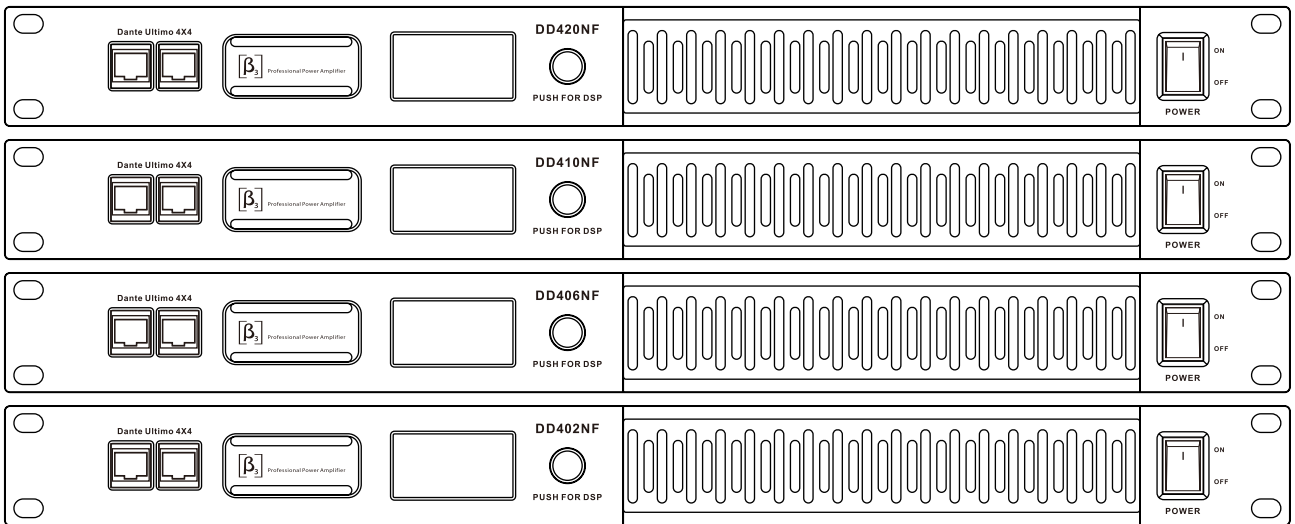




Beta Three

DD-NF Series

Dante Amplifier



WARNING NOTICES

This unit has been engineered and manufactured to assure your personal safety. Any improper use can result in potential electrical shock or fire hazards, in order not to defeat the safeguards, observe the following precautions for its installation, use and servicing.

- ⚠ Beware of high voltage in the device, do not open the chassis.
- ⚠ Do not touch the output terminals marked with ⚡ when the device is working.
- ⚠ Keep good cooling. The ventilations must not be covered or blocked by any objects like newspaper, rags or curtains. For rack installation, make sure there is at least 10cm space away from the ventilations.
- ⚠ Do not insert any metal parts or inflammable objects to the device due to high risk of electric or fire.
- ⚠ Do not expose the device to rain or at high humidity places. Do not put sundries onto the device.
- ⚠ Make sure to use the same components to do repair or replacement for the ones marked with ⚠.
- ⚠ Make sure the local grid voltage conforms to the rated power showed on the back panel of the.
- ⚠ Make sure the local voltage is in compliance with the device, and do not keep the device on long-time overloaded work.
- ⚠ Please unplug the power cord if long time no use.
- ⚠ Please contact local dealer or professional technicians when repair work is needed.
- ⚠ This equipment should be connected to power socket with ground protection.
- ⚠ Please unplug the power cord from the AC outlet to cut off the power.

■ Symbol instruction

- Stand for HIGH VOLTAGE DANGER.
- Stand for important operation step.

– This product has obtained multiple patents, please respect our intellectual property rights

CATALOGUE

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Manufacturer reserves rights for any product upgrade. Please be understandable that the new information does not be informed in time.

The images shown are for illustration purposes only and may not accurately represent the product.

1. Introduction

Thanks for your trust and buy $\beta 3$ product.

The DD-NF series are digital amplifiers, which support hi-z and low-z output and Dante network audio. The DD-NF series adopt multi-loop control technology, with excellent technical specification, especially the power amplification technology for low impedance and high current working conditions, which makes the amplifiers have over 90% efficiency and outstanding stability. The switching power supplies adopt PFC and soft switching technology.

The DD-NF series digital power amplifier is equipped with a high-performance DSP and a high-dynamic and high-precision AD/DA converter, a Dante Ultimo 4x4 network audio transmission chip, and a 2.4-inch high-definition LCD display. Audio transmission and amplifier monitoring can be achieved through a single network cable. It can receive analog universal frequency signals and Dante digital audio signals.

Features:

- Compact & light weight with 1U size.
- 90V~260V AC Input.
- DSP with high performance.
- Driving 2~16 Ω professional speakers and transformer coupled loudspeakers (100V or 70V).
- Audio transmission and amplifier monitoring (output voltage, current, temperature, protection, etc) with a single network cable.
- 2.4 LCD screen.
- Modular design, easy to maintain.

DSP functions:

- Dante digital audio/analog audio can be switched automatically and backed up each other.
- Digital/analog audio delay and level matching.
- Input 18dB, output +/-18dB gain adjustment.
- 4x4 audio routing, mixing matrix.
- Input 8-band parametric EQ, output 8-band parametric EQ, high and low pass filters.
- Support 512-order and below FIR filters.
- Volume, mute, phase adjustment, mode selection.
- Output average value, peak limiter
- Parameters can be saved/recalled between machines.
- User/debugging/factory authority settings,

2. Environmental protection, energy saving, cost saving

- ☆ Better Durability and reliability. All components work under lower temperature because of lower heat generating.
- ☆ Compact size and lightweight compared with analog amplifiers. Cost saving for transportation, handling and installation. Easier to install.
- ☆ Energy saving, operating cost reducing.
- ☆ Green and environmentally friendly
It greatly reduces the use of aluminum, copper and steel, saves energy and resources, and can reduce 70% of waste gas emissions in the transportation process.

Climate warming is a huge challenge facing the world. Energy conservation and emission reduction are effective measures to solve climate warming. Our company is committed to providing environmentally friendly products.

3. Installation

3.1 Unboxing

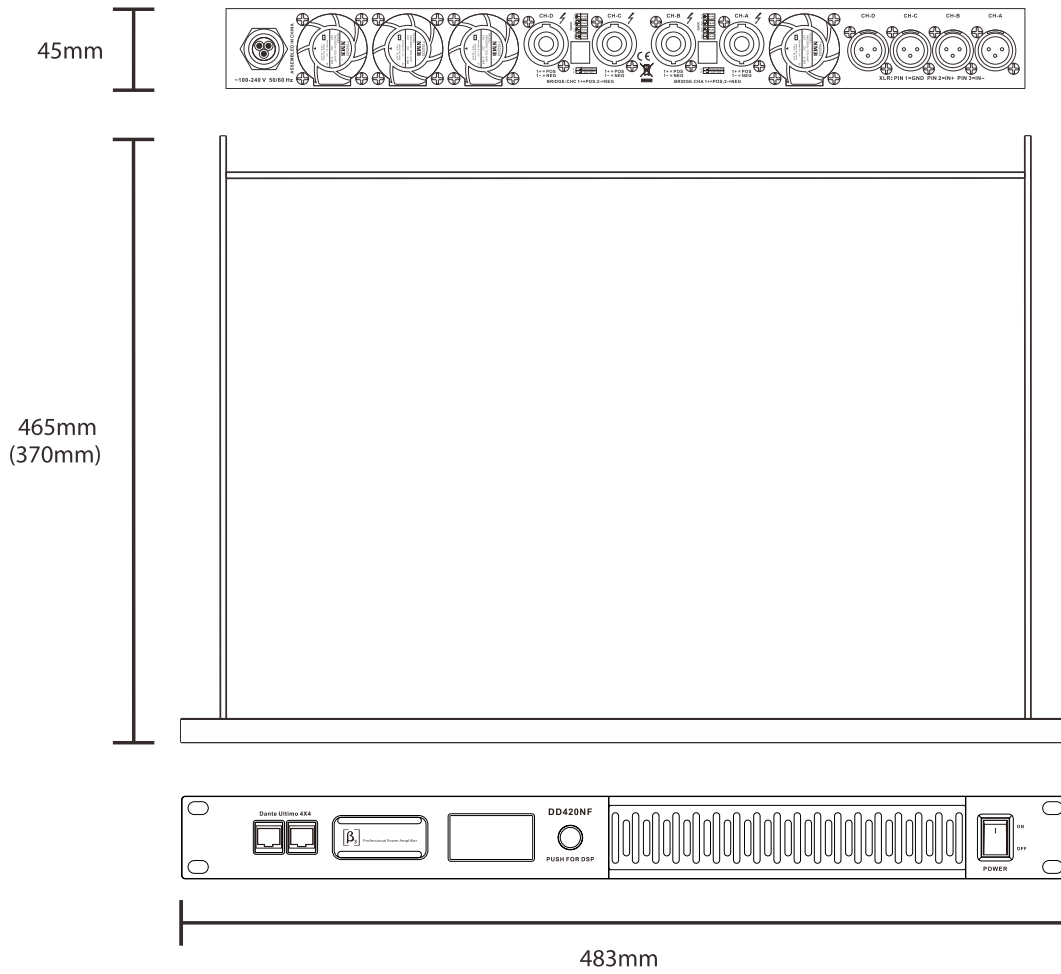
Open packaging box and check whether the amplifier is damaged during transportation. Please inform the shipping company once you find it is damaged. You have the right to request compensation for shipping damage. Please save the packaging box as evidence of damage for the shipping inspection. We will provide you necessary assistance when you need.

It is recommended to save all packaging materials for use in transportation. Do not transport the amplifier with proper packaging box.

Packing List:

Amplifier 1pc Manual 1pc Power cord 1pc Feet 4pcs

3.2 Dimension



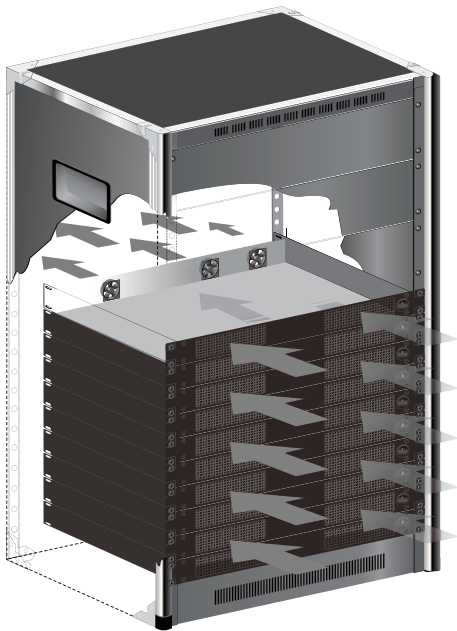
3.3 Installation preparation

	<p>Warning: Please read through the safety warning before installation.</p>
	<p>Please make sure the power cord is not connected to the power outlet and the power switch is turned off before installation. Make sure the volume knob is completely closed.(counter clockwise to the limit)</p>
	<p>Keep the signal sensitive equipment away (not less than 20cm) to avoid noise. This amplifier is high power and there is a strong magnetic field around.</p>

To ensure normal operation, following parts is needed:


1. Input Cable
2. Output Cable
3. CAT Cable
4. Network switch
5. Cabinet or equipment mountin

3.4 Cooling instructions



Fan cooling Air flow is front to back as illustrated in left figure. The fans will pull air from the front of the amplifier to the rear of the amplifier. Please keep it in 0°C-40°C environment, and ensure airflow is unobstructed for the front and rear panel. If the temperature of the heat sink inside the machine exceeds 70°C, the power limit function will be activated and the output power of the amplifier will be reduced to avoid excessive temperature rise. If the temperature of the radiator continues to rise to more than 85°C, the amplifier will be protected and the output will be shut down. When the temperature drops to a safe temperature, the amplifier will automatically restart. After using this device for a period of time (even if it is not turned on), if the fan runs at high speed for a long time but the heat dissipation effect is not good, please turn off the device and remove the mesh cover to clean the dust (for devices with mesh cover design).

3.5 Power cord

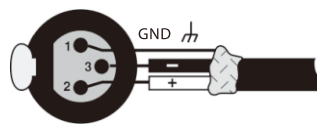
	The power cord must be grounded well, otherwise there is a high risk of electric shock!
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The power cord must have sufficient current capacity, AC power supply voltage and frequency must be in range of $\pm 10\%$ Of the nominal value. (Remarked on rear panel)

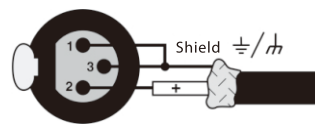
3.6 Input/Output

Connection knowledge:

Try to use shielded cables for input with high shielding layer density. Input signal use balanced connection to reduce noise interference. If using unbalanced connection, the shorter the better and not exceed 3 meters. The signal cable should avoid to parallel with the power cable and the output signal cable, or noise will happen. Turn off all equipment before you change any connection. Otherwise, it may cause damage to hearing and speakers.



Balanced input wiring



Unbalanced input wiring

4. Operating Instructions



Please make sure the power cord is not connected to power outlet and the power switch is turned off, the volume knob is completely turned off (counter clockwise to the limit)

4.1 Speaker protection

Clipping not only makes the sound quality worse, but also damages the treble unit. (The CLIP indicator will be on once clipping happens) you can turn down the input signal level to avoid clipping.

The speaker drive circuit may be burned by strong infra-sound signal. The sound of breathing and the high level and low frequency signal caused by the dropping of the microphone are typical infra-sound signals. To prevent infrasonic signals one of the following methods should be used:

- a. Install high pass filter between the mixer output and PA input.
- b. Open the high pass filter in the mixer. Set the filter frequency as high as possible without affecting the using. For example, set to 35 Hz for music signal and 75 Hz for microphone signal. For each mixer input channel, the filter frequency is set below the minimum fundamental frequency of the related channel.

4.2 Precautions

Although PA will be protected under exceptional circumstances, please pay attention to the use of PA in order to achieve the best performance and maximum safety:

1. It is necessary to configure PA before use including the connection of input and output cables improper wiring will result in equipment failure.

2. Before turning on the power supply of the device and make sure that the volume control knob is adjusted to the minimum. Otherwise, sudden bursts of sound may damage your hearing.

3. Do not connect the ground wire of the output cable and the ground wire of the input signal which will form ground loop and cause oscillation.

4. Do not connect any output to the power supply, battery or mains supply, otherwise it may cause an electric shock.

5. Tampering with the circuit or unauthorized modification of the circuit can be dangerous and all services will be invalid to provide..

6. Do not use Speakers when the yellow "Clipping" LED blinks continuously.

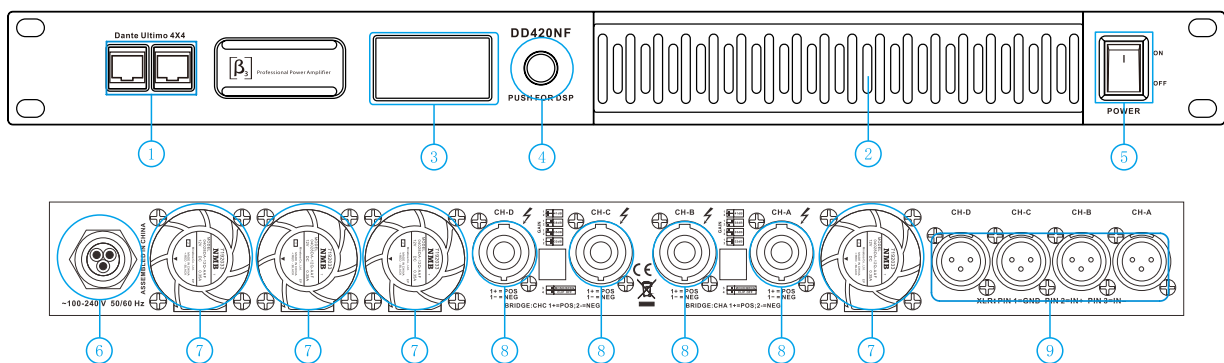
7. Please do not make mixer overload, otherwise it will send the clipping signal to speakers and speakers will precisely reproduce these signals and speakers may be damaged.

8. Do not use speakers below the nominal load too low a load may cause speakers output protection and premature clipping may damage the speaker.

9. When speakers are switched on, the output interface may have a fatal voltage.

Note: Betathree will not be responsible for any damage caused by excessive use of other equipment.

5. Operation Panel



1. Dante ports: 2* RJ 45 network port, Dante network audio, monitoring supported.

2. Air cooler: Fresh air was sucked in from the front and blow out to the back.

3. LCD Screen:1.9 inch LCD screen with back ground lights.

4.Control knob: Turn the knob to select the DSP menu and press to enter.

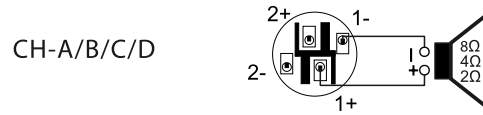
5. Power switch: Turn on or off the amplifier.

6.Power cord: Please select the right power cord accordingly.

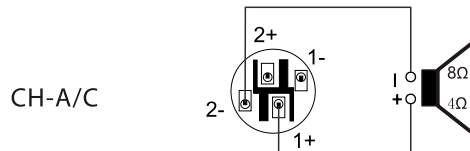
7. Fans: Airflow from front to back for cooling.

8. Output: Sockets for Speakers

Stereo/ Mono mode, wiring as below.

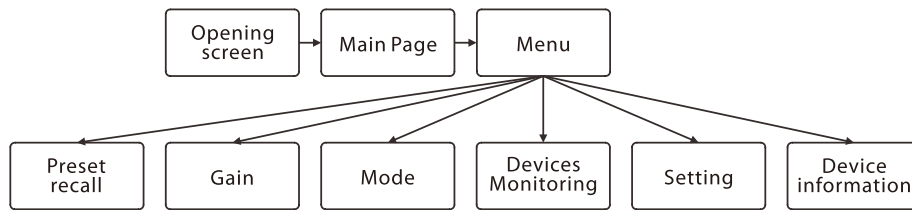


Bridge mode, wiring as below.



9. Analog audio interfaces: Balanced signal input jack.

6. LCD Menu structure



Opening Screen

Turn on the power, LOGO will be displayed on LCD screen, then enter to main page.

Main Menu

You can turn the volume/mute.
You can also see output volume/level/limit/Output Compression for each channel.
Display working temperature, network status and working mode.
Turn the knob to enter menu.

Menu

- | | |
|-----------------------------|--|
| 1. Preset | Preset recall |
| Current:MUSIC | Current present |
| 01:MUSIC | Preset by the manufacturer or user-defined, a total of 24 preset modes can be stored. |
| 02:LIVE | |
| 03:SPEECH | |
| 04:CLUB | |
| 05:..... | |
| 06:..... | |
| Back | |
| 2. Volume | Volume control |
| Volume | The volume of each output channel of the power amplifier can be controlled independently. |
| Mute | The mute of each output channel of the power amplifier can be controlled independently. |
| Noise Gate | The noise gate switch of each output channel of the power amplifier can be controlled independently. |
| Back | |
| 3. AMP Mode | Mode |
| Bridge | Bridge mode allows two channels to be combined to provide a single channel delivering. |
| Low-Z | Individually controlled low-z output mode. |
| Hi-Z 70V | Individually controlled 70V Hi-z output mode (some models). |
| Hi-Z 100V | Individually controlled 100V Hi-z output mode (some models). |
| Back | |
| 4. Settings | Settings |
| Standby:Normal/Standby | Normal: Normally work, Stand by: Stand by |
| Contrast:30-100 | Contrast, range 30-100, 75 by default. |
| Backlight:Always/Saving/OFF | Backlight, Always: Always on, Saving: shut down in 2 minutes OFF: |
| IP Mode:Auto-DHCP/User-set | IP Mode, Auto-DHCP, User-set. |
| Amp-IP:192.168.1.10 | Amp IP address, IP address can be modified under user-set mode. |
| Factory Reset | Factory reset |
| Back | |
| 5. Monitor | Devices Monitor |
| V | Voltage for each output channel. |
| I | Current for each output channel. |
| TEMP | Temperature for each channel and power module . |
| State | Protection or not for each channel. |
| 6. Info | Device Information |
| Model | Model number |
| Run time | Run time |
| Communication | Communication |
| SN | Serial number |
| FW | Firmware version |

Back

Back: back to upper menu

7. Device list interface

AMP
AMP Controller
— □ ×

Refresh
Set
About

Number	Name	Model	Status	Network
1	XXXX	XXXXX	Fault	ON
2	XXXX	XXXXX	Standby	ON
3	XXXX	XXXXX	Normal	ON
4	XXXX	XXXXX	Warning	ON
5	XXXX	XXXXX		OFF

Details
Save

Channel

4IN-4OUT

MAC

MAC1694070665

IP

Device Version Number

Run Time Refresh

Identifier

Open
Rename
Update

It can revise the device name, check status and configure for the devices.

8. DSP Controller Main Menu

AMP Controller
— □ ×

Name:

Model: XXXXXXXX IP: _____

Temp: -- Presrt: --

AMP

Status

Display Lock

Standby

Volume

A	B	C	D
12	4	-12.1	10.5
Gain 33	25	21	31.5
SEN 2	5.01	7.94	2.37
---	---	---	---
dBFS			

Source

1 In1	2 In2	3 In3	4 In4

Output

A OutA	B OutB	C OutC	D OutD
Mute <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Voltage ---	---	---	---
Current 0	0	0	0
Power 38	Temp 45	43	46
48 °C			

You can view the temperature, output voltage, and current of each channel, and detect the load status (open circuit, short circuit, limiter, etc.);

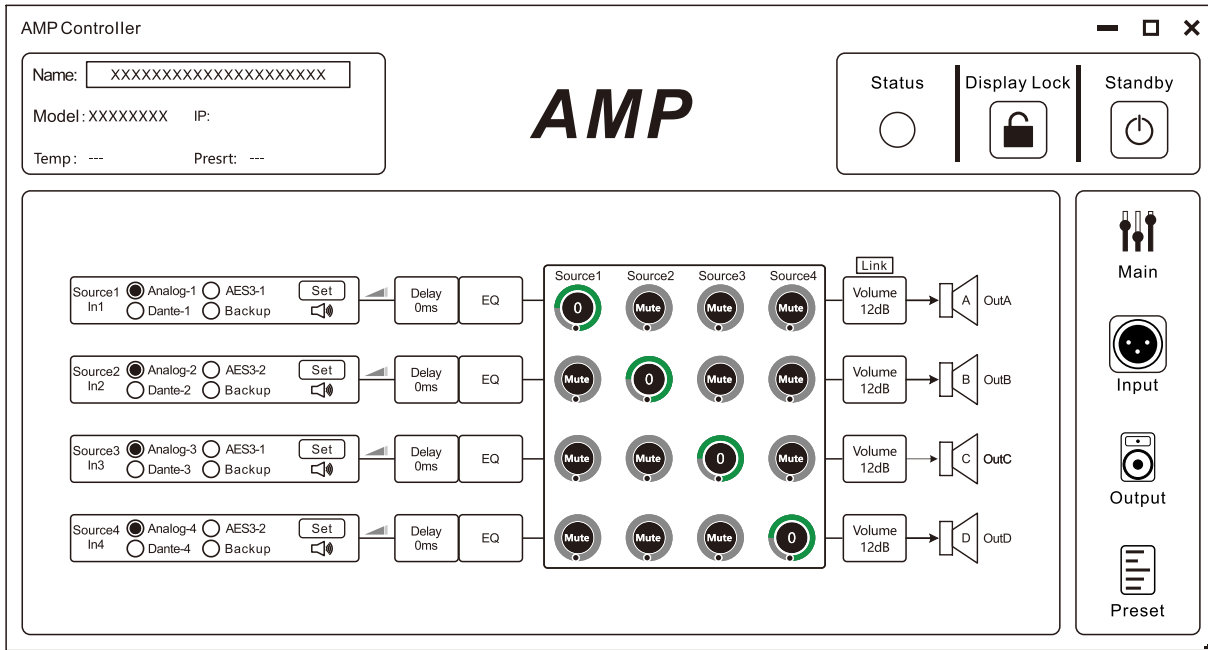
You can view input level for each channel.

You can control the volume of each amplifier output channel.

You can power on off the device and lock the amplifier display screen.

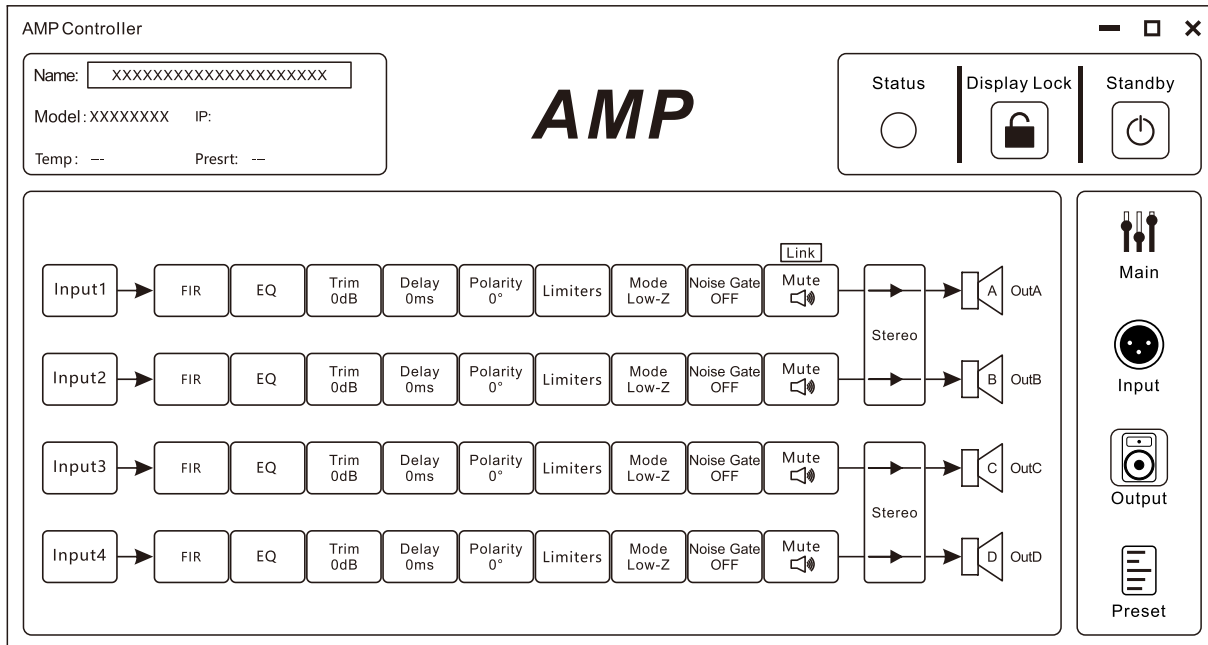
You can power on off the device and lock the amplifier display screen, modify the device address, name for audio source and name for channels.

9. Input menu



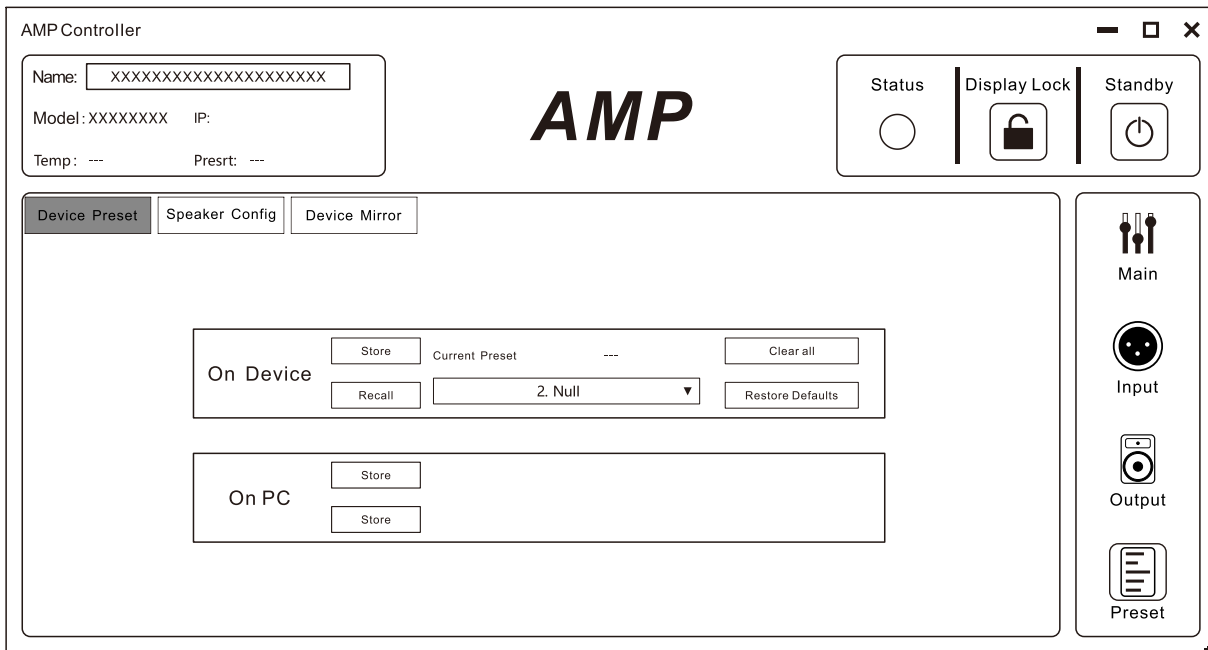
In this menu, you can set the following: Source delay matching (0~10ms), Level matching (± 18 dB), Input equalizer (8 levels + high low pass. Input delay (0~100ms), 4x4 audio routing and mixing (-80 dB~ $+18$ dB), volume for each channel (-80 dB~ $+18$ dB).

10. Output Menu



In this menu, you can set the following: FIR data (512th order and below), output equalizer (8 bands + high and low pass), volume fine-tuning (± 18 dB) delay (0~20ms), phase reversal, compressor (peak, average), power amplifier working mode (fixed resistance, fixed voltage), noise gate switch, mute, stereo bridge switching.

11. Preset Management



In this menu, you can set the following: Save and call 24 preset data, edit and call speaker database, import and export whole machine image data.

The menu bar of any interface can set the theme, language, user/debugging/factory permissions (factory permissions can freely set the content of user and debugging permissions)

12. Filter introduction

	Type
High low cut	Butterworth: 12dB, 18dB, 24dB, 36dB, 48dB; Bessel: 12dB, 24dB, 48dB; Linkwitz- Riley: 12dB, 24dB, 48dB.
PEQ	Peaking (± 24 dB), Low-shelf (± 24 dB), High-shelf (± 24 dB), All-pass 1ST All-pass 2nd, General-Low, General-High, Butterworth-Low, Butterworth-High, Bessel-Low, Bessel-High.
Other functions	Bypass, reset, copy, paste, save, call, phase display.

13. Specification

Model		DD420NF	DD410NF	DD406NF	DD402NF
Rated power (THD=1%, 1 kHz)	8Ω/Stereo	4X2000W	4X1000W	4X650W	4X250W
	4Ω/Stereo	4X3400W	4X1700W	4X1100W	4X425W
	2Ω/Stereo*	4X4760W	4X2890W	4X1870W	4X720W
	16Ω/Bridge	2X4000W	2X2000W	2X1300W	2X500W
	8Ω/Bridge	2X6800W	2X3400W	2X2200W	2X850W
	4Ω/Bridge*	2X9520W	2X5780W	2X3740W	2X1440W
	100V Hi-z	4X3400W	/	/	/
	70V Hi-z	4X2400W	4X1700W	4X1100W	/
RMS Output voltage (THD=1%,1kHz)		126.5V	89.4V	72.1V	44.7V
Max. Input Level		8.7Vrms(+21dBu)(gain by default)			
Gain by default (Rated output power,1kHz)		24dB	21dB	19dB	15dB
Gain range (Rated output power,1kHz)		24dB~42dB	21dB~39dB	19dB~37dB	15dB~33dB
THD+N		Typical value: 0.05% (10% RMS, 8 Ω)			
Crosstalk Suppression		≥90dB(lower than RMS, 20Hz-1kHz, 8 Ω)			
Frequency response		Typical value: 0.05% (10% RMS, 20Hz-20kHz 8 Ω)			
Input impedance		20kΩ(Blanced),10kΩ(unblanced)			
Damping coefficient		≥1000(20Hz-200Hz,8Ω)			
SNR		≥105dB(default gain, A weight, 20Hz-20kHz, 8Ω)			
Power supply		90~260VAC,50/60Hz			
Protection		Power supply undervoltage protection, amplifier output DC protection, overheat protection, temperature power control, overload power control			
Dimension(WxHxD)		483x45x465mm	483x45x370mm		
Net weight		13kg	9kg		

*This power is measured using a 20ms pulse 1kHz sine wave at 1% THD.

14. Power consumption & heat

Test signal: pink noise, 22Hz to 22kHz bandwidth.

1/8 power: common in audio material with mild clipping, most applications can refer to these data.

1/3 power: often used for audio material with severe clipping.

DD420NF

		Line Current(A)		Power(W)			Thermal Dissipation	
	LOAD	220V	110V	IN	OUT	Dissipated	Btu/h	kcal/h
standby		0.8	1.6	180.0	0.0	180.0	614.3	154.8
1/8 power	8Ω/CH	6.3	12.6	1388.9	1000.0	388.9	1327.2	334.4
	4Ω/CH	10.4	20.9	2297.3	1700.0	597.3	2038.4	513.7
1/3 power	8Ω/CH	15.0	29.9	3292.2	2666.7	625.5	2134.7	537.9
	4Ω/CH	25.1	50.3	5528.5	4533.3	995.1	3396.1	855.8

DD410NF

		Line Current(A)		Power(W)			Thermal Dissipation	
	LOAD	220V	110V	IN	OUT	Dissipated	Btu/h	kcal/h
standby		0.7	1.5	160.0	0.0	160.0	546.0	137.6
1/8 power	8Ω/CH	3.2	6.3	694.4	500.0	194.4	663.6	167.2
	4Ω/CH	5.2	10.4	1148.6	850.0	298.6	1019.2	256.8
1/3 power	8Ω/CH	7.5	15.0	1646.1	1333.3	312.8	1067.3	269.0
	4Ω/CH	12.6	25.1	2764.2	2266.7	497.6	1698.0	427.9

DD406NF

		Line Current(A)		Power(W)			Thermal Dissipation	
	LOAD	220V	110V	IN	OUT	Dissipated	Btu/h	kcal/h
standby		0.6	1.3	140.0	0.0	140.0	477.8	120.4
1/8 power	8Ω/CH	2.1	4.1	451.4	325.0	126.4	431.3	108.7
	4Ω/CH	3.4	6.8	743.2	550.0	193.2	659.5	166.2
1/3 power	8Ω/CH	4.9	9.7	1070.0	866.7	203.3	693.8	174.8
	4Ω/CH	8.1	16.3	1788.6	1466.7	322.0	1098.7	276.9

DD402NF

		Line Current(A)		Power(W)			Thermal Dissipation	
	LOAD	220V	110V	IN	OUT	Dissipated	Btu/h	kcal/h
standby		0.1	0.3	30.0	0.0	30.0	102.4	25.8
1/8 power	8Ω/CH	0.8	1.6	173.6	125.0	48.6	165.9	41.8
	4Ω/CH	1.3	2.6	287.2	212.5	74.7	254.8	64.2
1/3 power	8Ω/CH	1.9	3.7	411.5	333.3	78.2	266.8	67.2
	4Ω/CH	3.1	6.3	691.1	566.7	124.4	424.5	107.0

*1W=0.860kcal/h,1BTU=0.252kcal

15. FAQ & Trouble shooting

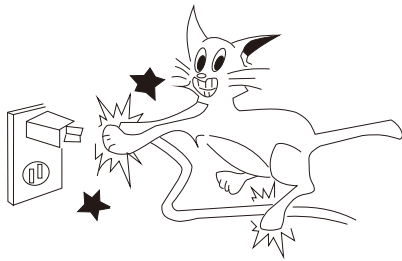
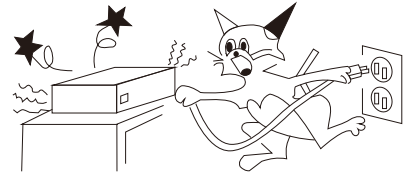
Fault phenomenon	S/N.	Process of exclusion
No sound, screen off	1	Check whether the power plug is in good contact with the power socket.
	2	Check whether the voltage is normal.
	3	Check whether the power is on.
No sound, screen on	1	Check whether the connected wires are in good contact with equipments.
	2	Check whether the audio source player is power on and volume turned on.
	3	Check whether the volume turned on for the amplifier.
	4	Check whether it is setting mute.
Other Faults	1	Check all connections as per the manual.
	2	Consult the local authorized repair center or access www.beta3pro.com .

16. SAFETY USE

SAFETY REGULATIONS

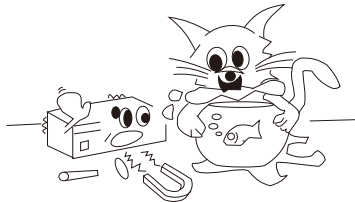
ABNORMAL PHENOMENON

Please turn off the power and pull out the cord if the device has any unusual sound or smell during operation.



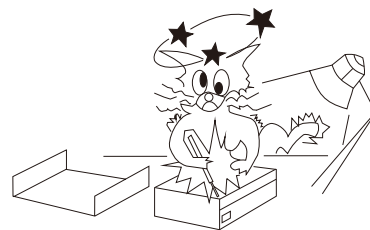
POWER CORDS PROTECTION

Power plug contact and separation socket must be handled properly. Do not touch the power cord with wet hands to avoid electric shock. Do not tie or tangle the power cord with other wires. Do not put the power cord in crowded places.



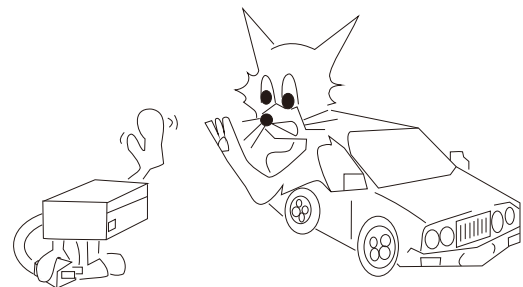
KEEP AWAY FROM WATER AND OTHER SMALL METAL PARTS

Do not drop or place metal materials on the device, such as nails, metal coil, or other flammable materials, or else it would cause the risk of fire hazard or electric shock. Do not expose the amplifier to dripping and splashing. Do not place any objects filled with liquid, such as vases, on the amplifier. Most importantly, do not spill water into the amplifier.



DO NOT OPEN THE COVER IF NOT GUIDED BY A QUALIFIED ELECTRICIAN

FOR SAFETY REASONS, UNPLUG THE POWER CORD TO PREVENT THE RISK OF FIRE HAZARD WHEN UNUSED FOR A LONG TIME.





Beta Three

DD-NF SERIES

PROFESSIONAL POWER AMPLIFIER

www.beta3pro.com