

Low/Mid Frequency unit	Spendor 130mm Homopolymer Polypropylene
High Frequency unit	19mm Soft Dome
Crossover point	4.5kHz
Nominal Impedance	8 ohms
Frequency response $\pm 3\text{dB}$	80Hz to 20kHz
Pair Matching	Within 1dB
Power Handling	70 watts
Sensitivity	84dB/1 watt/1 metre
Maximum SPL	100dBA at 1 metre
Input connections	Gold-plated 4mm terminals, Bi-wire option
Cabinet size (HxWxD)	305 x 165 x 180mm (12 x 6.5 x 7 in)
Weight	4.7kg (10.3lb)

Due to a policy of continual development Spendor Audio Systems Limited reserves the right to make changes without notice to these specifications.

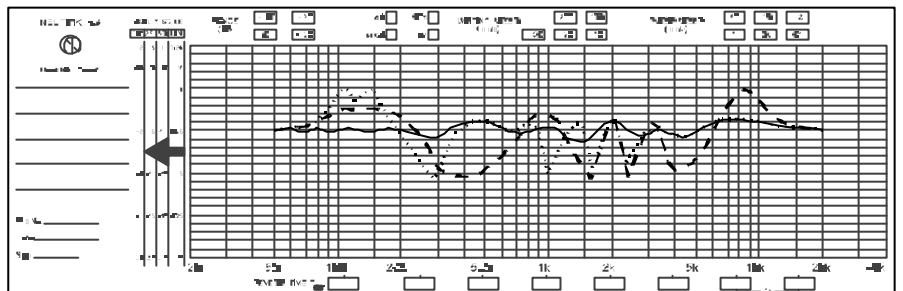
## Loudspeaker Positioning

Spendor S3/5 loudspeakers are designed to be free-standing, in that there should be an air space between the cabinet and large surface areas (walls and floor). The high frequency unit should be at about ear height for the normal listening position. If mounted above or below it will be advantageous to tilt them to face the listener.

Where loudspeakers have to be placed near to the corners of a room, they should be positioned non-equidistant from the side and rear walls. This reduces the effect of the phase differences between the reflections from the two walls and the directly radiated sound. Most loudspeakers should never be placed tightly into a corner, for although this increases the bass response in one frequency band, it is followed by a cancellation in the next (*Figure 1*). The effects may be heard by listening to live speech where the head is close to the room corner and comparing this with normal speech quality. Music reproduction will be affected in the same way. Reflections from any close wall or large reflective surface (furniture, mirror, etc.) can effect stereo imaging.

Figure 1 - Typical Loudspeaker Response Curve

- Optimum room position
- Corner position
- - - Placed on floor



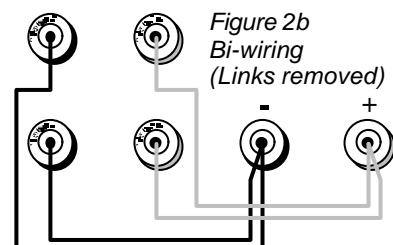
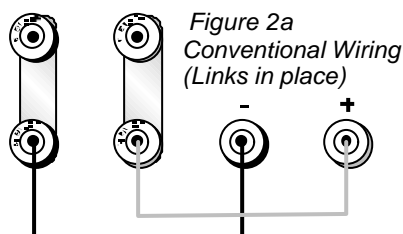
The dispersion characteristics of Spendor loudspeakers, in common with many other makes, are only correct for operation in an upright position. The loudspeakers may be mounted on shelves, but the conditions

outlined in the earlier, should be taken into account. A space between the back of the shelf and wall will, in most cases, be of some advantage. All loudspeakers need to be rigidly fixed at a point in space to produce crisp stereo images, low coloration and a wide dynamic range. This is helped by spiked stands of a suitable height. Ask your Spendor dealer for advice when choosing stands to be partnered with our loudspeakers. Spendor monitors are designed to be mounted on neoprene or similar material complimenting the 'lossy' design of the systems.

## Bi-wiring

Bi-wiring can give improved sound quality for the cost of a second set of cables. Bi-wired arrangements work to keep the heavy LF return earth currents away from the HF section of the crossover reducing or eliminating modulation distortion. Remove the links between the terminals and consult the diagrams before bi-wiring your loudspeakers.

Switch off your amplifier. Take the first cable pair. Connect the black terminal on the amplifier left channel to the black HF terminal on the left loudspeaker and the red terminal of the left channel to the red HF terminal on the left loudspeaker. Now connect a second pair between the black terminal on the amplifier left channel to the black LF terminal on the left loudspeaker and between the red terminal of the left channel to the red LF terminal on the loudspeaker. Repeat for the right channel.



## Queries and Service

If you require advice or service on your audio system please contact your Spondor dealer. We recommend that you retain all the packaging for your loudspeakers in case you need to transport them safely in the future.

## Warranty

All Spondor Classic Series loudspeakers (The Equipment) are guaranteed against defects in components and materials for a period of 5 years from date of purchase. Within this period parts will be replaced free of charge provided that failure is not due to accident, negligence or misuse. Labour and carriage are not covered except by local agreement. The guarantee offered does not affect the consumer's statutory rights. To obtain Service under guarantee the equipment together with an original or clear copy of proof of purchase must be delivered to a local Spondor dealer or distributor at the owner's expense.

Spondor Audio Systems Ltd and any of its authorised distributors or dealers reserve the right to refuse service under guarantee if the equipment has been subject to unauthorised modification or any of the serial numbers identifying the equipment have been defaced or removed.

Please register ownership of your Spondor loudspeakers by completing and returning the enclosed registration card. This will help us to deal quickly with any queries regarding your equipment.

## Wiring up

Position your loudspeakers where you want them before wiring up and choose suitable cable runs of approximately equal length. Switch off your amplifier. Check that the shorting links are in place between the HF and LF terminals of bi-wired loudspeakers and that the links are in place between the LF, MR and HF terminals on tri-wired models. For information on bi- and tri-wiring, see your loudspeaker specifications.

Deal with each channel separately. Connect the black terminal (marked 'negative' or with a '-' symbol) on the amplifier left channel to the black terminal on the left loudspeaker. Similarly, connect the red terminal (marked 'positive' or with a '+' symbol) of the left channel to the red terminal on the left loudspeaker. Repeat these connections for the right channel. Turn the volume control down and switch on the amplifier. Pick a source (CD, Tape etc..) and advance the volume control carefully.

## Cable Quality

Loudspeaker cables can have an important effect on sound quality in the overall context of balancing the complete sound reproduction system, not just in feeding the correct signal to the speakers but also in affecting the performance of the amplifier. Advice should be sought from your Spondor dealer. When bi- or tri-wiring you can use different cable types for the two/three HF/MF/LF sections in both channels. To retain the correct frequency balance of the loudspeaker, cables should have a loop resistance of less than  $0.4\Omega$ . It is recommended that you break and remake loudspeaker connections periodically to check for poor joints and surface corrosion of the bare cable.

## Loudspeaker Power Ratings

For full details regarding the power handling of your Spondor loudspeakers please see your loudspeaker specifications. Moving coil drive units show two types of permanent damage. Distortion or fracture of the cone/voice coil assemblies occurs where the cone movement is large enough to deform the material beyond its elastic limit, or damage is caused by physical contact with the magnet/frame assembly. This occurs mainly in the low frequency range of any specific unit. Voice coil overheating (burn out) - the more frequent damage - can occur at any frequency but is usually associated with middle and upper frequencies. These two power limitations may not have the same value.

In most loudspeaker drive units, a large part of the input power is dissipated as heat within the voice coil. The maximum input power is therefore directly related to the heat energy that the voice coil/magnet assembly can dissipate before the temperature rises to a point where the coil former or adhesives suffer physical changes and fail. The temperature rise of the coil is associated both with the power applied and the period of time for which the power is applied.

Where the overload conditions are bounded only by the limits of the cone excursion, the maximum continuous input power and the maximum peak power, may have the same value.

So for a single drive unit, two values are needed to express the maximum power capabilities in absolute terms - for multi-driver systems the number of values would, in most cases, be the number of units plus one, to cover the bass limitations. This means that for a three drive-unit system, such as the Spondor SP1/2, a single value for maximum input power, continuous or any other time period, cannot be specified. Each unit will have its own rating that is frequency dependent. Fortunately, for general use - the reproduction of speech and music - the power input to a loudspeaker is constantly changing. This, coupled with a programme spectrum that normally falls in level at both low and high frequencies, allows a maximum power rating figure to be given to a system that bears little relationship to the only measurable figure, i.e.. average watts x time.

Analysis of a range of programme material shows large variations, with time, in the relationships between the peak power values and the RMS or average power values. Percussive instruments, for instance, may have an instantaneous peak-to-average power ratio of 20 to 1.

The only relevant figure which can be placed on the maximum power input to any system which is to be used for normal programme material, therefore, is one which takes into account all the factors mentioned. This figure can be termed 'peak programme power' and is directly related to the maximum power that should be delivered by the driving amplifier. In the case of the SP1/2E, 100 watts is quoted, and is meant to cover 'normal' programme material that has a spectrum where

the peak levels at low and high frequencies are well below the mid-band levels, thus providing the necessary protection at low and high frequencies.

One complication does arise for bass guitar, organ pedal notes and electronic music reproduction. In these cases it will be possible, to apply the full 100 watts at low frequencies, which would result in mechanical damage. Amplifier specifications do not always specify the peak output power.

Final choice of a suitable amplifier rests with the user who is well advised to seek guidance of an authorised Spendor dealer. Care should be taken to ensure that whatever the amplifier rating, the input to the loudspeaker does not exceed the recommended peak value.

## Stereophonic Reproduction

Symmetry of acoustics and a listening position fixed within small limits is ideal for the best stereophonic definition. A typical set-up is shown in Figure 1. Any deviation from this general layout will degrade the perceived stereo image. A single fixed position is usually far too prohibitive for domestic listening and a compromise has to be found. Angling the speakers in so their axes cross in front of the listeners (Figure 2) is the most convenient method of increasing the listening area. Nowhere within this larger area will the stereophonic image be as sharp as before, however more listeners may receive an only slightly degraded stereo impression. If possible, it is important that, the listening area is arranged symmetrically within the room. This is because as much of the information is received indirectly as reflected sound from the surface of the walls. Different surface finishes or asymmetry will affect both the stereo balance and sound quality to some extent.

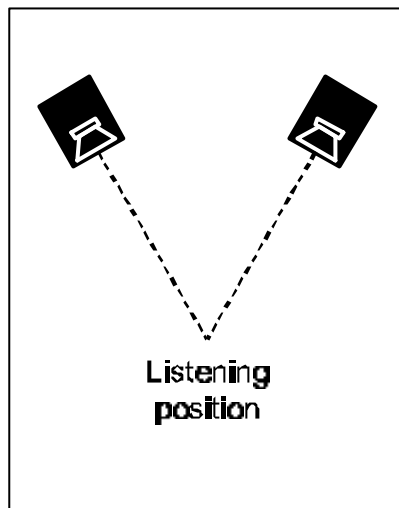


Figure 1 Single fixed position may be too restrictive for domestic listening

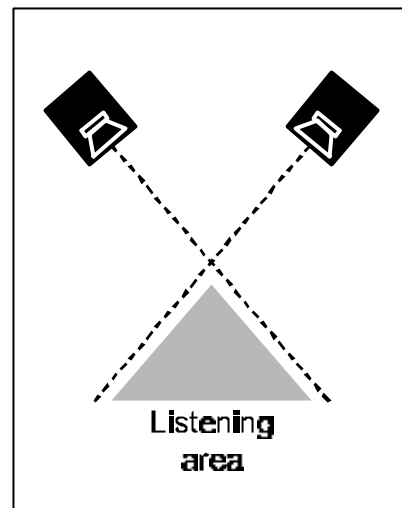


Figure 2 'Toe-ing in' – a convenient way to increase the listening area

Different surface finishes or asymmetry will affect both the stereo balance and sound quality to some extent.

## Polarity

It is important to observe the correct polarity when wiring up your system. There are two issues to be addressed - channel identification and phase. The left speaker should be connected to the left channel of the amplifier.

It is recommended that you connect red to red and black to black in both channels. Reversing connections to both channels changes the 'absolute phase' of the system. It should be noted however that absolute phase can differ from recording to recording and sometimes between amplifiers or pre and power amplifiers.

If the positive and negative connections to one side of the stereo pair are inverted the system is said to be 'out of phase'. This causes noticeable bass cancellation and a diffused stereo image. Test discs and tapes can be helpful. Reverse the polarity of the connections in one channel to restore correct phase. It is particularly important to get the polarity and phasing correct in bi- or tri-wired arrangements. Careful planning and labelling can remove the need for later remedies. If you suspect one drive unit is wired out of phase check all connections in a bi- or tri-wired system.

## Caring for your Loudspeakers

Spendor's high quality wood veneers should be treated as any other item of quality wood furniture. Routine dusting with a soft cloth is recommended. Do not be tempted to use an aerosol spray directly on to the loudspeakers as this may damage the drive units or grille fabric. Grille cloths can be best cleaned with an adhesive type clothes cleaner or a piece of sticky tape wrapped around the hand adhesive side out.

Treat the cabinets as you would any other piece of fine furniture. Do not expose the cabinets to damp, widely fluctuating temperatures or direct sunlight otherwise appearance and performance will suffer.

## For our customers overseas

Spendor loudspeaker systems are exported worldwide. Spendor has established an international network of qualified distributors who can be relied upon to provide advice and service. A list of current distributors is available from the address below. Distributors have their own specialist dealers who should be contacted in should advice be sought. Should an end user either move to a country where a distributor has not been appointed, or in the unlikely event that a satisfactory answer to a query was not forthcoming, please contact our Customer Service Manager.

**Spendor Audio Systems Ltd**  
Station Road Industrial Estate  
Hailsham, East Sussex  
BN27 2ER, UK

**Telephone:** +44 (0)1323 843474  
**Facsimile:** +44 (0)1323 442254  
**Email:** [info@spendoraudio.com](mailto:info@spendoraudio.com)  
**Web Site:** <http://www.spendoraudio.com>