



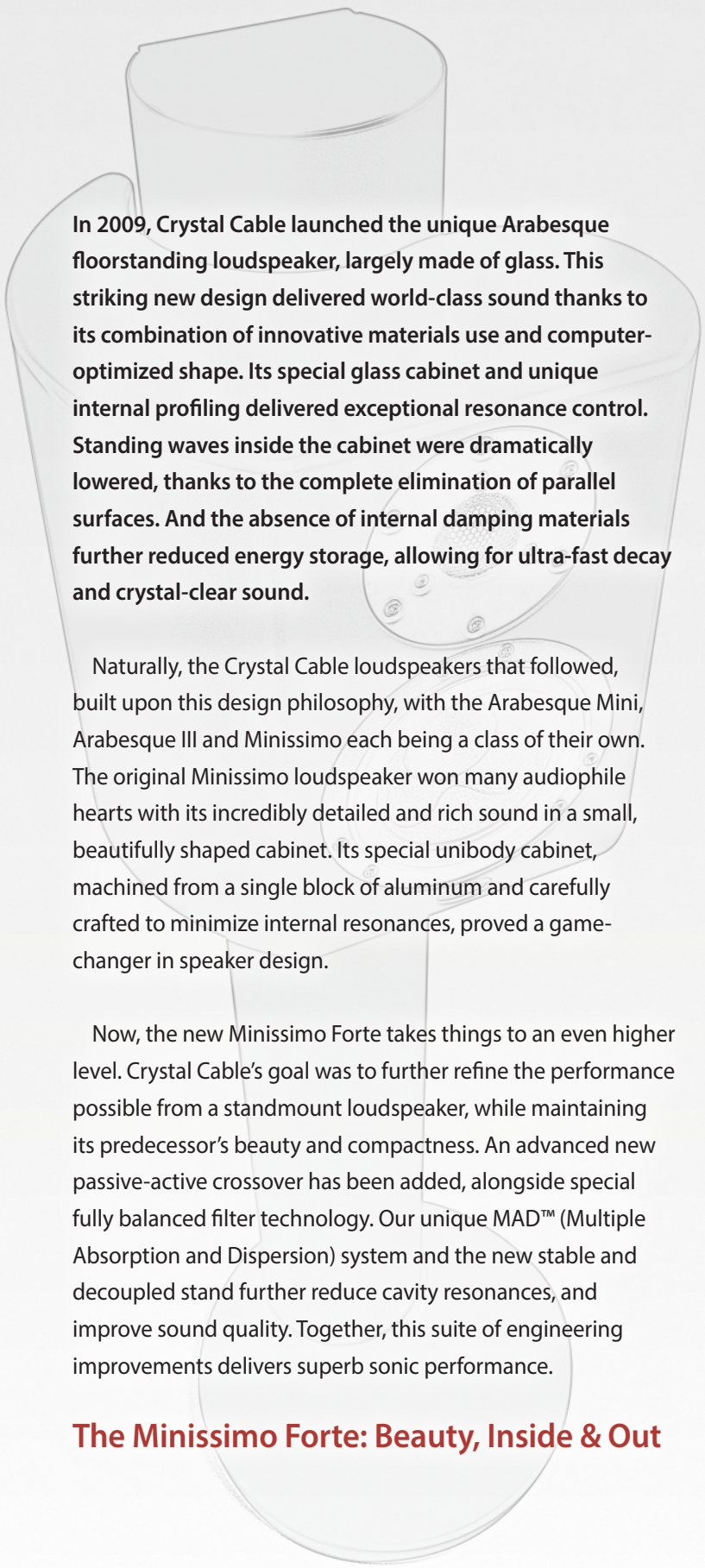
CrystalCable®

MINISSIMO  
*forte*



[www.crystalcable.com](http://www.crystalcable.com)

# Minissimo Forte: **The best Gets Better**



In 2009, Crystal Cable launched the unique Arabesque floorstanding loudspeaker, largely made of glass. This striking new design delivered world-class sound thanks to its combination of innovative materials use and computer-optimized shape. Its special glass cabinet and unique internal profiling delivered exceptional resonance control. Standing waves inside the cabinet were dramatically lowered, thanks to the complete elimination of parallel surfaces. And the absence of internal damping materials further reduced energy storage, allowing for ultra-fast decay and crystal-clear sound.

Naturally, the Crystal Cable loudspeakers that followed, built upon this design philosophy, with the Arabesque Mini, Arabesque III and Minissimo each being a class of their own. The original Minissimo loudspeaker won many audiophile hearts with its incredibly detailed and rich sound in a small, beautifully shaped cabinet. Its special unibody cabinet, machined from a single block of aluminum and carefully crafted to minimize internal resonances, proved a game-changer in speaker design.

Now, the new Minissimo Forte takes things to an even higher level. Crystal Cable's goal was to further refine the performance possible from a standmount loudspeaker, while maintaining its predecessor's beauty and compactness. An advanced new passive-active crossover has been added, alongside special fully balanced filter technology. Our unique MAD™ (Multiple Absorption and Dispersion) system and the new stable and decoupled stand further reduce cavity resonances, and improve sound quality. Together, this suite of engineering improvements delivers superb sonic performance.

**The Minissimo Forte: Beauty, Inside & Out**

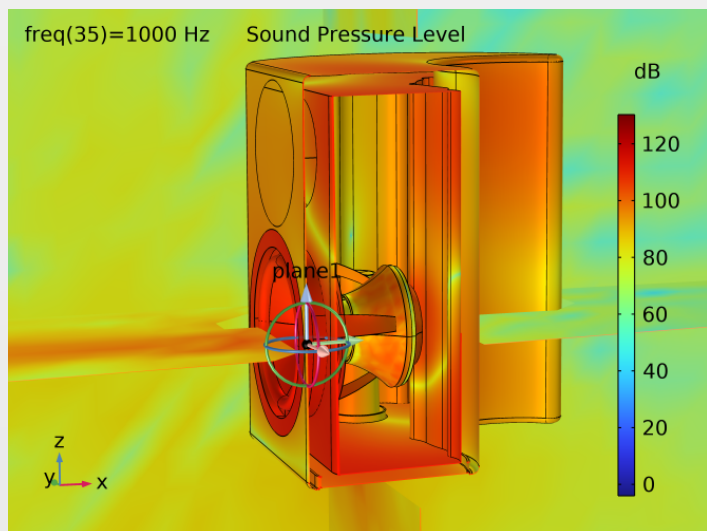
# Minissimo Forte: Development

With so much of the design right first time, the original Minissimo stand mount loudspeaker was a hard act to follow. So our engineers thoroughly analyzed the behavior of the loudspeaker using tools like COMSOL™ Multiphysics computer aided design facilities and our custom-made vibration measurement system. The decision was then taken to focus in on three specific areas where further improvements could be achieved, namely the speaker cabinet, stand assembly and crossover.

One key design aim was to take the Minissimo's cabinet and support stand out of the equation, making them as acoustically inert as possible. This was done by identifying and then eliminating all vibration paths inside the speaker, by the fitment of a special layer of internal resonance-reducing material. This is unique in the field of loudspeaker design, and has further lowered cabinet noise as well as preventing extraneous vibrations between cabinet and stand.

The result is a sonically neutral enclosure – one that does not feed unwanted acoustic energy into the drive units, or indeed compromise their operation by artificially exciting their output. This in turn provides an optimal basis for all the other improvements that our engineers have made to the new Minissimo Forte.

For the 'passive-active' crossover design, our engineers benefited greatly from the spectacular results achieved while designing the majestic Symphony loudspeaker of sister-brand Siltech, with which Crystal Cable shares all resources and production facilities. Most loudspeakers employ a passive separation filter using coils to provide the drivers with the correct signal, but this can cause non-linearity and dynamic compression of the signal. The passive-active filter used in Minissimo Forte eliminates these limitations by using frequency dependent components, which allows for much greater control of the sound, higher resolution of details in the music, and increases the dynamic range.



COMSOL™ simulation



MAD™ sound dispersion technology

# Minissimo Forte: Cabinet & Stand

Our acoustic engineers further enriched the sound by creating a special structure inside the cabinet that diffuses the propagation of soundwaves, and eliminates the last remaining strong wall reflections. This was done by the use of the most advanced measuring equipment, computer modelling and 3D printing techniques, to create the optimal internal structure. Together with the specially profiled bass reflex tube, this ensures the strongest, tightest and fastest possible bass.

The cabinet itself is machined from a single PU aluminum alloy block that is supremely rigid, creating a perfect platform for the Minissimo Forte's premium quality drive units. The carefully engineered MAD™ structure diffuses resonance, which in turn lets the drivers deliver the music - and not the cabinet. The result is a translucent, glass-clear sound that reveals striking amounts of detail.

Each Minissimo Forte comes with a sturdy, bespoke aluminum stand, designed to deliver high frequency sound at ear level when the listener is seated. It is as acoustically inert as possible, reducing resonance rather than adding noise of its own. The stand's structural parts decouple it from the cabinet, preventing the transfer of vibrations. At the same time, it also functions as the housing for the passive-active system in the loudspeaker.

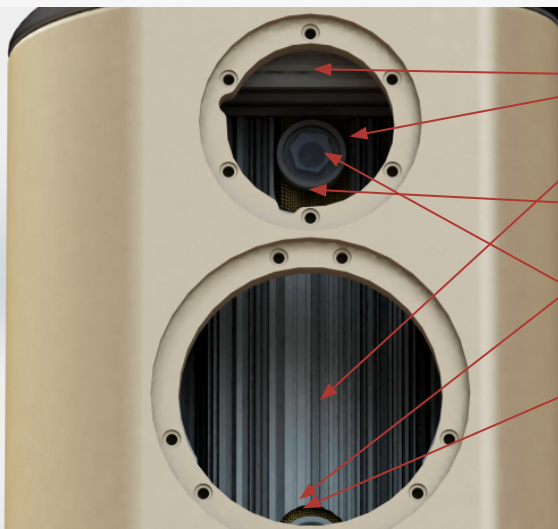
## STANDARD COLORS:

-  *Champagne*
-  *Fire Glow Red*
-  *Matt Black*

Other color options on request.



Top view



*Sound diffusing structure*

*Resonance damping layer*

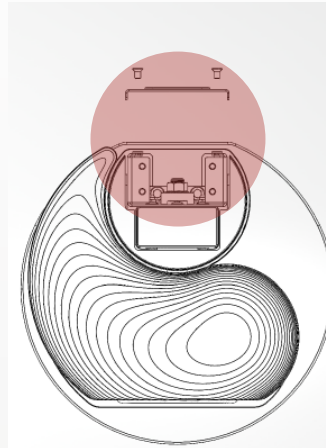
*Vibration decoupler*

# Minissimo Forte: **Electronic Crossover**

**Balanced passive-active filter:** Most loudspeakers employ multiple drive units, each of which is designed to reproduce a certain part of the frequency spectrum. The music signal is traditionally divided up between these drivers by a passive separation filter using coils, which can flatten dynamics and introduce unwanted tonal peaks or dips in the sound.

To get round this, Crystal Cable has developed a radical new type of passive-active crossover filter which is almost unique in the industry. Its active, powered electronics and the absence of the troublesome coils better tailor the drivers to the music being reproduced – in turn losing less of the original electrical signal. This delivers a more accurate, detailed and vibrant sound than is possible from conventional passive crossovers, and is more consistent over time, too.

This filter topology has many advantages for the most accurate and lively music reproduction. Firstly, the amplifier



- *Fully shielded electronics*
- *Balanced crossover design*
- *Optimized cable placement*

load is 16 Ohms (versus the more standard 4 or 8 Ohms), which makes it very easy to drive for just about any amplifier. Add to this the increased efficiency (95dB/2.83V), and amplifier choice is now very easy. Any good amplifier from 15W -150W will be sufficient to maximize its full potential. This means the amplifier doesn't need to 'overdrive' and will dissipate much less heat, making it easier to give its best possible performance.

Another key advantage is that the system sounds equally enjoyable at both low and high volumes. This is because the crossover's built-in current amplifiers keep the drive units under full control in all operating conditions – letting them deliver their absolute best in every situation.



Crossover situated in a solid machined stand

## **Crossover filter**

- Semi-active balanced second order filter (low Q)

## **Internal Wiring**

- Crystal Cable Infinite Crystal Silver

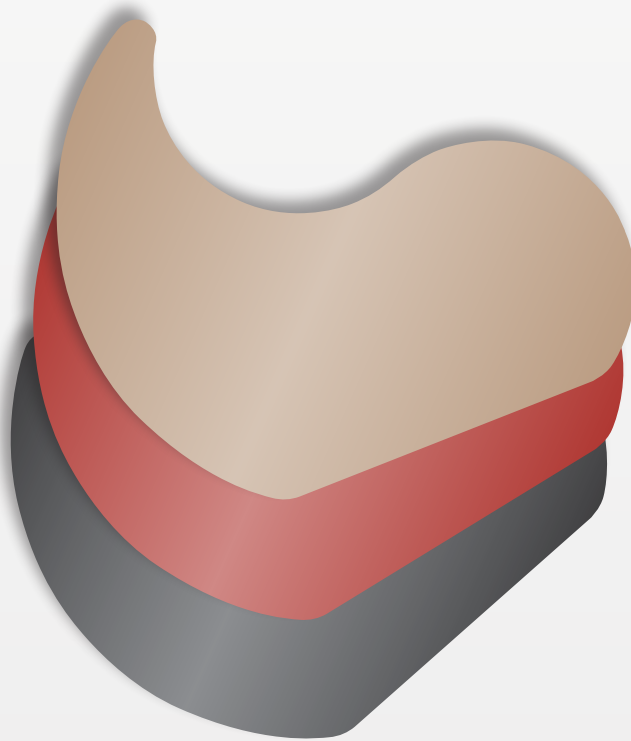
## **Specification**

- Efficiency: 95dB/2.83v
- THD: less than 0.2%
- Impedance: 16 Ohm
- Maximum Sound Pressure Level (SPL): 105dB
- Frequency response: 48Hz-38kHz (+/-3dB)
- Bass power: 150W



CrystalCable®

MINISSIMO  
*forte*



Handmade in the Netherlands

*Technical specifications are subject to change without prior notice.*