

QUALITÉ ET  
DISTINCTION



# FINAL SOUND

## 400i electrostatic speakers

### S100 subwoofer

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Founded in 1991, the Dutch speaker manufacturer Final Sound launched its business with hybrid loudspeakers that combine the concept of electrodynamic loudspeakers for low frequencies with the electrostatic design for medium and high frequencies. In 2002, the company obtained a patent validating this technology, thus generating a large amount of interest in this type of speaker. It also presented a wide range of models, spanning dual-channel, home-cinema and ambisonic equipment. Although better known in Europe, a dynamic distribution network has recently been put in place for the Final brand on this side of the Atlantic. Thanks to their completely modern design, Final Sound electrostatic speakers are extremely attractive. We will be looking at the 400i electrostatic model together with a S100 subwoofer.

#### ELECTROSTATIC TECHNOLOGY

The technology behind electrostatic loudspeakers emerged during the 1930s. More recently, manufacturers such as KLH, Quad, Stax, Acoustat, Martin Logan and now Final Sound have stuck to their guns and offered products that still provoke a great deal of interest among sound buffs, avowed music lovers and cinema enthusiasts in search of an alternative in sound and musical reproduction. This technology is based on that of the capacitor. The loudspeaker has a large, flat membrane. Placed between two perforated panels of stators, this diaphragm membrane is charged with electricity and vibrates with the changes in electrical polarisation between the panels. The polarisation of the entire unit is guaranteed by a high voltage feed amounting to thousands of volts. As the membrane is extre-



Wow! Dutch Electrostatic loudspeakers

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mely light, it responds more quickly yet is very sensitive to micro impulses, particularly in the middle and high registers. Equipped with a transformer in its base, it must be connected to an electric socket. For many, this technology represents the absolute pinnacle in terms of sound and musical reproduction, as it guarantees an unbeatable level of propagation and radiation of sound. One of the problems inherent to electrostatic speakers is the fact that they are restricted at low frequencies, meaning that it is important to connect a subwoofer to them. For this purpose, Final Sound offers a wide range of electrodynamic subwoofers that combine with the electrostatic panels to deliver the entire spectrum of sound.

#### FINAL 400I SPEAKERS

Measuring 48 inches high by 10 long and 6 deep at the base, and offered in black or silver finishes, the speakers we are testing are equipped with an anthracite membrane mounted on a rigid frame, supported by two vertical structures in satin anodised aluminium which connect it to the body of the speaker. At the relatively light weight of 12 pounds per unit, 400i speakers have a passband that ranges from 65 Hz to 22 kHz at approximately 3 dB, an impedance of 4 ohms at 86 dB and can supply 150 watts of power. Although the manufacturer recommends a 75 or 150 watt amplifier, 50 watts of amplification at 4 ohms of impedance is easily sufficient to gain the greatest benefit from the speaker. The 400i is the floor-standing entry model in the Final range. The product catalogue includes other models, such as the 600i, measuring 61 inches in height, the 1000i, at 74 inches and the 1400i, at 80 inches. Also available are electrostatic, central and ambisonic models. What is special about these models is that they are wall-mounted, which may be a wise choice in a home-cinema area or in smaller rooms. The 400i speakers come with long AC leads fitted with 12 volt adaptors at the ends. Two oval fittings are attached to the base of each loudspeaker with three screws, thereby ensuring that the speakers are positioned vertically, slightly inclined backwards. Once installed, the group

is stable. Five-point connection modules enable the use of good-sized speaker cables. These Final 400i speakers look superb, combining lightness with visual transparency.

#### FINAL S100 SUBWOOFER

This device comes in the form of a cube with a black acrylic finish. It is 22 litres in volume and its total external measurement is 32.5 cm. Accompanied by 5 cm high rubber feet permitting sound propagation from the 20 cm long-range woofer placed on the underside of the speaker, and weighing 16 kg, its passband ranges from 25 to 250 Hz at approximately 3 dB. Fitted with a discreet A/B amplifier with 100 watts RMS instead of a digital class D amplifier, it includes a 0-180 degree phase interrupter at the back, as well as two potentiometers, one for the volume and the other to control the low-pass filter. The user has the choice of an A/V receiver connection, a preamplifier/processor or an amplifier, with either high or low level LFE/ SUB-OUT output and with RCA or speaker



connecting cables.

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#### LISTENING

Due to the dimensions of the membrane and the fact that the propagation and radiation of sound is orientated equally towards the front and back of the speaker, electrostatic panels may prove to be sensitive to sound waves reflected by walls and to the acoustic pressure generated within a listening room. Our panels were therefore installed one and a half metres from the back wall, one metre from each side wall, with around three

metres space between them, and slightly orientated towards the listening chair. The higher range, larger Final models may need even more clearance. Once plugged into an electric socket, they were connected to YBA electronics consisting of a 140 watt Delta 2 amplifier at 4 ohms and a Classic Delta 2 preamplifier from the same company, an audio-digital C.E.C. / TL51X turntable, an Assemblage DAC 2.7 Platinum converter and a Slim Devices transporter. All of the above were



linked by Bis Audio Signature and Pierre Gabriel ML1 leads and Nordost Red Dawn Rev 11 speaker cables. We decided to begin the listening session without adding the S100 subwoofer to the speakers, in order to evaluate their intrinsic qualities. Our first impressions: With the Slim Devices Transporter as the source and a networked music player of a quality to satisfy music buffs, it did not take long for the 400is to show off their qualities. **Clear and transparent. A crystalline sound quality combined with a high level of definition.** They let the listener hear details without being analytical and the sound quality is more directional than is usual. The 400i speakers offer us a full-scale sound and stereo image. Nonetheless, their impedance level of 86 dB at 4 ohms requires a little more power, although this does not create any listening strain. On putting on the CD Jazz pour Noël by the Lorraine Desmarais Trio, on the Analekta label, the sound quality of Jean-Pierre Zanel-la's alto and soprano saxophones, more often than not strident, is here revealed with a more natural timbre. In the piece L'Enfant au Tambour, Frédéric Alarie's bass playing sounds nimble. Notes in the mid and low ranges of the sound spectrum are clearly separated in space, as are the sounds of Camil Bélisle's percussion playing. **The great dexterity and rhythmical sense of Lorraine Desmarais at the piano are reproduced precisely and with an extraordinary sonorous and musical articulation. There is no heaviness, rather a brightness of tone and an exceptional speed of execution unique to the artist.**

On her recent album Half The Perfect World, on Rounder Records, Madeleine Peyroux's voice is transmitted to us with the beautiful clarity of sound that is unique to the 400i speakers. In the song River, written by Joni Mitchell, the speakers even help us to hear K.D. Lang's comments during her duet with Madeleine Peyroux. Adding the Final S100 subwoofer to the 400is clearly adds power to the medium and low bass of the electrostatic speakers. Although the performance of the 400is is amazing, some types of music require a thicker bass with a little more body. The recent Eagles DVD, Farewell 1 live from Melbourne, benefited from the addition of the Final S100 subwoofer which, for the purposes of this test bench, we placed in the centre, behind the 400is and approximately one and a half metres away from them. This sub performs very well. All tests showed that the bass was more present, more generous, with astonishingly defined and articulated contours for a subwoofer of this size. The speed of execution from the 400i speakers is not diminished by the addition and the coherence of sound is improved in all areas by grouping the 400is and S100 together. Depending on the size of the listening room, however, it might be advisable to experiment with other models of subwoofers, such as the Final S110 and S220s, which are equipped with low frequency transducers measuring 8 and 12 inches respectively.

## CONCLUSION

**Certain people will always prefer electrostatic speakers. For our part, we were very impressed by their unique sound quality. The clarity and transparency of the sound they produce, coupled with their capacity to reproduce a full-scale image and stereo scene will attract many looking for an alternative form of sound and music reproduction. On their own, the Final 400i models proved to be excellent speakers which definitely succeed in providing a constantly renewed listening pleasure. They deliver a vivid sound and a feeling of openness that make for a brilliant listening experience. Once connected to the S100 subwoofer, they were presented in all their splendour, creating a coherent ensemble that can be used either in the stereo listening mode or the three channel home-cinema mode. Costing \$ 3,700, with a three-year parts and labour guarantee, simply add a Final Sound subwoofer of your choice to equip yourself with a well-designed and well-constructed system of acoustic speakers that combine quality and refinement.**

### Suggested price:

Final 400i electrostatic loudspeakers: \$ 3,700

Final S100 subwoofer \$ 950

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