



LINEA CLASSICA

Quinta

The new Quinta retains the excellent features of the previous model taking benefits from the new aluminum woofer, the new crossover and redesigned furniture. This is a true full-range speaker features excellent dynamic qualities that make it suitable for any genre from jazz trio to the great symphony orchestra that plays with authority, detail and finesse. The cabinet is made of molded MDF, veneered with real wood and finely polished. The front is covered in leather. Especially interesting is the woofer that uses a linear magnetic motor with a T-shaped pole and two copper rings that increase significantly the linearity cutting down the distortion in the midrange.



System	Floor standing column – Bass Reflex in 2 separate chambers, rear-firing reflex ports Finish: wood and leather
Drive units	3 bass drive units 6.5" aluminium cone 1 tweeter, dome 1" – silk dome, ferrofluid, decompression chamber
Number of ways	2 and a half way
Frequency response	32 -20000 Hz
Cross-over:	On pcb 12 dB/octave woofer (in quasi-series) 24 dB/octave tweeter
	Crossover frequency 2000 Hz circa
Max power handling	210 watt RMS
Recommended amplifier	Minimum 15 Watt RMS
Sensitivity	89 dB/2.83 Volt/1 metro
Nominal Impedance	8 ohm (8 max - 5.9 min tra 100 e 20000 Hz)
Room Positioning	At least 20 cm from rear wall At least 30 cm from side wall
Dimensions	117.5 x 24 x 39,5 cm (HxLxP)
Weight unpacked	34 Kg each
Packed weight	35 Kg each



Opera Quinta

System

The Opera Quinta differs from the previous model of the same name by having a new cabinet, new components and new crossover. The cabinet is slightly larger than before, with an internal volume of around 60 litres and is divided into two chambers; the lower chamber, of roughly 40 litres houses two bass drivers. The upper chamber, of roughly 20 litres houses the upper bass driver. The three reflex ports are mounted on the loudspeaker's rear panel. There are 4 gold plated terminal connectors and the speaker is bi-wirable if required.

Cabinet

All the new models have their cabinets in shaped MDF with sides veneered and lacquered using real wood, and the remaining sides are finished in leather. The size of the front panel, following Opera's tradition, is large enough to hold the loudspeakers. The inside of the cabinet is divided into two separate chambers, which not only reinforces the structure but also raises the frequency of the first normal resonance mode. The inside of the cabinet is filled with a good quantity of acrylic wadding which helps to eliminate internal reflections and resonance and aids bass frequency damping.

Components

All the models of the Classic Series use the same drive units; the one inch tweeter (the same used in the Callas SP) is a silk dome unit, ferrofluid filled and having an ample rear decompression chamber. The qualities of this SEAS tweeter are well known and appreciated. The woofer, also made by SEAS, was developed specially for this line of loudspeakers. It is a 6.5 inch unit with 18cm chassis, 38mm voice coil, aluminium diaphragm and rubber outer suspension. It has a dynamic mass appreciably higher than the norm, and an impedance of 4 ohm. Two copper rings are fitted above and below the T-shaped pole piece, which both reduce distortion and stabilize the magnetic flux. Finally, the bullet-shaped phase plug in ABS helps to dissipate heat and overcomes compression effects associated with normal dust-caps. It also improves emission at the high-frequency end of the unit's range. The cast chassis, of aerodynamic design, is fully open even beneath the inner suspension.

Crossover

In designing the new Classic Series, particular attention has been paid to electrical impedance. This is to ensure that the loudspeaker will present a load compatible with every type of amplifier. The minimum impedance for a nominally 6 Ohm loudspeaker under DIN regulations is not less than 4.8 Ohms at the lowest point of the impedance curve. Opera Quinta adhere to this norm. The electrical impedance curve of the Opera Quinta is in fact always above 5.9 Ohm (5.54 Ohm real impedance at 20KHz) and although not completely resistive it is extremely regular with phase rotations close to zero over a wide range of frequencies from 200Hz upwards. This ease of drive makes the Opera Quinta very rare and contrary to the prevailing tendency of the vast majority of loudspeakers currently produced.

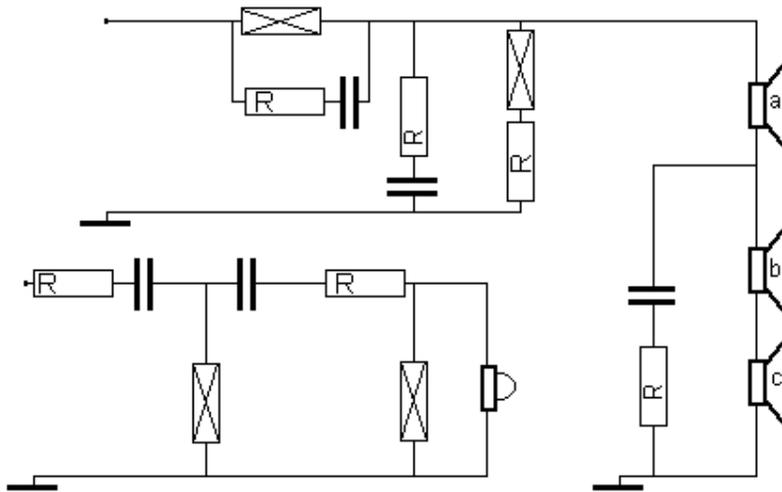
Sensitivity is 89Db (2.83V/1 metre). It should be mentioned that this value is obtained at a high and almost purely resistive impedance. At Opera we believe that the cost of a loudspeaker should be



considered together with the cost of a suitable amplifier to drive it; it is of little use to have an attractive price for the loudspeaker if a very expensive amplifier is then required to give good results.

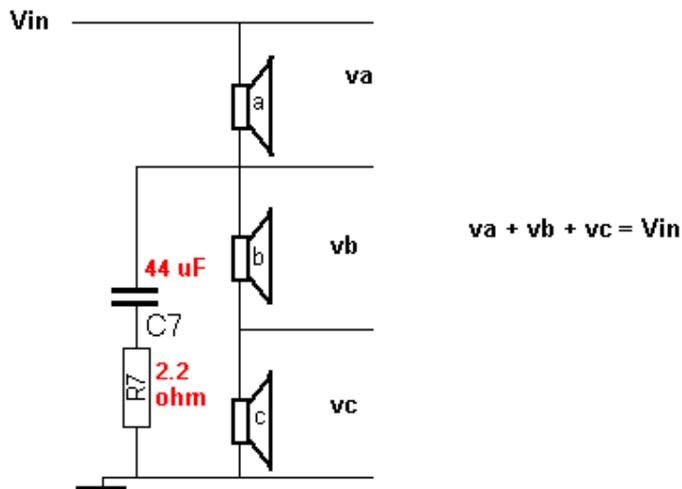
The Opera Quinta is a very easy loudspeaker to drive, and best results can be achieved with any type of amplifier whether valve or solid-state.

The crossover of the Opera Quinta is a 'two-and-a-half-way', with three bass units connected in quasi-series



Opera Quinta : cross-over

As can be seen from the diagram above the three bass drivers are connected in series but the two lower units (b & c) are shunted by an RC series network. In this way each drive unit receives one-third of the applied electrical power up to approx. 400Hz. In the next octave, between 400Hz and 800Hz there is a transition zone which sees the emission of the top bass driver increase and that of the two lower drivers decrease. Beyond 800Hz the lower units are attenuated by approx. 6dB per octave. Note that the sum of the voltage drop at the three bass units is mathematically equal to the voltage applied (see diagram below) which guarantees correct phase relationship; the drop in emission from the two lower bass units is compensated by the increase in SPL produced by the upper bass unit and, at least in the far-field, the three bass units behave as if they were only one (but with a greatly superior dynamic capacity). The acoustic centre of emission of the system, at low frequencies, coincides with the middle bass unit (b) and moves progressively until finally coinciding with the upper bass unit at the mid-frequencies, at which the crossover point to the treble unit is situated.

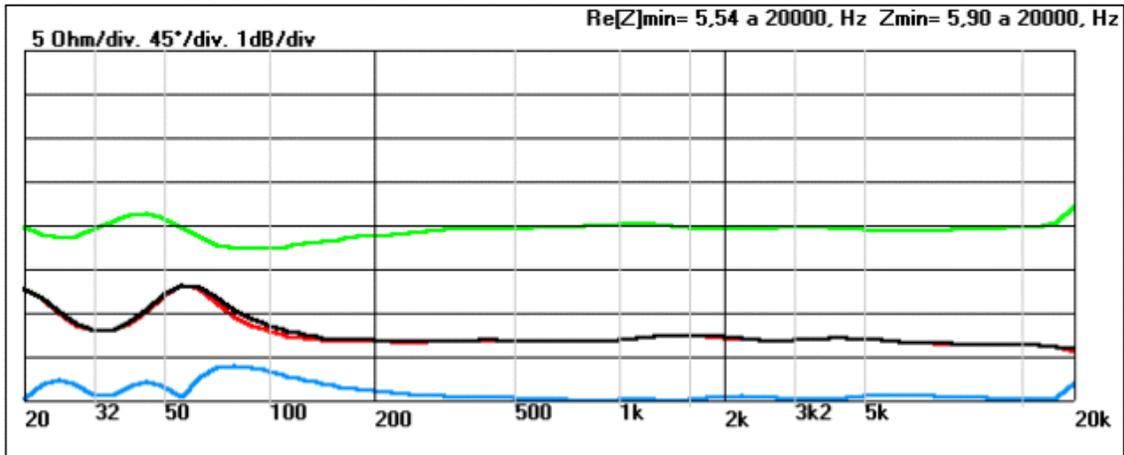


This topology is actually a variation of the progressive low-pass filter (as used in the Opera Divina), less sophisticated but equally effective in the sense that the listener perceives the sound as if everything comes from the upper bass unit. The coherence of the mid-bass frequencies is practically that of a two-way, while the effective radiating surface at low frequencies is the equivalent of a loudspeaker unit of slightly larger than 10 inches nominal diameter ($SD = 126\text{cm}^2 \times 3 = 378\text{cm}^2$.) In this way high power handling is obtained together with associated high dynamics and low distortion.

The electrical impedance of the three bass units connected in this way presents a capacitive-type curve compensated by the LR winding placed in parallel (4.8mH + 15Ohm) which has the effect of damping the resonance peaks of the reflex, greatly reducing phase rotations. The true low-pass filter consists of the 5 remaining components. The series RLC group at the input cancels out the typical aluminium cone resonance peaks while the parallel RC network enables an over-compensation of impedance towards the higher frequencies. This configuration has proved to be the most suitable to obtain the desired impedance curve. The overall acoustic roll-off applied to the top bass unit is in the order of 12Db per octave.

The high-pass filter for the treble unit, apart from a couple of resistors, is a classic fourth order which enables the acoustic frequency of the cross-over to be lifted to a little over 2kHz. The wave length at the acoustic crossover frequency is therefore equivalent to the distance between the centres of emission of the top bass unit and the tweeter, which makes the emission very similar to that of a small two-way loudspeaker.

The diagram below shows the very regular curve of electrical impedance. In particular, the module and the real part of the impedance in practice coincide from 200Hz upwards.



Electical Impedance : Black = Z module, Green =Phase, Red =Real[Z], Cyan Imag[Z]

Room placement

Opera Quinta is a floor standing loudspeaker. It is inadvisable to place the loudspeaker in a corner, and the recommended distance from side walls is at least 30cm. As always, the best position within the room will be found by some experimentation. Even though the reflex ports are rear-mounted, it is sufficient to maintain a distance of just a few inches between the rear of the loudspeaker and the rear wall.

The high value of the impedance module allows – assuming a good amplifier is used – two pairs of Opera Quinta in parallel (two for the right channel and two for the left). The impedance of two loudspeakers in parallel remains within 3 to 4 Ohms. Two loudspeakers in parallel produce approx. 95dB SPL with 2.83 volts at one metre and are able to fill even very large listening areas with sound, giving an extremely favourable price/performance ratio. If two pairs of Opera Quinta are used in this way they should be connected in parallel as illustrated in the diagram

