

Audison measurement standards

(Power measures taken according to **audison** standard, 1998 edition)

- 12VDC and 13.8VDC;
- 1 kHz or crossover cut-off frequency;
- 0.3% THD @ nominal power; 1% THD @ continuous power;
- Tolerance: +10%; -5%;
- Continuous power given by RMS Voltage measured on resistive load;
- The nominal power of the amplifier is measured upon a battery voltage of 12 Volts with a 4 Ohm load and with all channels in function.

audison

OWNER'S MANUAL

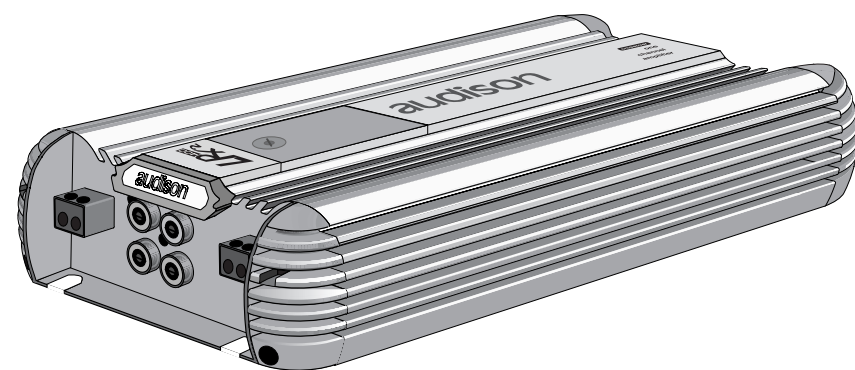
CAR POWER AMPLIFIERS

LR¹⁵⁰_{X2}

LR²⁵⁰_{X2}

LR⁵⁰⁰_{X2}

PRINTED IN ITALY - Code 10125760



audison
is a division of **elettromeia**

62018 Potenza Picena (MC) Italy

Tel. 0733.870870 • Fax 0733.870880 • <http://www.audison.com> • e-mail: com@audison.com

INTRODUCTION

Audison thanks you for preferring this product and compliments you on your choice since it was designed in order to insure outstanding musical and instrumental performances.

Before use instructions, please carefully read the safety norms you have to respect in order to avoid unpleasant inconveniences and to enjoy this product at best.

PRECAUTIONS

- Avoid to install the amplifier where temperature is below 0°C or above 55°C and in non ventilated places.
- The amplifier needs 12VDC power supply voltage with negative to ground. Be sure that your car electric system is compatible with the amplifier ordinary functioning.
- For safer driving, we recommend to adjust volume not to drown external traffic sounds.

WARNING!:

While installing the amplifier, make sure that the cable coming from the battery positive pole (+) doesn't touch the amplifier heat sink.

The heat sink is directly connected to the battery negative pole (-) through the screws which fix it to the vehicle chassis. Its contact with the positive pole cable would cause short circuit and, thus, possible fires and battery damages.

Please connect power supply cables to the amplifier terminal blocks (POWER + and -) before and to battery AFTER, to get maximum safety.

CAUTIONS

INPUTS: If the source output signal ground (PRE OUT) is not connected to the source chassis and the system sound is not powerful enough or is distorted, try to solve the problem by connecting the output signal cable braided shield (PRE OUT) to a point of the source chassis.

OUTPUTS: Don't connect -L and -R power outputs to each other or to ground (car chassis). In case you use an external crossover, make sure that channels grounds are not connected one to the other.

audison cable PRODUCTS FOR ELECTRIC CONNECTIONS



audison cable



RECOMMENDED POWER SUPPLY CABLES
Cable must be chosen according to its length and to the system total power.

MODEL	POWER SUPPLY TERMINAL BLOCKS		CABLES		BATTERY + AND GROUND		
							f mm (inch)
LR_{X2}¹⁵⁰	4 Ohms	MAINCRIMP 10	For 12 A.W.G.	MAINPOWER 10 (red and black)	PR 52.17R & B	RB 6.34.1G RB 8.34.1G	f = 6 (.24) f = 8 (.31)
	2 Ohms (4 Ohms mono)	MAINCRIMP 10	For 10 A.W.G.	POWERFLOW 9 (red and black)	PR 52.17R & B	RB 6.34.1G RB 8.34.1G	f = 6 (.24) f = 8 (.31)
LR_{X2}²⁵⁰	4 Ohms	MAINCRIMP 10	For 11 A.W.G.	MAINPOWER 10 (red and black)	PR 52.17R & B	RB 6.34.1G RB 8.34.1G	f = 6 (.24) f = 8 (.31)
	2 Ohms (4 Ohms mono)	MAINCRIMP 8	For 8 A.W.G.	MAINPOWER 8 (red and black)	PR 62.19R & B	RB 6.45.1G RB 8.45.1G	f = 6 (.24) f = 8 (.31)
LR_{X2}⁵⁰⁰	4 Ohms	MAINCRIMP 10	For 9 A.W.G.	POWERFLOW 9 (red and black)	PR 52.17R & B	RB 6.34.1G RB 8.34.1G	f = 6 (.24) f = 8 (.31)
	2 Ohms (4 Ohms mono)	MAINCRIMP 8	For 6 A.W.G.	MAINPOWER 5 (red and black)	PR 80.24R & B	RB 6.58.1G RB 8.58.1G	f = 6 (.24) f = 8 (.31)

RECOMMENDED SPEAKERS CABLES

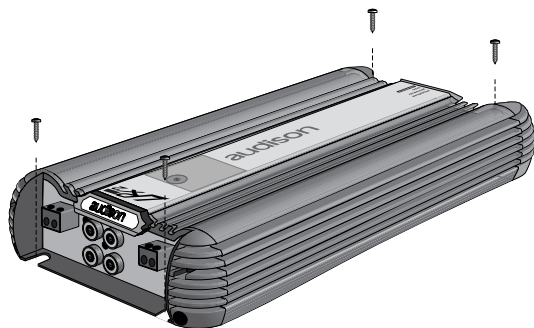
SPEAKERS TERMINAL BLOCKS	CABLE	
MAINCRIMP 14	096/20 MV	2 x 16 A.W.G.
MAINCRIMP 14	093/20	2 x 14 A.W.G.
MAINCRIMP 14	092/20	2 x 12 A.W.G.

RECOMMENDED SIGNAL CABLES

BEST series PIN-RCA / PIN-RCA extensions are available in the following sizes

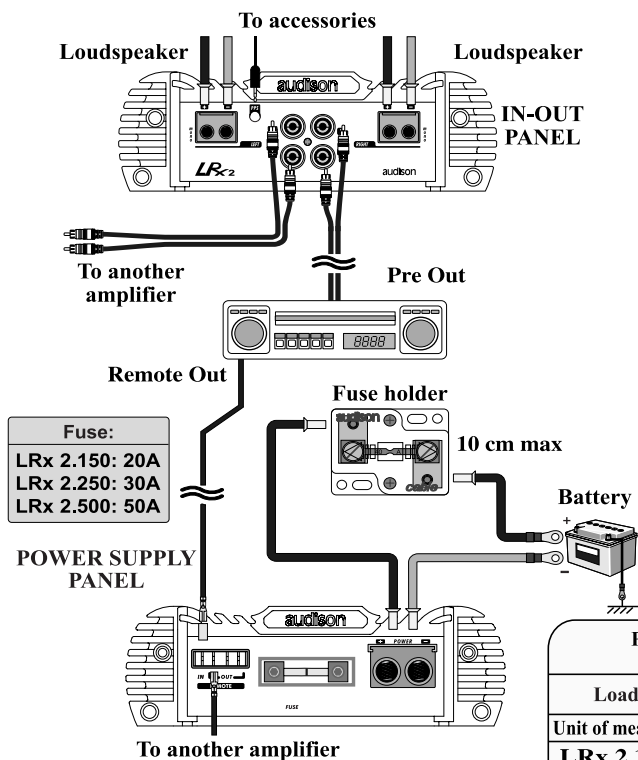
	BS 50 cm 50 (19.68 inch)	BS 300 cm 300 (118.11 inch)
	BS 100 cm 100 (39.37 inch)	BS 400 cm 400 (157.48 inch)
	BS 150 cm 150 (59.05 inch)	BS 450 cm 450 (177.16 inch)
	BS 200 cm 200 (78.74 inch)	BS 500 cm 500 (196.85 inch)
		BS 600 cm 600 (236.22 inch)

AMPLIFIER FIXING



Fix the amplifier through the self-tapping screws (4.2 x 16) given with it.

ELECTRIC CONNECTIONS



CAUTION!

For the system safer protection, we recommend the use of a strip fuse on the cable that connects the battery positive pole to the amplifier POWER (+) terminal block. This fuse has to be installed about 10 cm far from the battery; its value will have to be equal or slightly higher (+10% approx.) than consumption @13.8 VDC, according to the different configurations (see "Technical features"). It will have to be equal to the sum of the values of all fuses in case system consists of several amplifiers or in case amplifiers have several fuses.

POWER SUPPLY CABLE SIZE Length: 4/5 m				
Load	4 Ohms		2 Ohms (4 Ohms mono)	
Unit of measure	mm ²	A.W.G.	mm ²	A.W.G.
LRx 2.150	3	12	5.1	10
LRx 2.250	3.8	11	7.6	8
LRx 2.500	6.5	9	12	6

Description	p. 4
In-Out panel	
Functions	5
Power supply panel	
Functions	6
Fuse replacement	7
Controls panel	
Functions and controls	8
Technical features	
Size for fixing	10
LRx 2.150	10
LRx 2.250	11
LRx 2.500	11
Accessories	
CLK2 - LRx Cooling Kit	12
Configurations	
Block diagram	14
Configurations table	15
Controls panel diagram	15
Configuration examples	
Mono (Front+Sub)	16
Front+Sub	17
Front+Sub (Trimode)	18
Front+Rear+Sub	19
Multichannel	20
Installation	
Logo rotation	21
Amplifier fixing	22
Electric connections	22
audison cable products for electric connections	23
audison measurement standards	24

DESCRIPTION

Audison LRx 2.150, LRx 2.250 and LRx 2.500:

Car stereo power amplifiers characterised by excellent musical performances, small size and outstanding energy reserve.

Their power supply stage is made with 70A MOSFETs (one pair in LRx 2.150, two pairs in LRx 2.250 and three pairs in LRx 2.500); it is PWM, stabilised and oversize.

Input stage is provided with a special circuit (LNS) which permits the system disturbances rejection, reducing noise that is usually due to the vehicle electric parts (alternator, electronic injection, etc.), without altering musical signal quality.

Driver stages are characterised by a very linear circuitry. They have coupled differential transistors and an A Class complementary voltage amplifier. Power sections have Darlington configuration with high gain and SOA (Safety Operation Area) BJT TO247. Thanks to their great capacity to supply current, these amplifiers can easily drive even the most difficult loads and satisfy whatever power needs. They can give powers between 80 and 200W per channel with 4 Ohm load and between 110 and 330W per channel at 2 Ohms in continuous mode. Powers range increases in mono mode (bridged) and it is between 220 and 660W on 4 Ohms. Differently from what occurs with other amplifiers, LRx 2 are not blocked by protection systems immediately below 2 Ohms. Their exclusive "Overload Limiter" circuit allows them to go on working, limiting output power and pointing out how hard the applied load is by the "Limit" LED blinking.

Their big power reserve, their constant control at low frequencies and their exquisite timbre qualities make them ideal components to realise systems designed to attain outstanding musical features and very high sound pressures (SPL).

LRx 2 have two bypass HI-PASS and LO-PASS filters with non independent frequencies. Their configuration is Butterworth, 12dB/Oct.

A switch permits to decide whether to send the HI-PASS section or the LO-PASS one to power stages.

In case LRx amplifiers are used in extremely difficult conditions (very low loads) or in installations where space is too narrow and their heat sink cooling is not enough, they can be employed together with CLK2 cooling system (optional). It is a system made of two units to apply onto the amplifier sides; each of them is provided with an electronically controlled fan that allows the amplifier thermal stabilisation (see "CLK2 - LRx Cooling Kit").

LRx 2 protection includes:

- **RGP** (Resettable Ground Protection) circuit; in case a short circuit occurs between loudspeakers outputs and car chassis, it detects a high current flow in the pre-input ground and acts by putting the amplifier in stand-by, protecting its circuitry;
- a device against short circuits and against DC in the outputs, to protect loudspeakers;
- a device that detects the amplifier temperature excessive increase and stops its functioning until optimal conditions occur again.

Once the causes which implied protection circuits intervention have been checked and solved, the amplifier is reset by switching it off and on again.

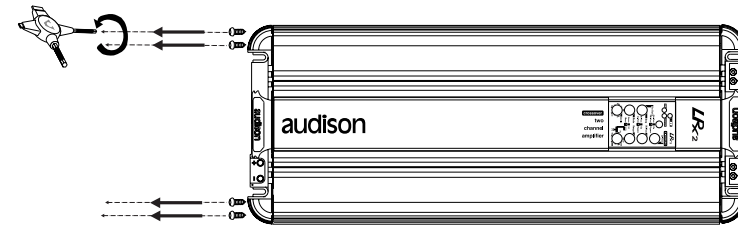
The amplifier is also provided with another general protection which is insured by an internal strip fuse, very easy to reach.

Optional:

- CLK2 cooling system is available upon request.

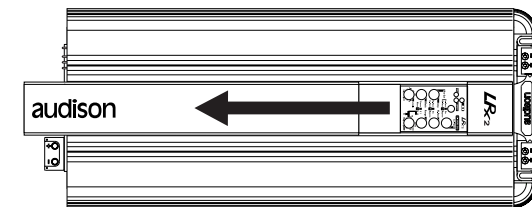
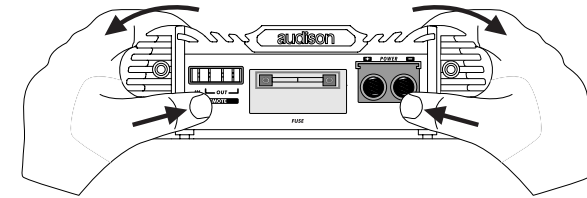
INSTALLATION

LOGO ROTATION



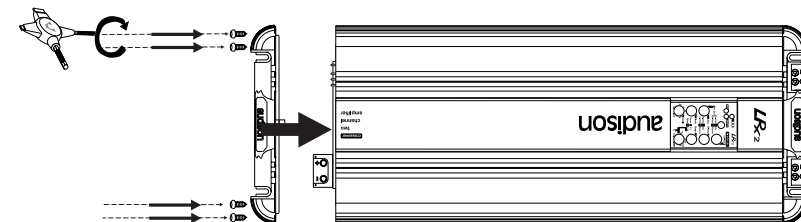
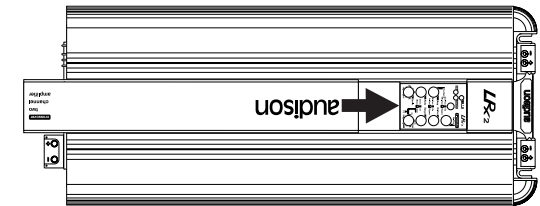
1 - Remove the transparent cover which protects controls and then the 4 screws which block the metal plate by using multispanner.

2 - Remove the plate without damaging the silkscreen printed panel which will have to stay on. We suggest that you seize both plate grips with your hands and pull them by blocking the silkscreen printed panel with your fingers against the amplifier chassis at the same time. This will permit to remove the plate from the panel without damages.



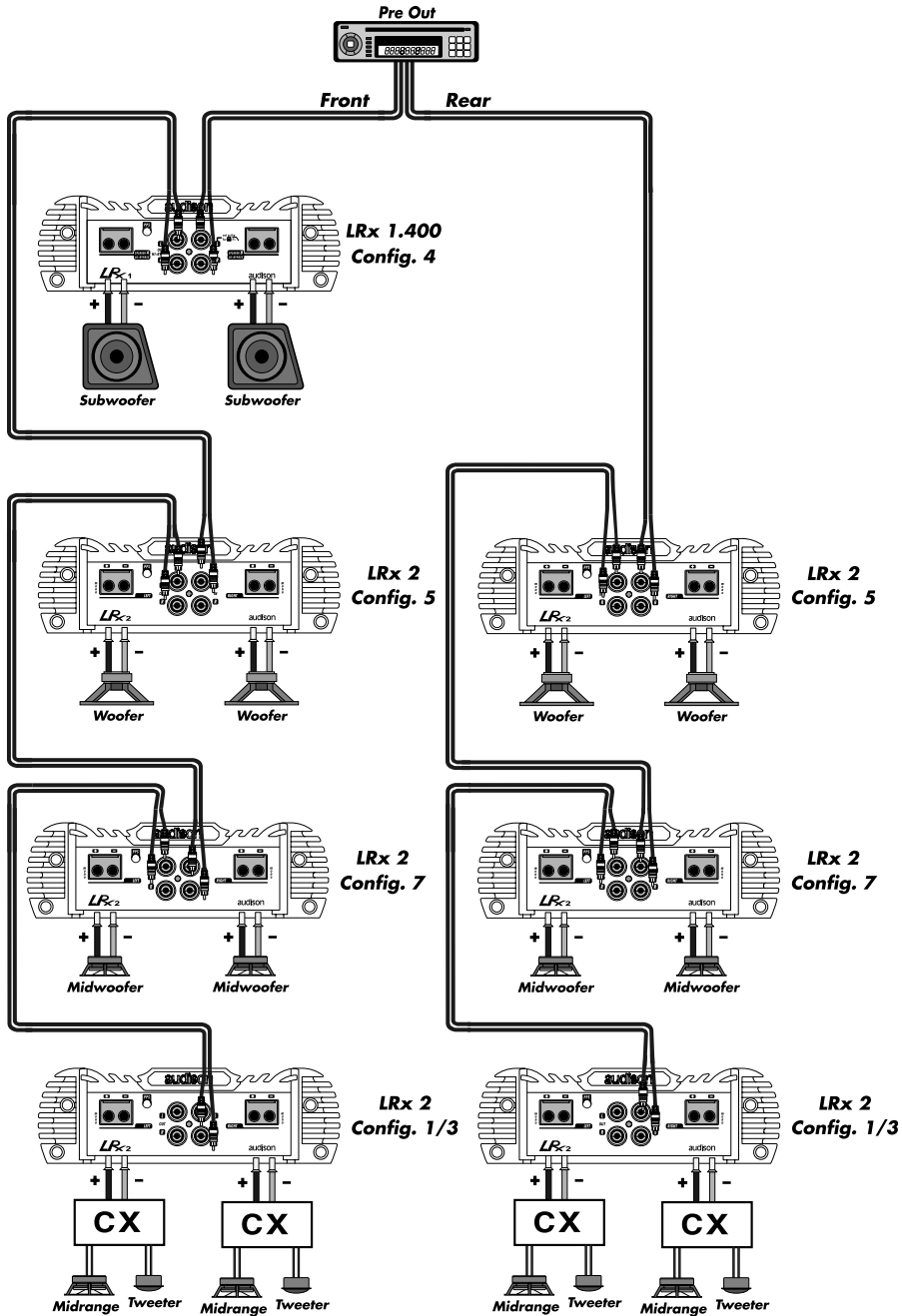
3 - Remove the strip with **audison** logo.

4 - Put the strip back again after turning it, so that **audison** logo is upside down.



5 - Mount the plate back by fixing it through the screws; then, re-assemble the transparent cover which protects controls

MULTICHANNEL

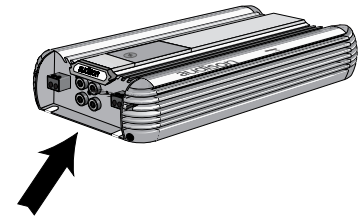


FUNCTIONS

1

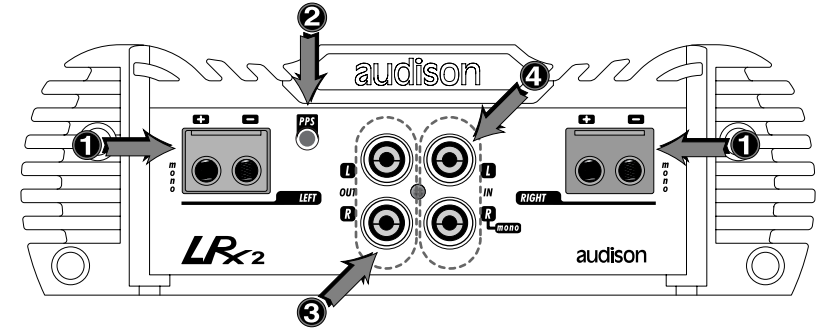
LEFT/RIGHT

Power outputs of the amplifier left and right channels. Connect the speakers cables to these outputs according to polarity. Terminal blocks accept cables up to 9 A.W.G. max (see "audison cable products for electronic connections" as far as their size is concerned). We recommend the use of audison cable products. Please use +L and -R terminal blocks called *mono* in order to connect the amplifier in bridge and exploit the maximum power insured by this configuration.



2

PPS (Phantom Power Supply)
Power supply socket for audison external audio accessories.



3

OUT

Left (L) and right (R) channels preamplified outputs (PRE OUT), to send to an additional amplifier. Please see "Configurations table" in order to check the type of signal.

4

IN

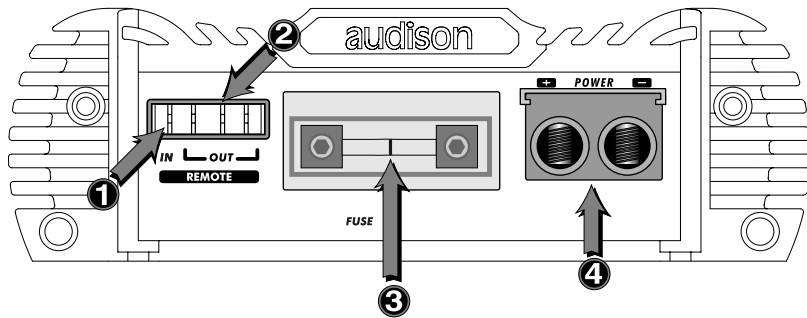
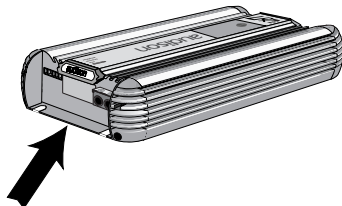
Amplifier left (L) and right (R) channels inputs (PRE IN). The preamplified outputs (PRE OUT) of a source (head unit, CD player, DAT, etc.) or of an external electronic crossover must be connected to them. Connect only the right (R) channel input in order to use the amplifier in mono.

FUNCTIONS

1

REMOTE IN

Terminal to connect Remote cable, which comes from the source and which controls the amplifier switching on. Applied voltage must be between 7 and 15VDC.



2

REMOTE OUT

Terminals to repeat the switching on control (Remote IN) coming from the source. They are used to switch on another amplifier or device in the system simultaneously. Available voltage is the same as the one applied on Remote IN.

3

FUSE (LRx 2.150: 20A - LRx 2.250: 30A - LRx 2.500: 50A)

Strip fuse. It insures the amplifier general protection. In case the fuse breaks down, please replace it by respecting its original value.

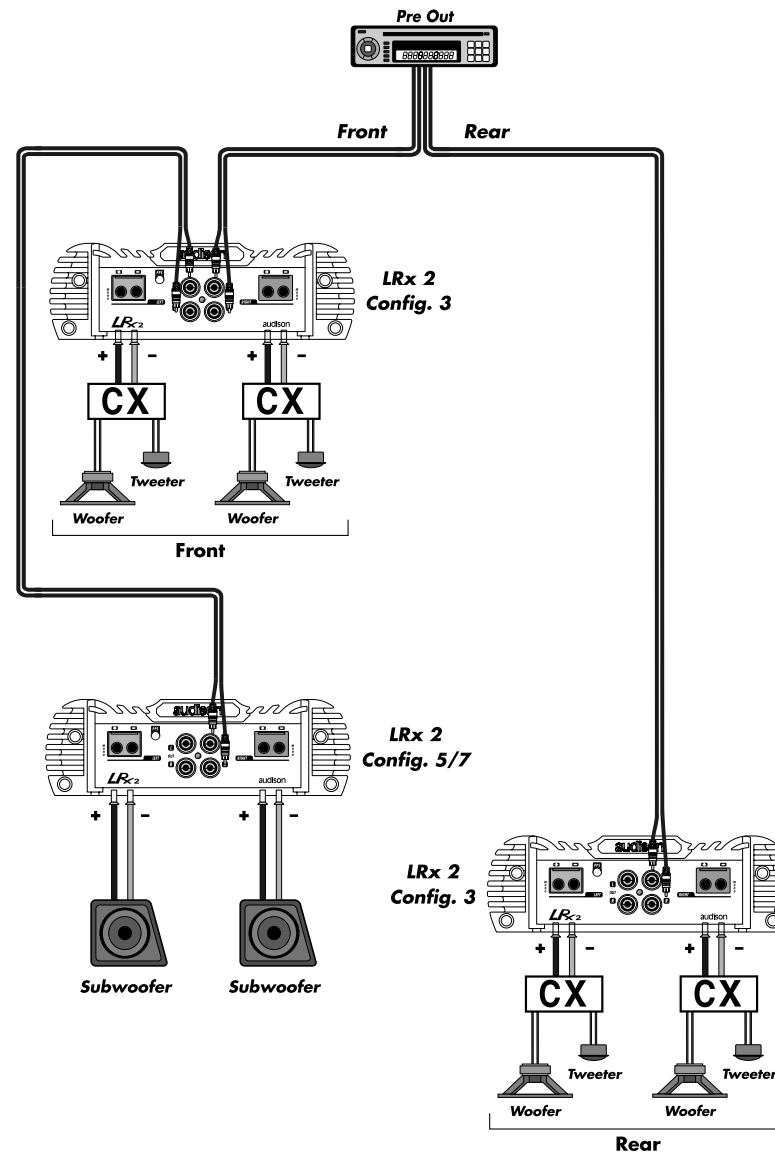
CAUTION: If you want to protect the system even more, please put a strip fuse onto the cable which connects the battery positive pole to the amplifier POWER (+) terminal block (see "Electric connections").

4

POWER

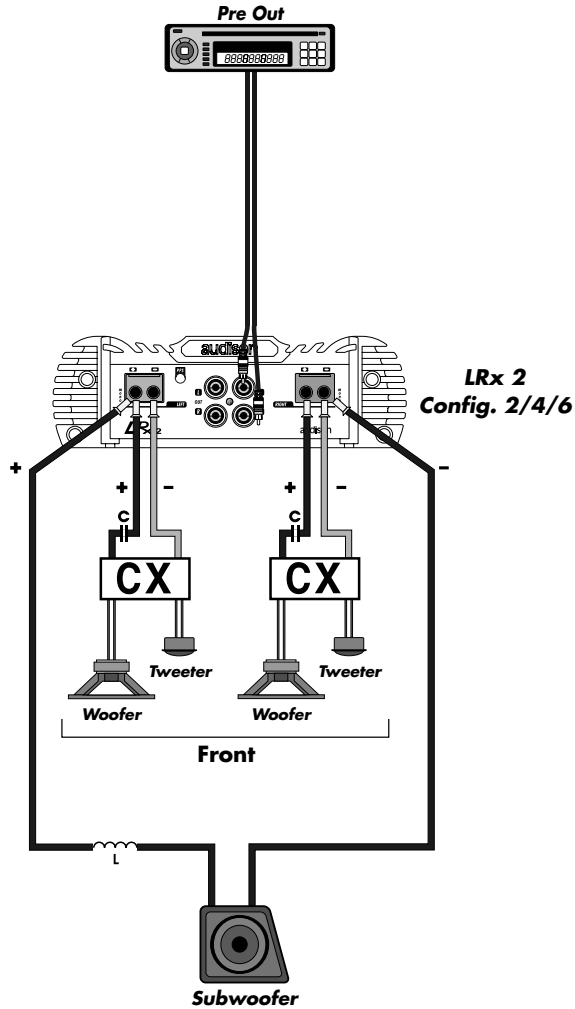
Terminal blocks for the amplifier power supply cable connection. Connect positive and negative poles according to indicated polarities. Holes have 8mm diameter and accept cables up to 3 A.W.G. max. In order to get the best current transfer, please use power supply cables with as big a section as possible. **audison cable** catalogue offers you a complete range of such products which can satisfy whatever demands; you can also find **Maincrimp** terminals in it. We strongly recommend their use because they contain the cable non protected end and allow the terminal block to fasten all its useful section.

FRONT+REAR+SUB



CX PASSIVE CROSSOVER

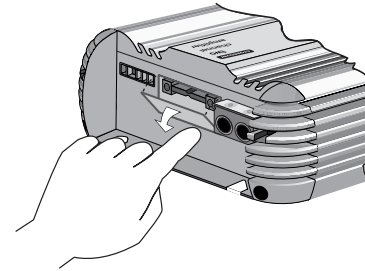
FRONT+SUB (TRIMODE)



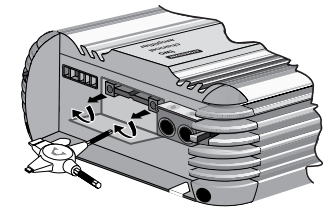
FREQUENCY Hertz	SPEAKERS IMPEDANCE			
	4 Ohms		8 Ohms	
	L (mH)	C (μF)	L (mH)	C (μF)
60	10.6	660	21.0	330
80	7.9	495	15.9	245
100	6.4	400	12.7	200
120	5.3	330	10.6	165
150	4.3	265	8.5	132

CX PASSIVE CROSSOVER

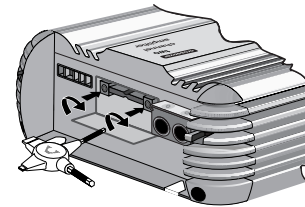
FUSE REPLACEMENT



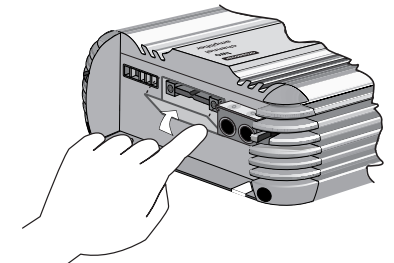
1 - Open the transparent cover by pushing the two teeth in its lowest corners to the direction indicated by the arrows.



2 - Remove the screws which fasten the fuse to eliminate pieces of the broken one; prevent them from going into the device.



3 - Check the value of the new fuse to assemble, then fix it by gradually and alternately fastening the two screws. This will avoid voltage drops along the line and will make the device perfect functioning easier.



4 - Close the transparent cover.

FUNCTIONS AND CONTROLS

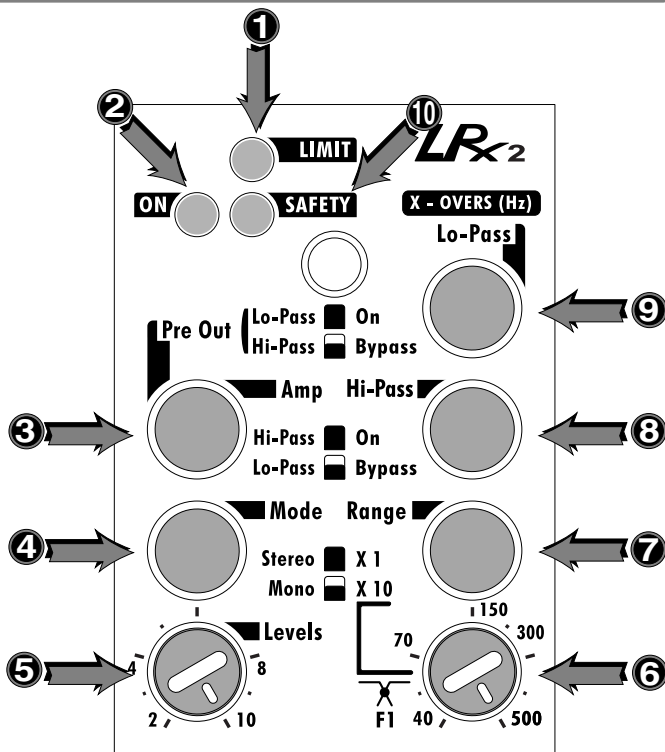
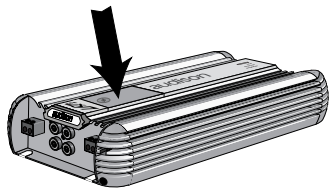
1

LIMIT (orange LED)

It indicates the Overload Limiter circuit is on.

Caution:

When this led is on (although sporadically), it means the applied load is a hard one. The activation of Overload Limiter circuit (output power limiter) will anyway allow the amplifier to function without distortions. In case Overload Limiter gets on too frequently (at every power peak), you will need to check if there are any failures or a too difficult load (that's to say impedance is about 50% lower than the minimum recommended one). The amplifier can go on functioning in these conditions but power will inevitably decrease.



2

ON (green LED)

It indicates the amplifier is on.

3

AMP: HI/LO-PASS (Pre Out: Lo/Hi-Pass)

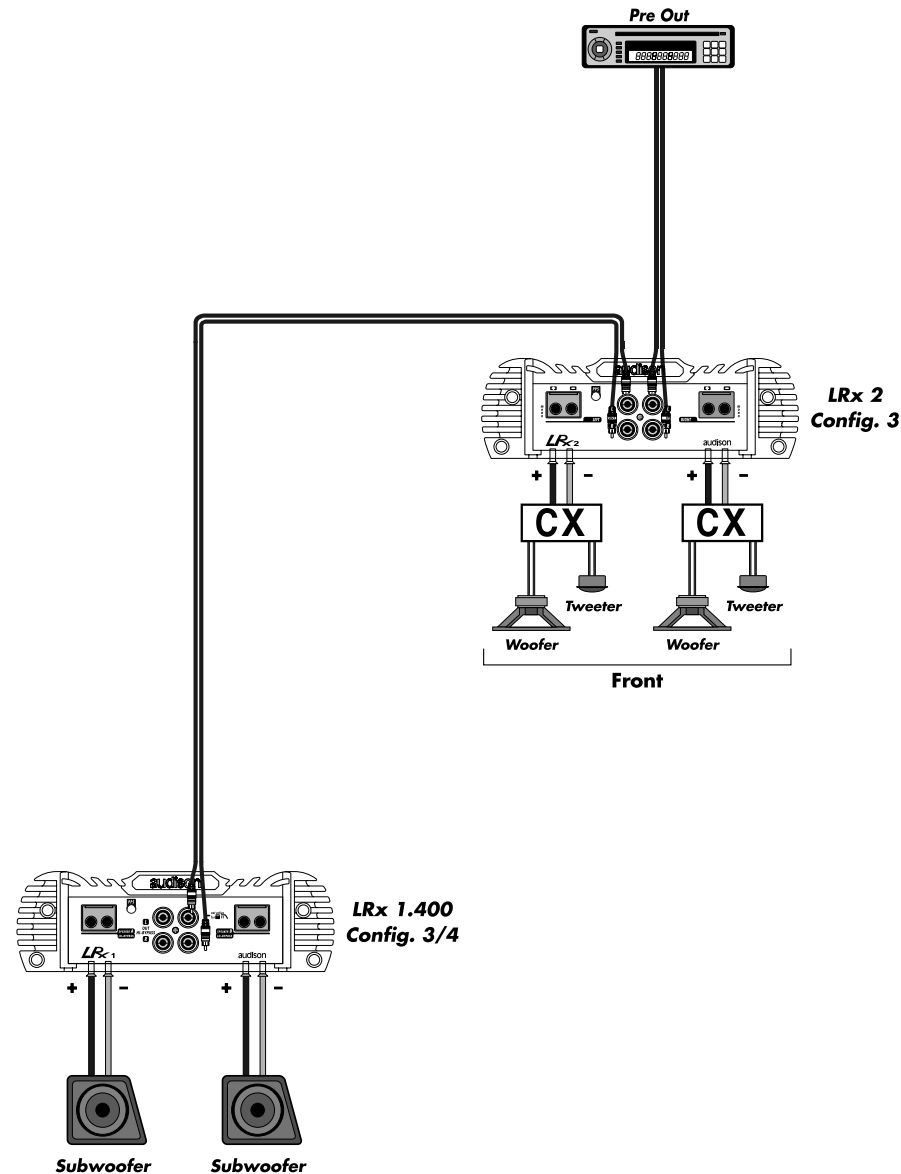
It permits to choose which type of signal (Lo-Pass or Hi-Pass) to send to the amplifier stage. The unselected signal will, thus, be on the **PRE OUT** output.

Amp: Hi-Pass ⇒ Preout: Lo-Pass

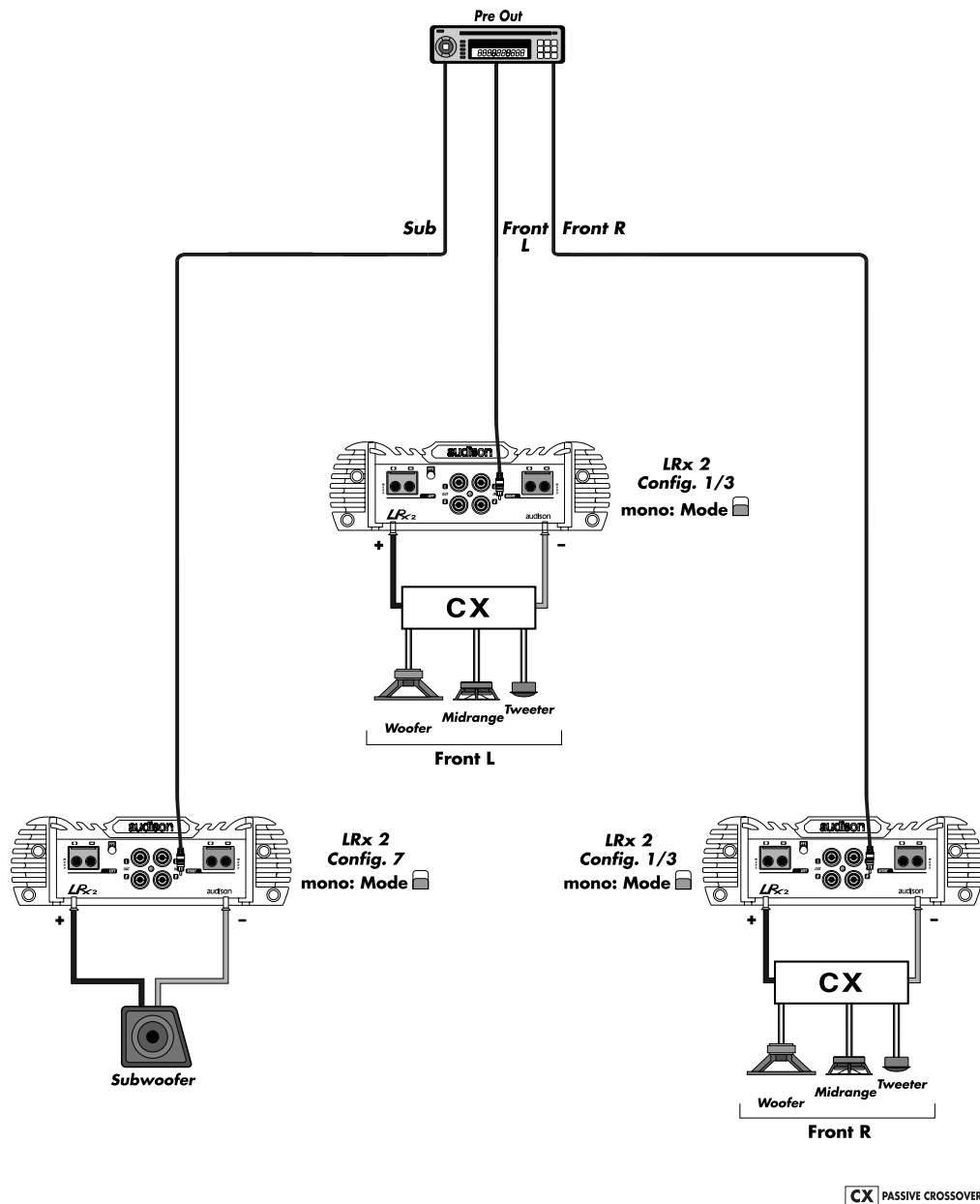
Amp: Lo-Pass ⇒ Pre Out: Hi-Pass.

(see "Configurations table").

FRONT+SUB



MONO (FRONT+SUB)



4

MODE

It permits to switch the amplifier functioning mode between Stereo and Mono (bridged).

8

HI-PASS

It permits to activate (**On**) or bypass (**Bypass**) the HI-PASS filter. In this way, a Hi-Pass signal or a full range one will be on the output, that is selected by **AMP: HI/LO-PASS** switch.

5

LEVELS

It adjusts the input sensitivity of both amplifier channels and sets their output level.

9

LO-PASS

It permits to activate (**On**) or bypass (**Bypass**) the LO-PASS filter. In this way, a Lo-Pass signal or a full range one will be on the output, that is selected by **AMP: HI/LO-PASS** switch.

6

F1

It permits to set Lo-Pass and Hi-Pass crossover point between 40 and 500 Hz.

7

RANGE: x1/x10

Frequencies range switch.

It permits to select the preset frequencies ranges within which to realise the crossover point between Lo-Pass and Hi-Pass through F1.

x1 ⇒ 40 ÷ 500Hz

x10 ⇒ 400Hz ÷ 5kHz

10

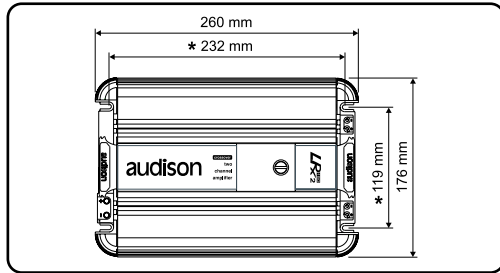
SAFETY (red LED)

It indicates that the amplifier protection circuits are on. In order for the amplifier to work again, you need to switch the system off and then on after 10 seconds at least. We recommend to check all connections before switching the amplifier on again.

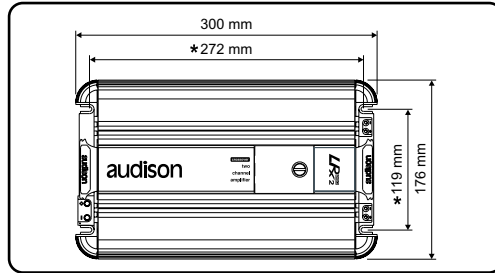
If LED stays on, please contact Audison authorised after sale centres.

SIZE FOR FIXING

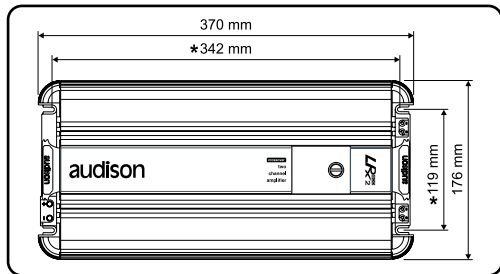
LRx 2.150



LRx 2.250



LRx 2.500



* Drilling dimensions for fixing

LRx 2.150

POWER SUPPLY

Voltage: 11 ÷ 15 VDC
 Idling current: 0.5 A
 Idling current when off: 0.02 mA

Consumption @ 13.8 VDC
 (Max Musical Power):

- A config. (see Output Power): 11 A
 - B/C config. (see Output Power): 18.5 A

AMPLIFIER STAGE

Distortion – THD (1kHz): 0.009 %
 Bandwidth (-3dB): 4 Hz ÷ 85 kHz
 S/N ratio (A weighed @ 1V): 105 dB
 Damping factor (1 kHz, 4 Ohms): 240
 Input sensitivity: 0.2 ÷ 5 VRMS
 Input impedance: 15kOhms

Load impedance:

- 2 Ch. stereo: 4-2 Ohms
 - 1 Ch. mono in bridge: 4 Ohms

Nominal output power (RMS)
NP @ 12VDC; THD 0.3%: 70W x 2 (4 Ohms)

Output power (RMS) @ 13.8 VDC; THD 1%
 - A config.: 80W x 2 (4 Ohms)
 - B config.: 110W x 2 (2 Ohms)
 - C config.: 220W x 1 (4 Ohms)

FILTERS/INPUTS

IN L/R: Bypass/ 12dB/Oct. Hi-Pass/Lo-Pass.
 (40 ÷ 500 Hz/400 ÷ 5000 Hz)

Pre Out: Bypass/ 12dB/Oct. Hi-Pass/Lo-Pass.
 (40 ÷ 500 Hz/400 ÷ 5000 Hz)

Inputs: IN L-R

OTHER FUNCTIONS

Remote IN: 7 ÷ 15 VDC – 1 mA
 Remote OUT: 12 VDC – 10 mA
 Auxiliary power supply (PPS):. ±12 VDC – 300 mA
 Fuse: 20 A

MAX SIZE (L x H x D): 176X56X260 mm

WEIGHT: 2.6 kg

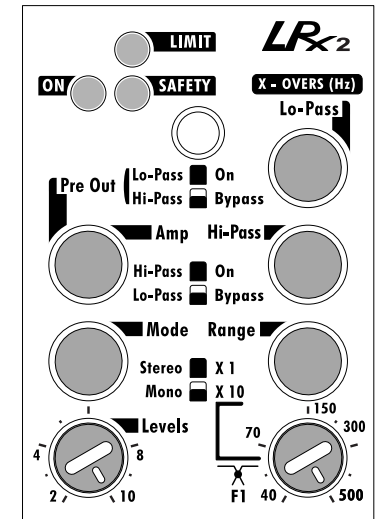
CONFIGURATIONS TABLE

LRX 2 models can be configured as follows:

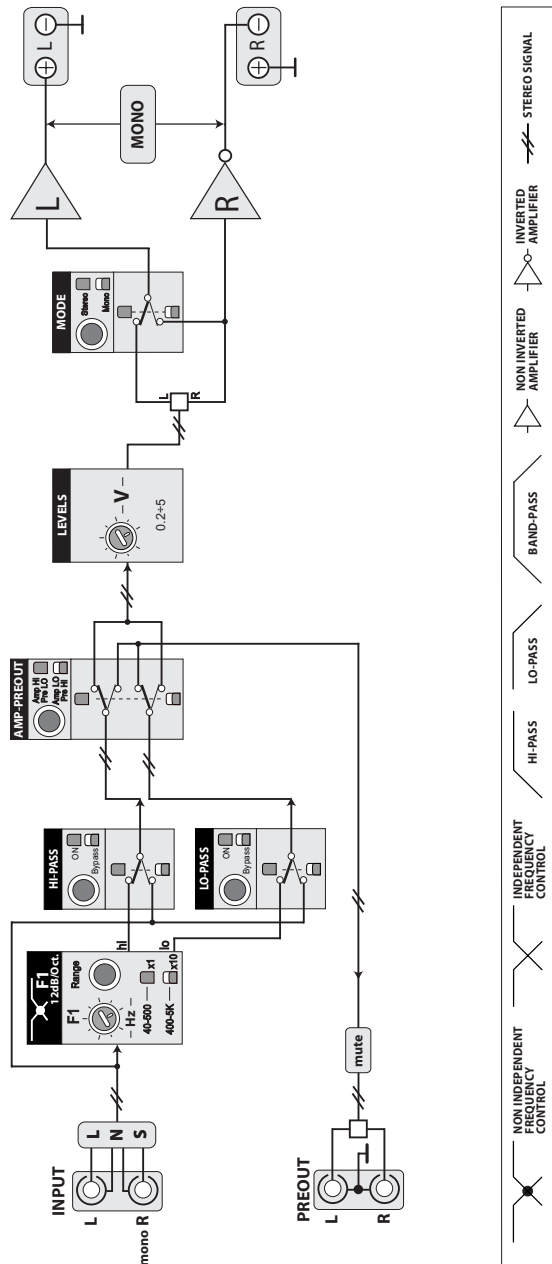
- Config. 1 = Speaker L-R (Hi 12 dB); Pre Out (Lo 12 dB)**
- Config. 2 = Speaker L-R (Full Range); Pre Out (Lo 12 dB)**
- Config. 3 = Speaker L-R (Hi 12 dB); Pre Out (Full Range)**
- Config. 4 = Speaker L-R (Full Range); Pre Out (Full Range)**
- Config. 5 = Speaker L-R (Lo 12 dB); Pre Out (Hi 12 dB)**
- Config. 6 = Speaker L-R (Full Range); Pre Out (Hi 12 dB)**
- Config. 7 = Speaker L-R (Lo 12 dB); Pre Out (Full Range)**

CONFIG.	SPEAKER L/R	PRE OUT	AMP/PRE OUT	HI-PASS	LO-PASS
1			HI/LO	ON	ON
2			HI/LO	BYPASS	ON
3			HI/LO	ON	BYPASS
4			HI/LO	BYPASS	BYPASS
5			LO/HI	ON	ON
6			LO/HI	ON	BYPASS
7			LO/HI	BYPASS	ON

CONTROLS PANEL DIAGRAM



BLOCK DIAGRAM



LRx 2.250

<p>POWER SUPPLY Voltage: 11 ÷ 15 VDC Idling current: 0.7 A Idling current when off: 0.02 mA</p> <p>Consumption @ 13.8 VDC (Max Musical Power): - A config. (see Output Power): 13.8 A - B/C config. (see Output Power): 27.5 A</p>	<p>Nominal output power (RMS) NP @ 12VDC; THD 0.3%: 100W x 2 (4 Ohms)</p> <p>Output power (RMS) @ 13.8 VDC; THD 1% - A config.: 120W x 2 (4 Ohms) - B config.: 210W x 2 (2 Ohms) - C config.: 420W x 1 (4 Ohms)</p>
<p>AMPLIFIER STAGE Distortion – THD (1kHz): 0.009 % Bandwidth (-3dB): 4 Hz ÷ 85 kHz S/N ratio (A weighed @ 1V): 105 dB Damping factor (1 kHz, 4 Ohms): 240 Input sensitivity: 0.2 ÷ 5 VRMS Input impedance: 15kOhms</p> <p>Load impedance: - 2 Ch. stereo: 4 - 2 Ohms - 1 Ch. mono in bridge: 4 Ohms</p>	<p>FILTERS/INPUTS IN L/R: Bypass/ 12dB/Oct. Hi-Pass/Lo-Pass (40 ÷ 500 Hz/400 ÷ 5000 Hz)</p> <p>Pre Out: Bypass/ 12dB/Oct. Hi-Pass/Lo-Pass (40 ÷ 500 Hz/400 ÷ 5000 Hz)</p> <p>Inputs: IN L-R</p>
	<p>OTHER FUNCTIONS Remote IN: 7 ÷ 15 VDC – 1 mA Remote OUT: 12 VDC – 10 mA Auxiliary power supply (PPS): ±12 VDC – 300 mA Fuse: 30 A</p>
	<p>MAX SIZE (L x H x D): 176X56X300 mm WEIGHT: 3.0 kg</p>

LRx 2.500

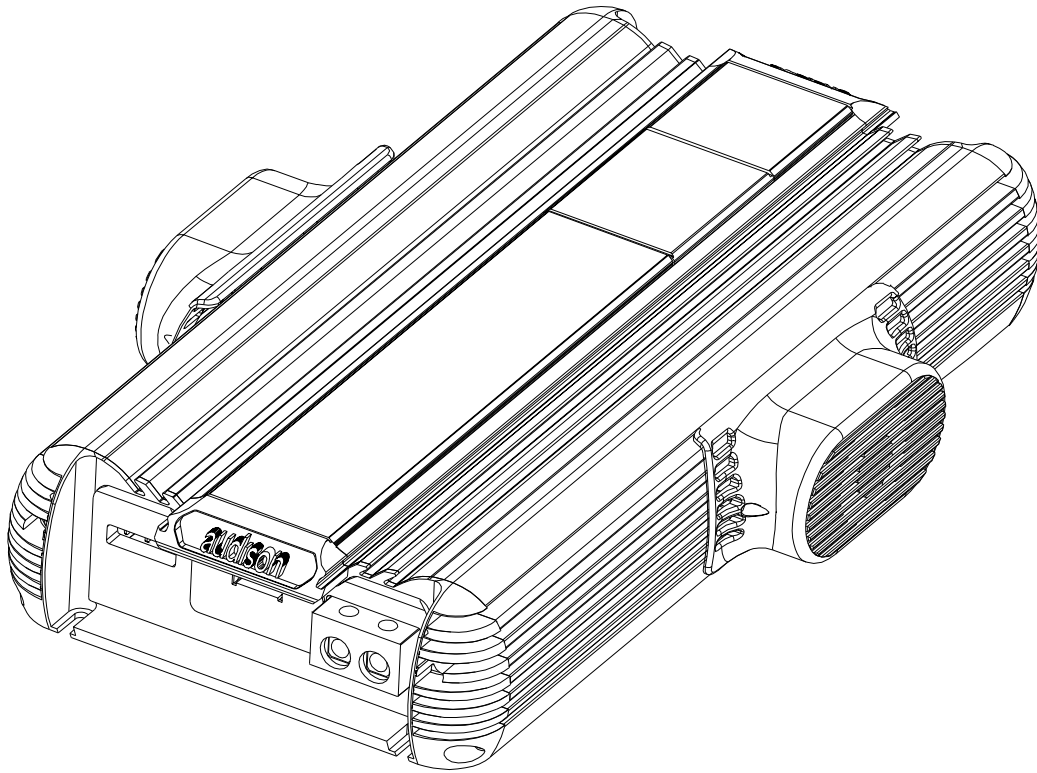
<p>POWER SUPPLY Voltage: 11 ÷ 15 VDC Idling current: 1.1 A Idling current when off: 0.02 mA</p> <p>Consumption @ 13.8 VDC (Max Musical Power): - A config. (see Output Power): 23.5 A - B/C config. (see Output Power): 44 A</p>	<p>Nominal output power (RMS) NP @ 12VDC; THD 0.3%: 160W x 2 (4 Ohms)</p> <p>Output power (RMS) @ 13.8 VDC; THD 1% - A config.: 200W x 2 (4 Ohms) - B config.: 330W x 2 (2 Ohms) - C config.: 660W x 1 (4 Ohms)</p>
<p>AMPLIFIER STAGE Distortion – THD (1kHz): 0.009 % Bandwidth (-3dB): 4 Hz ÷ 85 kHz S/N ratio (A weighed @ 1V): 105 dB Damping factor (1 kHz, 4 Ohms): 240 Input sensitivity: 0.2 ÷ 5 VRMS Input impedance: 15kOhms</p> <p>Load impedance: - 2 Ch. stereo: 4 – 2 Ohms - 1 Ch. mono in bridge: 4 Ohms</p>	<p>FILTERS/INPUTS IN L/R: Bypass/ 12dB/Oct. Hi-Pass/Lo-Pass (40 ÷ 500 Hz/400 ÷ 5000 Hz)</p> <p>Pre Out: Bypass/ 12dB/Oct. Hi-Pass/Lo-Pass (40 ÷ 500 Hz/400 ÷ 5000 Hz)</p> <p>Inputs: IN L-R</p>
	<p>OTHER FUNCTIONS Remote IN: 7 ÷ 15 VDC – 1 mA Remote OUT: 12 VDC – 10 mA Auxiliary power supply (PPS): ±12 VDC – 300 mA Fuse: 50 A</p>
	<p>MAX SIZE (L x H x D): 176X56X370 mm WEIGHT: 3.7 kg</p>

CLK2 – LRx Cooling Kit

This cooling system is specially designed to provide LRx amplifiers with the right working temperature.

CLK2 should be used when LRx amplifiers work in extremely hard conditions (very low loads) or in installations where space is too narrow and heat sink cooling is not enough. It consists of two units to apply onto the amplifier sides; each of them is provided with an electronically controlled fan. Its intervention depends on a thermal sensor that starts the system as soon as LRx heat sink reaches 45°C. The same sensor is connected to a special circuit which controls the two fans speed progressive increase when temperature increases, too.

Air flux constant control allows the amplifier very good thermal stabilization and limits noise.



Installation:

