



Montarbo



Professional Power Amplifier
User's Manual

English

GRAVIS SERIES

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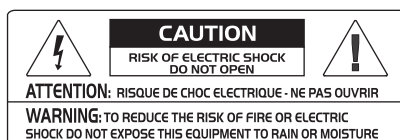
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IMPORTANT PRECAUTIONS

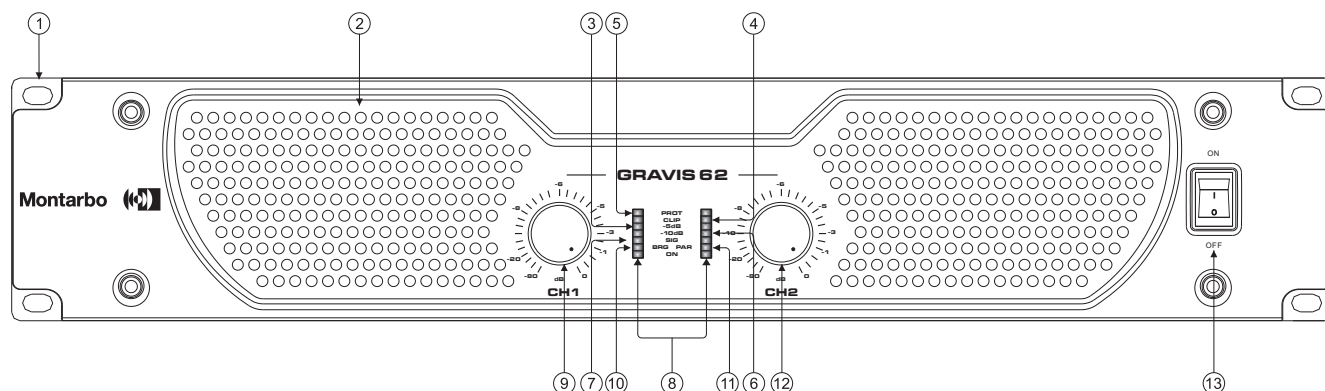


1. Read all documentation before operating your equipment.
2. Retain all documentation for further reference.
3. Mains voltage must correspond to rear unit label.
4. Damages caused by connecting to improper AC voltage are not covered by any warranty.
5. Always operate the unit with the AC ground wire connected to the electrical system ground.
Precautions should be taken to avoid equipment faulty, improper or inefficient grounding.
6. After connection to power supply Standby LED is lit, showing that some components inside are already powered.
7. Do not connect any amplifier channel output into another channel input. Do not connect in parallel or series an amplifier output with any other amplifier output.
8. In system setup, amplifier's output power should be 50% greater than loudspeaker(s) rated handling power.
9. Make sure the signal is correctly connected to amplifier input channel following current input mode.
10. Please turn off the power switch when extracting the power cord and signal cable, or adjusting the input mode switch.
11. In order to split one signal to more than one amplifier, we suggest to use a signal distributor.
12. In typical use, please set the volume to -0dB position.
13. If you need to supply power to more than one unit power amplifiers, to eliminate the big surge current interference to electricity net, and preventing the voltage fluctuate abnormal when simultaneously switching on the amplifiers, we recommend you use the sequence power procedure.
14. Do not obstruct the air entrance and exit ports.



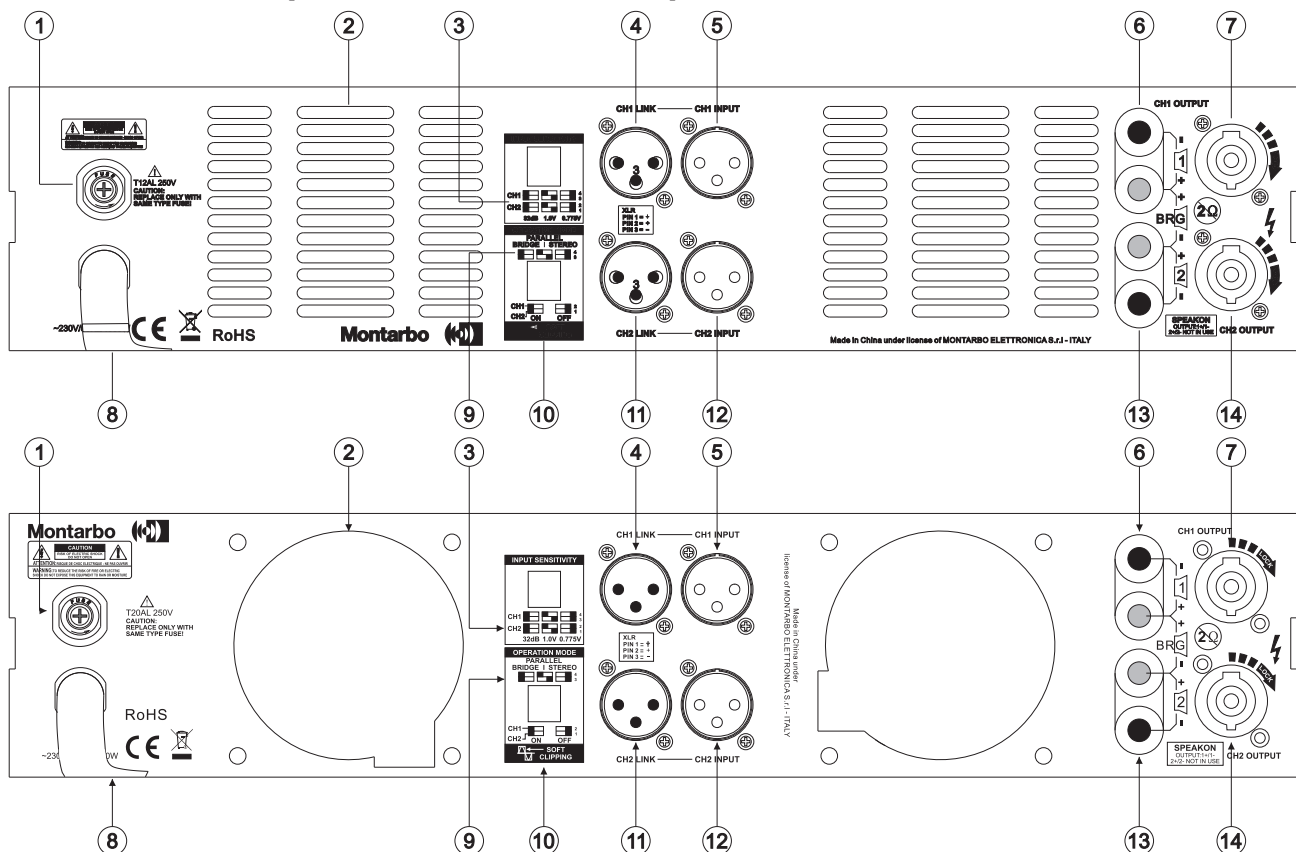
Important: Control functions and adjustment functions not described in this user's manual may cause mechanical danger or electrical shock.

GRAVIS series front panel function description:



1. Installation socket
To be used to fix in 19" rack installation.
2. Air entrance
This is the air entrance, don't block it. Since the dust will settle in the grille, please regularly remove the screws to clean the filter under the grille, thus maintaining a good ventilation.
3. -5dB signal indicator LED
When signal is at -5dB, this orange LED will be lit.
4. CLIP indicator
When this indicator is on, it means the amplifier has distortion (CLIP). In this status, the distortion is around 0.5%.
5. Protection Indicator
When this indicator is lit, it means the amplifier is in protection status, which should be due to output short-circuit, over-heat, DC, VHF (constant non-musical high frequency signal due to self-excitation or long time high-frequencies feedback).
6. -10 dB signal indicator LED
This green LED will be lit when signal at -10dB.
7. Signal indicator
With signal is up to -22dB, the green indicator LED will be lit. This LED is on with an input level around 0.35V.
8. Power ON Indicator
When this indicator is on, it means the main power supply system of amplifier is working.
9. CH1 volume control
In stereo or parallel mode: this knob controls CH1 volume. In bridge mode, this knob controls both channels volume, while CH2 knob is disabled.
Gain control range: -80dB~0dB in 40 steps, available turning angle is 280 degree.
10. Bridge indicator
When this indicator is lit the amplifier is on bridge mode, as set by rear panel dip switches.
11. Parallel indicator
When this indicator is lit the amplifier is on parallel mode, as set by rear panel dip switches.
12. CH2 volume control
In stereo or parallel mode, this knob controls CH2 volume. In bridge mode, this knob is inactive, the amplifier volume is controlled by CH1 knob only.
Gain control range: -80dB~0dB in 40 steps, available turning angle is 280 degree.
13. Power Switch
This switch is used to turn power on and off. Press the upper part to switch ON, and lower part to switch OFF.

GRAVIS series rear panel function description:



1. Fuse holder(230V) ▲

This fuse holder contains a standard fuse, which is used to protect amplifier from damages. If the amplifier is connected to power supply but Power ON LED is not lit, please check the fuse status. If you found the fuse broken, you must replace it with a same specification fuse.

2. Air exit

This part is the air exit. Don't obstruct it.

3. Input sensitivity selection by dip switches, with three settings:

Whole system signal gain 32dB - CH1 switches (3-4) ON; CH2 switches (1-2) ON.

Whole system signal gain 1.0V CH1 switch 4 ON, switch 3 OFF; CH2 switch 2 ON, switch 1 OFF.

Whole system signal gain 0.775V CH1 switches (3-4) OFF; CH2 switches (1-2) OFF.

4. CH1 LINK socket

CH1 LINK socket is a male XLR in parallel connection with CH1 female XLR, providing an output signal similar to the input.

5. CH1 XLR input

This XLR input is a balanced input, to be connected to sound source equipment.

6. CH1 Binding post output

Connect red color binding post to the positive pole of speaker. Connect black color binding post to the negative pole of speaker. In bridge mode, connect red color binding post to speaker positive connector.

7. CH1 SPEAKON output

There are two ways to use this Speakon output connector:

1) In Stereo or Parallel modes: 1+ connects the positive pole; 1- connects the negative pole.

2) In Bridge mode: 1+ connects to positive pole, 2+ connects to negative pole.

8. Power cord

This is the mains cord. Before plugging it to a AC power supply, please kindly check whether the amplifier marked voltage is conform to local voltage or not. Then connect the power cord to a mains plug conform to local mains socket.

GRAVIS series rear panel function description:

9. Operation mode selector by dip switches allows three settings:

- 1) Stereo mode: dip switches 3 and 4 are OFF-OFF - CH1 and CH2 have independent inputs and outputs.
Two channels volume are independently controlled.
- 2) Parallel mode: dip switch 3 is OFF, and 4 is ON CH1 and CH2 use CH1 input signal.
Two channels volume are independently controlled.
- 3) Bridge mode: dip switches 3 and 4 are ON - CH1 and CH2 use CH1 input signal.
The volume will be controlled by CH1 knob only.

10. Soft clip selector/ DIP Switches 2-1

- 1) With dip switch 2 is ON and CH1 input signal overloads, the circuit will smoothly limit the waveform.
- 2) With dip switch 1 is ON and CH2 input signal overloads, the circuit will smoothly limit the waveform.

11. CH2 LINK socket

CH2 LINK socket is male XLR in parallel connection with CH2 female XLR, providing an output signal similar to the input.

12. CH2 XLR input

This XLR input is a balanced input, to be connected to sound source equipment.

13. CH2 Binding post output

Connect red color binding post to the positive pole of speaker. Connect black color binding post to the negative pole of speaker.

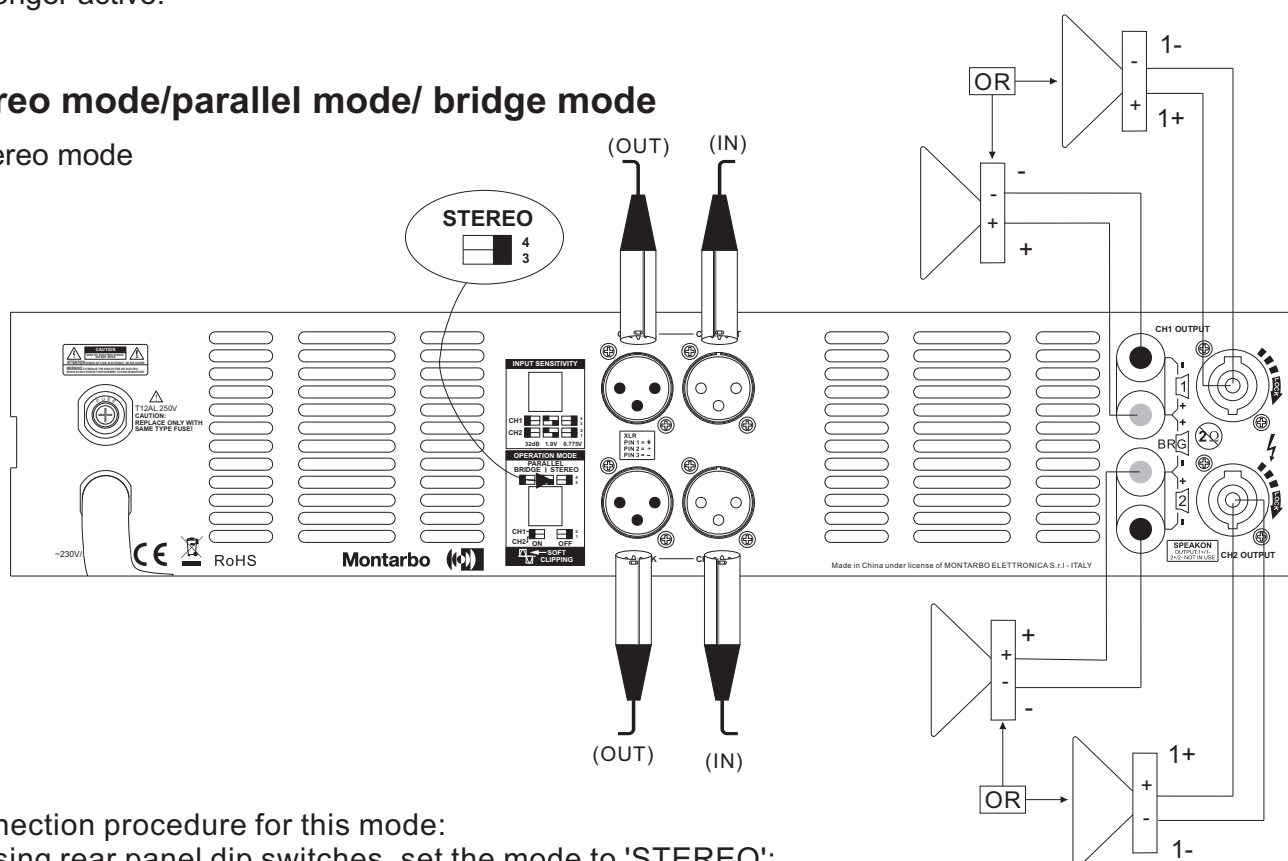
In bridge mode, connect red color binding post to speaker negative connector.

14. CH2 SPEAKON output

In Stereo or Parallel modes connect the SPEAKON output to the loudspeaker as follows: 1+ to the positive pole, 1- to the negative pole. Setting the amplifier to bridge mode, this connection is no longer active.

Stereo mode/parallel mode/ bridge mode

1. Stereo mode



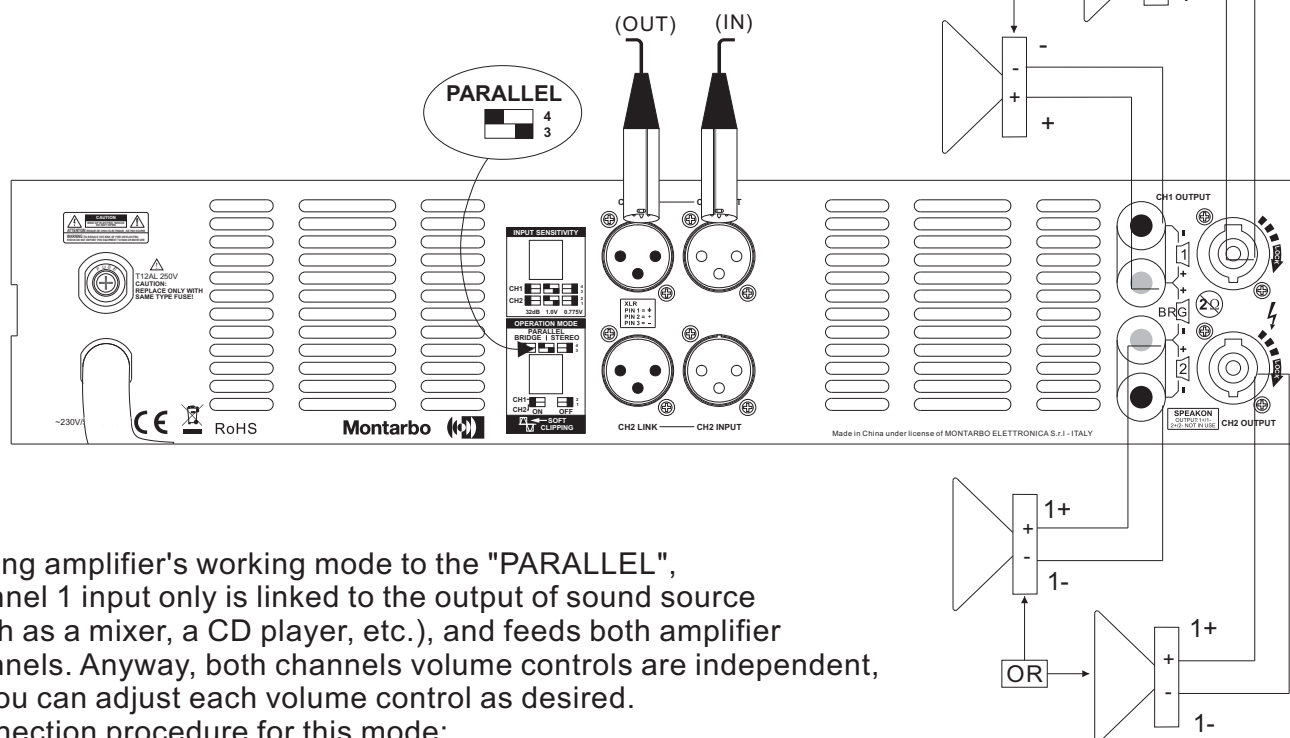
Connection procedure for this mode:

- 1) Using rear panel dip switches, set the mode to 'STEREO';
- 2) CH1 and CH2 inputs are independently connected to CH1/CH2 (L/R) outputs of sound source (such as a mixer, CD player, etc.).
- 3) There are two ways for output connection:
 - A. CH1 SPEAKON (1+/1-) = CH1 (+/-) OUTPUT, CH2 SPEAKON = (1+/1-) = CH2 (+/-) OUTPUT;
 - B. Binding post outputs.

⚠ Attention: Before plugging the input signal connectors please turn the volume to the minimum to avoid any noise, which should damage the connected speakers.

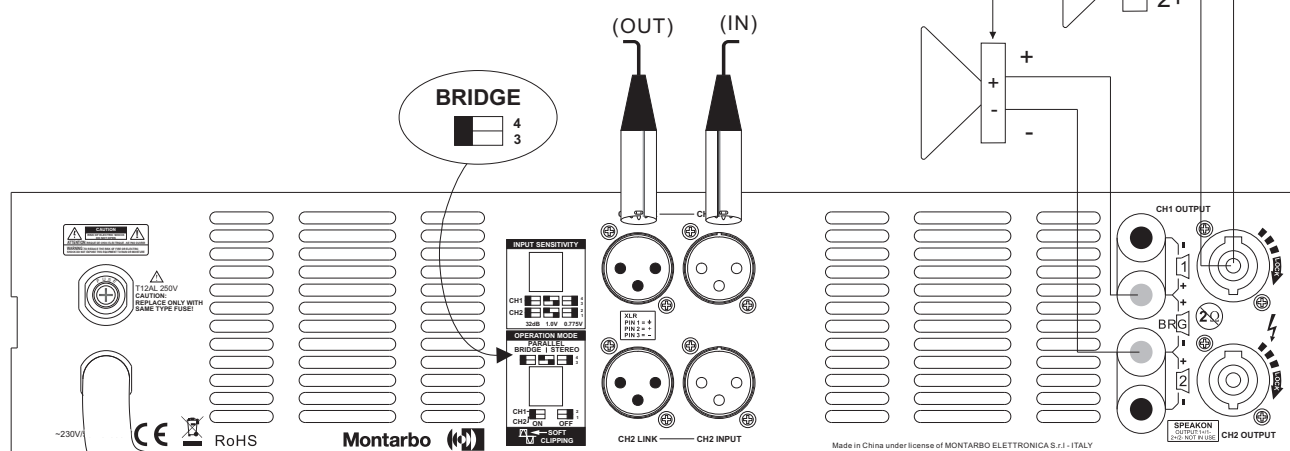
Stereo mode/parallel mode/ bridge mode

2.Parallel mode



⚠ Plugging the input signal connector, please turn the volume knobs to the minimum to avoid any noise, which should damage the connected speakers.

3.Bridge mode



Protection circuits

1. CLIP/Limit

This feature has two protection functions:

- 1) Limiting the input signal level to prevent input signal overloading beyond amplifier rated input level, thus causing square wave output damaging the speaker.
- 2) When the signal waveform distorts, it can automatically adjust gain and limit distorted signal output.
Note: If input signal is +22dBu (10V) even clip limit will be helpless, so do not increase input source signal unlimitedly.

2. Soft clip

This function can be selected by rear panel ON/OFF dip switches. When the input signal exceeds the set range, it will smoothly limit the input waveform range.

3. Overheat protection

- 1) When the amplifier works at full load for a long time, fans could reach higher speed. If this condition continues and the amplifier transistor temperature rises to 95 degrees, the first-step power decrease (halving output power) will be activated, to ensure that even overheating still there's program output. Power reduction according to different music content, amplifier will be recovered to be original output power in 3-10 minutes.
- 2) When the amplifier works for long time in overload, without ventilation or external temperature higher than 35 degrees, the amplifier is in the first phase of power reduction and no eased, the amplifier transistor temperature rises to 105 degrees, the fully protection will be activated and no signal will be output. In this condition, the PROT (protection) LED and temperature LED are simultaneously on.
Suggestion: Do not connect to the amplifier loads under 4 ohms, don't place the amplifier in high-temperature environment and without air flow.

4. VHF protection

If the amplifier output has reached a certain level and large amount of frequencies exceeding 10KHz, like a mic feedback, then the amplifier may go into VHF protection after 3 seconds. In this case the PROT (protection) LED on the front panel will be lit, the amplifier will have no output, but it will be recovered automatically after 10 seconds protection circuit activation. If the output signal does not change, the VHF protection will continue to be active.

5. Short-circuit protection

All our company Gravis series amplifiers are provided of short-circuit protection. This protection makes the output transistors working in a safe range. When output is in short-circuit, the PROT (protection) LED on the front panel will be lit and the amplifier has no output. The amplifier will be recovered 10 seconds after the end of short-circuit removal.

6. AC Power Supply Protection

If the AC mains voltage is lower than the minimum allowed working voltage (~165V), the power supply will be automatically turned off until when the mains voltage returns in regular range.

7. DC protection

- 1) In order to protect the speaker, the DC protection circuit will be activated, when the output signal has large DC voltage (=2.6V). In this case the PROT (protection) LED on the front panel will be lit, and the amplifier will have no output.
- 2) If there is DC output and the relay circuit is open, there's a protection circuit to force the amplifier output to burn the fuse to protect the speakers.

Ex-factory settings

1. All the volume adjustment knobs were set at "-80dB" position.
2. Power switch was set "OFF".
3. Soft clip dip switches set "ON".
4. Working mode selector dip switches set at "STEREO" place.
5. Sensitivity selector dip switches set at "0.775V" place.

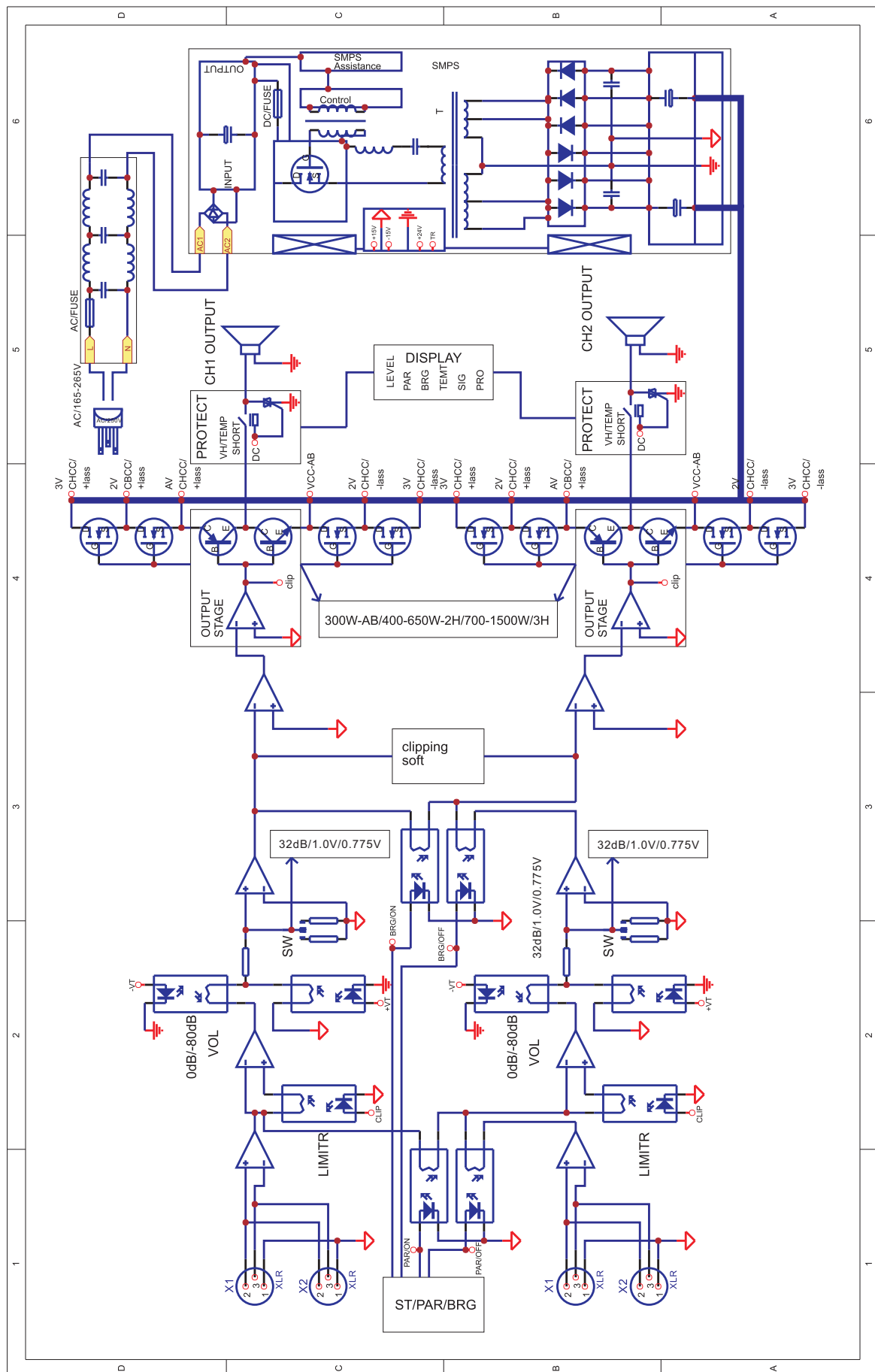
Use environment

1. The room temperature shall be kept around 25 degree when used indoor. The amplifier can't be used at too high temperature environment or such temperature may cause components damages due to over-heat.
2. If used outdoor, please avoid sunshine and rain damped, or it would shorten equipment's life.
3. a. Environment temperature: -10° C~40° C
c. Air pressure: 80kPa~106kPa
- b. Relative humidity: less than 90%

Applications

Gravis series has been designed for live concert, disco, night club, etc.

Block diagram



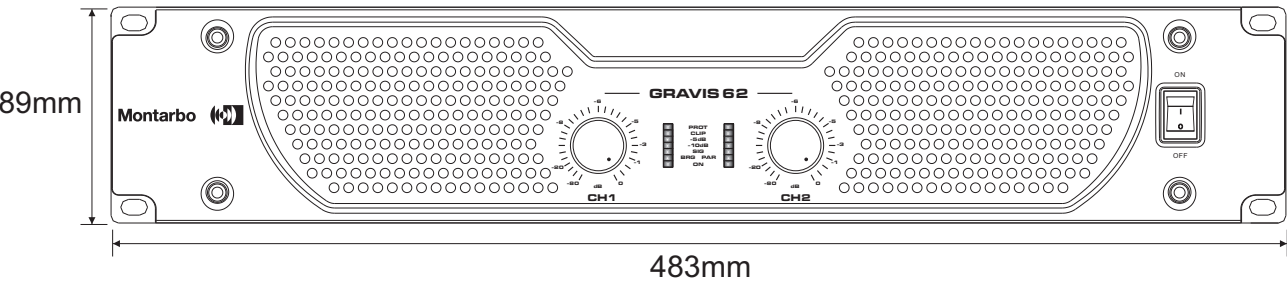
Specifications

MODEL ITEM	GRAVIS 24	GRAVIS 30	GRAVIS 46	GRAVIS 62
8 Ω stereo power*	450Wx2	650Wx2	850Wx2	1200Wx2
4 Ω stereo power*	750Wx2	1100Wx2	1400Wx2	2000Wx2
2 Ω stereo power**	1150Wx2	1400Wx2	2300Wx2	3000Wx2
8 Ω bridge power*	1600W	2280W	3000W	4100W
4 Ω bridge power**	2550W	3200W	4600W	6500W
Frequency response	20Hz-20KHz@8 Ω ,(+/-0.5dB)			
THD+N(THD%)	<0.1%	<0.1%	<0.1%	<0.1%
Slew rate	20V/us	20V/us	20V/us	20V/us
Damping factor (@100Hz)	>200	>200	>200	>200
Dynamic range	≥ 80 dB	≥ 80 dB	≥ 80 dB	≥ 80 dB
S/N rate	≥ 90 dB	≥ 90 dB	≥ 90 dB	≥ 90 dB
Input Sensitivity	32dB/1.0V/0.775V	32dB/1.0V/0.775V	32dB/1.0V/0.775V	32dB/1.0V/0.775V
Voltage gain	38dB	38dB	38dB	38dB
Input Impedance	Bal 20K/Unbal 10K			
Output circuit class	Class 2H	Class 2H	Class 3H	Class 3H
Protection	Soft start, short circuit, overload, DC, over-heat, THD clip/limit, output volume increase gradually function after switch on, lack of voltage of SMPS, VHF, infrasound frequency protection, over-power limit, output power will be limited if over-heat			
Cooling air-flow	Airflow from front panel to rear panel.			
Power voltage frequency	$\sim 230V \pm 10\%$ /50-60Hz			
Gross weight	12Kg	12Kg	15Kg	16Kg

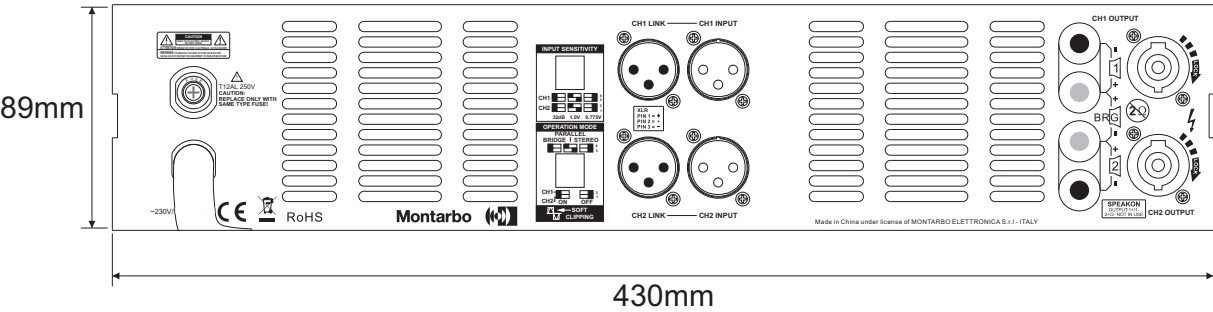
Power has been tested under EIAJ standard @ 230V.

GRAVIS series dimensions:

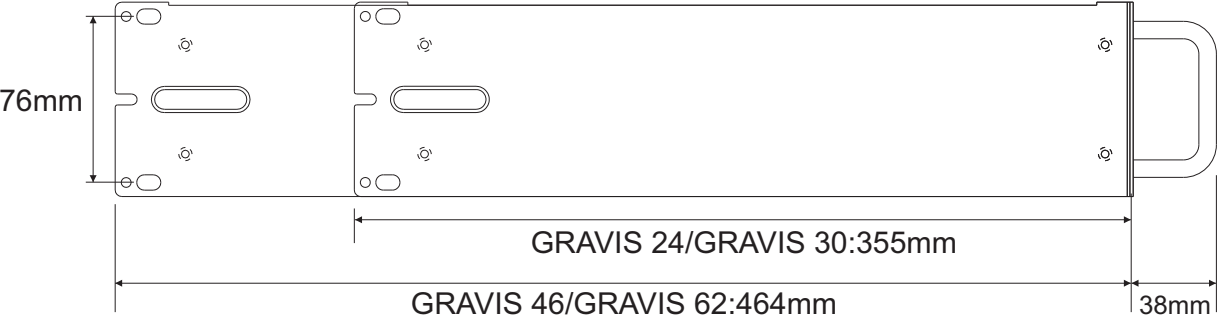
Front panel



Rear panel



Side panel



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