STUDIO MONITORS

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TANNOY®

ellipse 8

owner's manual

TANNOY

CONTENTS

QUICK SET UP

For those who know what an active nearfield monitor is, and have used broadly similar technology before, please at least read the following sections 1.2, 2.2 and 3.4 before doing anything else. We want you to be able to successfully unpack, set up and turn on your Ellipse Monitors without damaging them or your ears. Please do read all the other information and advice sections when you get around to it, to get the most from this very capable system.

1.0: INTRODUCTION

The Ellipse 8 is a state of the art studio monitor of immense ability, designed by Tannoy to exceed the performance expectations of the audio professional, integrating unique technology with such acoustic benefits as to ensure that there is much more to Ellipse than innovative styling.

The incorporation of the exceptional point source Tannoy Dual Concentric™ driver, leading edge electronics and the Tannoy SuperTweeter™ ensures that Ellipse represents a unique **WIDE**BAND™ technology integrated solution, which is aimed at satisfying the most exacting studio monitoring applications.

1.1: APPLICATIONS

Project studios	Broadcast control rooms
TV control rooms	Music studios recording and mixing
Post-production	CD mastering
Surround mixing	

1.2: POWER REQUIREMENTS

IMPORTANT:

- Check voltage selector is correctly set on the mains input module. The factory set voltage rating is displayed on the IEC mains input module on the rear panel - **See fig 1** (Page 4).
- Check that this setting is correct for your area before powering up the system. If it is incorrect, please change over to the alternative setting - **See fig 2** (Page 4).
- At the same time as resetting the voltage the mains fuse must also be changed to the appropriate current rating that matches the operating voltage - **See fig 3** (Page 4).

Fig. 1.
IEC input module showing voltage setting viewing window with rating set at 100V - 120V.

Fig. 2.
IEC input module showing fuse location and input voltage selector orientated for insertion at 100V - 120V usage.

Fig. 3.
IEC input module showing fuse location and input voltage selector orientated for insertion at 200V - 240V usage.

POWER CABLE CONFIGURATION

A mains cable is supplied with an IEC moulded socket at one end and a moulded mains plug, appropriate to the country of use, at the other end. Where the moulded plug is fitted with a mains fuse, always replace with the same 5A rated fuse. If the fitted plug is unsuitable for your type of power sockets, it should be cut off and disposed of safely ensuring that it cannot be mistakenly inserted into a live socket.

The wires in the mains cable are coloured in accordance with the following code:

Green and Yellow	Earth
Blue	Neutral
Brown	Live

The internal wires of the mains cable may not correspond with the coloured markings identifying the terminals in your mains plug, if that is the case then please proceed as shown below. Ensure that the terminals are tightened securely, and that no loose strands of wire are present.The cord grip is clamped over the outer sheath of cable, rather than over the wires.

Green and Yellow must be connected to the terminal in the plug marked by the letter E, the earth safety symbol, or coloured Green or Green and Yellow.
Blue must be connected to the terminal in the plug marked by the letter N or coloured Black.
Brown must be connected to the terminal in the plug marked by the letter L or coloured Red.

IMPORTANT - THIS EQUIPMENT MUST BE EARTHED.

FUSE PROTECTION

Additional mains fuses are provided in the voltage selector section of the IEC mains module. These can only be accessed once the power supply cable has been unplugged. Fuses must only be replaced with those of the same type and rating. Anti-surge type with spiral-wound element is recommended.

- For 100V - 120V use 5mm (3/16") x 20mm (13/16") Time Delay rated at 3.15A (T3.15A).
- For 200V - 240V use 5mm (3/16") x 20mm (13/16") Time Delay rated at 1.6A (T1.6A).

FOR YOUR OWN PROTECTION

- Store the complete packaging in case it is needed for re-use.
- Never expose the unit to moisture, water and extremes of temperature or humidity. Specifically, the unit shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the unit. Allow 150mm (6") behind the unit to allow for sufficient ventilation. Efficient ventilation must not be impeded.
- Never remove the rear panel of the unit, as there is a risk of electric shock.
- There are no user serviceable parts inside the unit. Always refer servicing to your Tannoy dealer or authorised service agent.
- Avoid violent shocks to the unit during packing or transportation.
- Do not plug the unit into the mains until all other connections have been made and checked.
- Terminals marked with the flash symbol are hazardous live and the external wiring connected to these terminals requires installation by an instructed person or the use of a ready-made lead or cord.

1.3: DESIGN PHILOSOPHY

The design of an active monitoring system encompasses many interdependent components: drive units, enclosure, amplifiers and so on. For the Ellipse development programme, each element has been re-examined, looking for new ways of doing things, free of the limitations imposed by accepted techniques, and finding solutions with imagination and flare.

Setting new standards for quality in reference monitoring, the Tannoy Ellipse represents a new generation of active reference monitors featuring wide bandwidth technology. By linking the Tannoy Dual Concentric™ driver with a time-aligned Tannoy **WIDE**BAND™ SuperTweeter™ in a tri-amped active system, carrying on the consistent frequency response and dispersion up to and beyond 40kHz, a true wide bandwidth monitoring system has been created for use with contemporary high rate digital audio.

Considerable design effort has gone into finding ways to move away from the conventional rectangular enclosure with its uninspiring appearance, resonant flat panels, internal standing waves and high-frequency diffraction problems. The resulting elliptical cabinet has a lot of advantages, and not just in the looks department.

The critically designed amplifier module provides high power output, low distortion and a dedicated package of ASP to optimise the full acoustic potential of the driver and enclosure technology in Ellipse.

TANNOY DUAL CONCENTRIC™

A complex driver design principle in itself, the Dual Concentric™ loudspeaker unit was first patented by the company in 1947. The continuous process of acoustic and materials development has brought us to the compact, sophisticated unit used in Ellipse - comprising dual magnet assembly, high frequency Tulip WaveGuide™ and injection moulded polypropylene low/mid frequency cone.

The clear acoustic advantages of the Dual design are not trivial matters to get right. For example, the cone is required to simultaneously reproduce the lower six octaves of the frequency spectrum, whilst acting as a continuation of the hyperbolic high frequency horn. The high frequency driver itself has to cover 4 octaves from midrange to 20kHz, with consistent amplitude, phase and dispersion.

However, the design effort is worth it, as the intrinsic advantages of the Tannoy Dual Concentric™ are numerous.

- There is a coincident point source across the frequency spectrum, high, mid and low.
- The high sensitivity of the HF low-pressure horn driver gives excellent headroom and freedom from thermal compression.
- The intrinsic near time-alignment of the two component parts of the driver design allows true time-alignment to be achieved with a limited amount of electronic phase / time manipulation in the active crossover filters.

TANNOY **WIDE**BAND™ SUPERTWEETER™

Continuing the frequency response to 50kHz, the pod-mounted SuperTweeter™ uses a specially developed aluminium alloy and carbon fibre dome with a rare earth magnet, and is driven by a dedicated 30W IC power amplifier with 80kHz bandwidth. The SuperTweeter™ is time-aligned to the Dual Concentric™, over a wide horizontal dispersion, using a fourth order Gaussian hi-pass filter and critical physical positioning.

The crossover frequency is very high at 14kHz, well away from the mid frequency band where sensitive stereo location information is concentrated. Listening at 1 metre on axis with the high frequency horn, the precise point where the signals synchronise, the SuperTweeter™ is undetectable as a separate source.

CABINET

Along with drive units, the enclosure design plays a major role in the acoustic performance of the monitoring system. A wide variety of shapes, techniques, and materials were researched, to arrive at the elegant, functional and eye-catching elliptical cabinet design. The form of the Tannoy Ellipse is significant. Conventional rectangular, sharp cornered boxes tend to suffer from diffraction and reflection problems caused by the cabinet boundaries - the often overlooked cause of many irregularities heard, and emitted sound field degradation measured, in the higher frequency areas.

With Ellipse however, these side diffraction anomalies have been minimised, and the SuperTweeter™ housing shape and position facilitate consistent, wide dispersion and accurate time-alignment, both on and off axis. The overall cabinet design concept is so effective at minimising diffraction effects because the distance from the centre of the driver to the smoothly rounded edge of the cab is constantly changing, as is the angle of the diffracting edge, so these unwanted diffraction products are diffused in both time and direction.

The laminated birch construction, with its massive MDF front and rear baffle panels, is inherently stiff. This results in an enclosure that is non-resonant, both acoustically and mechanically, while providing the optimum volume for the Dual Concentric™ drive unit for accurate low frequency reproduction.

AMPLIFIER MODULE

Given the increased accuracy and flexibility of active crossover and equalisation circuits, meaning that flatter frequency responses and better phase alignments are possible, it's understandable the integrated active type of speaker system has become the standard in near-field monitoring. This format is the basis of the Ellipse. ASP is employed to optimise frequency response and phase / time alignment, and provide extensive user equalisation to compensate for a range of installations and applications. Premium grade components lie at the heart of the amp module, with 350 discrete components and 28 integrated circuits mounted on a compact surface mount technology PCB. The power amplifiers incorporated are compact, reliable and high quality, tailored to their drive units, with high dynamic damping of diaphragm overshoot and ringing.

2.0: INSTALLATION | **2.1:** UNPACKING AND VISUAL CHECKS

To remove the speakers from the carton without damage, open the box in the upright position and fold back the four flaps. Remove the top foam packaging and power cable then lift the unit out by gripping the cabinet, not the tweeter pod. Place the speaker on a stable surface and inspect for signs of transit damage - please note that nothing on, or in, your speakers should rattle. In the unlikely event of transit damage inform the carrier and supplier; keep all the damaged packaging, as this will show evidence of any careless handling.

2.2: PRELIMINARY RECOMMENDATION

A word of warning on high sound levels - these speakers are capable of generating high output levels over sustained periods of time and such levels, over 95dBspl for 8 hours per day, can eventually cause permanent hearing loss. Since Tannoy monitors have a natural-sounding flat frequency response and low distortion, it's possible not to be aware just how high the sound level is high while working with them.

For continuous exposure we recommend the occasional use of a sound level meter. This should be capable of integrating the sound level over a period of exposure according to noise control standards and used just to check that noise levels are always within safety limits. It is usually accepted that 80dBspl is a safe level for continuous exposure.

3.0: PLACEMENT OF THE SPEAKERS

3.1: POSITIONING

Speaker placement, and the listening environment itself, can completely compromise the performance of any loudspeaker. It is important to understand some of the positional limitations of near-field speakers, and the operating environment, in order for you to gain maximum performance.

Your Ellipse monitors have an integral rubber base that will allow non-slip, vibration free mounting on the near-field platform on your desk or a dedicated speaker stand. Alternatively the rubber base may be removed and an "Omnimount" wall bracket attached, increasing the range of mounting and location possibilities.

The construction of the Ellipse incorporates magnetic shielding for the drive units. These monitors can therefore be used in close proximity to TV screens without any picture distortion. The greatest stray magnetic field is radiated from the front of the main driver, but it's unlikely you'd put your VDU right in front of the speaker. Side-by-side placement should be OK virtually touching, and, of course, modern non-CRT flat screens are unaffected by magnetic field.

3.2: ORIENTATION

Where do you aim the speakers to give you the smoothest and most consistent sound?

How far apart do you place them to give you a good stereo image?

The basic rule is to arrange an equilateral triangle. The distance between the two monitors should be roughly the same as the distance between one monitor and your ears, this in the listening position where you are leaning forward on the console armrest. This distance translates into a usual listening distance, for a near-field system, of around 1.3m (4'3") from each speaker, implying that the speakers will be around 1.3m (4'3") apart to create the normal equilateral arrangement applied in most stereo set-ups.

The speaker horizontal axis should be aimed at a point halfway between the two extremes of the listening positions (furthest forward and back) used when working. This is typically a range of about 600mm (24"). If possible, line up the vertical axis on a level with your ears referencing to the very centre of the Dual Concentric™ drive unit.

You can now confirm that you are on axis in both planes. First ensure that your head is in your normal listening position, look into the centre of the Dual Concentric™ high frequency unit wave guide, if you can see the gold colour of the HF driver dome in the centre of the WaveGuide, then you are close to the ideal listening position. Also, having the monitors angled in towards the user minimises high frequency reflections from walls and outboard gear. Keeping close to this height, while moving around horizontally to access extremes of the desk and so on, will maintain a consistent frequency response; experienced as a wide "sweet spot" in which to work.

3.3: CONNECTING YOUR SPEAKERS

Before hooking up and switching on, ensure that the sensitivity control is set to minimum (+4dB). Connect the IEC plug on the mains power cord into the mains socket/switching module on the amplifier panel. To prevent overload risk it is advisable to check there is no signal present prior connecting a source to the monitor input. Connect the audio signal source (console output) to the input XLR connector at the back of the monitor.

Once the power has been switched on the Multi function LED on the front panel will illuminate RED for two seconds before turning GREEN.

The connectivity of the balanced input is:

Ground (screen)	pin 1
Signal (+) (hot)	pin 2
Signal (-) (cold)	pin 3

If the source itself has a balanced output, use a standard screened (shielded) twin conductor microphone cable, connected as follows:

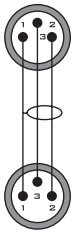
Pin 1 female to pin 1 male (using the screen)
Pin 2 female to pin 2 male
Pin 3 female to pin 3 male

If the source has an unbalanced output, a single conductor screened cable can be used as follows: Signal and ground (screen) wired as normal at the source connector; at the XLR end, the signal should be connected to pin 2, and the screen to pins 1 AND 3.

However, rejection of EMI (Electro-Magnetic Interference, such as radio breakthrough) can be improved by using a screened twin conductor cable even with an unbalanced source, with male XLR connection as described above, as follows: At the source end, whether a phono (RCA) or jack type of connector, the signal (+) should be connected to the centre pin, and the screen and signal (-) should be linked and connected to the signal ground. **(See fig.4)**

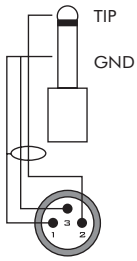
XLR - XLR

Pin 1 - Pin 1 (Ground)
Pin 2 - Pin 2 (Hot)
Pin 3 - Pin 3 (Cold)



Jack (unbalanced) - XLR

Sleeve - Pin 1 (Ground)
Tip - Pin 2 (Hot)
Sleeve - Pin 3 (Cold)



Jack (balanced) - XLR

Sleeve - Pin 1 (Ground)
Tip - Pin 2 (Hot)
Sleeve - Pin 3 (Cold)

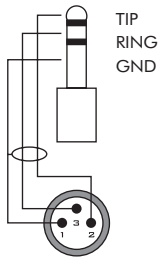


Fig. 4.
XLR signal input socket - Sensitivity control and Lo. Mid and Hi Trim adjuster pots

3.4: SETTING THE LEVEL

The sensitivity control allows for use with a wide range of equipment. Although the two signal levels widely used are nominally +4dBu and -10dBu, the whole area of reference levels is highly confused, with different levels being adopted by different manufacturers, broadcasters, countries, types (e.g. pro or semi-pro) etc. etc. One well-known and high quality mixer manufacturer uses the 0dB meter indication to denote 0dBu output signal level (0.775V). The control room monitor level control can then add up to 10dB gain; so that, with the control room level control set to maximum, 0dB on the meters would mean sending +10dBu (2.45V) to the monitors.

Fortunately, there is a simple way to ignore all that and set the sensitivity control to suit your own mixing desk / workstation etc. Basically, when running with a healthy level on the master output meters, peaking at around, say +3dB (on some thumping dance music for instance), your Ellipse monitors should be able to reach full output in their +4dB setting (minimum). If not, although your monitor level control is turned up to maximum, increase the sensitivity gradually (clockwise towards the -10dB end) until you see short flashes of the red clip indicator.

You can now turn down the volume knowing that max output from your equipment results in flat-out running of your monitors, so they are correctly matched. A little fine-tuning to ensure the left and right are set equally is the only other thing to check.

3.5: CONSOLE REFLECTIONS

Another area of confusion is around the meaning of the term "near-field". Here's one interpretation:

"In physical acoustics, the near-field is defined as the region of space within a fraction of a wavelength away from a sound source. According to this definition, the outer boundary of the near-field region varies inversely with frequency. In terms of human localisation, we will designate the near-field as region of space within 1 m of the centre of the listener's head, and the "far-field" as the region at distances greater than 1 m".

In this interpretation, only frequencies below 170Hz are a fraction of a wavelength @ 1m (3' 3⅜")(½ wavelength). 1m (3' 3⅜")is ¼ wavelength @ 85Hz 1/10 wavelength @ 34 Hz etc. At high frequency you are lots of wavelengths away from the speakers, e.g. 30 wavelengths @ 10kHz.

That is mostly to do with understanding how you sense the direction of the source of sounds, which is a complex subject. For the rest of us, the near-field is a sufficient proximity to the sound source for the room reflections to become negligible. Clearly, the closer you get to the source, the indirect sound bouncing off all the reflective surfaces in the room will be reduced in proportion to the direct sound coming straight from the speakers; but it will never be totally eliminated.

The nearest, and therefore the most significant, reflective surface in a near-field monitoring set-up is the working surface of the console. Its delayed reflection interferes with the direct sound in a particular way to do with the path-length difference between direct and indirect. If the path from the speaker to your ears via the surface of the desk is 340mm (1' 1⅜")longer than the direct path, for example, then the indirect sound will arrive one millisecond after the direct. The direct and indirect sounds will, therefore, be in phase @ 1kHz, and will add or reinforce, but @ 500Hz the two signals will be half a wavelength out of sync, so they will partially cancel. Partially, because the indirect sound is lower in magnitude than the direct, and so is too weak to cancel totally the direct sound.

This strong, single delay gives rise to "comb filtering", so called because the repetitive peaks and dips in the frequency response look like a comb. Peaks will appear at multiples of 1kHz and dips at odd multiples of 500Hz. The weaker the reflection, and the further away the listener is from the "angle of reflection equal to the angle of incidence", the less the effect will be. With careful placement it can be minimised, one major tip can be to use stands behind the desk, rather than site the monitors on the Meter Bridge or small platform

4.0: DESIGN FEATURES

4.1: AMPLIFIER STAGES

The input XLR is directly connected to the chassis with a grounding pin on pin 1. Pin 2 is the non-inverting input and pin 3 is the inverting input. Pins 2 & 3 connect to an electronically balanced, variable gain instrumentation amplifier, which has identical gain and impedance on each input pin for high CMR (common mode rejection). This circuit also contributes very low noise and distortion, while allowing infinitely adjustable sensitivity between +4dBu and -10dBu for full output; two-stage RF filtering further reduces interference.

The signal then flows via a mute circuit for switch-on delay or fault conditions, to the variable EQ (section 4.5). Before reaching the crossover frequency-dividing filters, the signal passes through a complex set of active CL filters (capacitor / inductor), whose purpose is to add finely tuned emphasis or de-emphasis in various narrow frequency bands, to augment the frequency response shaping built into the EQ and crossover circuits.

These help create a more neutral system, diminishing the main sources of colouration. To describe something as characterless and colourless normally wouldn't sound all that attractive; but these are good qualities in a monitor. It means it won't superimpose its own sound-fingerprint onto the signal, but will let you hear the sounds you are creating, neutrally, naturally.

The crossovers are based on Rauch filters, with additional first order and all-pass sections to arrive at symmetrical acoustic transfer functions and optimum phase relationships. Finally, the signal passes to the power amplifiers. Two 150W power amps drive The Dual Concentric™ driver in the Ellipse. A monolithic 30W wide bandwidth amplifier powers the SuperTweeter™ giving ample headroom for the minute signal in this very high frequency band.

4.2: ASP

The Analogue Signal Processing used in Tannoy Ellipse comprises high and low order frequency dividing networks, fixed and variable equalisation, and tuned LC correction filters. This elaborate circuitry is used to achieve a flat frequency response and exceptionally accurate time-alignment across the frequency spectrum. It's easy to appreciate that flat frequency response is desirable in a monitor, but why time alignment?

WHAT'S THE POINT OF TIME-ALIGNMENT?

Different musical sounds are largely distinguished by their attack; the first instants of the dynamic envelope let you identify what instrument is playing. This is transient, non-repetitive information; it requires a system with a clean impulse response to deliver the transients in the right time order, so that a recording of a triangle will sound like a guy standing in front of you playing a triangle.

Also, in a Stereo mix, or a multi-channel mix for that matter, the apparent position of sounds - voices, instruments, reverberation etc. - is dependent on complex phase / time relationships between the components of those sounds emanating from each channel, as much as their relative magnitude. In other words, the stereo image is a time-domain phenomenon. The better the time-domain data is preserved, the more precisely stereo position can be created and resolved. Witness the striking stereo imaging of a pair of correctly set-up Ellipses. You can locate the central phantom image much more firmly, and the sensation of sounds, especially reverbs, seeming to come from far outside the stereo pair will be pretty noticeable, even distracting when you're not used to it.

Furthermore, the fact that the Tannoy Dual Concentric™ is effectively a point source of sound, means that the flat frequency response and time-alignment of frequency bands don't just happen on axis, but are well maintained off-axis. It's very important that the reverberant field is also free from peaks and cancellations in the response.

Compression and limiting have been consciously omitted to preserve dynamics. That means that it is possible for you to drive Ellipse systems into clipping, or drive unit over-excursion; and abuse can result in damage. But, it is a professional system and you want to hear the true dynamics of your work, so Tannoy's view is that any limiting should be applied by the engineer and not imposed by the monitors. That's the only way to assess whether you need it.

4.3: MULTI-FUNCTION LED WITH VLF INDICATOR

The front baffle houses a multi function LED below the Dual Concentric™. This LED can give three colours of indication:

LED Coloured RED:

- The system is powering up (2 seconds on switch-on).
- The LF power amp is clipping (short flashes only please) or:
- Fault condition, such as a blown output transistor (rare); or the internal heatsink temperature has exceeded 70° C., (possible through insufficient ventilation). In the case of overheating, switch off for 10-15 minutes and resume, making sure plenty of cool air can get to the back of the speaker. If the system repeatedly gets hot and shuts down under moderate use, a fault must have developed. Please contact your supplier.

LED Coloured GREEN:

Switched ON; the monitor is operating normally.

LED Coloured YELLOW:

Subsonic, or Very Low Frequency signal is present. The Ellipse's 6th order low frequency alignment incorporates a steep low-cut filter (LF hi-pass) to stop excessive cone movement and waste of available amplifier power.

That's a fairly common arrangement in integrated active near field monitors, because it's great for making best use of available amplifier power and conferring some protection to the LF driver, but what if you want to be aware of what's going on below the turnover frequency of the LF hi-pass? The downside of this kind of alignment is that you may be working with signals in the mix that have subsonic VLF content. In a conventional passive speaker and external amplifier set-up, you'd know about it because of the excessive slow cone movement that would be pretty obvious to see.

This kind of unwanted VLF content saps amplifier power and can cause damage to whatever speakers out in the world will be reproducing the track. It can happen on dialogue, music or whatever - think about a spoken "P" causing trouble because of inadequate pop-shielding, a subway train passing under the studio during a big symphonic moment and no-one noticing, or even a drum loop sampled from warped vinyl. There are plenty of subsonic signals waiting to disrupt your work, but you don't want to impose a blanket remedy by inserting a 50Hz hi-pass filter on the entire mix.

That is where the VLF indicator in the Ellipse comes into play - any sub 20Hz signals above an innocuous level will cause the LED indicator to flash yellow on every positive and negative half cycle of the offending signal component. You may want to look into eradicating the problem at source, but at the very least, you can set about finding which track is culpable and filter it out.

4.4: ACTIVE CROSSOVER

The integrated active crossover, which splits the input signal into LF and HF separate amplification channels, has been designed using a dedicated computer simulation program. The result is an unconventional topology giving optimum electronic transfer functions, i.e. achieving the desired target response when combined with the acoustical responses of the LF and HF units in the actual cabinet.

Thanks to the advantages of the Dual Concentric principle, filters with low phase variations in the overlap frequency range can be used without the detrimental effect on the spatial dispersion that occurs with conventional multi-way speakers. As a result the group delay can be maintained practically constant over the whole frequency range, essential to provide a good transient response and an accurate stereo image. Such a degree of optimisation and accuracy in matching the crossover to the drive unit cannot be achieved passively, without inducing significant loss of sensitivity and resulting in highly inconsistent performance due to the variations in the impedance of the drive units.

4.5: BASS PORTS

Ellipse monitors have bass ports located on the front baffle. You should keep the back panel of the monitors at least 150mm (6") away from the nearest wall surface to avoid the monitor coupling with the surface and increasing the bass response in a manner that results in a bass light mix.

If you cannot avoid being close to the wall or if you're using a separate subwoofer, you may wish to consider plugging the port tubes with closed cell foam-rubber plugs supplied. Because the ports aren't needed if the monitors are coupled to the wall or are being used with a high pass filter, you won't be losing any bass performance and you can improve the mid-bass response by plugging the ports.

4.6: SENSITIVITY CONTROL

The sensitivity control on the rear panel provides input gain adjustment, and it may seem strange that you turn it clockwise towards a negative figure (-10dB) or anticlockwise towards a positive one (+4dB). That's because it tells you the nominal signal level needed to drive the system to full power at each end of the range. We kept the conventional operation of a volume control - it gets louder when you go clockwise - but resisted the temptation to calibrate from 0 - 11. The sensitivity control allows the monitor to be used with any professional or semi-professional equipment, with a balanced or unbalanced output signal. See section 3.4, Setting the Level.

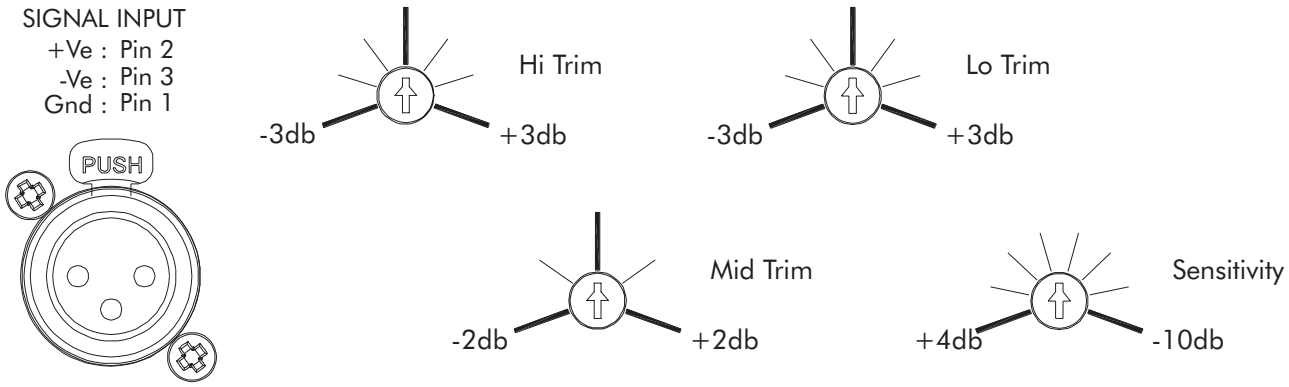


Fig. 5.
XLR signal input socket - Sensitivity control and Lo. Mid and Hi Trim adjuster pots

4.7: TRIM CONTROLS

The primary function of the trim controls is to compensate for room effects. How a monitoring system sounds and measures is obviously affected by room acoustics, a major factor being the monitor's proximity to boundaries. If placed close to a wall the main effect is a low frequency boost. In a common set-up, where the mixing desk and monitors are located close to a wall or studio window, the LF boost can be as high as 6dB (relative to free space), and this boost happens progressively from 400Hz downwards.

To enable precise compensation for room related effect, and to correct slight variations in drive unit sensitivity, a three-band equalizer precedes the crossover section, allowing fine adjustment at a low Q. For example, the mid trim has a +/- 2dB range of adjustment centred at 1.4 kHz. Yet because of the low Q factor this is still providing a +/- 1dB adjustment at 330Hz and 6kHz.

There is a further option to reduce LF output using the foam bungs provided to disable the bass reflex ports. In a ported enclosure system such as the Ellipse, the ports add to the LF acoustic output, but they do this by resonance. With the ports disabled, the enclosure becomes an "infinite baffle" system, which has a superior transient response. So there is a trade-off to experiment with. For example, some users will prefer the sound with the ports disabled and the low trim turned up, rather than the ports enabled and the low trim turned down. Minimum and maximum levels of LF output are achieved with the low trim turned to -3dB and the ports disabled; versus having the low trim turned to +3dB and the ports enabled. But as suggested above, it is possible to get similar (but not identical) output curves with ports disabled or enabled, using the low trim adjustment.

5.0: PERFORMANCE DATA

Frequency response measurements have been measured in Tannoy's anechoic chamber @ 1 metre on-axis (apart from dispersion traces). Some measurements taken with ports disabled by use of port bungs - see individual captions.

In common with all conventional anechoic chambers, the benefits are limited by the physical size of the space, hence the irregularities in the traces below 200Hz. To maintain anechoic performance down to 20Hz would require a space maybe 100 times larger, which becomes unfeasible. Also, a true full bandwidth anechoic chamber would show much reduced output at low frequency, a factor of the wider dispersion of longer wavelengths. Virtually all real-world acoustic spaces will show higher low frequency levels than our anechoic chamber.

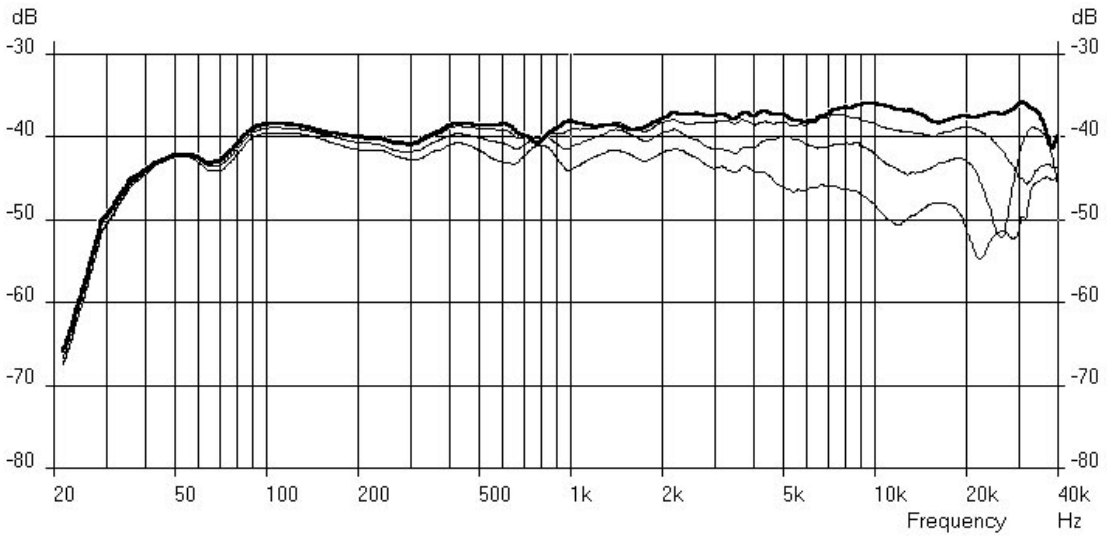


Fig. 6.
Horizontal dispersion - measured at 0° - 15° - 30° - 45°.

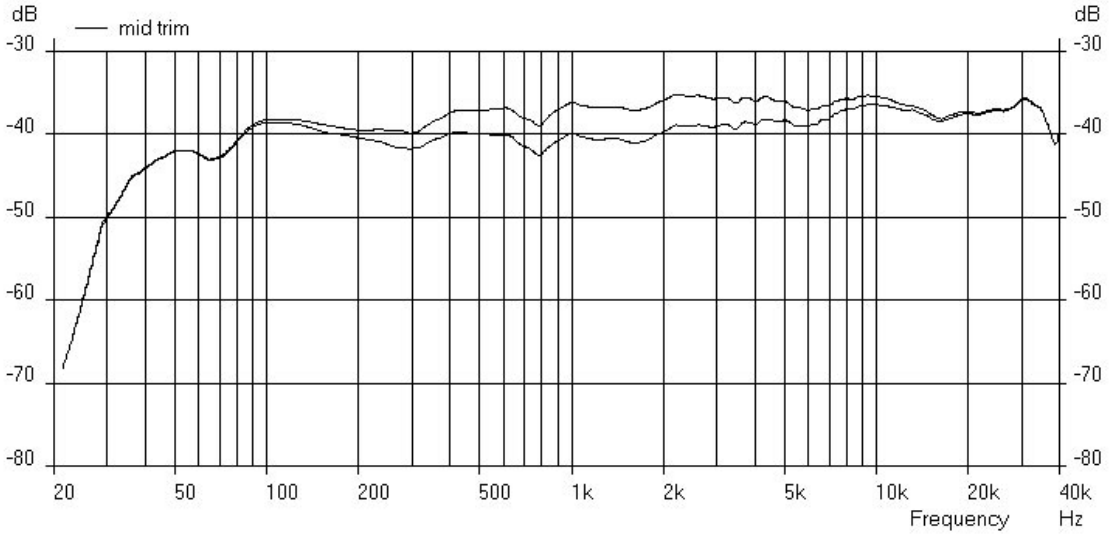


Fig. 7.
Mid Trim - Minimum & maximum.

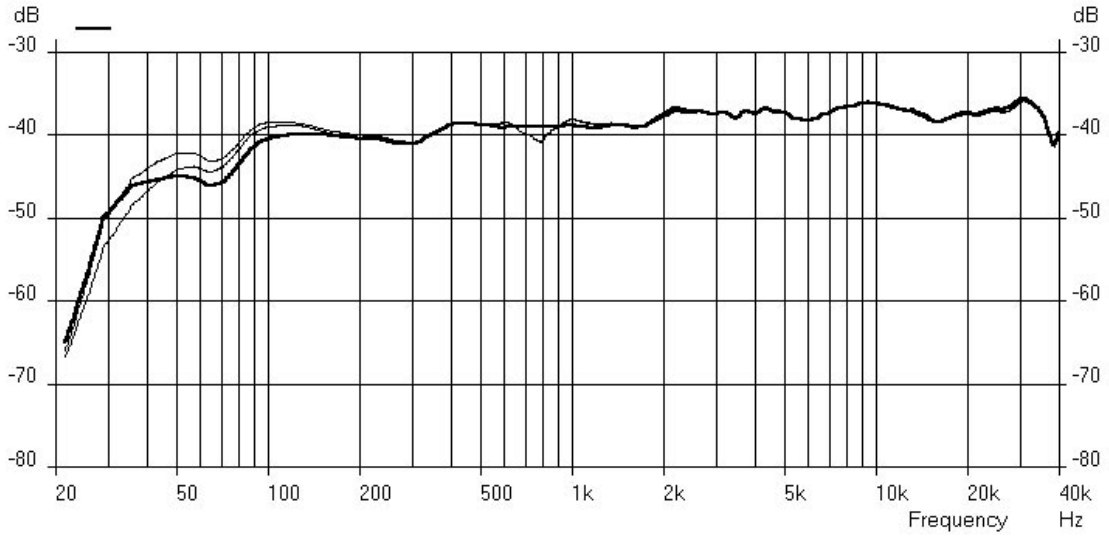


Fig. 8.
LF reduced by bungs (bold) and by Lo-Trim minimum setting

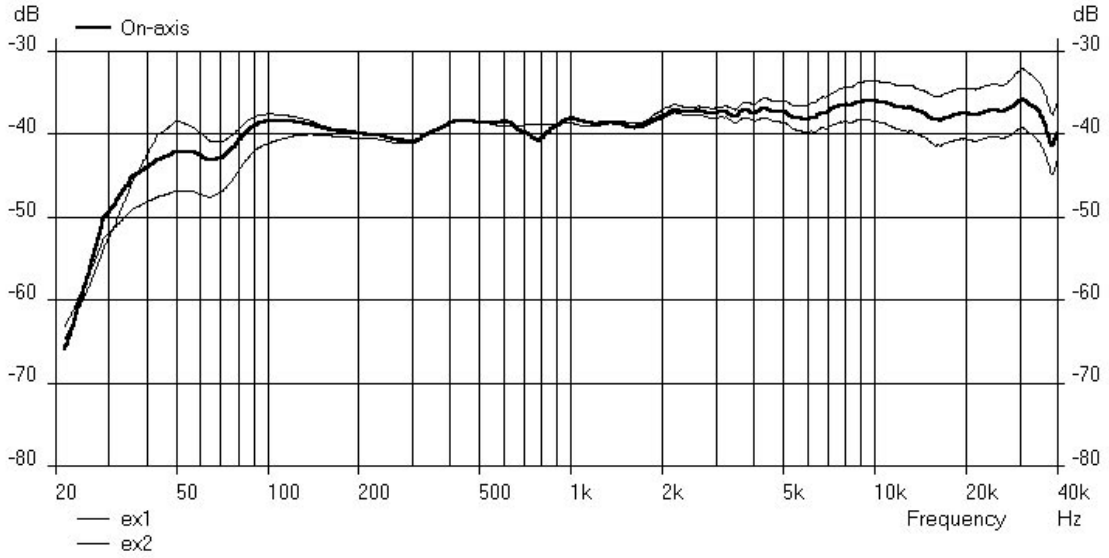


Fig. 9.
Hi & Lo Trims - Minimum & maximum + flat (min. LF trace with port bungs).

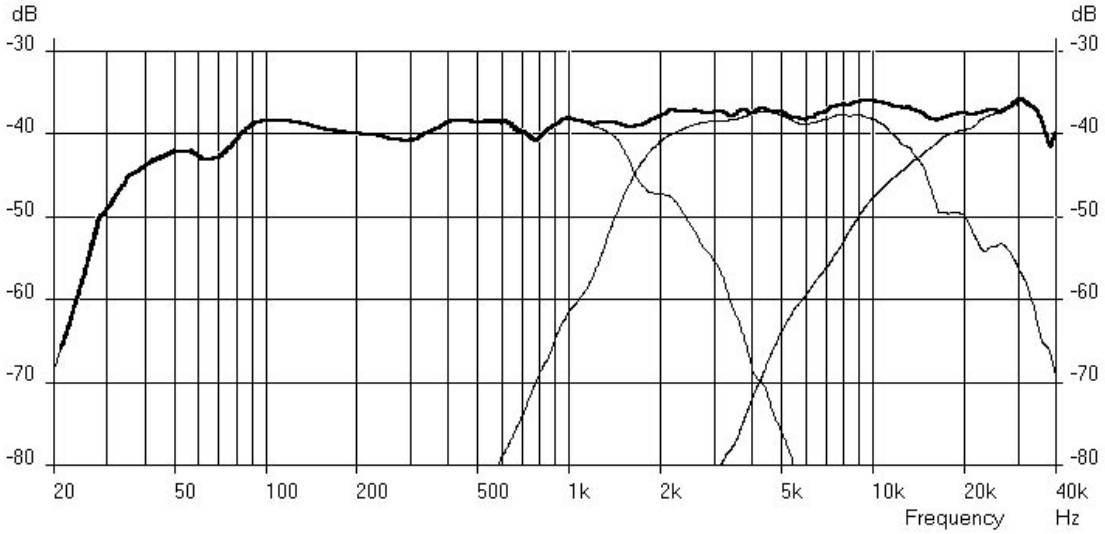


Fig. 10.
Full bandwidth + LF, HF & ST pass-bands

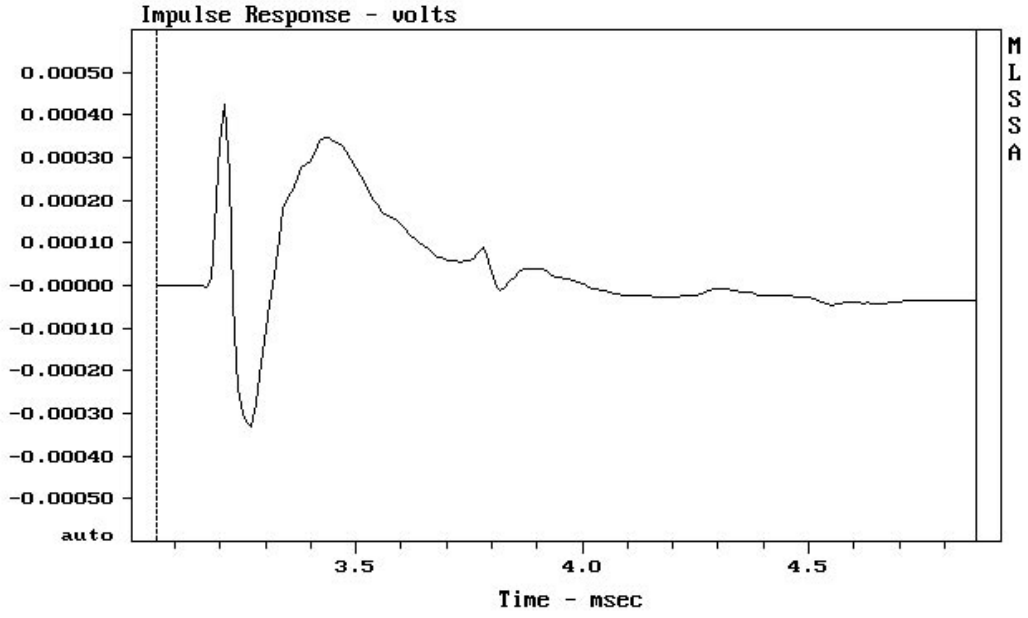


Fig. 11.
Impulse response using MLSSA.

TECHNICAL SPECIFICATIONS

SYSTEM

Frequency response *(1)*:	40 Hz - 50 kHz
Maximum SPL *(2)*:	118 dB Distortion < 0.8%

ELECTRONIC SECTION

Amplifier Input:	22 kΩ balanced on combined XLR/jack
Sensitivity:	0.775 Vrms (0 dBu)
Crossover frequencies:	1.7 kHz & 14kHz
Amplifier output power:	LF 150 W / HF 150 W / ST 30W
Output noise:	80 dBV
Power supply:	Fixed mains voltage - IEC inlet with detachable power cord
Power consumption:	10 to 160 VA

CABINET

Type:	Low frequency design optimised bass-reflex loaded, 12 litres
Drive unit:	Tannoy shielded 160mm (6.5") bass driver
Tannoy shielded:	25mm (1") soft dome tweeter
Construction:	Laminated birch / MDF baffle.
Finish:	Grey suede paint finish - Black on SuperTweeter™
Dimensions H x W x D:	340mm (13⅜") x 210mm (8⅜") x 260mm (10⅜")
Cabinet weight:	15 kg (33lbs)

SHIPPING

Pack dimensions H x W x D:	440mm (17⅜") x 620mm (24⅜")x 290mm (11⅜")
Shipping weight:	18.5 kg (40.7lbs)

NOTES

(1) +/- 3 dB , measured at 1m in an anechoic chamber. ***(2)*** Peak SPL at mix position for 1 pair driven

Tannoy operates a policy of continuous research and development. The introduction of new materials or manufacturing methods will always equal or exceed the published specifications which Tannoy reserve the right to alter without prior notice. Please verify the latest specifications when dealing with critical applications.

7.0: WARRANTY

No maintenance of the Ellipse Monitor is necessary.

All components are guaranteed for a period of one year from the date of manufacture, subject to the absence of, or evidence of, misuse, overload or accidental damage.

For further information please contact your dealer or the distributor in your country.
If you cannot locate your distributor please contact:

Customer Services, Tannoy Ltd, Coatbridge, Strathclyde ML5 4TF
T: +44 (0) 1236 420199 F: +44 (0) 1236 428230 **www.tannoy.com**

DO NOT SHIP ANY PRODUCT TO TANNOY WITHOUT PREVIOUS AUTHORISATION

This warranty in no way affects your statutory rights.

8.0: SERVICING

8.1: CABINET FINISH

To remove marks and scuffs use a soft brush. If necessary, a little warm water and detergent can be used but under no circumstances use a solvent or abrasive cleaner.

8.2: DRIVER REMOVAL

Remove the two port tubes from the front baffle panel. Remove the silver trim plate by hooking your fingers into the holes left by the port tubes and carefully pulling the trim panel towards you. This will disengage the studs that hold the panel in place and allow you to remove it to gain access to the driver itself. Undo the four chassis mounting screws and remove the driver, note the polarity of the internal connections and disconnect the internal wiring. Take care not to damage the moving parts of the LF driver.

To refit the driver, connect the cables from the crossover to the chassis terminals. Fit the driver into the mounting hole, making sure that the internal connecting cables are not trapped or able to touch the LF cone. Fasten the screws finger tight and then progressively tighten them down with the appropriate driver.

8.3: AMPLIFIER

A fuse is located just under the mains input **(location 2 fig 1)**. Replacement is simple and a spare fuse is provided inside the fuse housing itself. Always use the correctly rated fuse, as indicated on the silk screen-printing. Only qualified and authorised personnel should undertake any other servicing regarding the amplifier section.

In case of any malfunction of the unit, the first thing to check should be the input connection, more especially if the source has unbalanced outputs (see "Connecting your speakers" section) as improper connection can result in significant level reduction and affect the response.

8.4: LIST OF SPARE PARTS

PART NUMBER DESCRIPTION

9900 0385 Cabinet assembly

7900 0495 Driver kit - Type 1690

7900 0457 High Frequency Unit - Type 1205

7300 0682 Amplifier- complete unit 100v - 120v

7300 0683 Amplifier- complete unit 220v - 240v

9.0: DECLARATION OF CONFORMITY

The following apparatus is manufactured in the United Kingdom by Tannoy Ltd of Rosehall Industrial estate, Coatbridge, Scotland, ML5 4TF and conform(s) to the protection requirements of the European Electromagnetic Compatibility Standards and Directives relevant to Domestic Electrical Equipment. The apparatus is designed and constructed such that electromagnetic disturbances generated do not exceed levels allowing radio and telecommunications equipment and other apparatus to operate as intended, and, the apparatus has an adequate level of intrinsic immunity to electromagnetic disturbance to enable operation as specified and intended.

Details of the Apparatus: Tannoy Active Loudspeaker
Model Number: Ellipse 8

Associated Technical File: EMC-Ellipse 8

Certifying Competent Body: Nemko Ltd
EMC Compliance Services

Certificate Number: N394C1

Test Methods/Procedures: EN 55103 - 1: 1996
EN 55103 - 2: 1996

Applicable Standards: EN 55103 - 1: 1996
EN 55103 - 2: 1996
EN 61000-3-2: 1995 + A1/A2/A14
EN 61000-3-3: 1995
EN 61000-4-2: 1995 + A1: 1998
EN 61000-4-3: 1996 + A1: 1998
EN 61000-4-4: 1995
EN 61000-4-5: 1995
EN 61000-4-6: 1996 + A1
EN 61000-4-11: 1994

Signed: 

Position:
Engineering Director - Professional Products

Date:
10th September 2002

For Tannoy Ltd

TANNOY | ellipse | DUAL CONCENTRIC | WIDEBAND™ TECHNOLOGY

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