



CLASS-D AMPLIFIER

T-1D120-1D240-1D350-1D500



T-2D120-2D240-2D350-2D500



T-4D120-4D240-4D350-4D500



Please follow the instructions in this manual to obtain the optimum results from this unit.
We also recommend that you keep this manual handy for future reference.

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1. SAFETY PRECAUTIONS

- Be sure to read the instructions in this section carefully before use.
- Make sure to observe the instructions in this manual as the conventions of safety symbols and messages regarded as very important precautions are included.
- We also recommend you keep this instruction manual handy for future reference.

Safety Symbol and Message Conventions

Safety symbols and messages described below are used in this manual to prevent bodily injury and property damage which could result from mishandling. Before operating your product, read this manual first and understand the safety symbols and messages so you are thoroughly aware of the potential safety



Indicates a potentially hazardous situation which, if mishandled, could result in death or serious personal injury.



Indicates a potentially hazardous situation which, if mishandled, could result in moderate or minor personal injury, and/or property damage.



When Installing the Unit

- Do not expose the unit to rain or an environment where it may be splashed by water or other liquids, as doing so may result in fire or electric shock.
- Use the unit only with the voltage specified on the unit. Using a voltage higher than that which is specified may result in fire or electric shock.
- Do not cut, kink otherwise damage nor modify the power supply cord. In addition, avoid using the power cord in close proximity to heaters, and never place heavy objects - including the unit itself - on the power cord, as doing so may result in fire or electric shock.
- Be sure to replace the unit's terminal cover after connection completion. Because high voltage is applied to the speaker terminals, never touch these terminals to avoid electric shock.
- Be sure to ground to the safety ground (earth) terminal to avoid electric shock. Never ground to a gas pipe as a catastrophic disaster may result.
- Avoid installing or mounting the unit in unstable locations, such as on a rickety table or a slanted surface. Doing so may result in the unit falling down, causing personal injury and / or property damage.

When Installing the Unit

- Should the following irregularity be found during use, immediately switch off the power, disconnect the power supply plug from the AC outlet and contact your nearest ITC dealer. Make no further attempt to operate the unit in this condition as this may cause fire or electric shock.
 - If you detect smoke or a strange smell coming from the unit.
 - If water or any metallic object gets into the unit
 - If the unit falls, or the unit case breaks
 - If the power supply cord is damaged (exposure of the core, disconnection, etc.)
 - If it is malfunctioning (no tone sounds.)
- To prevent a fire or electric shock, never open nor remove the unit case as there are high voltage components inside the unit. Refer all servicing to your nearest ITC dealer.
- Do not place cups, bowls, or other containers of liquid or metallic objects on top of the unit. If they accidentally spill into the unit, this may cause a fire or electric shock.
- Do not insert nor drop metallic objects or flammable materials in the ventilation slots of the unit's cover, as this may result in fire or electric shock.

SAFETY PRECAUTIONS

CAUTION

When Installing the Unit

- Never plug in nor remove the power supply plug with wet hands, as doing so may cause electric shock.
- When unplugging the power supply cord, be sure to grasp the power supply plug; never pull on the cord itself. Operating the unit with a damaged power supply cord may cause a fire or electric shock.
- When moving the unit, be sure to remove its power supply cord from the wall outlet. Moving the unit with the power cord connected to the outlet may cause damage to the power cord, resulting in fire or electric shock. When removing the power cord, be sure to hold its plug to pull.
- Do not block the ventilation slots in the unit's cover. Doing so may cause heat to build up inside the unit and result in fire.
- Avoid installing the unit in humid or dusty locations, in locations exposed to the direct sunlight, near the heaters, or in locations generating sooty smoke or steam as doing otherwise may result in fire or electric shock.
- Due to product upgrades, while some of the features and specification in the user manual does not match the actual functions, sorry for any inconvenience and thanks for your kind understanding!

When Installing the Unit

- Do not place heavy objects on the unit as this may cause it to fall or break which may result in personal injury and/or property damage. In addition, the object itself may fall off and cause injury and/or damage.
- Make sure that the volume control is set to minimum position before power is switched on. Loud noise produced at high volume when power is switched on can impair hearing.
- Do not operate the unit for an extended period of time with the sound distorting. This is an indication of a malfunction, which in turn can cause heat to generate and result in a fire.
- Contact your ITC dealer as to the cleaning. If dust is allowed to accumulate in the unit over a long period of time, a fire or damage to the unit may result.
- If dust accumulates on the power supply plug or in the wall AC outlet, a fire may result. Clean it periodically. In addition, insert the plug in the wall outlet securely.
- Switch off the power, and unplug the power supply plug from the AC outlet for safety purposes when cleaning or leaving the unit unused for 10 days or more. Doing otherwise may cause a fire or electric shock.

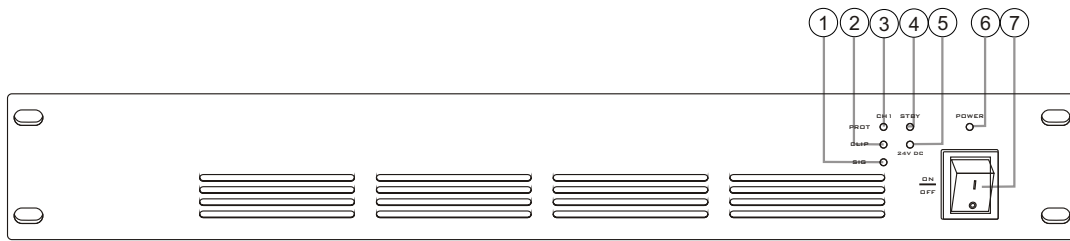
An all-pole mains switch with a contact separation of at least 3 mm in each pole shall be incorporated in the electrical installation of the building.

2.FEATURES

1. High efficiency class D power amplifier;
2. Standard cabinet design(1.5U), humanized design, exquisite craft, all show high temperament;
3. Built-in active bandpass filter, filter out unwanted music signal effectively;
4. Balance signal input, 1/2/4x120W,240W,350W,500W power output;
5. Panel was regulating function independently;
6. Panel with signal, peak, protection, the power indicator LED;
7. With amplifier output, power standby control normal monitoring, power amplifier standby cascade port;
8. Power amplifier with DC24V power supply port, charged pressure to adapt to the range (21.6~ 26.5V DC) protection, avoid long-term supply for battery failure or damage of high voltage equipment;
9. AC alternating current power supply pressure;
10. Power amplifier output: 100V voltage;
11. Electrical equipment electrical isolation, signal input and the power output isolation, in line with the 3C, UL\ IEC60065 certification requirements;
12. Built-in short circuit, overload, high temperature protection.
13. "STBY IN" sibling with "STBY thru", Normal when the port outputs high level, short of the port, the amplifier standby protection panel "STBY" red indicator light; amplifier standby time and work "STATE OUT" output 5V, when the amplifier output short circuit protection, the port output low.
14. When the channel "LINE IN" input signal, the corresponding port access VCA 10K Ω adjustable resistance, adjustable size of the input signal.

3. NOMENCLATURE AND FUNCTIONS

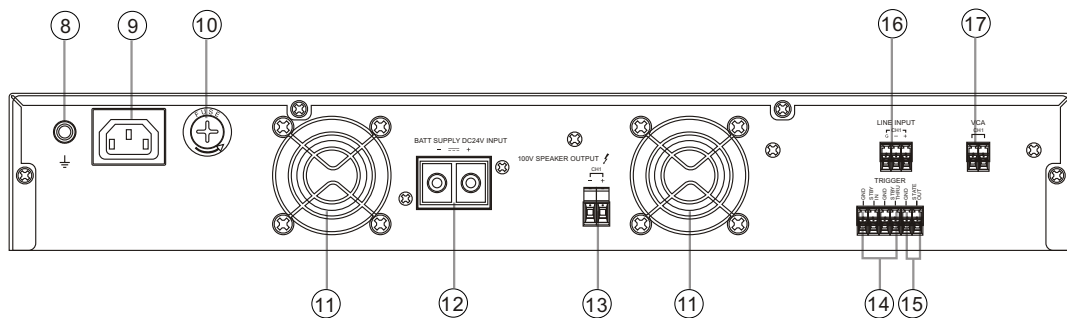
3.1 FRONT PANEL(T-1D120-1D240-1D350-1D500)



1. SIG
CH1 signal indicator
2. CLIP
CH1 clip indicator
3. PROT
CH1 protection indicator

4. Stby indicator
5. 24V DC indicator
6. Power indicator
7. POWER SWITCH
Up: turn on the power
Down: turn off the power

3.2 REAR PANEL(T-1D120-1D240-1D350-1D500)

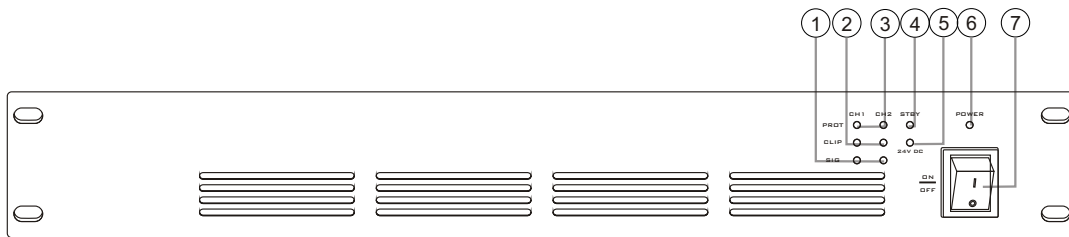


8. Grounding terminal
9. AC power input
10. AC power fuse
11. Cooling fan
12. DC 24V power input

13. CH1 100V speaker output
14. Remote Standby, cascading standby
15. State output
16. Line input
17. Remote volume control;
External audio controller

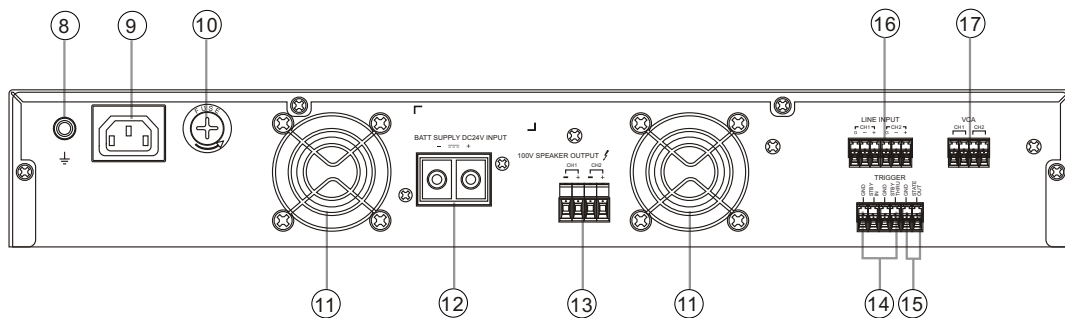
NOMENCLATURE AND FUNCTIONS

3.3 FRONT PANEL(T-2D120-2D240-2D350-2D500)



- | | |
|---|--|
| 1. SIG
CH1-CH2 signal indicator | 4. Stby indicator |
| 2. CLIP
CH1-CH2 clip indicator | 5. 24V DC indicator |
| 3. PROT
CH1-CH2 protection indicator | 6. Power indicator |
| | 7. POWER SWITCH
Up: turn on the power
Down: turn off the power |

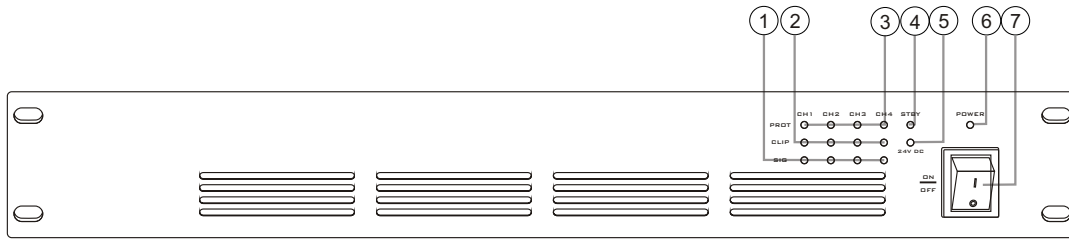
3.4 REAR PANEL(T-2D120-2D240-2D350-2D500)



- | | |
|------------------------|---|
| 8. Grounding terminal | 13. CH1 ~ CH2 100V speaker output |
| 9. AC power input | 14. Remote Standby, cascading standby |
| 10. AC power fuse | 15. State output |
| 11. Cooling fan | 16. Line input |
| 12. DC 24V power input | 17. Remote volume control;
External audio controller |

NOMENCLATURE AND FUNCTIONS

3.5 FRONT PANEL(T-4D120-4D240-4D350-4D500)



1. SIG

CH1-CH4 signal indicator

2. CLIP

CH1-CH4 clip indicator

3. PROT

CH1-CH2 protection indicator

4. Stby indicator

5. 24V DC indicator

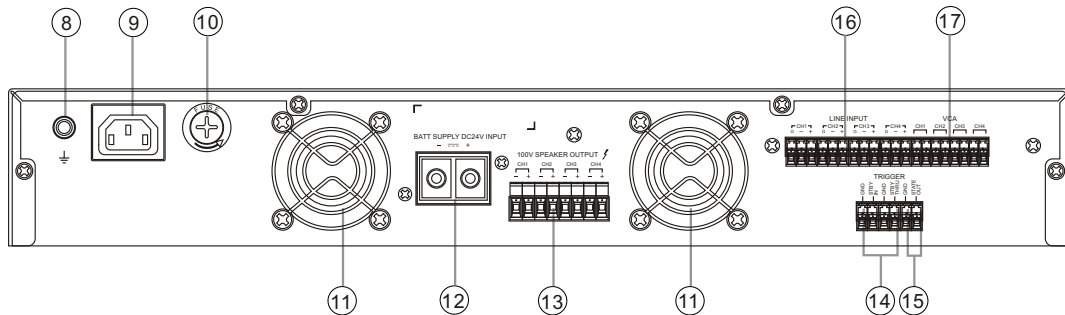
6. Power indicator

7. POWER SWITCH

Up: turn on the power

Down: turn off the power

3.6 REAR PANEL(T-4D120-4D240-4D350-4D500)



8. Grounding terminal

9. AC power input

10. AC power fuse

11. Cooling fan

12. DC 24V power input

13. CH1 ~ CH4 100V speaker output

14. Remote Standby, cascading standby

15. State output

16. Line input

17. Remote volume control;
External audio controller

4. OPERATING INSTRUCTION

Effective value over current protection- fuse protection

Weather the effective power current can temporarily reach the peak depends on the impedance of the load and the type of signal, because the fuse protection support RMS several times of the standard power. To prevent turning the amp off in extreme cases, the amplitude of the input signal should be reduced (due to the SMPS over current protection), there by reducing the power current consumption.



24V DC power supply

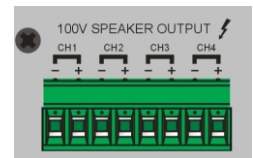
21.6~ 26.5V operating voltage range

Note: Pls don't reverse the positive and negative polarity of the battery to avoid any damage to the devise. Post 100A current maximum support, such as more than easily damaged terminals.



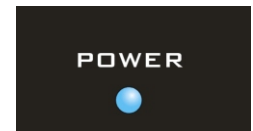
100V speaker output

1 channels Class-D amplifier output with source filters to pass invalid audio signal; available for 100V external speaker. The total power of the speakers connected to the output terminals can not exceed 80% of the RMS of the amplifier.



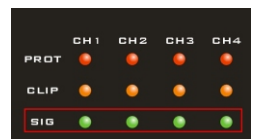
Power LED

When power is turned on, the power LED emits blue light.



Signal LED

SIGNAL is an output signal indicating. When the corresponding outputs detects a signal is and the output voltage reaches 10V, the signal LED emits green light. Under normal operating it flashes.



Clip LED

When the output voltage exceeds the rated maximum level, distortion orange LED lights up. Distortion long bright LED indicates the status of the peak above the machine work. To avoid serious distortion or cut the top, so they should be appropriate to reduce the volume.



Protect the LED

When the protection circuit is working, the orange protection LED indicator on.



OPERATING INSTRUCTION

In the following circumstances protect the LED is on

- ①. In the self-test procedure after the power is on, the LED is lit continuously on for about 2S. In this process there is no output.
- ②. the excessive signal causes clipping, the led flashes, the brief flashes makes no influence to the distortion. The excessive and continuous clipping may destroy the speakers. So pls turn down the volume when the leds shin frequently.
- ③. If the output cable is short cut, the indicator will keep on. But if the volume is turned off, the indicator may be off. Pls check the load and output cables.
- ④. If the protect be shut down because of the over high temperature, pls turn the amp off, check whether the ventilation or the wind grid is good.
- ⑤. When the power is power during working or the power supply voltage is too high, the indicator will keep on.
- ⑥. If the amplifier fault is not in accordance to the above situations, while the Protect indicator keeps on, pls turn to the professional engineer.

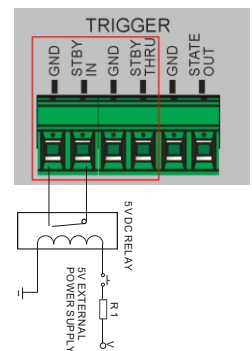
REMOTE CONTROL INTERFACE AND REMOTE STANDBY INTERFACE

When the "STBY IN" and "GND" or "STBY THRU" and "GND" are short cut, the main power amplifier will be forced off. The machine will turn to standby mode, with consumption less than 60W.

They are electrically connected in parallel; you can input from one socket and output from another socket and connect to the remote standby control interface of the next amp.

Note:

When cascade, the GND terminal of the "Remote Standby control interface" should connect to the GND terminal of the next one accordingly; otherwise it will cause the machine to turn to the standby mode and it cannot work properly.

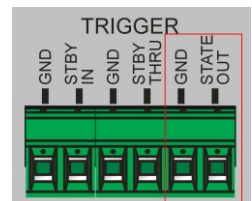


STATE OUT

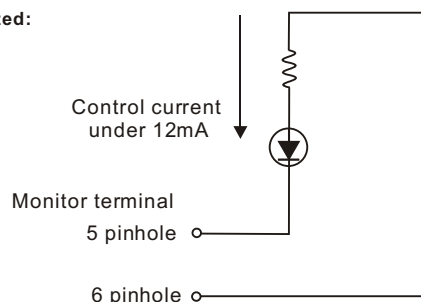
When the normal state circuit is operating, this port output high level(+5 V).

The use of the terminal, according to the case-channel power ON / OFF state and the protection of the state, to control external connected device (monitor display panel) indicator lights up and the operation of the power of the lamp is turned on.

The circuit is designed to monitor the voltage between terminals 5 and 6 feet 5V; please currents when used in a closed environment below 12mA.



When the LED is lighted:

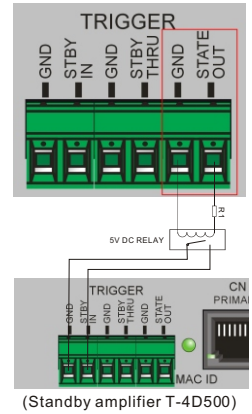


OPERATING INSTRUCTION

Monitor terminal (status output)

The use of the terminal, according to the case-channel power ON / OFF state and the protection of the state, through the DC relay to control the spare amplifier (another T-4D500) working condition.

The circuit is designed to monitor the terminal voltage of between 5 and 6 feet 5V; please currents when used in a closed environment below 200mA.



Thermal Protection

The temperature control circuit that combines with the heatsink controls working status of the fan.

The fan works in the lowest speed when the temperature reaches 45°C. When the temperature gradually approaches 70°C, the thermal protection circuit will increase the fan speed until it reaches the maximum value.



Equipment grounding

The equipment enclosure ground terminal and ground power lines common connection point.

Note: there should be a section of the protective ground to have sufficient strength and current-carrying capacity, thereby ensuring under fault conditions, exposed conductive parts will not lead to shock, but not because of the current flowing through the point of focus to produce high temperature heating phenomenon .



5. WIRING INTRODUCTION

① DC power cable

Will meet the requirements of the nominal power is connected to the "Power Interface" terminal, pay attention to the polarity; kind of connection wires, use 4-10AWG models.

1 channel maximum support power 500W, input current is $500W/24V = 20.83A$, choose 10AWG wire.

2 channel maximum support power 1000W, input current is $1000W/24V = 41.67A$, choose 7AWG wire.

4 channel maximum support power 2000W, input current is $2000W/24V = 83.83A$, choose 4AWG wire.

② Input line connection

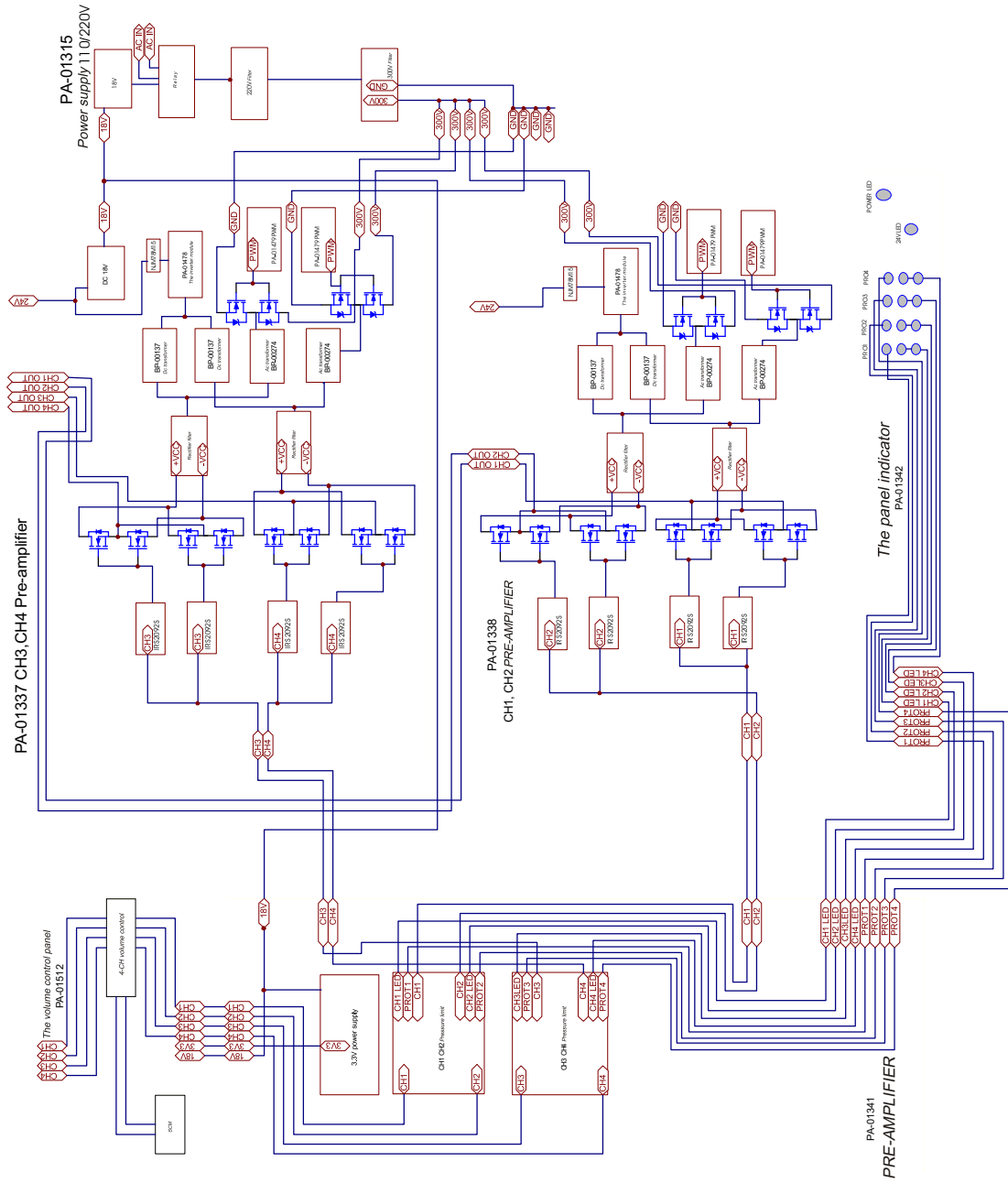
Input connector is active power balance, pins 1 grounding (block), pin 2 cold (anode, -)
Pins 3 hot (positive, +)

Note: it is recommended to use symmetry (balance) shielded cable, because the balance of signal noise and radio interference of AC power source is not so sensitive. And unbalanced lines can cause noise, especially when long cable through.

③ The output line

Connected directly with the constant voltage speaker; Speaker output line should be 1 mm^2 RVS pair twisted copper wire. The diameter should be increased when the distance is longer.

7. BLOCK DIAGRAM



8. OPERATING INSTRUCTIONS

1. Starting up and closing down

- ① Before connecting the amplifier to the power socket, please make sure the supply voltage is in accordance with labeled behind the backboard of amplifier.
- ② Before connecting the power line with power socket, please make sure the power line is not broken.
- ③ Connect the power line before starting up, and connect other equipments as well. Pull up the power line after closing down.
- ④ In a sound system, the amplifier should be the first to start up and the last to close down. Starting up order: First start up the sound source equipments, and then start up the amplifier. Following this order, you can avoid damaging the speakers.

2. Standby control

The "GND" and "STBY IN" or "GND" and "STBY THRU" port from short circuit backboard can trigger amplifier standby function. The machine disconnects amplifier output port and goes into standby status. Stand-by power consumption is less than 80W, front panel "STBY" indicator light is on.

Attention: The input signal indicator light won't extinguish in stand by status. Disconnect backboard "GND" and "STBY IN" or "GND" and "STBY THRU" short circuit condition, the machine is recovering proper functioning.

3. Monitoring port operation

Circumscribe display panel from backboard monitor port "GND" and "STBY OUT", amplifier working condition can be monitored. When the amplifier is working normally, monitor port output is 5V. Direct voltage lightens circumscribed display panel build-in indicator light. When amplifier protection status is triggered because of high temperature or overload or output connection short circuit, monitor port output low level 0V, circumscribed display panel indicator extinguishes. It means the amplifier is in protection state. When the amplifier returns to normal working status, circumscribed display panel indicator is lightened.

9. FAULT DETECTION

Failure	Cause	Check
No reaction when power on	① Check weather main power voltage is well connected	① Check main power supply voltage and power voltage polarity
	② Weather AC fuse is blown	② replace insurance tube of the of the same specifications
Over Temperature" failure	due to long time use in full power, the internal temperature exceeds the limit value	reduce the output power, or standby till the temperature decrease
Overload" or "short"	The output load is light, the output voltage is too high	properly reduce the output amplitude, adjust the volume knob
overload or short circuit	① exceeds the rated capacity	① check constant voltage output circuit
	② connect to external load exceeds the rated capacity	② reduce the load

PRECAUTIONS

1. Always use the fuse with the same specifications and be sure to tighten the fuse holder to prevent poor contact.
2. The machine uses single-chip control, so the continuous switch time interval should be more than 10 seconds.

10. SPECIFICATIONS

Model	T-1D120	T-1D240	T-1D350	T-1D500
Rated output power	120W	240W	350W	500W
Peak output power	180W	360W	525W	750W
Power interface output	100V			
Input Sensitivity&Impedance	LINE IN:775mV/10K Ω			
Frequency	80Hz~16KHz(+1dB, -3dB)			
S/N Ratio	>85dB			
THD	80Hz -16kHz, 10dB below maximum power <0.2% 1 kHz, maximum power <1%			
Overall efficiency	>85%			
Radiating	After a forced air into the front, 50/70 $^{\circ}$ C Thermostat			
Protection	With short circuit, overload, over temperature protection, output DC			
Power supply	<input type="checkbox"/> ~110V 50Hz <input type="checkbox"/> ~110V 60Hz <input type="checkbox"/> ~115V 50Hz <input type="checkbox"/> ~115V 60Hz <input type="checkbox"/> ~120V 50Hz <input type="checkbox"/> ~120V 60Hz <input type="checkbox"/> ~220V 50Hz <input type="checkbox"/> ~220V 60Hz <input type="checkbox"/> ~230V 50Hz <input type="checkbox"/> ~230V 60Hz <input type="checkbox"/> ~240V 50Hz <input type="checkbox"/> ~240V 60Hz			
Power supply	24 V DC rated power, 21.6~ 26.5V operating voltage range			
Maximum power dissipation	144W	288W	420W	600W
Dimension	484x444.5x65mm			
Weight	7.7Kg			

SPECIFICATIONS

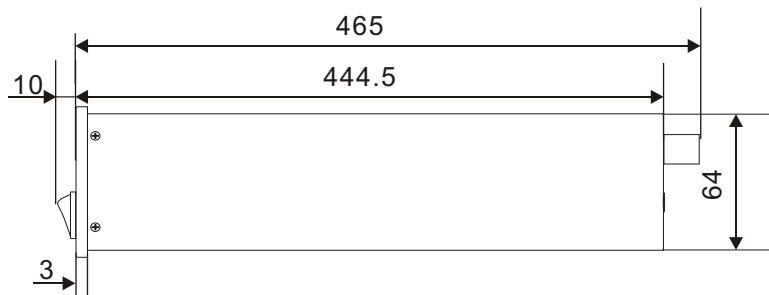
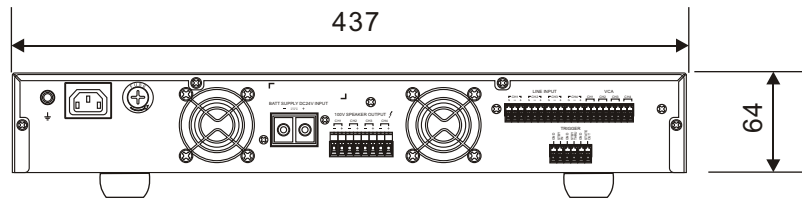
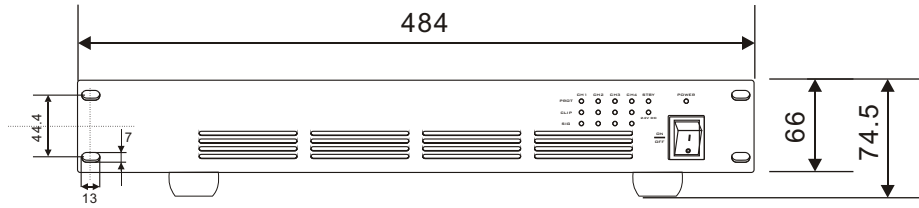
Model	T-2D120	T-2D240	T-2D350	T-2D500
Rated output power	2*120W	2*240W	2*350W	2*500W
Peak output power	2*180W	2*360W	2*525W	2*750W
Power interface output	100V			
Input Sensitivity&Impedance	LINE IN:775mV/10K Ω			
Frequency	80Hz~16KHz(+1dB, -3dB)			
S/N Ratio	>85dB			
THD	80Hz - 16kHz, 10dB below maximum power <0.2% 1 kHz, maximum power <1%			
Overall efficiency	>85%			
Radiating	After a forced air into the front, 50/70 $^{\circ}$ C Thermostat			
Protection	With short circuit, overload, over temperature protection, output DC			
Power supply	<input type="checkbox"/> ~110V 50Hz <input type="checkbox"/> ~110V 60Hz <input type="checkbox"/> ~115V 50Hz <input type="checkbox"/> ~115V 60Hz <input type="checkbox"/> ~120V 50Hz <input type="checkbox"/> ~120V 60Hz <input type="checkbox"/> ~220V 50Hz <input type="checkbox"/> ~220V 60Hz <input type="checkbox"/> ~230V 50Hz <input type="checkbox"/> ~230V 60Hz <input type="checkbox"/> ~240V 50Hz <input type="checkbox"/> ~240V 60Hz			
Power supply	24 V DC rated power, 21.6~ 26.5V operating voltage range			
Maximum power dissipation	288W	576W	840W	1200W
Dimension	484x444.5x65mm			
Weight	8.2Kg			

SPECIFICATIONS

Model	T-4D120	T-4D240	T-4D350	T-4D500
Rated output power	4*120W	4*240W	4*350W	4*500W
Peak output power	4*180W	4*360W	4*525W	4*750W
Power interface output	100V			
Input Sensitivity&Impedance	LINE IN:775mV/10K Ω			
Frequency	80Hz~16KHz(+1dB, -3dB)			
S/N Ratio	>85dB			
THD	80Hz - 16kHz, 10dB below maximum power <0.2% 1 kHz, maximum power <1%			
Overall efficiency	>85%			
Radiating	After a forced air into the front, 50/70 $^{\circ}$ C Thermostat			
Protection	With short circuit, overload, over temperature protection, output DC			
Power supply	<input type="checkbox"/> ~110V 50Hz <input type="checkbox"/> ~115V 50Hz <input type="checkbox"/> ~120V 50Hz <input type="checkbox"/> ~220V 50Hz <input type="checkbox"/> ~230V 50Hz <input type="checkbox"/> ~240V 50Hz		<input type="checkbox"/> ~110V 60Hz <input type="checkbox"/> ~115V 60Hz <input type="checkbox"/> ~120V 60Hz <input type="checkbox"/> ~220V 60Hz <input type="checkbox"/> ~230V 60Hz <input type="checkbox"/> ~240V 60Hz	
Power supply	24 V DC rated power, 21.6~ 26.5V operating voltage range			
Maximum power dissipation	576W	1152W	1680W	2400W
Dimension	484x444.5x65mm			
Weight	9.8Kg			

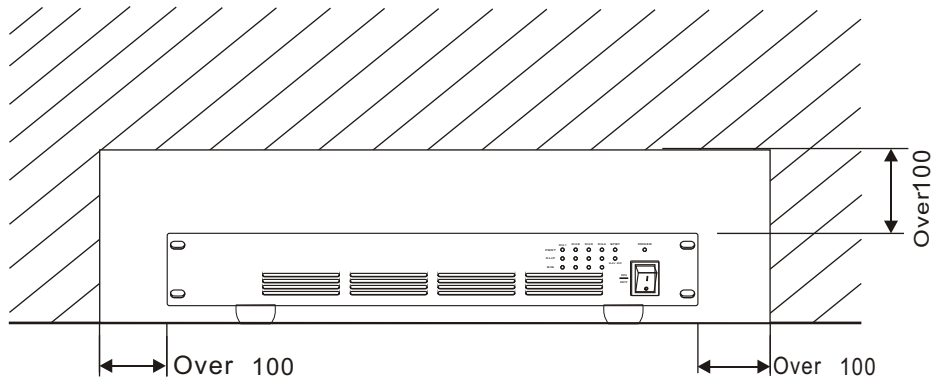
11. DIMENSIONAL DIAGRAM

UNIT: mm



Keep the unit's all sides over 10 cm away from objects that may obstruct air flow to prevent the unit's internal temperature rise.

UNIT: mm



PUBLIC ADDRESS SYSTEM

