



Beta Three

USER MANUAL

**B series**  
**PROFESSIONAL POWER AMPLIFIER**



## NOTE

- ⚠ High voltage inside the equipment. Do not open the chassis. Ask for service from professionals.
- ⚠ Do not expose the equipment to the rain or moisture.
- ⚠ Keep adequate ventilation, do not block the port.
- ⚠ Be sure the voltage of this equipment complies with the local industrial voltage.
- ⚠ Put off the power plug if not used for long time.
- ⚠ Do not work on overload for long time.

### ■ Symbols:

- ☐ The equilateral triangle with lightning bolt warns the user of dangerous voltage levels localized within the cabinet.
- ☐ The equilateral triangle with exclamatory mark means the important operation in the user's manual.

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# 1. INTRODUCTION

Thanks for your reliance and support.

The Beta Three<sup>®</sup> B Series professional amplifier is new designed high-performance professional power amplifiers with low distortion high damping factor and smooth sound.

The Beta Three<sup>®</sup> B Series professional amplifier is designed for live performance, entertainment venues, fixed installations where professional sound reinforcement is required. B series is mainly used for high power subwoofers and line-array speakers.

The innovative switching power supply enhances high power efficiency while maintaining strong reliability and superior performance.

- Housed in a rugged, all-steel 2U chassis.
- Unique radiator structure for efficient cooling.
- Designed with efficient circuit protection to avoid the damages caused by mistaken operations.
- Overvoltage power input, under voltage, anti-surge protection and switching impact protection.
- To avoid abnormal and failure of the PA system to cause damage to the speaker by DC output protection and high-frequency sustained energy limit.
- Over temperature protection automatically.

## **DEAR CUSTOMERS:**

Please carefully read and strictly follow the user's manual when you use B series professional amplifier. If you have any question, please contact the local dealer.

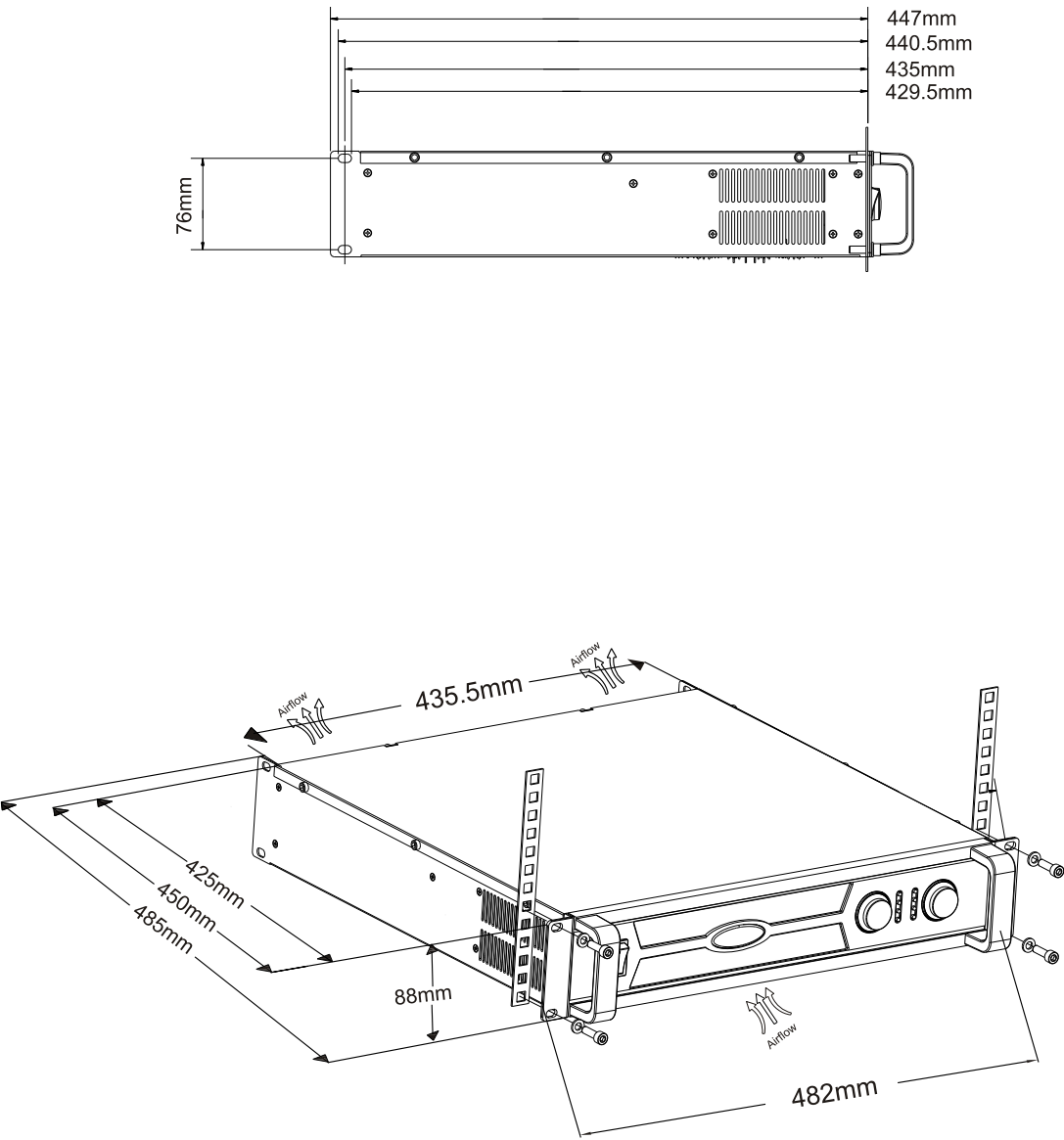
## 2. Parameter-B20

Rated Power 1kHz < 0.5% THD+N	Stereo & parallel mode	8Ω	2200W/CH
	Stereo & parallel mode	4Ω	3600W/CH
	Bridged mono mode	8Ω	6800W
Peak Output Voltage	195V (per channel) 390V(bridged) ▲		
Input Sensitivity	3.15V RMS(X40/32dB, rated power/8Ω)		
Max gain	44dB (0dBu/0.775V)		
THD	<0.025%(1kHz)		
IMD	<0.05%		
Frequency Response	20Hz~20kHz(< ±0.5dB)		
Phase Response	< ± 15° (20Hz-20KHz)		
S/N ratio	≥113dB(1KHz,X40/32dB A-weight)		
Damping Factor	>500 (100Hz)		
Slew Rate	15V/μs		
Input Impedance	18k		
Min Loading Impedance	2.6Ω/stereo, 5.2Ω/bridged mono mode		
Crosstalk	-85dB(1kHz)		
Average Current Draw	10A (Typical music, 1/8 rated power, 230V/4		
Max Current Draw	19A(Continuous music, 1/3 rated power, 230V/4Ω)		
Dimension(H*W*D)	88×483×452mm		
Net Weight	15kg		
Gross Weight	16kg		

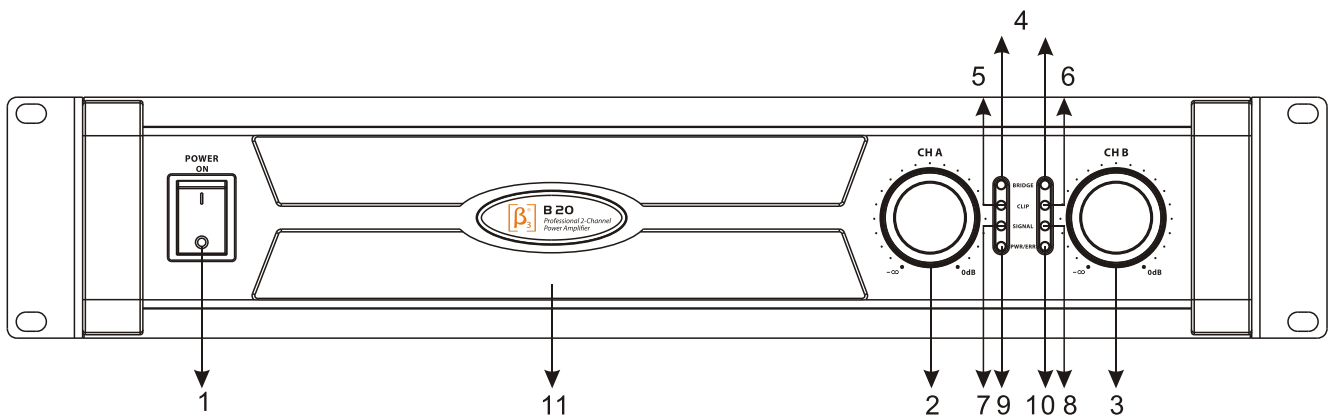
## 2. Parameter-B10

Rated Power 1kHz < 0.5% THD+N	Stereo & parallel mode	8Ω	1350W/CH
	Stereo & parallel mode	4Ω	2350W/CH
	Bridged mono mode	8Ω	4300W
Peak Output Voltage	155V (per channel) 310V(bridged)▲		
Input Sensitivity	2.5V RMS(X40/32dB, rated power/8Ω		
Max gain	42dB (0dBu/0.775V)		
THD	<0.025%(1kHz)		
IMD	<0.005%		
Frequency Response	20Hz~20kHz(< ±0.25dB)		
Phase Response	<±15° (20Hz-20KHz)		
S/N ratio	≥110dB(1KHz.X40/32dB A-weight)		
Damping Factor	>500:1 (100Hz)		
Slew Rate	15V/ μ s		
Input Impedance	18k		
Min Loading Impedance	2.8Ω/stereo, 5.6Ω/bridged mono mode		
Crosstalk	-80dB(1kHz)		
Average Current Draw	7A (Typical music, 1/8 rated power, 230V/4		
Max Current Draw	13A(Continuous music, 1/3 rated power, 230V/4Ω)		
Dimension(H*W*D)	88×483×452mm		
Net Weight	13.8kg		

3. Installation



## 4. Front Panel



- |                    |                           |                           |
|--------------------|---------------------------|---------------------------|
| 1、Power switch     | 5、Clip indicator of CHA   | 9、power indicator of CHA  |
| 2、Gain CHA         | 6、Clip indicator of CHB   | 10、power indicator of CHA |
| 3、Gain CHB         | 7、Signal indicator of CHA | 11、Air intake             |
| 4、bridge indicator | 8、Signal indicator of CHB |                           |

## 5. Indicator Explanation

**PWR/ERR power/working indicator for each channel independently, details as below:**

**a.** PWR/ERR indicator turns to red when power on for 10s self-inspection. No signal output during the process. The indicator turns to green when 10s self-inspection is finished.

**b.** PWR/ERR indicator flashes between red and green if output short-circuit or wrongly low impedance. Turn off the volume, the indicator turns back to green. Then please check loading impedance and output connection before using.

**c.** PWR/ERR indicator will gradually turn to be orange when inside temperature is excessively high. Please improve the air input condition and clean the dust if this happens frequently. When inside temperature exceeds safety level, PWR/ERR indicator is red. Please turn off the amplifier, check and change the installation methods to make sure no block to the air intake.

**d.** PWR/ERR indicator continues to be red if input voltage is too high or too low. In this condition, the amplifier will shut down and needs at least 3 minutes for recovering. Please be sure local input voltage is stable

**e.** PWR/ERR indicator continues to be red when the amplifier encounters problems. Please send it to after-sale service if the problems are not solved by the above.



SIGNAL OUTPUT indicator for each channel independently.

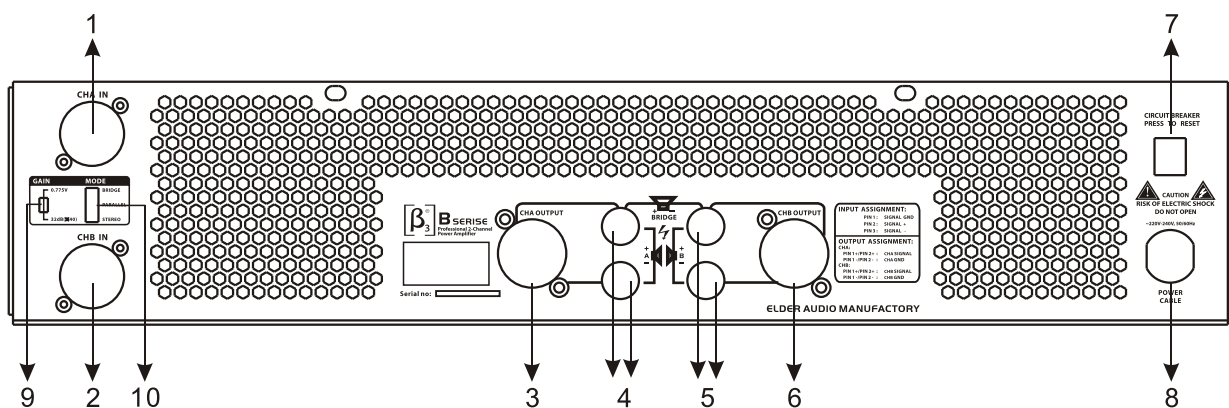
The indicator does not light up when GAIN is adjusted to minimum no matter there is signal input or not.

CLIP indicator for each channel independently.

CLIP indicator flashes when signal input is overloaded. Transient flash will not cause distortion so much, but frequent and serious CLIP will damage speaker or cause sound distortion. Please turn down the gain or decrease input signal level.

BRIDGE indicator indicates that two channels are working on bridge mode.

## 6. Rear Panel



1. CHA signal input (XLR & TRS combined jack)
2. CHB signal input (XLR & TRS combined jack)
3. CHA signal output (NL4 jack)
4. CHA signal output (binding post)
5. CHB signal output (binding post)

6. CHB signal output (NL4 jack)
7. Circuit breaker
8. Power cord
9. Gain/Sensitivity switch
10. Modes select switch

## 7. Power Supply Connection

- ⚠ Please assure the local voltage complies with the voltage indicated on rear panel before connecting power supply.
- ⚠ Please assure the cable and jack of power supply not damaged, before connecting power supply.
- ⚠ Please assure the amplifier is well connected to earth after power on.
- ⚠ Pull out plug after power off.
- ⚠ Please refer to power consumption in data sheet for selecting input power capacity.
- ⚠ Power input of B-series amplifier apply circuit breaker replacing blown fuses. To avoid inconvenience of changing fuse. Please reset circuit breaker If the amplifier shut down, if this happens again, It indicates the amplifier needs servicing.

## 8. Input/output Connector

### ■ Input connector

This product adopts balance circuit design to reduce noise. Please make sure to apply to balance connection.

- ⚠ Note: Even the signal output equipment is not balance circuit design, single core wire should not be used in case extra noise produced.

Please connect negative pole of double wired conductor to earth, it can achieve noise reduction with balance connection.

Each channel has XLR & TRS combined jack with inside parallel connection.

Input jacks of two channels are paralleled directly in parallel mode. Choose any jack to input signal and output from any jack for connecting to next amplifier. But too many cascade connection will cause signal interference and distortion.

Note: please do not input signal from the two input jacks at same time under parallel mode.

### ■ Output Connector

Each channel have a group of binding posts and one NL4 MP jack for power output, which is paralleled inside.

The red binding post connects to positive pole of power output and the black connect to earth.

Under the bridge mono mode the red binding post of channel A connects to positive pole of output, and the red binding post of channel B connects to negative pole.

Pins 1+, 2+ of NL4 for each channel are connected to positive pole. Pins 1-, 2- are connected to earth. In this way speakers are connected smartly to speakers. For example, 4pcs 8Ω speakers or 8pcs 16Ω at most speakers can be connected with 2pcs speaker cable. This connection way can be very important for line array application.

- ⚠ Note: Please make sure the speakers impedance connected to each channel not less than 4 Ω, if less than 4 Ω may cause power amplifier working abnormally or overheat.
- ⚠ Note: Please power off before connecting and do not touch bare wire in working condition to avoid electric shock.

## 9. FUNCTION SETUP

### ■ Gain and sensitivity setup

Panel gain control knob rotates clockwise will increase the gain while counterclockwise will decrease the gain.

Note: Gain control knob does not adjust the power output but the amplification times of signal input

Note: When gain control knob is adjusted to less than 12:00 position, the signal may be damaged under pre-process. The amplifier can not output the full power although signal input is increased.

B-series amplifier offers two options for gain sensitivity.

Note: This setup has an impact on the system, If wrongly setup, it will lower the quality of sound even damage the system. It must be operated by professionals.

Please turn off the power before changing settings.

### ■ 32dB(X40)

You can find the square hole around the XLR input socket as picture at rear panel and switch to the position of the 32dB(X40), The maximum gain of the system is setting up 40times 32dB(X40)

Under this mode, the system gain is 32dB(X40) when the gain knob was turned to the maximum. This mode is suited for more than one amplifiers using together or balance several amplifier's gain under active crossover mode. This setup can easily delivery same Gain to different speaker from different amplifier.

This mode is suited for the amplifier under signal processing instrument that can output higher voltage(>3.5Vrms), it can reduce the influence of the system noise and other equipment interference on the system in long distance transmission.

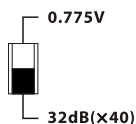
Note: Under this mode. The different amplifier's gain is same when the gain knob turn to Maximum.

Note: Under this mode, input the same signal, the amplifier output power of different power levels are the same, it can not output all the power for big power amplifier and can easier to overload for small power amplifiers.

Note: Under this mode, the output power of amplifier is small and can not play it's performance when pre-equipament is weak.

Note: The factory setup of amplifier is 32dB(X40) input sensitivity mode.

As picture:



## 9. FUNCTION SETUP

### ■ 0.775V

Switching to the position of 0.775V, the system sensitivity is set to 0.775V.

Under this mode, when gain knob turned to maximum and input signal 0.775V(0dB), the power output of amplifier approximately reaches RMS power.

When amplifier using alone to match with per-equipment which have 0dB level output indicator, it's easily to adjust the different amplifier to approximately reaches RMS power through pre-equipment.

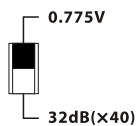
Note: Under this mode, when the gain knob is turned to the maximum, the gain for the higher power amplifier will be bigger.

Note: Under this model, Input the same signal, Bigger nominal power amplifier will get higher power output.

Note: This mode is easier to cause clip and overload even to damage the speaker by overload.

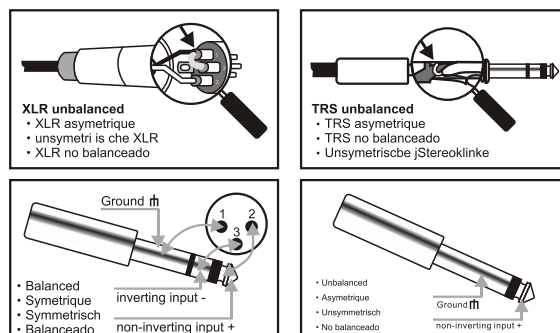
Note: Compared with former mode, The pre-amplifier system noise will be much amplified

As picture:



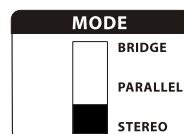
# CABLE CONNECTING

Mode option and signal cable connection as the right drawing:

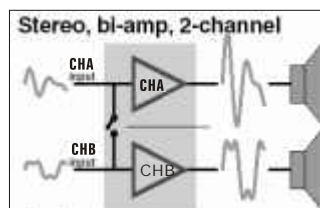


## A. Stereo mode:

Put the switch of mode at stereo as the right picture:

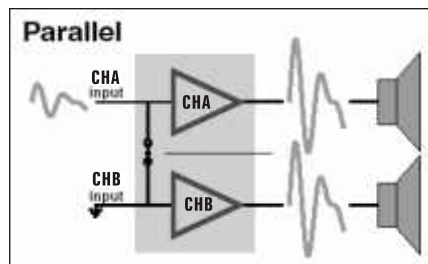


Under the stereo mode, the signal on CH A and CH B is independent, the signal to channel A is only for channel A, the signal to channel B is only for Channel B. Like the right drawing:



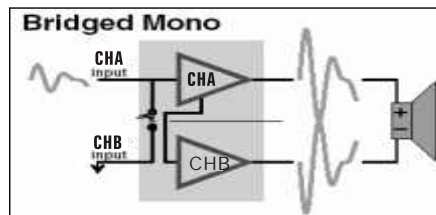
## B. Mono mode:

Put the switch of mode at PARALLEL, as the right picture:  
Under the mono parallel mode, to input signal to channel A or channel B is the same. This signal is provided to output A as well as to output B.  
Note: Please do not input signal to channel A and B at the same time.



## C. Bridge mode:

Put the switch of mode at BRIDGE, like the right picture:  
Under the bridge mono, signal just can be input from channel A, no voice if input from channel B. The +of output A is the + of bridged output, the -of output B is the -of bridge output.  
like right drawing:



- ⚠ Under the bridge mode, The output voltage is so high enough to make a electronic shock. Please power off the unit before operate it under bridge mode.
- ⚠ Under the bridge mode, Don't input the signal by channel B and check all the wiring, convinced the input and output line isolation.

## 10. OPERATION STEPS

Please refer to following steps

### 1> Start

- a、 Setup the function and connection according to the above functions connecting;
- b、 Check if the output cable is short circuit or working at wrong load impedance.
- c、 Check if the local voltage complies with the user's manual;
- d、 Be sure the equipment is power off and the volume knob is to the minimum;
- e、 Connect the power supply, turn on the device of sound source and other related devices and make sure these equipment work in order;
- f、 Turn on the power switch
- g、 Adjust the knob of volume clockwise step by step.

### 2> Off

- a、 Turn the volume knob to the minimum.
- b、 Turn off the power switch.
- c、 Turn off other related devices.

## 11. PROTECTION AND COOLING SYSTEM FUNCTION

High efficient and safe working mode will lower the defect rate. Improper operation and bad application should be avoided.

1>Short circuit protection: when the load at the output end is short circuit, the equipment can cut off the signal and protect the equipment;

2>Output DC protection: when the equipment has faults and there is DC in output signal, the equipment can cut off output automatically and avoid damage for speaker caused by DC;

3>Overheat protection: If the temperature of heat sink exceeds the allowed temperature, the sensor will cut off the output , avoid damage caused by high temperature so as to protect the amplifier.

B series amplifier has good cooling system design with 4pcs of 80mm variable speed fan to ensure air intake/outtake from front to rear is very smooth and cooling well in small narrow rack remains stable. The temperature control system can reduce the amplifier working temperature to ensure working stability. Temperature control circuit tests each of high temperature parts. Keep adjusting cooling fan speed in the process of temperature rising in order to reduce the system temperature .It is the efficient way to reduce the amplifier working noise and prolong the working life of fan.

## 12. TROUBLES AND TROUBLE SHOOTINGS

Trouble	SN	Trouble shootings
No sound, no power indication	1	Check if the power plug and jack are connected well.
	2	Check If the power input is AC 220-240V,50Hz/60Hz.
	3	Check if the circuit breaker on rear panel is shut off, push it back.
No sound, power indicator is on, signal indicator is off	1	Check if the music signal cable is connected well.
	2	Check if the power of music source is turned on and the volume is turned on.
	3	Check If the amplifier volume is turned on.
CLIP indicator flashes, sound is abnormal	1	Check if the music source is too much output.
POWER indicator flashes, sound is abnormal	2	Check if there is any short circuit in output connections and if the load is correct. Then restart.
No sound on one channel under paralleled mono mode	1	Check if the switch of MODE on rear panel is at the PARALLEL, please put it at PARALLEL if it not at the position.
	2	Check if there is a volume pots channel is not turned on.
Low bridge output	1	Check the input signal level.
	2	Make sure it is at BRIDGE mode.
Power indicator stays at red	1	Check if the local voltage is same as the voltage of the equipment.
Others	1	Check if the setup and connection are in accordance with the user manual.

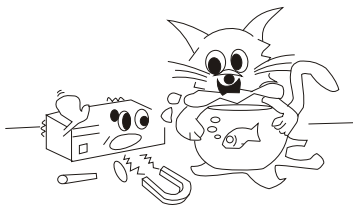
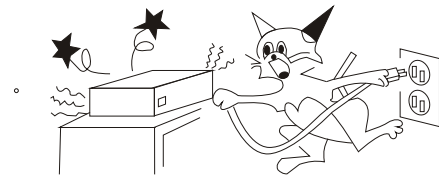
## 13. Safety attentions

### SAFETY REGULATIONS

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#### **ABNORMAL PHENOMENA:**

Please turn off the power and pull out the plug when  
You find unusual sound or smell when operation.



#### **POWER CORDS PROTECTION**

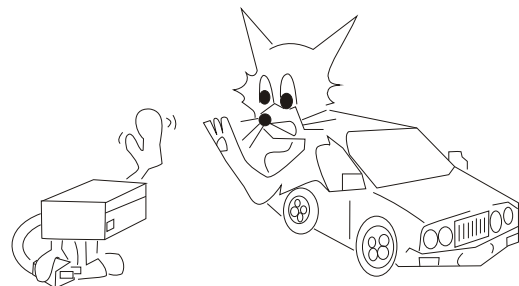
Don't touch power cords with wet hands to avoid  
electric shock.  
Don't put the cords in crowded people.

#### **KEEP AWAY FROM WATER AND SUNDRY GOODS**



#### **DON'T OPEN THE COVER IF NOT GUIDED BY A QUALIFIED ELECTRICIAN**

#### **PULL OUT THE POWER CORDS TO AVOID FIRE WHEN YOU DON'T USE THIS UNIT**





Blank lined paper for writing.



Beta Three



Beta Three

# B SERIES

## PROFESSIONAL POWER AMPLIFIER