

# QUAD

*the closest approach to the original sound.*

ESL 2805 & ESL 2905



Reference  
series



# The Quad ESL

## Contemporary Electrostatic Loudspeaker Design

The new ESL 2805 and ESL 2905 Electrostatics are Quad's latest reference loudspeakers and like their predecessors should be regarded amongst the finest loudspeakers in the world today. In areas such as transparency, and lack of colouration, they are without peer.

It should be noted that whilst moving coil loudspeakers are the norm, the physical principles upon which they work are fatally flawed and not even the latest advances in materials science can address their shortcomings.

Quad alone has sought a different path to push the boundaries of electrostatic technology to the point where our ESLs are closer to the ideal loudspeaker than any other.

Quad's patented panel technology results in a combination of the speed and accuracy only possible from an

electrostatic loudspeaker; together with the imaging and soundstaging only possible from a theoretically ideal point source; and the coherence and continuity of a single drive unit.

With possibly the lowest distortion of any loudspeaker, the ESL can be enjoyed for hours on end without fatigue; never adding or subtracting from the original recording. Even at low volume levels, they retain the full detail and drama of the music.

In short, the Quad ESL technology is unique in its clarity of sound, lack of distortion, lack of interference and continuity of response.

The ESL 2805 and ESL 2905 loudspeakers are the absolute pinnacle of that technology. Engineered without compromise, they are destined to become modern classics.





Quad products stand alone in the hi fi world renowned for their longevity; quality of build; and consistently high standard of performance. Our award winning service department regularly maintains products over 50 years in age. Products which still bring their owners immeasurable pleasure.

Quad products are designed with the single aim of reproducing recorded music as accurately as possible.

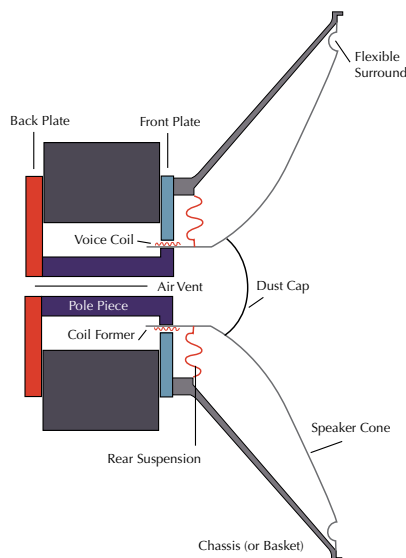
Simplicity of use and elegance of design are purely consequential to the application of sensible engineering principles.

We have never sought to design statement pieces or style icons, yet almost every Quad product has become regarded as such.

# The case for a closer approach...

## The moving-coil conundrum

A moving coil speaker consists of a wire coil suspended inside a magnet. When an audio signal passes through the coil a varying magnetic field is set up which interacts with the magnet and causes the coil to move back and forth. A cone (or in the case of high frequency speakers, a dome) is attached to the coil, which compresses and rarifies the air generating sound waves.



Because large speaker drive units cannot reproduce high frequencies well, and small ones cannot reproduce low frequencies at all, practical hi fi loudspeakers use two or more drive units connected via a 'crossover network' which divides the frequencies between the bass and the treble units. Additionally, because even a large bass unit is very small compared to the length of a low frequency sound wave, some form of box is needed to prevent the waves from the back of the cone cancelling the sound from the front.

Moving coil speakers have undeniable advantages of cost and ease of manufacture, and the cabinets can be designed in many different shapes, sizes and finish. However, the cabinet is also a prime source of colouration in the bass region. Additionally, because the cone of a bass unit is large and heavy, it cannot start and stop instantaneously. Some of the energy is stored and releases over time, causing smearing and 'boom' in the bass. In the crossover region, where not only are the masses between the drive units hugely dissimilar but so are their dispersion patterns, this shows up as unevenness of response and a confused image, precisely in the critical area where the ear is at its most sensitive.

# The Electrostatic

alternative

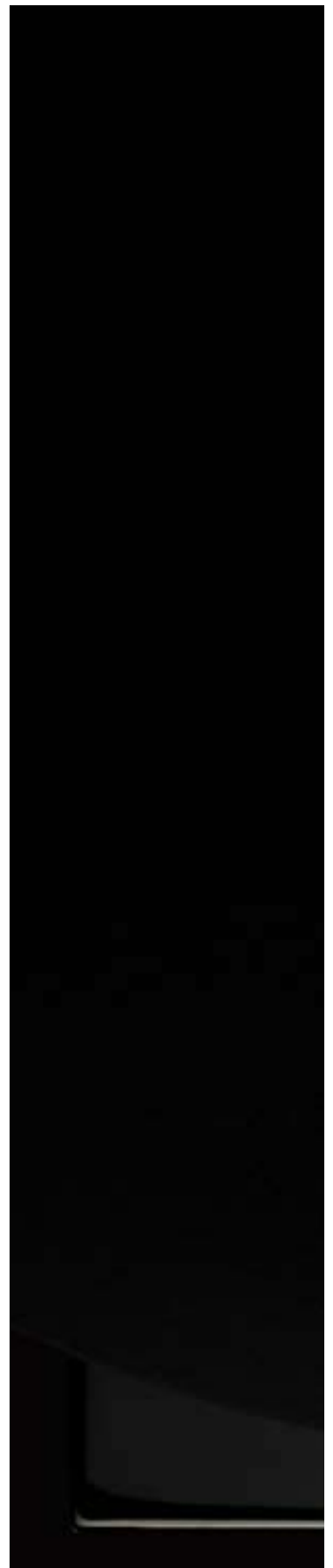
Although deeply flawed, their cost and convenience advantages are such that the overwhelming majority of loudspeakers in today's marketplace are moving coil, and at Quad we manufacture some of the finest examples of this genre. But, as a counsel of perfection, we have to look elsewhere.

Electrostatic speakers have long been renowned for their superlative accuracy and clarity in mid range and upper frequencies but deficiencies in the bass response and indifferent dispersion characteristics have presented difficulties which few manufacturers have satisfactorily overcome. Many hybrids have been attempted over the years which combine moving coil speakers in the bass with electrostatics handling the upper registers, but these designs have not been successful.

An electrostatic speaker is a plastic membrane which is coated with a resistive material and suspended between two perforated metal plates. A polarising voltage of several thousand

volts is connected to the membrane which at rest is suspended at an equal distance between the two plates. When an audio signal (also stepped up to a few thousand volts by a matching transformer) is applied to the metal plates, the varying signal across the plates attracts or repels the membrane, and sound is reproduced. Because the membrane is extremely light, and driven across its entire surface, transient response and freedom from overhang is exemplary quite unlike moving coil loudspeakers.

Of course, if it were as simple as this, there would be many more electrostatic loudspeakers. The challenge has been to produce an electrostatic loudspeaker with extended bass response and a satisfactory dispersion. Virtually none have succeeded. A combination of acoustic problems and extreme difficulties of manufacture has resulted in a bare handful of true full range electrostatic loudspeakers being available to the audiophile and in this field Quad are pre eminent.



"I know of no other speaker I'd rather own,  
regardless of price. I think it's the finest hi-fi  
purchase you could ever make in terms of  
performance and value-yes, it's that good.

Speaker of the year? Nah. Speaker of the  
centuries. This one and the last.'

– Stereophile , Sam Tellig

QUAD

# The electrostatic principle

Naturally produced sound emanates from a point. Virtually no loudspeaker comes close to achieving this but the Quad approach comes closest of all.

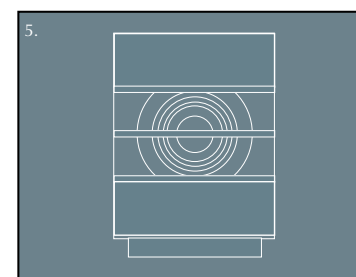
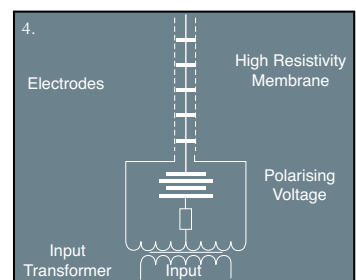
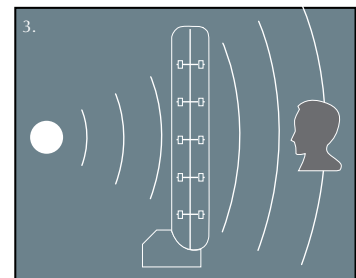
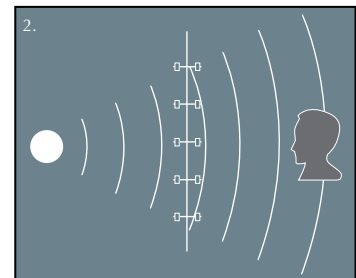
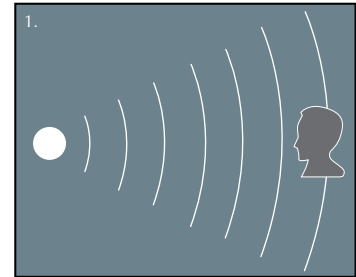
The ESL is dipolar, producing front and rear radiation. It has no box so there is no colouration. Using large panels ensures well maintained bass to well below 40Hz. The centre two panels in each Quad ESL Loudspeaker incorporate concentric rings on the outer grid plates around the diaphragm. Each ring is subjected to a minuscule time delay and attenuated by its own individual circuit, the sound spreading gradually from the centre outwards through each successive ring. This carefully structured delay line creates a near perfect spherical wave front originating from an apparent point 400mm behind the loudspeaker. Imaging is pinpoint and there is no 'sweet spot' all listeners receive a full sonic presentation.

The result is a loudspeaker of unsurpassed accuracy. The Quad ESL is probably the lowest distortion loudspeaker ever made.

1. A perfect point source produces a spherical wave pattern.
2. The air particle movement at a plane some distance from the source.

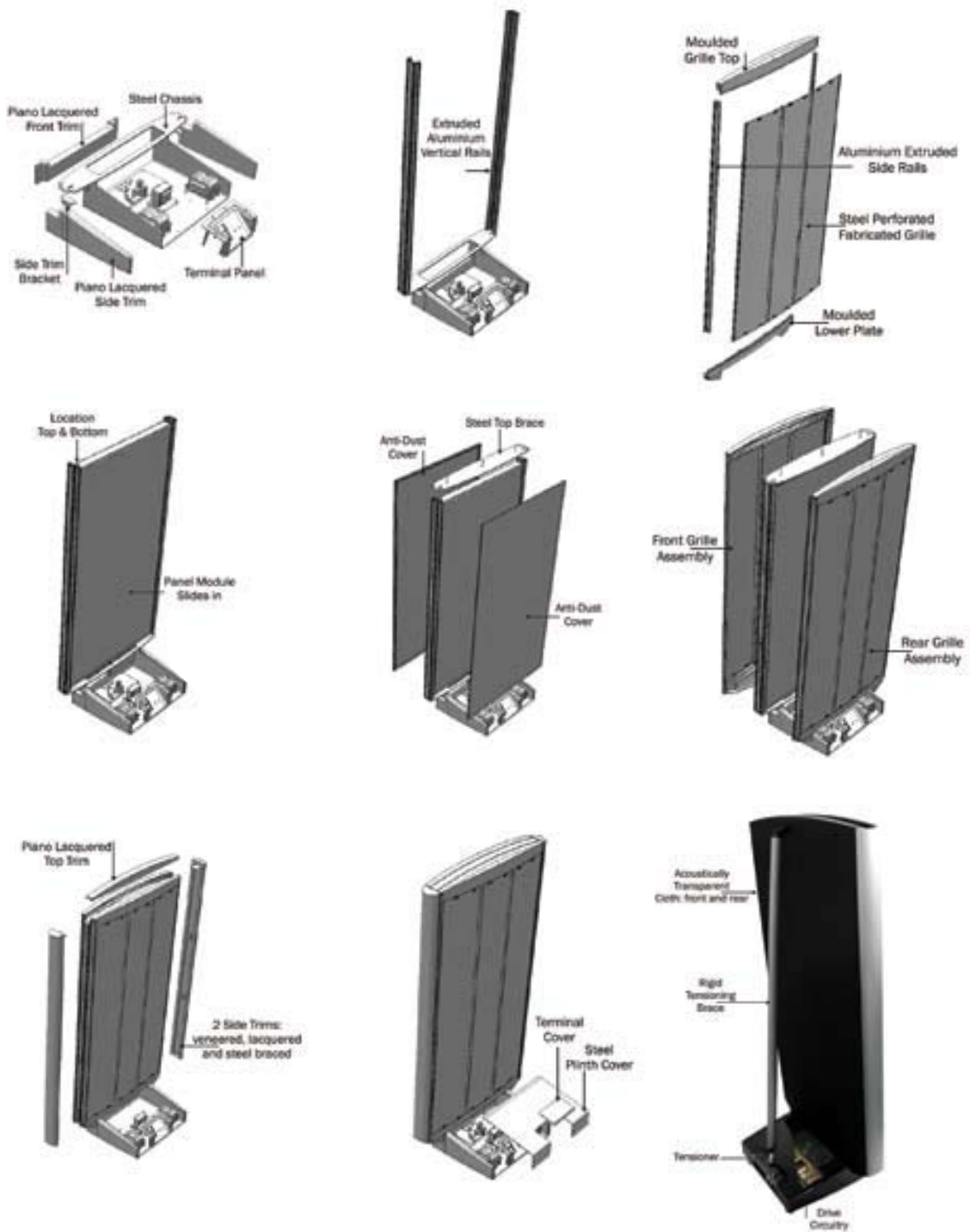
An identical movement in the ESL

3. membrane produces an identical wave front
4. The membrane carries a constant charge. The charge on the electrodes fluctuates according to the music signal.
5. The music signal is fed first to the centre section, then to each ring in turn via delay coils





# Construction process of an ESL 2905



# The ESL<sub>for</sub> home theatre



Whilst for most ESL customers the important factor is performance with two channel stereo sources, be those analogue or digital, for a growing number of customers 'home cinema' or even multi channel music is now also becoming an important consideration.

To create a system which is able to excel at both is a difficult task. Typically the dispersion of traditional moving coil loudspeakers and also the use of three screen channel speakers; create various unwanted interference patterns, which effect quality of the sound and ultimately your enjoyment.

For home cinema use, the ESL is quite remarkable. Although there is no dedicated centre channel to match the new ESLs, most Home Cinema amplifiers feature a 'phantom' centre channel mode.

Such is the ability of the ESLs to project a stable central image, the lack of a centre channel has been regarded by many as an advantage.

The unbroken frequency response and natural presentation of the vocal track is uncannily realistic a hypnotically immersive experience.

A close-up photograph of a black speaker grille. The grille has a fine, woven texture. In the center, there is a small, dark rectangular label with the word "QUAD" written in a white, serif font. The lighting is dramatic, with a bright highlight along the bottom edge of the grille, suggesting a curved surface.

QUAD

"By the highest standards, the 2905s get everything right to a degree that had me shaking my head in awe. This is easily one of the most revealing and accurate loudspeakers I have ever heard."

– Hi-Fi World , Noel Keywood





# The original sound...

Ask many of the most respected music industry professionals in the world what their speaker of choice is – the answer is surprisingly common. The Quad ESL opens a window on a recording unlike any other speaker.

More hi fi critics regard the Quad ESL as an absolute reference for their listening than any other loudspeaker. They are regularly praised by leading magazines, winning Golden Ears from The Absolute Sound (USA); and not just ‘Product of the Year’, but also ‘Component of the Year’ from Stereophile (USA); a Diapason D’Or award (France); and a ‘System of the Year’ award from Hi Fi News magazine – all of these within the last three years alone.

For those involved in the recording industry, their reputation is unsurpassed. The transparency of their reproduction has won them many fans. For professional musicians and studios, this is an invaluable asset. It allows them to hear exactly what has been recorded in perfect balance.

Because of their speed and neutrality, they are unaffected by the overhang and self imposed character of moving coil alternatives.

The Quad ESL has been used by Tony Faulkner (shown left recording at Henry Wood Hall in London) for many years. He started using the ESL 63, the ESL 63 Pro, and now uses a pair of ESL 989s for his critical monitoring.

Tony has produced over a thousand classical music recordings using the Quad ESL because he knows he can trust what he hears – that the very essence of the performance is being transferred.

Using the Quad ESLs for listening at home, you can be sure that your experience will mirror that of the concert hall. You will hear detail and depth never before noticed and each listening session will draw you into the music – transforming your appreciation of every great performance and every great recording.

◀ Tony Faulkner, mastering a classical recording at Sir Henry Wood Hall, London using a pair of ESL loudspeakers

# Quad ESL-2905

The ESL 2905 is the larger of the two models – it employs a grand total of six electrostatic panels; the inner two utilising the concentric rings of anodes used to create the point source image.

The ESL 2905 has a fifty percent greater diaphragm area than its smaller brother. This increase allows for a markedly improved bass response, and greatly enhanced dynamics. The ESL 2905 is therefore a good choice for those in larger rooms, or those seeking more drama on big pieces. However, this speaker doesn't compromise on detail and subtlety – far from it. After all, it is an electrostatic design and so has considerably less inertia and overhang than any moving coil loudspeaker.

Construction is a combination of tensioned aluminium extrusions

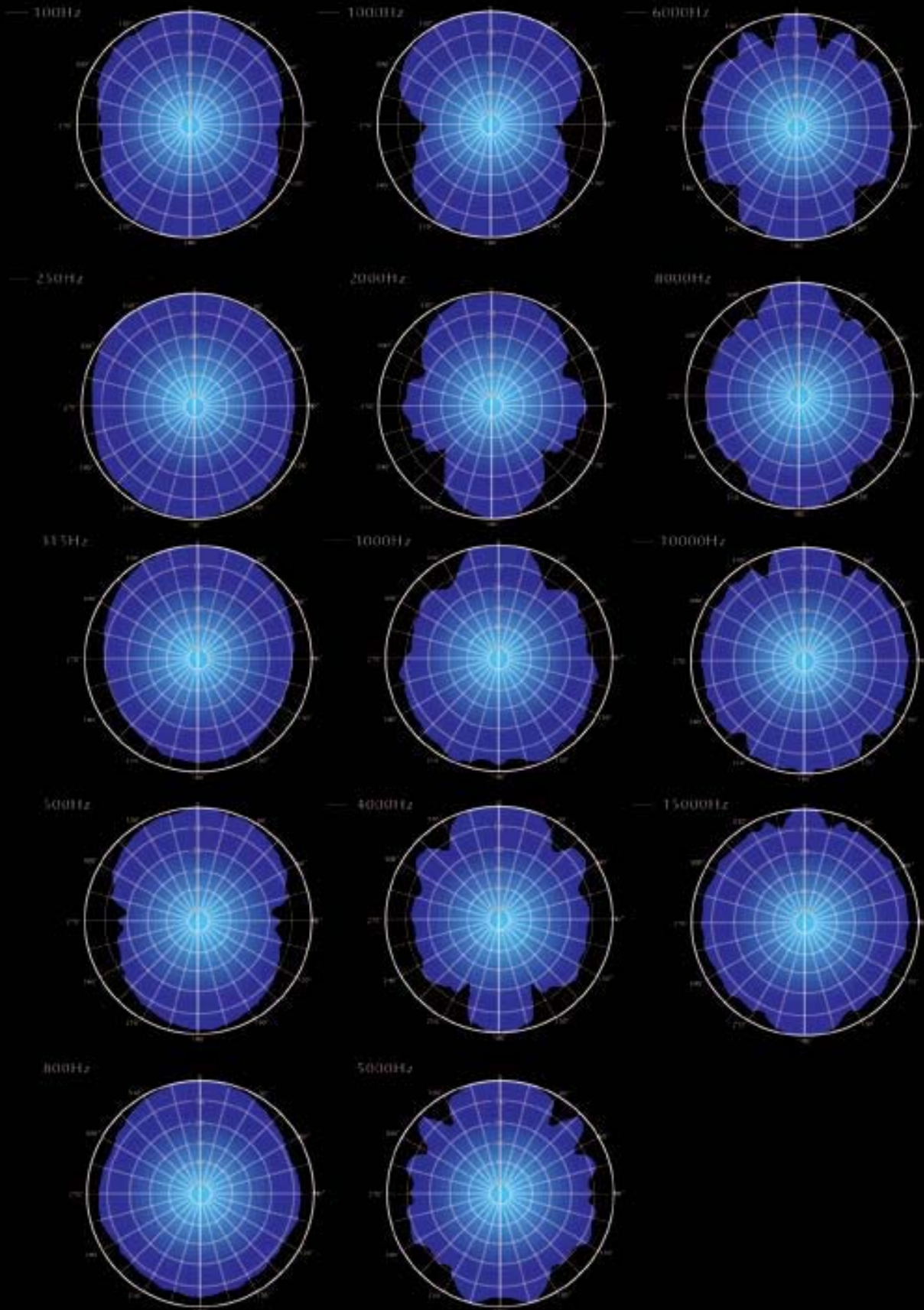
coupled to stainless steel support structures, with a piano gloss wooden trim. The substantial base construction is finished with piano gloss side cheeks and high quality terminations.

Internally, the highest quality components are used, including rare core transformers and high grade audiophile capacitors. Three types of protection system are used to ensure the speakers are difficult to damage when over driven.

A rigid three dimensional structural support system, combined with an overall speaker mass of 41.6kg ensures the maximum transmission of sound energy. This results in the most dynamic and powerful Quad ESL ever produced.



Quad ESL 2905  
Horizontal Directivity



# Quad ESL-2805

The ESL 2805 is the smaller of the two models and uses four panels rather than six. The inner two panels of the ESL 2805 again utilise the concentric anode rings for point source imaging, and the outer rings are again linear in their response.

Whilst the absolute bass extension and dynamic ability are less than its larger brother (it lacks the two supplementary panels of the 2905), the ESL 2805 offers a sublime performance nonetheless. In all other areas the ESL 2805 will sound identical to the ESL 2905 particularly with regard to imaging, detail resolution, and lack of colouration. This is due to both speakers sharing the same technology and components.

The clarity of mid range for which the Quads are most famed is fully in evidence; the sparkling detail and transparency has long been the hallmark of this series.

With a base weight of 34.8kg, together with the rigid bracing, the ESL 2805 is an incredibly stable platform that is ready for a lifetime's work.

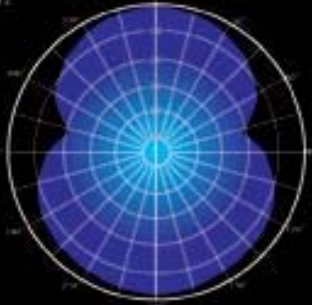
For chamber music, light orchestral, jazz, folk, blues, or indeed, for any aficionados not requiring the additional bass extension and weight of the larger model, you will find the ESL 2805 to be your perfect transport for the journey into audio nirvana.



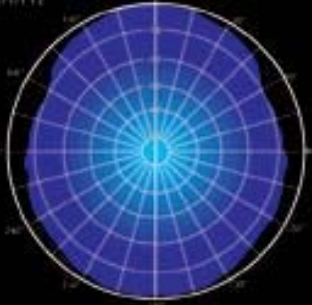


Quad ESL 2805  
Horizontal Directivity

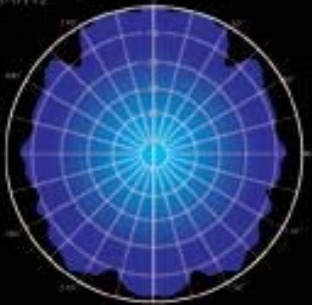
100Hz



1000Hz



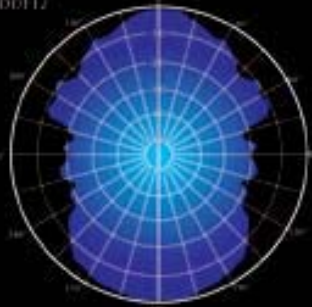
6000Hz



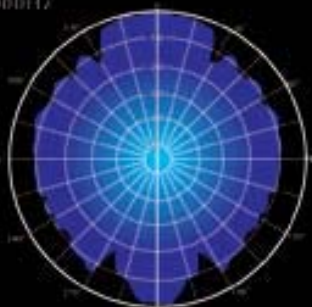
250Hz



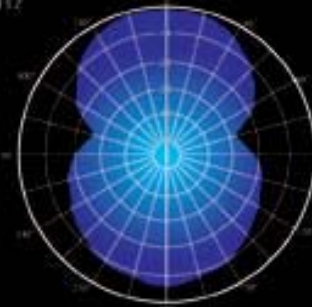
2000Hz



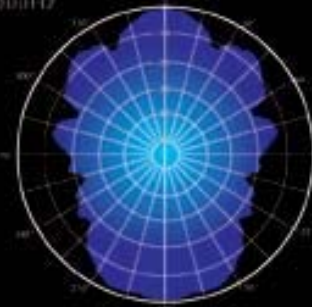
8000Hz



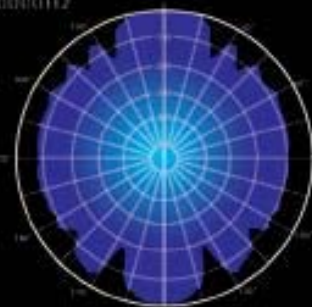
1150Hz



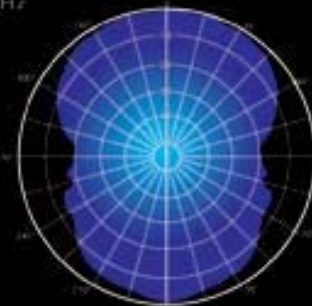
10000Hz



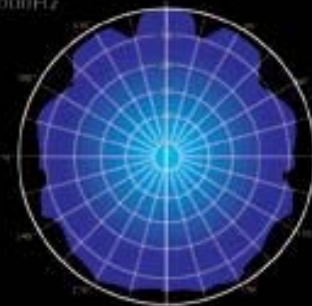
100000Hz



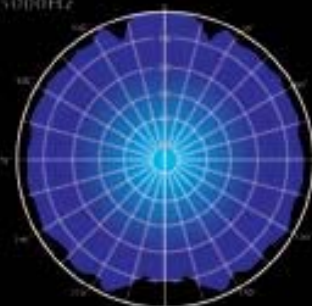
500Hz



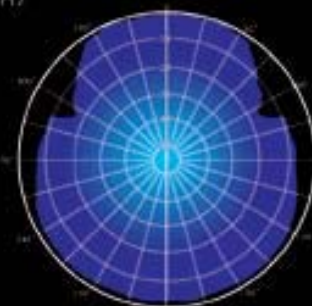
4000Hz



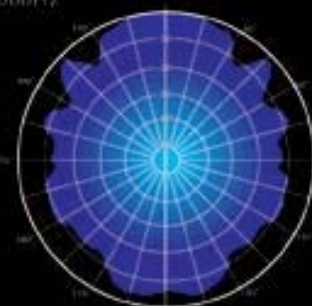
15000Hz



8000Hz



50000Hz



# ESL 2805 & 2905 Specifications



Model	ESL 2805	ESL 2905
<b>Construction</b>		
<b>Format</b>	Floor-Standing Dipole with 3° Tilt Back	Floor-Standing Dipole with 3° Tilt Back
<b>Type</b>	Full-range Electrostatic	Full-range Electrostatic
<b>Membrane</b>	Ultra Low Mass (0.5g/m <sup>2</sup> ) Tensioned Film	Ultra Low Mass (0.5g/m <sup>2</sup> ) Tensioned Film
<b>Panel Elements</b>	4	6
<b>Time Delay</b>	Progressive Concentric Rings	Progressive Concentric Rings
<b>Chassis Structure</b>	Heavy Duty Composite Aluminium / Steel	Heavy Duty Composite Aluminium / Steel
<b>Acoustic Performance</b>		
<b>Maximum Output</b>	2N/m <sup>2</sup> at 2m on axis	2N/m <sup>2</sup> at 2m on axis
<b>Sensitivity</b>	1.5 mbar per volt referred to 1m. (86 dB/2.83V rms equivalent)	1.5 mbar per volt referred to 1m. (86 dB/2.83V rms equivalent)
<b>Impedance</b>	8 Ohms nominal	8 Ohms nominal
<b>Impedance Variation</b>	4 - 15 Ohms	4 - 20 Ohms
<b>Maximum Input</b>	Continuous input voltage (rms): 10V Programme peak for undistorted output: 40V Permitted peak input: 55V	Continuous input voltage (rms): 10V Programme peak for undistorted output: 40V Permitted peak input: 55V
<b>Frequency Response</b>	37Hz - 21kHz (-6dB) 33Hz - 23kHz (useable)	32Hz - 21kHz (-6dB) 28Hz - 23kHz (useable)
<b>Distortion (100dB at 1m)</b>	Above 1000Hz    0.15% Above 100Hz     0.5% Above 50Hz      1.0%	Above 1000Hz    0.15% Above 100Hz     0.5% Above 50Hz      1.0%
<b>Electrical</b>		
<b>AC Input</b>	220-240V or 110-120V	220-240V or 110-120V
<b>Power Fuse</b>	63mA anti-surge, 200-240V 100mA anti-surge, 100-120V	63mA anti-surge, 200-240V 100mA anti-surge, 100-120V
<b>General</b>		
<b>Power Consumption</b>	6 Watts	6 Watts
<b>Dimensions (HxWxD)</b>	1040mm x 695mm x 385mm (add 25 - 55mm for feet)	1430mm x 695mm x 385mm (add 25 - 55mm for feet)
<b>Weight</b>	Net 34.8kg	Net 41.6kg

## Quad Product Range

### Reference series

#### Electrostatic Loudspeakers

- ESL 2805
- ESL 2905



ESL 2805

### Performance series

#### Loudspeakers

- L ITE2 5.1 System
- L ITE2 Mini Loudspeaker Pair
- L ITE2 Centre Loudspeaker Single
- 9L2 Loudspeaker Pair
- 11L2 Loudspeaker Pair
- 12L2 Loudspeaker Pair
- 21L2 Loudspeaker Pair
- 22L2 Loudspeaker Pair
- L2 Centre Loudspeaker Single
- L2 Subwoofer Single
- L ITE2 Subwoofer Single

#### Electronics

- 99 CDP 2
- 99 CD S
- 99 Pre
- 99 Stereo
- 99 Tuner
- 909 Stereo
- 909 Mono



99 Pre Amp  
99 Power Amp

### Classic series

#### Electrostatic Loudspeakers

- ESL 989
- ESL 988

#### Amplifiers

- II forty Power Amplifier (mono)
- II Classic Power Amplifier
- QC twenty four Pre Amplifier
- QC 24P Phono stage



Quad II Forty Power Amp  
QC24 Pre Amp

# QUAD

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