



SD Series Digital Power Amplifier

SD1000/ SD2000/ SD3000

USER MANUAL

Thank you for purchasing this Class D audio amplifier. In order to take full advantage of this product, please keep this manual and refer to the operating instructions for detailed information.



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1. Key features

The SD series is a very cost-effective, compact, easy-to-operate unit. Self-oscillating design type Class D power amplifier with outstanding voice intelligibility, an excellent S/N ratio, clearly defined highs, a full mid range and a powerful bass. It is ideal for DJs, audio studios, hotels, conference and multifunction rooms, multi-media classrooms, etc.

The SD series digital power amplifier design is upgraded from standard digital power amplifier, inherited the high reliability and wide applicability. The form of digital modulation circuit is equipped, which allows the tone quality to have a large dynamic range, high efficiency and low distortion. Bridge mode is also possible, which allows the amplifier to have strong applicability. The power supply adopted the advanced SMPS circuit design and APFC design, to provide a 100~240V universal applicable power supply with extremely high efficiency. The APFC power supply provides a circuit power factor up to 0.99.

Years of dedication on digital amplifier, enable successfully to develop a new circuit topology: the more complete digital signals are obtained after music signal adopting the new modulation mode. This new modulation mode ensures sampling of some extremely small signals and enriches sampling modes. In addition, the fixed switch frequency is greatly reduced, which allows the power amplifier to produce less heat and greatly enhance the efficiency. At the same time, the static power consumption is also reduced by a wide range.

The circuit protection has been carefully designed. As far as the short circuit problem is concerned, we solve an insurmountable difficult problem in this field of the industrial, high frequency short circuit judgment. Through a large number of experiments and improvements, we design a unique circuit to make the SD series power amplifier fully reliable. In addition, we dedicated on the study of power protection, current overloading protection, over-voltage protection, under-voltage protection, temperature control, DC protection, peak clipping, amplitude limiting, VHF protection and Automatic temperature control fan system.

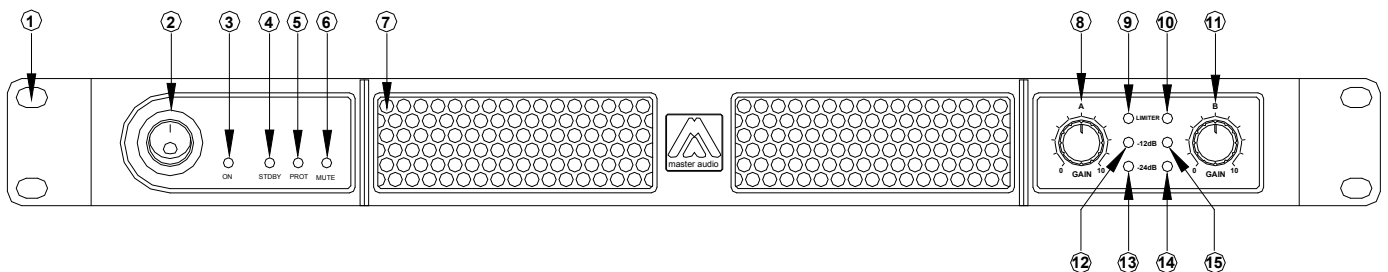
Some characteristics of the SD series digital amp:

- * When the amp's power plug has connected to the AC power, the amp will lit an orange LED, to indicate the amp is power-connected.

- * When switch on, the signal output has a smooth increase of the volume.
- * When you want to test any protection function of the amp, please turn the amp to a big output, and test the protection function. Then you can see the protection function very obviously.
- * When the heat sink of the Power-supply reaches a temp of 80C degree, protection led will lit; When the High-frequency transformer reaches a temp of 115C degree, the protection will lit; in case of protection active, please turn off the amp, wait 30 seconds and restart. If the amp can not recover, please don't try to repair it and contact the manufacturer.
- * Mute: the mute is recoverable.

When the amp is in short-circuit, DC fault, the mute will lit. (during the DC fault, the output will completely cut, then gradually recover); When the heat sink of the amplification is overheated(reach 80C degree), the amp will lower the output automatically; when the temperature reach 90C degree, the whole amp will stop working in order to protect the amp. During overload, the mute will LED lit and have no output.

2. Front panel



(1) Installation hole

Using this hole, the amplifier can be fixed in the rack easily.

(2) Power switch

After the power is switched on, it takes approximately 3 to 4 seconds for the soft-start function to be executed, then the amplifier is ready to operate.

(3) LED indicator of power on

(4) LED indicator of stand-by

(5) PROT

This indicator lights up when the amp has some un-recoverable problem. At this time, the amp must be turned off firstly, and then check the reason.

(6) MUTE

This indicator lights up when the signal is mute due to output short-circuit, DC protection or over temperature on heat sink.

(7) Exit for hot air flow:

This air flow comes from the front and goes through the rear fans and exits.

(8/11) Channel A and B volume knob:

These potentiometers are used to control the input volume of the amplifier.

(9/10) Channel A and B output signal CLIP indicators (red LEDs):

When the output signal voltage is too high, these LEDs light up.

(12/15) Signal indicators (-12db):

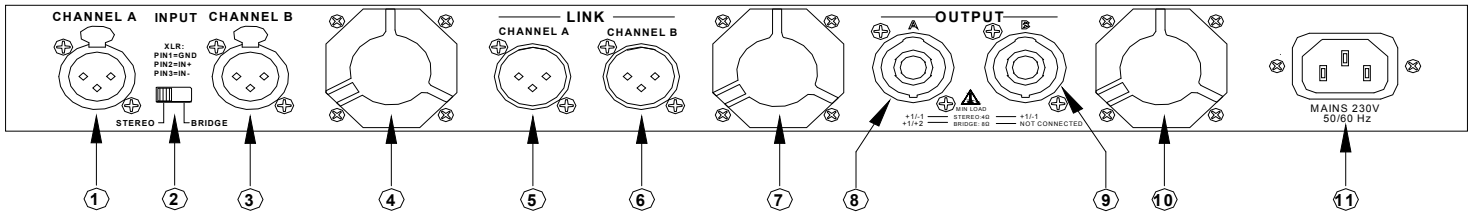
It indicates that the output level of the amplifier is around -12db, related to the maximum power.

(13/14) Signal indicators (-24db):

It indicates that the output level of the amplifier is around -24db, related to the maximum power.

3. Rear panel

SD1000/2000/3000 rear panel:



(1/3) Channel A and B input: XLR Female connectors

Using a standard XLR:

- Pin1: ground
- Pin2: positive
- Pin3: negative

(2) Working mode select: Stereo/ Bridge mode switch

Stereo Mode: You have to connect the input and output of both channels.

Bridge Mode: The input signal must be applied to CH A only: and **+1, +2** is the output of Bridge mode on a Speakon . Do not connect channel B input or output on Bridge mode.

(4/7/10) Hot Air Exhaust:

The cold air intakes the amplifier from the front, cooling the internal heat sinks, and exits by the 4/7/10 fans.

(5/6) Channel A and B Link : XLR male connectors

Using a standard XLR for connecting another amplifier in daisy chain

Balanced: Pin1: ground Pin2: positive Pin3: negative

(8/9) Channel A and B output: Speakon connectors. Power output

(11) IEC AC power cord for mains power supply

4. Safety instructions



Caution: To reduce the risk of electric shock, do not remove the cover or rear panel. No user-serviceable parts inside. Servicing must be carried out by qualified service personnel.



The lightning symbol in the triangle indicates insulated components inside the housing with hazardous voltages that can cause injury to persons.



The exclamation mark in the triangle indicates important operating and maintenance (servicing) instructions that are provided in the documentation accompanying the unit.

- * Caution: To reduce the risk of electric shock, do not remove the cover. No user-serviceable parts inside.
- * To avoid the risk of fire or electric shock, do not expose the unit to rain or moisture. Do not allow metal objects or liquids to come into contact with the unit, since electric shock or malfunctions may result.
- * Do not cover any ventilation slots, as this may result in overheating. Always install the unit in a well-ventilated location. Ensure that the unit is not close to any heat source, and avoid dusty and moist environments.
- * Do not attempt to repair the unit yourself. Maintenance checks and repairs must be carried out only by qualified personnel.

5. Precautionary measures and cautions

Ensure that the power switch is switched off before connecting the cables to install the unit.

Ensure that the mains power supply corresponds to the rated voltage of the unit.

Ensure that there is an adequate source of power; do not switch on several amplifiers at the same time.

Ensure that all connectors are correctly and securely connected.

Ensure that the input level (volume) controls are set to the lowest level (to the left) before the power is switched on.

If the amplifier malfunctions, switch it off immediately. Do not attempt to repair it yourself; contact your dealer for service.

Cautions for testing with sine wave/ measuring the specifications :

When testing the parameters of the SD series amplifier with audio analyzer equipment like Audio Precision, an electrical filter must be added between the output of the SD series amplifier & the audio analyzer. The electrical filter is used to filter the ultra-high switching frequency. The switching frequency will affect the precision of the testing results.

When testing the THD, S/N ratio and other parameters with sine wave signal, the output should be adjusted to 1/8 RMS output. This is the standard testing.

When using the oscilloscope to check the waveform of the SD series amplifier, some "hairs and shadow" things will be seemed, but these "hairs and shadow" are not distortion. They are the switching frequency, because the SD series is designed with self-oscillating type.

6. Signal input connectors

1) CHA & CHB Input & Link

Fig. 1 is input male XLR, one can use it to link to another amplifier

Pin1= Ground ; Pin 2= Signal + ; Pin 3= Signal -

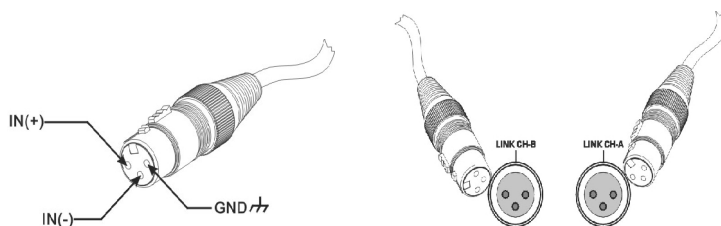


Fig. 1

Attention: Improper connections will result in malfunctions. Ensure that connections are correct before beginning operation.

7. Signal output connectors

Fig. 2: Signal output via Speakon connectors for **Stereo** mode

Channel A :

- 1+** Connect signal output to (+) speaker
- 1-** Connect signal output to (-) speaker
- 2+** Do not used
- 2-** Do not used

Channel B :

- 1+** Connect signal output to (+) speaker
- 1-** Connect signal output to (-) speaker
- 2+** Do not used
- 2-** Do not used

STEREO MODE

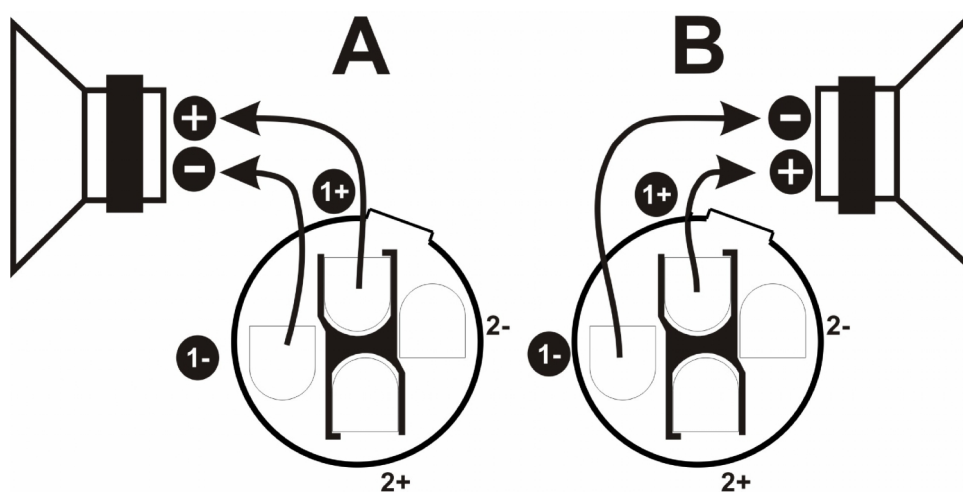


Fig. 2

Fig. 3: Signal output via Speakon connectors for **Bridge** mode

Channel A :

1+ Connect signal output to (+) speaker

1- Not connected

2+ Connect signal output to (-) speaker

2- Not connected

Channel B :

1+ Not connected

1- Not connected

2+ Not connected

2- Not connected

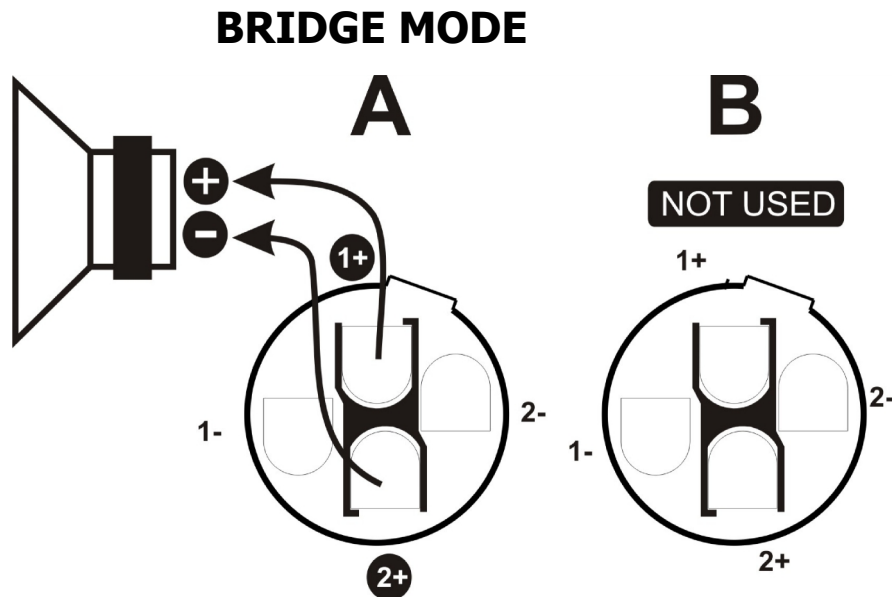


Fig. 3

Attention: Improper connections will result in malfunctions. Ensure that the connections and operating mode are correct before switching on the power.

8. Operating instructions

Operating procedures:

1) Connect the unit to appropriate speakers.

Get sure that the result of impedance of the speaker systems connected is not lower than 4 Ohms on each channel when working in Stereo mode, 8 Ohms in Bridge mode.

2) Ensure that all input and output connections are correct and secure.

3) Ensure that the mains power supply corresponds to the rated voltage indicated on the amplifier.

4) Connect the signal source, e.g. mixing console, to the signal input of the amplifier.

5) Set the input level (volume) of the amplifier to the lowest setting.

6) First switch on the power for the signal source, e.g. mixing console, then switch on the power for the amplifier.

7) Adjust the input level (volume) to the desired volume.

9. Maintenance

1. Clean the unit by wiping it with a slightly damp cloth. Do not permit moisture to enter the unit. Do not use alcohol or any volatile liquid cleansers that may damage the unit.
2. Clean the ventilation slots regularly with a vacuum cleaner. This maximises cooling by the amplifier fans and helps to prevent overheating.

10. Troubleshooting

In the event of operating problems, first check the causes described below before requesting assistance.

Problem	Possible causes	Suggested remedies
No response when amplifier is switched on	1. No power	1. Turn on the power.
	2. Loose power cord connection	2. Ensure that the power cord is securely connected to the mains supply before switching on the amplifier power switch.
	3. Blown fuse (Internal)	3. Turn off the power and check the internal fuse. If the fuse has blown, always replace it with the same type of fuse.
No sound	1. No input signal	1. Connect the signal source to the amplifier input, then turn on the power.
	2. Loose speaker connection or malfunctioning speaker	2. Ensure that the speaker is securely connected. Check to see that the speaker is in good operating condition.
	3. Incorrect connection	3. Ensure that the speaker is correctly connected to the amplifier.
	4. Overheating protection	4. Avoid overloading the amplifier for prolonged periods. Do not attempt to operate the amplifier in a poorly ventilated location. Check to see that the cooling fans are operating properly and that the ventilation slots are free of dust.
Inadequate output volume	1. The signal input level (volume) is set to the lowest level	1. Adjust the signal input level to the desired volume.
	2. Output of the signal source, e.g. CD player, is too low	2. Increase the output of the signal source, or adjust the input level of the amplifier.

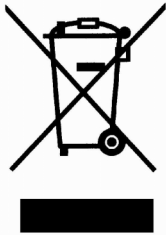
11. Specifications

Model Name		SD1000	SD2000	SD3000
Output power 1 KHZ	Stereo 8 Ω	2 x 300 W	2 x 500 W	2 x 800 W
	Stereo 4 Ω	2 x 560 W	2 x 900 W	2 x 1500 W
	Bridge 8 Ω	1120W	1800W	3000W
Frequency response		20 Hz to 20 kHz		
Input sensitivity		1.0 V	1.3V	1.7V
THD%: 1/8 RMS, 1KHZ		<0.1%	<0.1%	<0.1%
Slew rate(RMS,1KHZ)		>20V/μs	>20V/μs	>20V/μs
damping Factor(RMS,1KHZ)		>250	>250	>250
Dynamic		≥95dB	≥95dB	≥95dB
S/N ratio (A-weighted, RMS)		≥95dB	≥95dB	≥95dB
Voltage gain		33dB	33dB	33dB
Input impedance		Balance:20K Ω, unbalanced:10K Ω		
Average power consumption (music program)		600W	900W	1600W
Output circuit design		CLASS D	CLASS D	CLASS D
LED indicators		On/ STY(power on/standby), PROT/MUTE, Limit/-12db/-24db		
Connectors		Input: 2 XLR female sockets; Link: 2 XLR male sockets; Output: 2 Speakon sockets ;		
Cooling system		Low-noise , Variable speed fans; air flow from front to the rear		
Power supply		230V~50/60Hz		
Dimensions (W×D×H)		483mm x 240mm x 44mm		
Weight		3.2Kg	3.2Kg	3.6Kg

MASTER AUDIO SD Power Amplifiers: **FEBRUARY 2014**

Specifications subjected to change without notice

English



***Correct Disposal of This Product
(Waste Electrical & Electronic Equipment)***

(Applicable in the European Union and other European countries with separate collection systems)

This marking shown on the product or its literature, indicates that it should not be disposed with other household wastes at the end of its working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate this from other types of wastes and recycle it responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take this item for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product should not be mixed with other commercial wastes for disposal.

Rev.04