

CanEVER Audio - La Scala Owner's guide



The CanEVER Audio LaScala Power Amp coming in two cabinets containing power supply and the amplifier

The design at the base of the La Scala power amplifier is the result of over 30 years of research and experience made in the design and building of amplifiers based on single ended, push-pull and hybrid circuits, using tubes and/or transistors.

The block diagram below shows the basic concept of the *La Scala Power Amp*:



The main “signal chain” of the amplifier consists of only 6 (!!) components:



Please note, that there are no resistors and no capacitors in the signal chain either!
This is the fewest number of components possible to set up an amplifier capable of 180 W peak power per channel in pure class A.

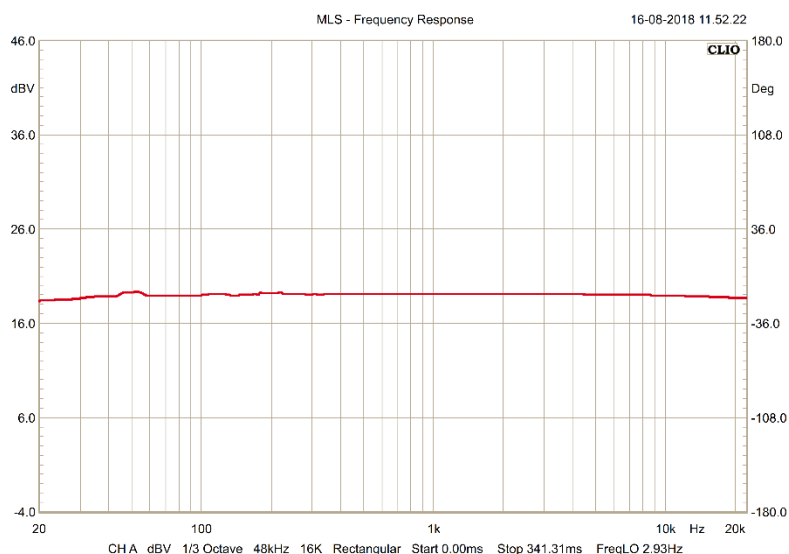
La Scala Power Amplifier

Technical Characteristic	Benefit
output power of 120 W per Channel (90 Wrms – 180 Wpeak) in pure class A with very low distortion	natural sound
4 Ohm and 8 Ohm selectable impedance at the output	easy match between the power stage and the connected loudspeaker.
NO capacitors on the signal path!	no distortion or phase rotation; maximum transfer of energy.
two stages only: - one for the voltage amplification - one for the current amplification	maximum transfer of energy from the input to the output with the maximum signal integrity.
minimalist design with a minimum number of active components: - voltage stage made with only one push-pull of triodes - current stage made with only one push-pull of MOSFETs	signal amplification made by triodes; power amplification made by MOSFETs; active components as triodes for the signal and MOSFETs for the power, are used where they exhibit the maximum performance
output current stage with buffer configuration	easy drive of almost any kind of loudspeaker even those with a complex impedance curve.
NO Global Feedback!	maximum dynamic.
smart BIAS control circuit (supervised by a microprocessor)	circuit works always in the optimum area to minimalize the crossover distortion; aging of the triodes is not a problem because automatically managed.
massive aluminum and stainless steel cabinet	maximum mechanical stability

La Scala Power Supply

Technical characteristic	Benefit
huge power supply with 1900 Wrms of reservoir power in dual-mono configuration	huge current available for the rectifier to avoid injection of distortion
power supply with massive inductive filter and high current capacitors	reduction of current peaks for lowest possible distortion
each stage of the La Scala is powered by its dedicated power supply	dual mono power supply for the MOSFET stage pure inductive power supply for the triodes filament power supply for the heating of the tubes with dedicated transformer low noise power supply for the microprocessor with independent transformers.
soft start at power on	dual technology implemented to avoid the use of non linear resistors
massive aluminum and stainless steel cabinet	maximum mechanical stability

Technical Data

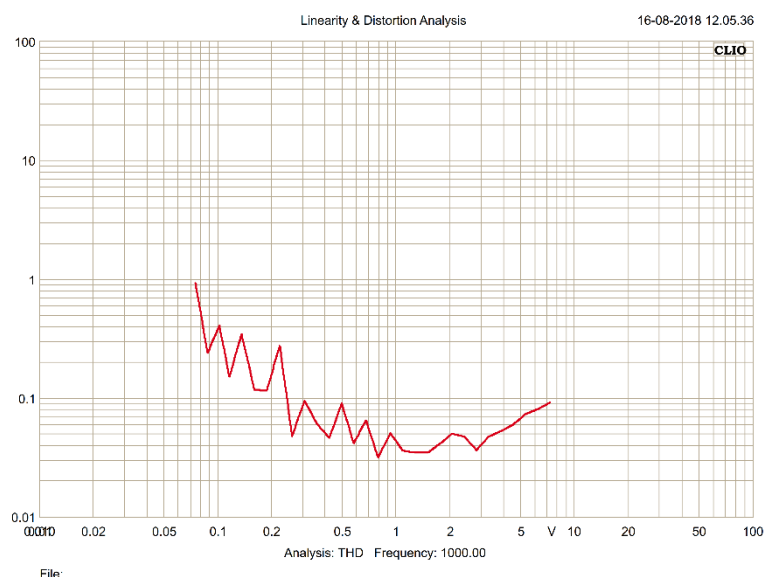


Frequency Response at full power,
5 Ohm / 200 W resistive load and
impedance selector set to 8 Ohm.

- within ± 0.5 dB across the whole audio band 20 Hz-20 kHz
- within ± 3 dB across 10 Hz-70 kHz

Note:

Due to the custom transformers made for the La Scala Power Amp, there is no phase rotation in the whole audio band!



THD (Total Harmonic Distortion)
at full power,
5 Ohm / 200 W resistive load,
impedance selector set to 8 Ohm.

- 100 Hz 0.3%
- 1 kHz 0.5%
- 10 kHz 0.7%

Tubes	2x 6N6P (6H6n/6H6pi) matched pair – 1x 6N30P (6H30n/6H30pi)
Power	90 Wrms / 180 Wpeak / 120 W per channel. (optional bridge configuration delivering 180 Wrms / 420 Wpeak / 240 W)
Gain	7 dB (optional 14 dB) 2.45 Vrms input voltage needed for the maximum power output
Input resistance	55 kOhm
Damping factor	> 1000
Amplifier size	41.5(W)x35(D)x24(H) cm
Amplifier weight	21 kg
Power Supply size	41.5(W)x35(D)x24(H) cm
Power Supply weight	39 kg
Cables length	158 cm (connectors included)
Cables weigh	0.8 kg

POWER ON

In a very first step, connect the power supply and the electronics of the amp with the two red cables delivered with the *LaScala Power Amp*.



There is only one way to connect power supply to the electronics of the amp as the connectors come with a special profile to fit to the corresponding plug in one position only:

- 4 pins *female* + 7 pins *male* to connect to the power supply
- 4 pins *male* + 7 pins *female* to connect to the electronics of the amp

The cable with 4 pins delivers the power, while the cable with the 7 pins delivers the high voltage plus the power supply for the control board.

After the two red cables are connected, please connect the main power cable to the power supply.

To power on or off the La Scala there is switch positioned at the downside of the power supply cabinet centered at the front edge. (see picture below)



After the La Scala is powered on, a self-test starts to check the whole system.

Note:

At the end of the test procedure one can listen a short "blub" from the loudspeakers. Please do not worry. This is part of the normal operation!

After the successful test of the BIAS control circuit, the BIAS first is applied to *one* triode and to *one* MOSFET only. These are the "masters". Now the power amplifier is really powered on. Both, the triode and the MOSFET, are the active "master" devices.

After the BIAS is applied to the "master" triode and the "master" MOSFET, the "slave" triode and MOSFET start to follow the specs of the masters. This process lasts about 2 - 3 seconds. During this process one can listen to a high frequency "sweep sound" from the loudspeaker. This sound stops after the "slave" triode and MOSFET are in the perfect balance with the "masters" to let the push-pull circuits exhibit their maximum performance.

The above described "master & slave" mechanism manages the aging of the tubes as well. So the performance of the circuit is guaranteed, even if the tubes change their values over the time or once their specs are not exactly matched from the start.

SETUP

To enter the SETUP menu, keep pressed the **SETUP** button at the front panel for at least 2 seconds. (After pressing the **SETUP** button for at least 10 seconds, the La Scala will be reset to the default factory defined values)



The user is allowed to adjust the following parameters:

Parameter	Value	Description
sec LCD ON	<ul style="list-style-type: none"> • 10 sec • 20 sec • 30 sec • 40 sec • 50 sec • always ON 	<p>How long the display stays ON.</p> <p>After the sec_LCD_ON time the display is powered OFF, while the power amplifier is still turned on.</p> <p>The default value is always ON.</p>
MONITOR	<ul style="list-style-type: none"> • TEMP & Vbias • TEMP & FAN RPM • Heart Beat 	<p>Kind of data monitored at the display:</p> <ul style="list-style-type: none"> • TEMP & Vbias shows the temperature of 4 test points and the BIAS of the triodes • TEMP & FAN RPM shows the temperature of 4 test points and the RPM (Revolution Per Minute) of the fans. • Heart Beat sets a minimalist display with four dots running alternatively to show, that the power amplifier is running. <p>The default value is TEMP & Vbias.</p>
FAN	<ul style="list-style-type: none"> • OFF • SILENT MODE 	<p>The fans powered OFF.</p> <p>The fans work in "silent mode" for a better air circulation only.</p> <p>The default value is SILENT MODE.</p>
TEMP THRESHOLD	xx °C	<p>Defines the threshold of the temperature after which the fans start to increase the RPM (Revolution Per Minute).</p> <p>If the measured temperature increases over 80°C, the fans are set to the maximum speed trying to recover the unit. Over 85°C the La Scala Power Amp is forced to stand-by mode. The amp returns to normal operation after the temperature falls below 80°C.</p> <p>The default value is 60°C.</p>
BIAS mode	<ul style="list-style-type: none"> • SAVE • COMFORT • COMPETITION 	<p>The BIAS defines the operation region of the MOSFETs. Setting COMFORT mode the linearity increases, even more in COMPETITION mode but the heatsink temperature increases proportionally.</p> <p>In SAVE mode the sound is balanced toward the trebles region.</p> <p>The default is COMFORT.</p>

Note: The parameters are stored permanently inside the circuit of the La Scala Power Amplifier until later changes!

The Amplifier Unit



Connect the loudspeakers to the big terminals. Those professional connectors have a contact resistance of 0.2 Milliohms and they are rated for a current of up to 63A.

There is not any risk to damage the loudspeakers in the event of a fault of one of the output MOSFETs. The output transformer galvanically isolates the speaker from the amp's electrical circuit.

Select the most appropriate impedance position while the amplifier is working. There is no need to power off the La Scala while switching between 4 Ohms and 8 Ohms.

Because of the irregularities of the loudspeaker impedance, the 4 Ohms or 8 Ohms switch positions do not absolutely reflect the impedance of the loudspeaker.

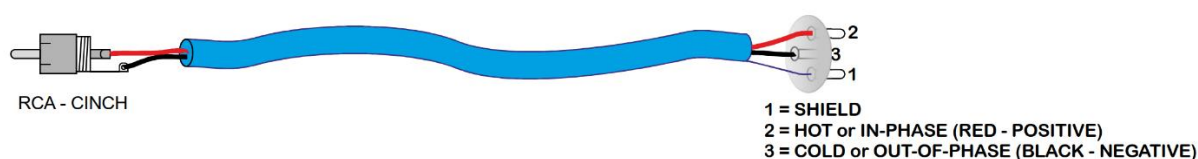
Feel free to choose the "best" setting based on the sound of your stereo system!

As main rule, the 8 Ohms position grants more voltage swing and sources lower current and vice-versa in the 4 Ohms setting.

The power amplifier has real balanced inputs only for the best immunity to electric noise. The XLR input directly connected to the input transformer for a total galvanic isolation from the preamplifier.

Note:

In the case, that the preamplifier is not equipped with balanced outputs a custom cable should do the job.



Do NOT bridge the pin 1 with the pin 3 because this creates a ground loop. Instead, solder the shield of the cable to pin 1 inside the XLR connector ONLY on one end and isolate the shield from the other two cables inside the RCA connector at the other end of the cable.

The above matter is not simple and depends on the earth connections of the system. The risk of a no qualified installation is to have ground loops that pick up the hum from the power network or from the transformers of other units.

The temperature of the unit depends on the power selector at the rear side of the power supply. Higher power means higher temperature. ☺

The heat is naturally dissipated by the 4 chimney heatsinks on the top of the power amplifier. To complete the structure, another 4 liquid cooled heatsinks are installed on the downside of the top plane.

The power MOSFETs are glued like a sandwich in between the bottom of the chimney and the top of the liquid cooled heatsink on the bottom. Basically there is no need for the fans. They are used only to let the air circulate more freely inside the cabinet. Without the fans, expect a temperature increase of 10 to 15°C. In this case, the unit would continue to work without any problems.



On the left You see the structure of the cooling system of one of the 4 MOSFETs.

The La Scala Power Amp limits the heat to dissipate without the need of any electronic feedback network.

The La Scala is intrinsically safe because the MOSFETs used are of the LATERAL technology. If the temperature raises over the maximum stated at the technical data sheets, the MOSFETs automatically reduce the current flowing through them instantly lowering the heat to dissipate too. Of course, in this case also the released power decreases.

The Power Supply Unit



Use the two red cables delivered together with the amp to connect the La Scala Power Amp to the power supply.

The cables are equipped with professional connectors and there is only one way of inserting the connectors into the sockets at the backplane of both units.

The insulation material of the cables has a high specific weight, which results into a heavy weight of the cables. The polymers used for the insulation have a high immunity to the mechanical vibrations too.

Choose the power selector regarding your needs. In most audio systems, there is no need to set the amp for maximum power. Experiment the best setup for your system by listening.

The inrush current at the power-on of the unit is limited avoiding that the current sink by the big transformers forces to blow the main fuse in your house. A double technology is implemented avoiding solutions with non linear resistors.

Contact Information

For the latest specifications, additional product information, worldwide sales and distribution locations, and information about La Scala:



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