

# Sub-Woofer



MULTICHANNEL



ACOUSTIC ENGINEERS

1. Read instructions – all the safety and operating instructions should be read before the appliance is operated.
2. Retain these instructions – the safety and operating instructions should be retained for future reference.
3. Heed warnings – all warnings on the appliance and in the operating instructions should be adhered to.
4. Follow instructions – all operating and other instructions should be followed.
5. Water and moisture – the appliance should not be used near water, for example near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement or near a swimming pool etc..
6. Ventilation – the appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug or similar surface that may block the ventilation openings. Similarly, the appliance should not be built into an installation, such as a bookcase or cabinet, that may impede the flow of air through the ventilation openings.
7. Heat – the appliance should be situated away from heat sources such as radiators, stoves or other appliances that produce heat.
8. Power sources – the appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
9. Power cord protection – power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles and the point where they exit the appliance.
10. Cleaning – the appliance should be cleaned only as recommended by the manufacturer.
11. Unattended periods – the power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
12. Object and liquid entry – care should be taken so that objects and liquids do not fall into the appliance.
13. Damage requiring service – the appliance should be serviced by qualified service personnel when:
  - i. the power supply cord or the plug has been damaged
  - ii. objects have fallen or liquid has been spilled into the appliance
  - iii. the appliance has been exposed to rain or other serious liquid exposure
  - iv. the appliance does not appear to operate normally or exhibits a marked change in performance
  - v. the appliance has been dropped or the cabinet damaged
14. Servicing – the user should not attempt to service the appliance beyond those measures described in the operating instructions. All other servicing should be referred to qualified service personnel.
15. Grounding or polarisation – precautions should be taken so that grounding or polarisation means for the appliance are not defeated.

## Introduction

Welcome. In selecting ATC you have chosen an example of the finest audio engineering available. ATC was founded on a principle of engineering excellence, and that principle still defines our products today. Given the right opportunities, ATC products will deliver exceptional audio performance, but the opportunities will only arise from careful and thoughtful installation and use. Please read the following manual fully. It will help you understand the product and to realise its full potential. We are happy to answer questions and offer advice on any issues that arise through installation or use of ATC products. Contact details can be found at the back of this manual.

ATC was founded in London in 1974 by Australian emigre Bill Woodman, who still heads the company today. An enthusiastic pianist and engineer he was naturally drawn to loudspeaker design and after a period working at Goodmans, where many of the names that went on to found British loudspeaker companies began their careers, he struck out on his own. The premise on which ATC began is a simple one, and one that in many respects is still true today: hi-fi loudspeakers tend to be detailed and accurate but of limited dynamic range, while professional monitor speakers tend to express the opposite character. ATC products were designed from the outset to offer the best of both. It's an easy concept to describe, but surprisingly difficult to engineer.

The difficulty inherent in designing such loudspeakers is one of scale. Hi-fi levels of accuracy and detail call for lightweight moving parts and delicate engineering. Professional monitor levels of performance however demand far more robust components engineered to survive the rigours of high level use for extended periods. The only way to combine the two is through precision engineering of a class and scale more often associated with aerospace or motorsport. But the results are worth the effort and the cost. ATC loudspeakers, with their unique in-house designed drivers, combine the best of hi-fi and professional to devastating effect.

ATC has become synonymous with active systems. Choosing to offer active loudspeakers (where the passive crossover network is replaced by active filters and multiple power amplifiers) is simply a result of the uncompromising attitude to loudspeaker design. While passive systems still have their place, and ATC engineering skills can still bring remarkable results from them, "active" is a fundamentally better solution to the problems posed by accurate, high level music reproduction. The ATC instinct is always for the better solution. Not cheaper, not quicker, but better.

It was the development of active loudspeakers that first brought ATC into electronics design and engineering. Active speakers demand multiple power amplifiers so ATC from the mid 1980s became not just a loudspeaker manufacturing company but an electronics manufacturer too. The further step from electronics for active speakers to a range of stand-alone amplifier products was natural and now means that ATC engineering is available from the recording desk or CD player output to the ears.

From modest beginnings ATC has grown to become one of the very few manufacturers successful across both domestic and professional audio. By selecting ATC you join a group of music lovers, professional audio engineers, studios and musicians across the World that understand and value the engineering that goes into an ATC product - and the sound that comes out.

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# Sub-woofers

## 1. Sub-woofer Placement

The subjective performance of any sub-woofer will be fundamentally influenced by the acoustic character of the room in which it is used, and its position within the room. Monitor and sub-woofer systems are most often installed in rooms which are comfortable to sit and talk in, and the typical mixture of carpets, curtains and soft furnishings help ensure that middle and high frequencies are reasonably well controlled. There may however be low frequency problems; either too much or too little bass. To minimise these problems the sub-woofer should be kept away from

corners or walls. Start with it positioned around 1 metre from the side walls and 2 metres from the back. If the balance is bass-light, the sub-woofer can be moved towards the corner. Use the sub-woofer controls (see Section 4.5) to optimise satellite integration and for fine tuning rather than to compensate for inappropriate positioning. All rooms vary and it is a good idea to experiment with both listening and speaker positions until a good compromise is reached. If the sub-woofer is to be placed in any form of enclosure, adequate side and top clearance for cooling airflow must be provided. For professional installations the requirements are often very specific. Please consult with an experienced professional acoustician if necessary.

Diagram 1 - input connection pins

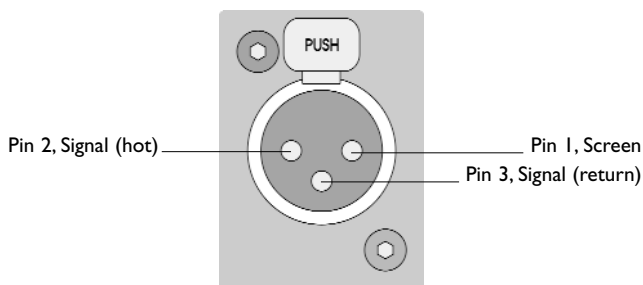


Diagram 2 - balanced cable

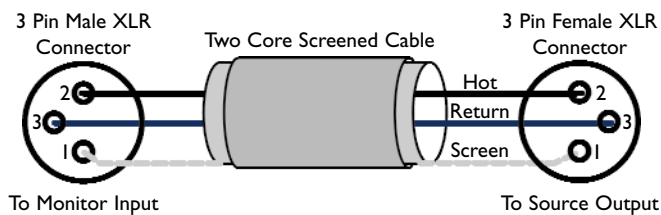
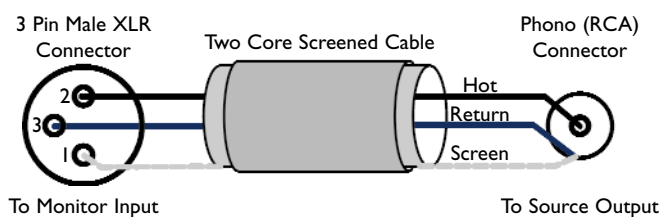


Diagram 3 - unbalanced cable



## 2. Connection

Either two or three cable connections are required for each sub-woofer: one for mains power and one or two for the audio signal. The mains cable is specifically supplied to comply with local statutory safety approvals and alternatives should not be substituted. If you intend to use your sub-woofer in an alternative territory please contact ATC for advice. The mains connection must always be earthed.

The signal cable(s) and plug(s) should be of a good quality and XLR terminated. Poor cable and plug quality will compromise the performance of your sub-woofer. The signal input pin configuration is illustrated in Diagram 1. If two signals connections are made to the sub-woofer (i.e. a stereo pair) the left and right signals will be summed by the amplifier so increasing the effective sensitivity by 6dB.

## 3. Signal Cable Options

Balanced cable configuration is the preferred option, however unbalanced connection is possible. Diagrams 2 and 3 illustrate the signal cable connections required for each option. Balanced (XLR to XLR) connection offers lower noise and better immunity to "hum" pick-up. Unbalanced (XLR to Phono or Two Pole Jack) connection carries risk of hum caused by multiple signal earths.

Hum problems resulting from unbalanced connection may be reduced by making ONE of the following modifications to the signal cable connections: If the driving preamplifier (or desk) is "double insulated" (i.e. has no mains earth), disconnect the signal cable screen at the RCA Phono plug end. Alternatively, disconnect the signal cable screen at the XLR end. This second option will make the source the reference signal earth.

# Sub-woofers

## 4. Operation

The sub-woofer amplifier control and connection panel provides a range of adjustment facilities to assist its integration with the satellite speakers. These facilities are explained below and illustrated in Diagrams 4, 5 and 6.

- 4.1 **Level:** Sets the overall sensitivity of the sub-woofer. Initially the level control should be set towards the centre of its range and only adjusted once the **Low Pass** and **Contour** controls have been set.
- 4.2 **Low Pass:** Varies the upper crossover frequency as indicated on the control panel and Diagram 5. This is the fundamental parameter that defines the integration of the sub-woofer with the satellites. The **Low Pass** control should be set at, or slightly above, the specified low frequency cut-off of the satellite speakers.

- 4.3 **Contour:** With the **Contour** control set to the **Flat+** position the sub-woofer pass-band frequency response is fundamentally flat and in phase with the satellite speakers. With the **Contour** control to the **Flat-** position the frequency response remains flat but the phase is reversed. Depending on the relative position of the sub-woofer and satellite speakers within the listening environment, phase reversal can result in more consistent integration. The **Flat** position is recommended for music programme material.

With the **Contour** control in the **Lift+** position the frequency response is lifted in the 40 - 60Hz region. This boosted setting is designed to provide a more demonstrative sub-woofer performance appropriate for audio/visual programme material. The response curves for each **Low Pass** filter position with **Lift+** selected is shown on the control panel and in Diagram 6. The **Lift-** position retains the frequency response but reverses the phase.

Due to the nature of the electronics in ATC active loudspeakers it is quite normal for a sound to be heard from the speaker when the power is applied or disconnected. The noise heard will not damage the speaker and is quite normal. Although ATC uses the highest-grade components, a different noise may be heard from each speaker due to slight tolerance variations in the amplifier components.

## 5. Listening

The ear and brain tend to interpret distorted sound as loudness and thus underestimate the actual level of undistorted sound. ATC sub-woofers, like all ATC products, demonstrate very much lower levels of distortion than conventional systems of a similar size and it is therefore advisable to begin listening at an artificially low level and carefully increase the volume. It is also possible for the ATC systems to produce sufficient sound pressure levels for your ears themselves to become a source of distortion and make the sound appear harsh. Any audible distortion indicates that either the system or your ears are being overloaded and that the volume level should be reduced.

Diagram 4 - connection and control panel

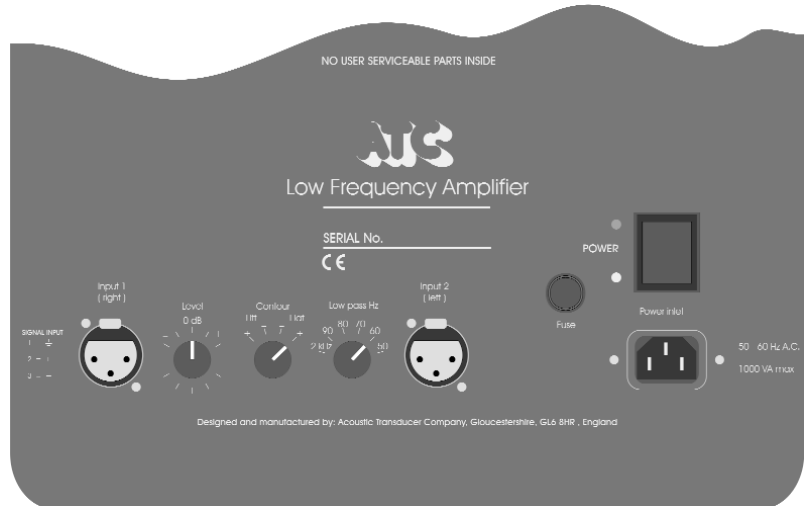


Diagram 5 - low pass options, contour flat

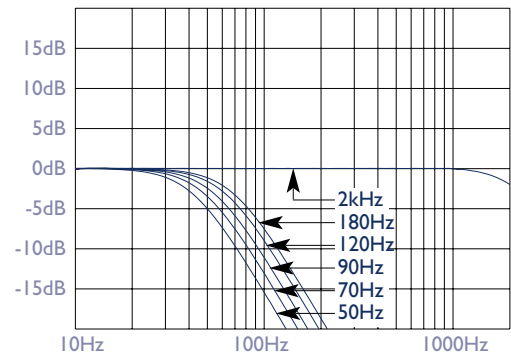
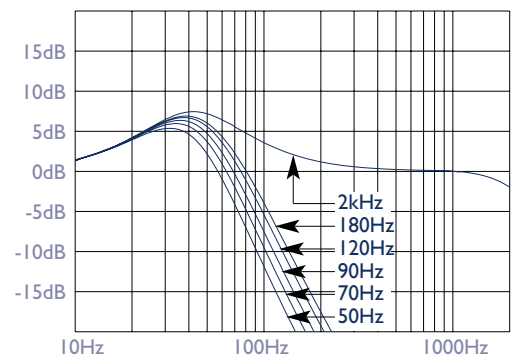


Diagram 6 - low pass options, contour lift



	SCM0.1/12SL Pro / C4	SCM0.1/15SL Pro / C6
<b>Drivers:</b>	314mm (12")	375mm (15")
<b>Cut-off Frequencies: (-3dB free standing)</b>	18Hz & 250Hz	18Hz & 250Hz
<b>Max Continuous SPL:</b>	112dB SPL @ 1 metre	115dB SPL @ 1 metre
<b>Input Connectors:</b>	2 x Male XLR	
<b>Input Sensitivity:</b>	1V Balanced	
<b>Input Impedance:</b>	>10k Ohms	
<b>Common Mode Rejection:</b>	>90dB	
<b>Harmonic Distortion: (amplifier)</b>	<0.01%	
<b>Amplifier Output</b>		
<b>Continuous:</b>	450 Watts	
<b>Dynamic:</b>	1000 Watts	
<b>Overload Protection:</b>	Active FET momentary gain reduction	
<b>Gain Control Range:</b>	±6dB	
<b>Contour Equaliser:</b>	6dB lift @ 40 - 60Hz	
<b>Filter Characteristics:</b>	50Hz, 70Hz, 90Hz, 120Hz, 180Hz, 2kHz low pass 2nd order critically damped	
<b>Power Requirements:</b>	100, 115, 230V (factory set for territory), 50/60Hz	
<b>Cabinet Dimensions (HxWxD):</b>	582 x 530 x 530mm	624 x 580 x 580mm
<b>Overall Weight:</b>	54kg (119lb)	64kg (141lb)
<b>Cabinet Finish:</b>	Pro Black Spatter (Pro models). Standard real wood veneers are available in Black Ash, Mahogany, Cherry and Natural Oak. Other veneers and finishes can also be supplied to special order.	

## 6. Care and Maintenance

High technology material finishes are used in this product. The surfaces are durable and with a little care can be kept as good as new even under conditions of heavy use. Normally a dry duster will be all that is required to keep the finishes clean. Heavy soiling can be cleaned using a cloth slightly moistened with a non-abrasive household cleaner.

There are no components within the speaker that can be considered expendable, or that would benefit from regular maintenance. There is no requirement for any kind of routine service work and there is no schedule for preventative maintenance. Should a speaker fail to switch on when the power switch is operated the fuse should be inspected. Lift out the fuseholder cover using a small flat-blade screwdriver, remove the fuse and inspect it for damage. If required, a replacement fuse should be fitted. Fuses most often fail only because of a serious electrical fault. If this is the case then simply replacing the fuse will only result in another fuse failure. The speaker should be returned to ATC for service if a second fuse fails.

There are no user replaceable parts within the speaker and in the unfortunate event of any malfunction, repair should be referred to either the supplying dealer or consultant, the relevant importer, or ATC.

The above specifications comply with the following standards: Australian Standard Specification No 1127 "Sound System Loudspeakers" Part 5, IEFEE Specification Standard No 219-1975

ATC reserves the right to vary products and specifications without prior notice. Acoustic Transducer Co. is a trading name and ATC is the registered trade mark of Loudspeaker Technology Ltd.

## 7. Warranty and Contact

All ATC products are guaranteed against any defect in materials or workmanship for a period of two years from the date of purchase. Within this period we will supply replacement parts free of charge provided that the failure was not caused by misuse, accident or negligence.

**Purchasers who complete and return the Warranty Card will have their warranty period extended up to a period of six years from the date of purchase. This guarantee does not limit statutory rights.**

ATC can be contacted at:

Loudspeaker Technology Ltd, Gypsy Lane, Aston  
Down, Stroud, Gloucestershire GL6 8HR, UK.

Telephone: +44 (0)1285 760561

Email: info@atc.gb.net

Website: www.atcloudspeakers.co.uk



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**Loudspeaker Technology Ltd, Gypsy Lane, Aston Down, Stroud, Gloucestershire GL6 8HR, United Kingdom**

**Telephone +44 (0)1285 760561 Fax +44 (0)1285 760683**

**Email: [info@atc.gb.net](mailto:info@atc.gb.net) Website: [www.atcloudspeakers.co.uk](http://www.atcloudspeakers.co.uk)**