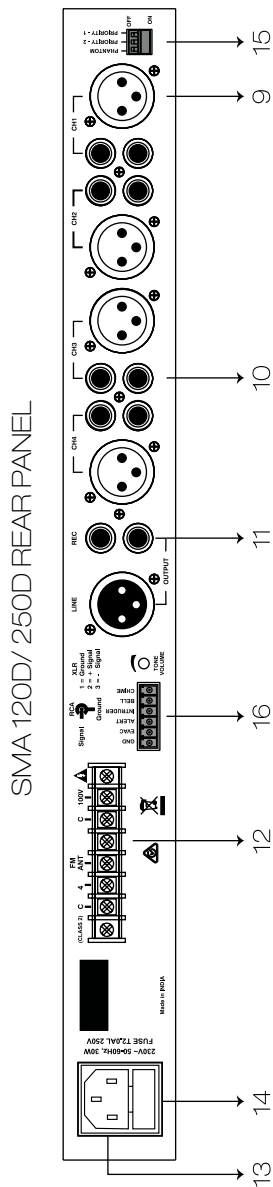


FRONT PANEL CONTROLS

The functions of the controls and indicators on the SMA 120D/250D, SBA 120/250/500 are as follows:

1. **POWER SWITCH:** Press the switch to up for power on and down for power off. At start-up (turn-on),
2. **ON INDICATOR:** This LED will illuminate BLUE and indicates that the amplifier is on and receiving mains power.
3. **SIGNAL INDICATION:** This green LED indicates the presence of the signal.
4. **MASTER LEVEL CONTROL:** The master level pot controls the overall output level of the amplifier depending on the levels set for the individual input channels as detailed below. Start with the control set to level '0' and turn clockwise until the desired output level of the amplifier is reached. (Note: SBA 120/ 250/ 500 have this level control on the rear panel. It is a recessed control without any external knob. You can set it to the desired level using a simple cross head screw driver. The output level can be increased by rotating this control clockwise from MIN (-) position to MAX (+) position.)
5. **TREBLE CONTROL:** Keeping this control in the centre position will give an overall flat treble response. If this treble control is moved in a clockwise direction will provide up to 9dB of treble boost @ 10kHz And if it is moved in a counter-clockwise direction from 0 dB then it will provide up to -9dB of treble cut @ 10kHz. We recommend to keep this in Centre '0' dB position for a normal initial operation. (Note: This feature is not present for SBA 120/ 250/ 500)
6. **BASS CONTROL:** Keeping this control in the centre position will give an overall flat bass response. If this bass control is moved in a clockwise direction will provide up to 12dB of bass boost @ 100Hz, and if it is moved in a counter-clockwise direction from '0'dB then it will provide up to -12dB of bass cut @ 100Hz. We recommend to keep this in Centre '0' dB position for a normal initial operation. (Note: This feature is not present for SBA 120/ 250/ 500)
7. **MICROPHONE/LINE INDIVIDUAL LEVEL CONTROLS:** The SMA 120D/250D features 4 universal mic/line input controls labeled Ch 1 through to Ch 4 and should be adjusted to provide the required level mix for each individual channel. Initially keep these controls at level '0' and rotate the controls in clockwise direction to achieve the desired mix level for each channel individually. (Note: This feature is not present for SBA 120/ 250/ 500)
8. **MEDIA PLAYER INPUT (USB, SD, FM, BLUETOOTH):** (Only for SMA 120D/250D) This module can accept audio signal inputs from external USB stick, Micro SD card, BLUETOOTH and FM. Please use Ch-4 Volume control as a Master control for varying the volume of 'Media Player' signal input. A Battery operated external Remote control provided for secondary volume control (Battery not provided with the unit). CH-4 Volume control should be kept Fully Clockwise to utilize full volume span through the remote control. ** Recording function available. This device will be detected as " Sonodyne SMA " while pairing with any external Bluetooth devices.

NOTE: You should always ensure that the fan grille and Front ventilation slots are kept clean and free from the build up of dust and lint. This will ensure longer operation of your amplifier and reduce the possibility of it prematurely going into thermal shutdown mode. See the section "Installation – Cooling on page 9 for recommended cooling procedures.



REAR PANEL CONTROLS

9. **BALANCED MICROPHONE INPUTS:** All four inputs are dual mic/line. The microphone inputs is via a 3 pin Female XLR connector per channel. The mic input sensitivity is 1.2mV. Reading from left to right across the rear panel, the inputs are 4, 3, 2, & 1. (Note: For SBA 120/ 250/ 500 there is a balanced Female XLR Line/Aux Input. The Line input sensitivity is 180mV. The SBA 120/ 250/ 500 includes a 3 pin male XLR connector which can be used for (Line Out) Signal Linking to other similar amplifier. In some projects, the same input may be looped through to multiple amplifiers using this method. Up to 6 amplifiers can be looped together without any noticeable loss in level. A distribution amplifier should be used when more than 6 amplifiers need to be looped.)

The pin configuration for the female 3-pin XLR on each input is as follows:

Pin 1 = Signal Ground; Pin 2 = Hot (non-inverting or in phase); Pin 3 = Cold (inverting or reverse phase)

10. **UNBALANCED STEREO LINE INPUT:** For all the 4 channels the line/auxiliary inputs are via dual RCA connectors per channel. the input sensitivity is 180mV @ 100k Ω . Reading from left to right across the rear panel, the inputs are 4, 3, 2, & 1. (Note: This feature is not present for SBA 120/ 250/ 500)
11. **REC OUT:** Dual RCA output connectors provided on the rear panel gives a dual mono line level output with a maximum of 200mV (± 20 mV) into 10k Ω as a most standard requirement for tape recorders. This output is sourced before the master gain control and as such, the REC output level is not influenced by the variation of the master gain control. (Note : This feature is not present for SBA 120/ 250/ 500)
12. **SPEAKER OUTPUT TERMINAL STRIP:** The screw terminals on the Rear panel provides Direct Speaker Outputs and a Mute point. Reading from left to right the terminals are:
- | | |
|-----|--|
| COM | Common or “-” for low impedance speaker loads (4 Ω). |
| 4 | Positive “+” for 4 Ω speaker loads (use with common) |
| COM | Common or “-” for 100V speaker loads |
| | (maximum load of 80 Ω at 100V for SMA 120D/ SBA 120, 40 Ω at 100V for SMA 250D/ SBA 250, 20 Ω at 100V for SBA 500 |
| 100 | Positive “+” for 100V line speaker loads (use with common). |

Please ensure that the correct “Common” is used. Low impedance and 100V loads can be used simultaneously but please pay careful attention to the overall speaker load. When used individually, the low impedance load should be 4 Ω or higher while the 100V line load should not fall below 80 Ω for SMA 120D/ SBA 120, 40 Ω for SMA 250D/ SBA 250 and 20 Ω for SBA 500. When both outputs are used simultaneously, ensure that total output power should not exceed 120W for SMA 120D/ SBA 120, 250W for SMA 250D/ SBA 250 and 500W for SBA 500 .

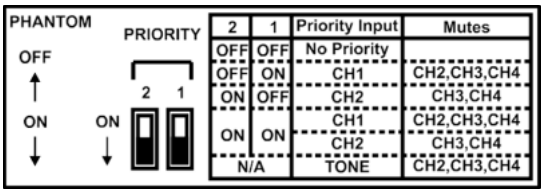
13. **MAINS INPUT CONNECTOR:** Your amplifier is provided with a 3 Pin IEC socket for mains connection. Use the mains cable supplied with the unit to power up the unit. NOTE: Your unit must always be earthed!
14. **MAINS FUSE:** The Mains IEC socket has a Fuse compartment which carries the mains fuse of 2.0 A Slow Blow for SMA 120D/ SBA 120, 4.0 A for SMA 250D/ SBA 250 and 5.0 A for SBA 500, always use the same rating and type of fuse while replacing.

REAR PANEL CONTROLS

15. PHANTOM POWER: (SMA 120D and SMA 250D only) 12V phantom power is available for condenser or electret microphones on the XLR input when this switch is pushed down.

PRIORITY MODE : The SMA mixer amplifiers feature priority mode detection which allows channels to be muted when audio is detected on channels 1 and 2. This can be used for applications like paging where background music is muted while the announcement occurs.

The priority section consists of two DIP switches to set the required priority logic as shown below:



NOTES 1. RELEASE TIME. The release time is fixed and unmutes the audio after approx. 5 seconds

2. LEVEL THRESHOLD. The level threshold is fixed and cannot be changed

16. TONE GENERATOR (SMA 120D/ SMA 250D only): This 6 pin terminal allows tones to be internally triggered for playback. Simply connect any of the tone input terminal to the ground terminal (GND). Adjust the volume control to increase or decrease the tone level.

TONE VOLUME: The tone volume is controlled using the 'TONE VOLUME' control on the back panel. Increase the volume by turning the POT clockwise and counter-clockwise to decrease the volume. The MASTER volume control does NOT affect the tone volume.

IMPORTANT: Do NOT drive external voltages into the pins as damage to the unit will occur.

TONES :

1. 'EVAC': a long continuous repeating tone with a ramped frequency. Triggered by shorting EVAC to GND, the sound will continue to repeat until the short is released.
2. 'ALERT': a short tone burst tone repeated every 0.5s. Triggered by shorting ALERT to GND, the sound will continue to repeat until the short is released.
3. 'INTRUDER': a two tone 'low' 'high' alert repeating every 0.4s. Triggered by shorting INTRUDER to GND, the sound will continue to repeat until the short is released.

INSTALLATION

POWER REQUIREMENTS

Power consumption for your model of the SMA 120D/ 250D and SBA 120/ 250/ 500 amplifier is indicated on the rear panel for maximum output.

Ensure that your mains voltage is the same as the rear panel mains voltage marker ($\pm 10\%$).

MOUNTING

Your amplifier is designed for standard 19" rack mounting SMA120D/250D and SBA 120/ 250 occupies 1 EIA rack units (1.73") and SBA 500 occupies 2 EIA rack units (3.50").

The mounting centres are:

Vertical: 1.25" (32.0mm) for 1 EIA rack unit and 2.99" (76mm) for 2 EIA rack unit.

Horizontal: 18.2" (461.8mm) to 18.7" (470.8mm)

The slots in the mounting flange will accept bolt diameters up to 1/4" (6.35mm).

We recommend that you provide additional support for the amplifier, especially if road use is planned, as the weight could bend some rack frames. This support can be provided by secure shelving, support rails or a rear rack mounting strip to match up with the rear rack mount ears provided on your amplifier.

COOLING

The new SMA 250D/ SBA 250/ 500 amplifiers are cooled by an axial fan which draws cool air from the right of the amplifier and expels the heated air out the left of the amplifier. These amplifiers offer two speed fans that is In OFF condition initially and switching to full speed when the internal heat-sink temperature exceeds 60°C. An unrestricted airflow into and out from the amplifier must be provided. Any restriction of the airflow will cause heat to build up within the unit and possibly force the unit into its thermal shutdown mode.

If the amplifiers are to be operated in an environment where the airflow is restricted such as sealed racks, the cooling should be supplemented by extra cooling fans to evacuate the heated air and aid the flow of cool air through the unit.

INPUT WIRING

IMPORTANT: Do not directly connect pin 1 on the amplifier's input or strapping XLR, to the amplifier's chassis, speaker ground or power ground!

WARNING: Input signal ground is not to be used as a safety ground (earth).

The XLR input to your amplifier is a balanced 3-pin configuration and requires all three pins to be connected. Only high quality twin-core shielded cable should be used.

When wiring for a balanced source, the connector going to the input of your amplifier should be wired as follows: Pin 1 = GROUND / SHIELD Pin 2 = HOT (In Phase - non inverting) Pin 3 = COLD (Reverse Phase - inverting)

When wiring from an unbalanced source you must ensure that pin 3 is connected to pin 1 (input ground), either by linking the pins in the input connector or by the source equipment's output wiring.

When wiring for an unbalanced source: Pin 1 = GROUND/SHIELD Pin 2 = HOT (in phase with the amplifier's output) Pin 3 = GROUND/SHIELD (joins to pin 1)

NOTE: In-line XLR connectors often have a termination lug that connects directly to the chassis of the connector.

IMPORTANT: Do not link this lug to pin 1 at the amplifier's input as it will defeat the amplifier's input grounding scheme.

HUM PROBLEMS

Most equipment is designed for minimum hum when used under ideal conditions. When connected to other equipment, and to a safety earth in an electrically noisy environment, problems may occur.

The three "E"s of hum and hum related noise which can plague your audio system are:

- a) Electrostatic radiation,
- b) Electromagnetic radiation, and
- c) Earth loops

Electrostatic radiation capacitively couples to system elements, causing an interference voltage that mainly affects higher impedance paths, such as amplifier inputs. The source is generally a nearby high voltage, such as a mains lead or a speaker lead. The problem can usually be reduced by moving the offending lead away, or by providing additional electrostatic shielding (i.e. an earthed conductor which forms a barrier to the field).

Electromagnetic radiation induces interference currents into system elements that mainly effect lower impedance paths. Radio transmitters or stray magnetic fields from mains transformers are often the cause of this problem. It is generally more difficult to eliminate this kind of interference, but again, moving the source away or providing a magnetic shield (i.e. a steel shield) should help.

Earth loops can arise from the interfacing of the various pieces of equipment and their connections to various safety earths.

This is by far the most common cause of hum, and it occurs when source equipment and the amplifier are plugged into different points along the safety earth where the safety earth wiring has a current flowing through it. The current flowing through the wire produces a voltage drop due to the wire's resistance. This voltage difference between the amp earth and source equipment earth appears to the amplifier's input as a signal and is amplified as hum.

There are three things you can do to avoid earth loop problems:

- Ensure the mains power for the audio system is "quiet" i.e. without equipment on it such as air-conditioning, refrigeration or lighting that may generate noise in the earth circuit.
- Ensure all equipment within the system shares a common ground/ safety earth point. This will reduce the possibility of circulating earth currents, as the equipment will be referenced to the same ground potential.
- Ensure that balanced signal leads connecting to the amplifier are connected to earth at one end only

OPERATION

IMPORTANT: All signal source equipment should be adequately earthed. This not only ensures your safety but everybody else's as well. Faults can and do occur in mains connected equipment where the chassis can become "live" if it is not properly earthed. In these instances, the fault in a "floating" (ungrounded) piece of equipment will look for the shortest path to ground, which could possibly be your amplifier's input. If the fault current is large enough, it will destroy the input to your amplifier and look for the next available path, which maybe you!

Before making any connections to your new SMA/SBA series amplifier, observe the following:

- Ensure the mains voltage supply matches the label on the rear panel of your amplifier ($\pm 10\%$).
- Ensure that the power switch is OFF.
- Ensure that all system grounds (earth) are connected from a common point. Avoid powering equipment within a system from multiple power sources that may be separated by large distances.
- Check the continuity of all interconnecting leads to your amplifier; ensure that there are no open or short-circuited conductors.
- Ensure that the power handling of your load (speakers) can adequately cope with the power output of the amplifier.
- Before operating your new SMA/SBA Series amplifiers, ensure that:
- All the Level controls are at the "OFF" position (fully anticlockwise).
- The Tone controls are at the Centre position.

POWERING UP

REMEMBER: The amplifier should be the last piece of equipment that you turn on and the first piece of equipment that you turn off.

We recommend turning the Level controls on your amplifier down when turning the unit on.

When switching the amplifier off, wait a couple of seconds before switching the amplifier on again. This allows the ICS circuit to reset.

Only competent or qualified persons should attempt any service or maintenance of your amplifier.

Your new SMA/SBA Series amplifiers will need minimal maintenance. No internal adjustments need to be made to the unit to maintain optimum performance. To provide years of unhindered operation we suggest a maintenance inspection be carried out on a regular basis, say every 12 months or so.

FANS

Due to the openness of the air path through your SMA 250D/ SBA 250/ SBA 500 amplifier, very little dust should settle within the amplifier. The unit has been designed so that any dust and/or foreign particles that do settle within the amplifier will not unduly hinder the cooling of the amplifier.

Over time, dust may build up on the leading edge of the fan blades and reduce their cooling efficiency. The time taken for this to happen will depend on the environment and the amount of use.

The fan blades are accessible once the lids are removed and can be easily cleaned. You need only hold the fan rotor still and wipe the dust off the blades. Many users stall the fan and use compressed air to blow the dust off the fan blades. It is important to note that the fan blades must be held still whilst blowing air over the blades otherwise you may burn out the bearings in the fan.

FUSES

If the amplifier is subjected to heavy use such as short circuits, over loads, these fuses will eventually fatigue and may require replacing to ensure they do not fail at an inconvenient time.

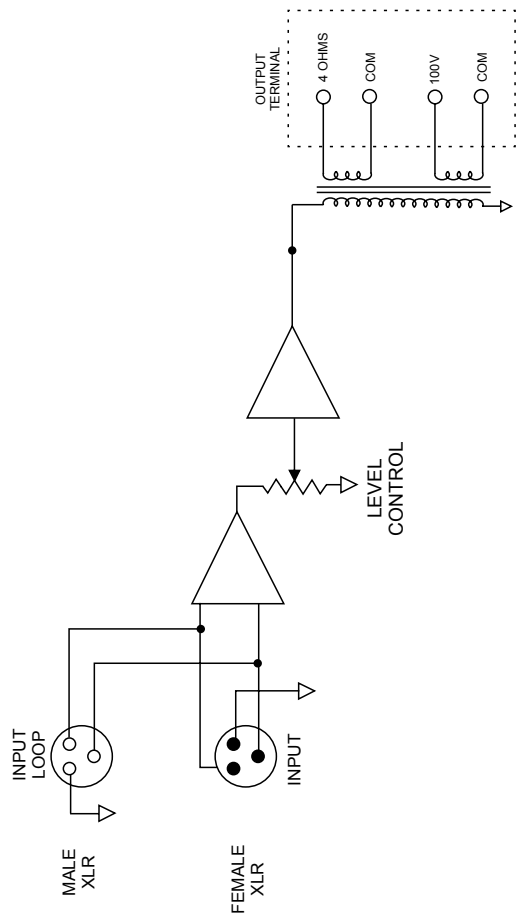
WARNING: Make sure the unit is off and is unplugged from the mains. Give the main filter capacitors time to discharge before removing lids and inspecting the fuses.

You should replace the fuse if the element is sagging or discoloured. Only ever replace with the same type fuse and current rating.

When checking for a failed fuse, do not rely on visual inspection alone. You should use an ohm meter to check continuity.



FIG. 4: BLOCK DIAGRAM SBA 120/ 250/ 500



SPECIFICATIONS: SMA 120D/ 250D



	SMA 120D	SMA 250D
INPUT MAINS SUPPLY	230V/50Hz	230V/50Hz
OUTPUT POWER @ 1% THD	120W	250W
OUTPUT	4 Ω / 100V Outputs through Transformer	4 Ω / 100V Outputs through Transformer
INPUT SENSITIVITY	MIC (XLR): 1.2mV (± 0.1 mV) AUX (RCA): 180mV(± 20 mV)	MIC (XLR): 1.2mV (± 0.1 mV) AUX (RCA): 180mV(± 20 mV)
TONE CONTROL	BASS: ± 9 dB (@100Hz) TREBLE: ± 9 dB (@10kHz)	BASS: ± 9 dB (@100Hz) TREBLE: ± 9 dB (@10kHz)
REC OUT	200mV ± 20 mV (10k Ω)	200mV ± 20 mV (10k Ω)
THD (-3dB)	< 0.3%	< 0.6%
S/N RATIO (@100V) NON A-WTD, POTS CENTERED	> 75dB	> 80dB
FREQUENCY RESPONSE @ 4 Ω @100V	100Hz (± 10 Hz) ~ 20kHz (± 1 kHz) 100Hz (± 10 Hz) ~ 20kHz (± 1 kHz)	120Hz (± 10 Hz) ~ 15kHz (± 1 kHz) 120Hz (± 10 Hz) ~ 15kHz (± 1 kHz)
NUMBER OF INPUTS	4 Inputs (XLR & RCA)	4 Inputs (XLR & RCA)
DIMENSIONS (WxHxD)	483mm x 44mm x 310mm	483mm x 44mm x 310mm
SHIPPING WEIGHT	7.5kg	7.8kg
SPECIAL FEATURES	a) 1RU construction b) 4 x Inputs thru XLR / RCA c) Media Player Input module with recording facility d) Convection cooling e) CH-1 Priority over - all other channels. f) CH-2 Priority over - Remaining channels g) Phantom power selectable h) Master volume control (on front panel) i) Bass/Treble control	a) 1RU construction b) 4 x Inputs thru XLR / RCA c) Media Player Input module with recording facility d) Fan cooling e) CH-1 Priority over - all other channels. f) CH-2 Priority over - Remaining channels g) Phantom power selectable h) Master volume control (on front panel) i) Bass/Treble control

NOTE: Due to continuous improvements, all specifications are subject to change



SPECIFICATIONS: SBA 500

	SBA 120	SBA 250	SBA 500
INPUT MAINS SUPPLY	230V/50Hz	230V/50Hz	230V/50Hz
OUTPUT POWER @ 1% THD	120W	250W	500W
OUTPUT	4 Ω / 100V Outputs through Transformer	4 Ω / 100V Outputs through Transformer	4 Ω / 100V Outputs through Transformer
INPUT SENSITIVITY	180mV ($\pm$ 20mV)	180mV ($\pm$ 20mV)	1V ($\pm$ 50mV)
THD (-3dB)	< 0.3%	< 0.3%	< 0.3%
S/N RATIO (@100V) A-WTD, POTS CENTERED	> 80dB	> 80dB	> 80dB
FREQ. RESPONSE @ 4 Ω	100Hz($\pm$ 10Hz) ~ 18kHz($\pm$ 1kHz)	120Hz($\pm$ 10Hz) ~ 15kHz($\pm$ 1kHz)	80Hz($\pm$ 10Hz) ~ 18kHz($\pm$ 1kHz)
@100V	100Hz($\pm$ 10Hz) ~ 18kHz($\pm$ 1kHz)	120Hz($\pm$ 10Hz) ~ 15kHz($\pm$ 1kHz)	80Hz($\pm$ 10Hz) ~ 20kHz($\pm$ 1kHz)
INPUTS	1 Input (XLR) with Link Out (XLR)	1 Input (XLR) with Link Out (XLR)	1 Input (XLR) with Link Out (XLR)
DIMENSIONS (W x H x D)	483 x 44 x 310 mm	483 x 44 x 310 mm	483 x 88 x 310 mm
SHIPPING WEIGHT	6.5kg	7.6kg	12kg
SPECIAL FEATURES	a) 1RU construction b) 1 x Input thru XLR Female and Male XLR link c) Convection cooling d) Master vol. control (on rear panel)	a) 1RU construction b) 1 x Input thru XLR Female and Male XLR link c) Fan cooling d) Master vol. control (on rear panel)	a) 2RU construction b) 1 x Input thru XLR Female and Male XLR link c) Fan cooling d) Master vol. control (on rear panel)

NOTE: Due to continuous improvements, all specifications are subject to change

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