

# TLE 1

Subwoofer User-Guide<sup>viii</sup>





## Product Support

For product support, accessories or servicing advice, please contact a PMC authorised dealer.

## Warranty

This product is warranted against defect of manufacture and materials for a period of 5 years from date of purchase.

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## General Usage Guidelines

1. Read these instructions and keep them in a safe place for future reference.
2. Heed all electrical safety warnings, including those on the sub-woofer itself.
3. Do not use the sub-woofer near water.
4. Clean only with a dry, lint-free, cloth.
5. Do not block the rear panel amplifier heat sink.
6. Do not install near any heat sources such as radiators, ovens or other equipment that produce excessive heat.
7. This product is protected with a thermal cut out. Should the back panel become too hot, this will then cut the internal power. Normal operation will automatically be resumed, when the back panel has cooled.
8. Do not cut, replace or re-wire the supplied mains cable, it is earthed for your safety. Replacement cables of the same type can be purchased from recognised electrical retailers in a variety of lengths.
9. Provided it is correctly earthed, the type of mains cable used does not have any bearing on performance.
10. Protect the mains cable from being walked upon or pinched.
11. An integral fuse, located alongside the IEC-320 mains inlet protects the TLE1 from voltage spikes and surges.
12. The integral fuse is type T2AL in 100-120volt models and type T1AL in 220-240volt models.
13. This product should only be used with the same power source as indicated on the rear panel label.
14. Unplug the sub-woofer during electrical storms or when unused for long periods of time.
15. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way or exhibits a distinct or sudden change of operation or performance.
16. Please retain all packaging in the event that the unit needs to be shipped for servicing.
17. Place all packaging in a safe place, out of reach of small children.
18. When using the TLE1 with spikes ensure there is no cabling (or feet!) underneath that may be pierced by the spikes.

## Introduction

Thank-you for purchasing a PMC TLE1, an audiophile sub-woofer design that is the result of experience gained in the professional audio production field, and research into the acoustics and ergonomics of the home. Leading professionals such as BBC Radio and Television, Chesky Records, Dolby Laboratories, Granada Television, LucasFilm, Dreamworks, JVC and Sony use PMC loudspeakers.

Size and aesthetics have played a major part in the creation of this radical new unit, evident in its tall slender form and tiny footprint. The TLE1 is ideal for all domestic situations, especially those where space is at a premium and the user has a keen eye for design.

The two 170mm custom drivers are driven by a true 150watt, ultra low distortion audiophile power amplifier, based upon one of Bryston's world-class designs. In their Canadian facility, Bryston has been designing state-of-the-art specialty electronics for both the professional and consumer audio markets for over twenty years.

Also within the elegant compact cabinet lies a true transmission line with an effective length of 3 meters, this gives the TLE1 the ability to produce a flat frequency response down to 22Hz with real clarity and detail. The PMC transmission line loading system provides a number of significant benefits over a standard 4<sup>th</sup> order ported or 2<sup>nd</sup> order acoustic suspension (sealed) enclosure. They include dynamic, accurate and articulate response at all listening levels, gradual low-frequency roll-off below the -3dB point, ease of placement aiding a consistent in-room response, extremely low output distortion, increased power and depth.

This purist approach to low frequency reproduction affords a unique opportunity for those who wish to enjoy high-quality multi-channel music recordings as well as earth shaking Hollywood blockbusters.

## Specifications

Frequency Response:	22– 250Hz in room.
Amplifier Power:	150watts RMS.
Amplifier Distortion:	<0.009%, 20Hz – 20kHz (full output).
Amplifier Slew Rate:	>60V per $\mu$ S
Signal to Noise Ratio:	90dB ref. 0dBu.
Drivers:	2 $\times$ 170mm custom doped with magnesium alloy chassis.
Low-pass Filter:	Continuously variable, 40Hz – 155Hz, 12dB per octave.
Phase Control:	Continuously variable, 0° – 360°.
Low-pass Filter Bypass:	Yes
Trigger Input:	12V AC/DC (continuous).
Unbalanced Inputs:	2 $\times$ Gold-plated RCA/Phono, impedance 20k $\Omega$ .
Balanced Inputs:	2 $\times$ Gold-plated Neutrik XLR, impedance 20k $\Omega$ .
Dimensions (W $\times$ H $\times$ D):	200mm $\times$ 550mm $\times$ 545mm. Spikes add >28mm.
Weight:	17.5kg.
Power consumption:	180watts.
Thermal cut-out	80°C Auto reset.

## Sub-woofer Connections

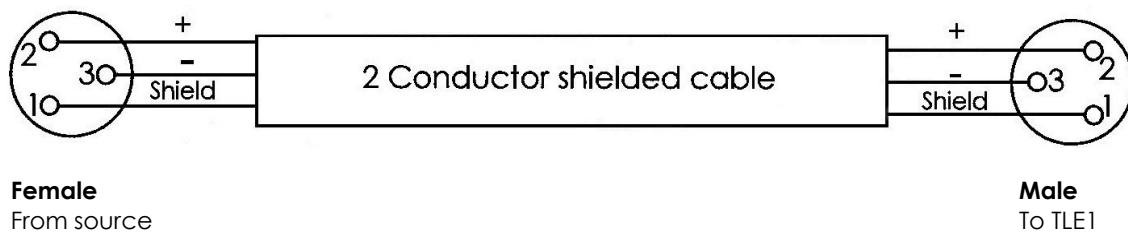
When selecting cables for use with your PMC sub-woofer, ensure that they are adequately shielded, which is particularly important if single-ended runs are used and that their construction is of a high enough standard to withstand the rigors of everyday use.

First, decide which type of input you will be using:

### Balanced (XLR)

**Input Selector:** 'BAL' (switch in the out position. This can be found under the flap at the top rear of the unit)

The TLE1 can be connected to an amplifier, pre-amplifier, receiver or surround processor using balanced (XLR) inter-connect cables. Balanced cables are recommended wherever possible due to their inherent superiority and noise rejection, which is particularly important if long cable runs are required.

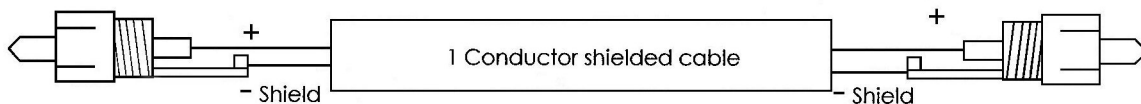


OR

### Unbalanced / Single-ended (RCA/Phono)

**Input Selector:** 'UNBAL' (switch in the in position. This can be found under the flap at the top rear of the unit)

Single-ended (RCA) connections are still the most common method of routing signals from an amplifier, pre-amplifier, receiver or surround processor to a sub-woofer. The hook-up method is exactly the same as that for balanced inter-connects.



Connect one end of each cable to your processor, receiver or amplifier and the other to the TLE1

Note: Both types of connection cannot be used concurrently.

Tip: An inexpensive length of RCA cable can be used when experimenting with sub-woofer placement and then replaced with balanced inter-connects – if supported by your hardware – once the final position has been determined.

#### Do I use both left and right inputs?

If your processor only provides one sub-woofer output – sometimes labelled "LFE" or "SUB" – then a single balanced or unbalanced cable can be used, connected to either the left or right input of the TLE1, it doesn't matter which. If a single unbalanced input is used, then it is recommended that the supplied RCA shorting plug is inserted into the unused RCA socket. Stereo sub-woofer or stereo pre-amplifier outputs are also supported; requiring the use of two lengths of cable (one for left, one for right), so that the sub-woofer reproduces the bass information from both channels.

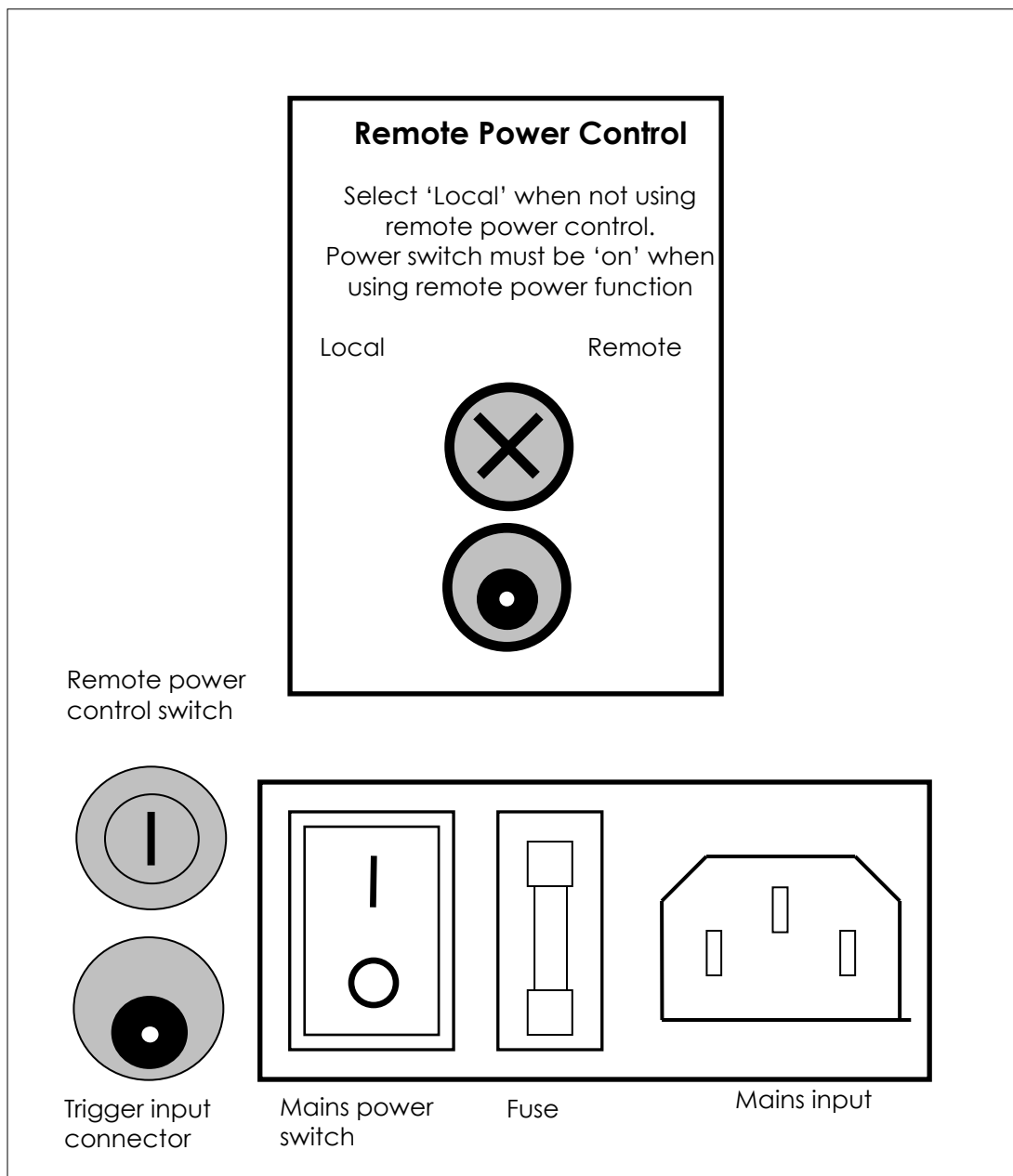
If you are using the sub-woofer in a two-channel system, it can be connected to any available pre-amplifier output/s, provided the output is not of the fixed gain type (a tape record loop, for example).

## Trigger Input

The TLE1 has a standard 12volt AC or DC (constant) external control trigger. It can be used in conjunction with a home automation system or suitably equipped processor to automatically enable or disable the TLE1 according to mode, source or mood.

To use the trigger, the rear panel mains power switch must be "ON" and the 'Remote Power Control' in the "Remote" position. The trigger input uses a standard low-voltage 2.1mm DC jack.

If Remote trigger is not required, simply leave the "Remote Power Control" in the "Local" position, and use the mains power switch, as normal



## Sub-woofer Set-up and Placement Guidelines

Sub-woofer integration is of paramount importance in order to attain convincing music and movie performance. Motion picture soundtracks are mixed with the same care and attention as the finest 'audiophile' recordings on Compact Disc, SACD or DVD-Audio.

There are no hard and fast rules that will guarantee optimum performance, when it comes to sub-woofer installation, experimentation really *is* the key. It is a common misconception that sub-woofers can be positioned anywhere in a room; bass below 100Hz is omni-directional but response will differ according to location. There follows a list of general guidelines one can follow in order to attain the best performance from your system.

1. Set the controls of the TLE1 sub-woofer to neutral, i.e. volume control to its mid-point and roll-off 'OFF' (indicator LED green). In this state the sub-woofer's integral low-pass filter is defeated.
2. Configure your receiver, processor or surround amplifier so that its sub-woofer output is enabled (for all material) and defeat its own low-pass filter. If this is not possible, select the highest sub-woofer crossover value available – commonplace options are 80, 100 and 120Hz. Refer to the user guide supplied with your hardware for detailed instructions.

The purpose of steps 1 and 2 is to ensure the TLE1 receives the widest range of frequencies possible during set-up. This is only a temporary measure; the configuration of system crossovers will be covered later in this user guide. Nor are we concerned about the sub-woofer's output level at this stage.

3. Disable all the system's loudspeakers. In some cases this may not be possible, electronically, so we advise temporarily disconnecting all applicable loudspeaker cables. Before doing so make certain that all power amplifiers are 'OFF' and that no accidental shorting occurs.
4. Find a programme source with solo acoustic double bass or bass guitar and set the system volume to a comfortable listening level. Material with a tuneful bass-line is recommended.

From the primary listening position, concentrate on the lower registers, remembering that the TLE1 is not designed to reproduce high frequencies and that they will be absent during this test. The aim is to position the sub-woofer in a location where the bass and mid-bass are neither woolly, compressed, over-bearing nor boomy, and where the response is at its smoothest and most consistent.

As a general rule of thumb, low frequencies are often reinforced when a sub-woofer is positioned adjacent to a boundary wall, but it's important to remember that all rooms are different and that acoustics and their interaction with your loudspeakers are the most influential factor on the performance of any system.

The TLE1 drivers can be orientated in any direction, but PMC recommends that the minimum distance between the rear vent and a boundary, such as a wall, is 25mm (1 inch). Both the rear mounted vent and amplifier heat sink require a free, circulating air.

Once in the optimum position the use of the supplied spikes is recommended to ensure the TLE1 remains as stable as possible. Pennies or spike 'cups' can be placed under the spikes to protect wooden flooring. The supplied grille cloth is acoustically transparent and can be left in place at all times.

Note: The performance of your TLE1 will improve over the first few hours of use, as the close tolerance drivers 'bed in'. Low frequency dynamics and bass extension are two areas that will benefit as the drive units reach their optimum working condition.

## Sub-woofer Controls

Having decided upon the optimum in-room placement for the TLE1, its controls, in conjunction with those of your amplifier, pre-amplifier, receiver or surround processor, are then used to integrate the sub-woofer into the remainder of your system.

1. **Input Selector:** (See page 4 for a description). 'BAL' (switch in the out position) is used with balanced XLR inter-connects. 'UNBAL' (switch in the in position) is used with unbalanced RCA connections.
2. **Roll Off Switch:** 'OFF' (green LED illuminated) bypasses the TLE1's own low-pass filter. This mode is recommended when using an amplifier, receiver or surround processor which has built-in bass management, usually with a dedicated "LFE" or "SUB" output, thereby avoiding potential filter interactions. 'On' enables the low-pass filter and associated 'Roll Off' control. This mode is recommended for two-channel use using available pre-amplifier output(s).

In most multi-channel installations, bass-management within the decoding hardware is often preferred. For example, selecting a 100, 80 or 60Hz crossover will route all bass to the TLE1 including that from other channels. Some surround processors allow independent loudspeaker and sub-woofer crossover frequencies. In such cases it is important to avoid undue overlap (where the sub-woofer and any full-range loudspeakers reproduce the same frequencies), but bear in mind that the sub-woofer channel of Dolby Digital, Super Audio CD and DVD-Audio can contain significant energy up to and beyond 150Hz.

3. **Roll Off Control:** Adjusts the integral 12dB/octave low-pass filter. The 'Roll Off' control specifies the point at which the TLE1 begins to attenuate frequencies above the set value, thereby blending its response with the remainder of the system.

If you are using the TLE1 in a typical two-channel system, or wish to simply reinforce low frequencies produced by other loudspeakers in a multi-channel installation, then the use of the low-pass filter 'Roll off' control is advised. It should be adjusted by ear to the point where the TLE1 integrates seamlessly into the system. I.e. The subwoofer should only produce low frequencies that the main loudspeakers are not capable of.

4. **Level Control:** Adjusts the sub-woofer's output volume.

For a wholly convincing experience, it is important that the output level of your sub-woofer is correctly set. While ultimately this parameter is a matter of personal preference, it is however advisable to begin from known, calibrated level. Most amplifiers, pre-amplifiers, receivers and surround processors include integral calibration noise. This is used to achieve the same output level from all the loudspeakers in a system. We advise setting the decoder's sub-woofer output level to its mid-point (usually 0dB) and adjusting the level control on the TLE1, this will later afford maximum flexibility of adjustments according to listening mode. Follow standard calibration procedures using an SPL meter located at your primary listening position and set to C-Weighting, 'Slow' response mode whenever possible. In a THX system, the output SPL attained should be 75dB. In the absence of internal set-up noise, a recognised calibration DVD such as 'Avia: Guide to Home Theater' or 'The Ultimate DVD: Platinum' can be used.

5. **Phase Control:** Adjusts the phase relationship between the TLE1 and any other loudspeaker reproducing the same frequencies. At 0° the TLE1 is electronically in-phase, at 180° electronically in opposing phase.

The relative phase of a sub-woofer is a misunderstood and often over-looked aspect of installation. It is the relationship and interaction of the frequencies shared between the TLE1 and the other loudspeakers in your system. As no bass-management filter is a brick wall, there will always be overlap around the selected crossover point. It is therefore important that the shared frequencies do not cancel one another, which is the result of a sub-woofer that is not in phase. The relative phase of a sub-woofer will depend on its position in the room and its proximity to any other loudspeaker.

To set the phase value, listen to music with strong mid-bass content such as kick drum and adjust the control so that the combined output of the TLE1 and the remainder of your loudspeakers is at its loudest – the use of an SPL meter can help. Again, experimentation is the key, listen for tight, punchy and even bass response. NB The effects of adjusting the phase can be extremely subtle in some environments.

## Summary

- Select appropriate input depending on interconnects used. -Page 4.
- If required, connect up Trigger input and set "Remote Power Control" to "Remote". -Page 4.
- Find the best location for your TLE1, following our guide. - Page 6.
- Fit spikes (recommended). - Page 6.
- Set the user controls for best tonal integration with the rest of your system. - Page 7.
- Congratulations; Your TLE1 is set up, so sit back, relax, and enjoy the experience!

The TLE1 has been designed to accompany many audiophile loudspeakers in both surround and stereo configurations. To realise the ultimate in any format the following PMC products are engineered to interface seamlessly in any environment.

<b>DB1i</b>	Two way, Mini Monitor
<b>DB1M-Ci</b>	Centre channel
<b>TB2i</b>	Two way, Monitor
<b>TB2M-Ci</b>	Centre channel
<b>GB1i</b>	Two way, floorstanding loudspeaker
<b>FB1i</b>	Two way, floorstanding loudspeaker
<b>OB1i</b>	Three way, floorstanding loudspeaker
<b>CB6i</b>	Three way, centre channel for use with OB1i or EB1i

For further information contact: [sales@promonitor.co.uk](mailto:sales@promonitor.co.uk) or visit [www.pmc-speakers.com](http://www.pmc-speakers.com)