

ACOUSTIC  
ENGINEERS

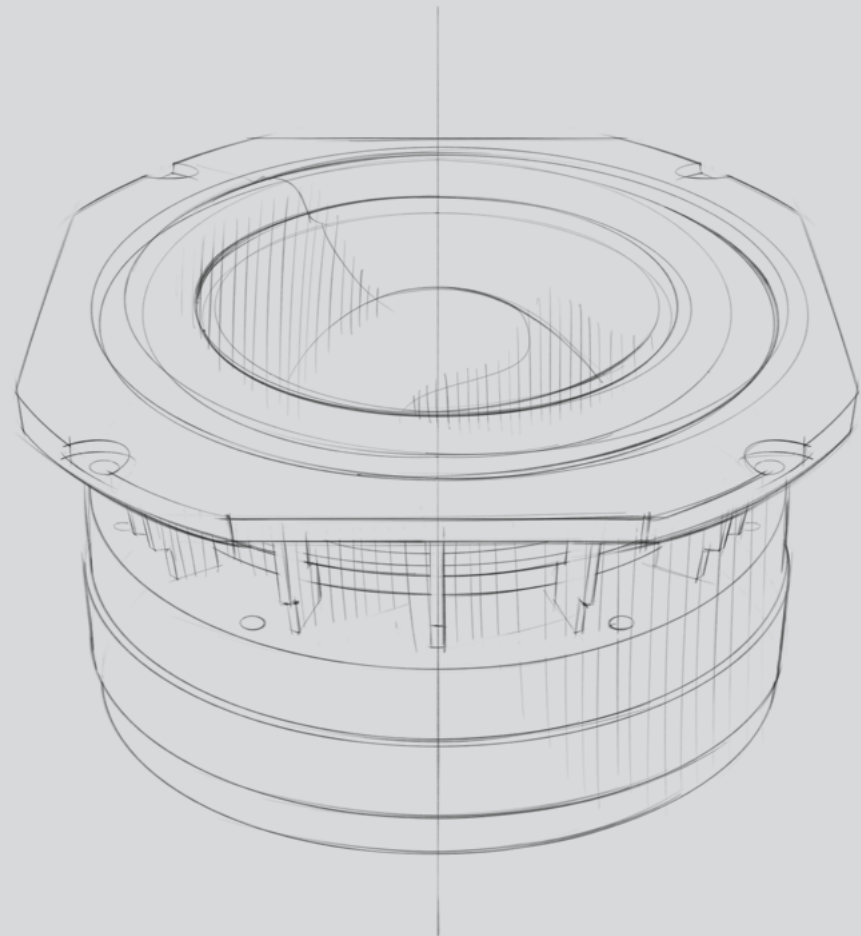


*Limited Edition*

SCM20ASL

OWNER'S HANDBOOK

# HIGH PERFORMANCE 2-WAY ACTIVE LOUDSPEAKER



# INDEX



## SCM20ASL LIMITED EDITION

- 04 The back story
- 08 Introducing the SCM20ASL LE
- 10 The benefits of Active Technology
- 12 Features and Specifications
- 16 System installation and operation

## C4 SUB MK2 LIMITED EDITION

- 14 Features and Specifications
- 24 System installation and operation

# THE BACK STORY TO THE SCM20ASL LE

ATC's first loudspeaker system, the 3-way S50, was released in the late 70s and by the late 80s had evolved into the SCM50 (which is still in production today). Both models were mid-size 3-way systems which were too large for many, making it clear that a smaller 2-way system was needed if ATC were to engage with a far greater number of potential customers, both in the professional and consumer Hi-Fi markets.

As a result, in 1987 Billy Woodman began the development of a new 150mm/6" mid-bass driver that would become the heart of a new loudspeaker and ATC's first 2-way design, the SCM20. Whilst the finished system

may have been simpler than the existing 3-way designs, mid-bass drivers for 2-way loudspeakers present a challenge due to the bandwidth they need to cover and the conflicting requirements of bass and mid-range reproduction, so there was significant development work to complete.

The earlier development of the ATC 3" soft dome midrange and specifically the large voice coil it employed, highlighted the importance of power handling & dynamic range so this new mid-bass driver started with a 75mm/3" voice coil, operating in ATC's favoured short-coil-long-gap (underhung) configuration, but with a much longer

## SCM20 HISTORY

**1990** FIRST SCM20 RELEASED WITH ATC 150mm/6" SB75-150SC BASS DRIVER AND VIFA D27 1" SOFT DOME TWEETER

**1993** FLOOR-STANDING SCM20T 'TOWER' MODEL LAUNCHED

**1996** SCM20SL UPDATED WITH BASS DRIVER UPGRADE TO 'SL' SPEC AND REVISED CROSSOVER

20mm magnetic gap, suited to the large cone excursions required for good bass reproduction. The result was a huge 175mm/7" diameter motor assembly weighing 8.4kg/18.5lbs which was costly to build and challenging to handle but resulted in far superior linearity than most mid-bass drivers available at the time.

In 1993, three years after the launch of the first SCM20 and based on customer feedback, ATC released a floor-standing version of the speaker, the SCM20T. This was a relatively low-key addition to the product range to satisfy Hi-Fi market aesthetics rather than a performance

upgrade. The larger cabinet would, however, provide a housing for improvements that would arrive five years later.

Since the invention of the moving coil loudspeaker, designers had been looking for ways of improving the sonic performance of loudspeaker systems. Very few companies put more emphasis on this than ATC and, in 1996, through a combination of timing, the right material coming to market and ATC's engineering skill, a breakthrough was made with the development of the Super Linear Magnetic System. This new loudspeaker technology reduced the level of flux modulation in the motor drive

system and, in turn, delivered a reduction in distortion. The resulting acoustic signal featured greatly improved clarity and resolution.

Following the huge improvements the SL technology brought to the SCM20 would always be challenging but in 1998, the active loudspeaker technology developed for the larger SCM50A/100A trickled down and the active SCM20ASLT was born, boasting an integrated 2-channel Amp-Pack with active crossover filters and 250W continuous power on tap (200W bass, 50W high frequency), all housed in the floor-standing Tower cabinet.



**1996** SCM20SL BILLY WOODMAN SIGNATURE MODEL RELEASED WITH EBONY VENEER AND TERMINAL PANEL BI-AMP (4 TERMINAL) INPUT PANEL

**1997** BI-AMP (4 TERMINAL) INPUT PANEL FROM THE SIGNATURE MODEL ADDED AS STANDARD

**1998** ACTIVE FLOOR-STANDING SCM20ASLT MODEL LAUNCHED

**2002** SCM20SL UPDATED WITH NEW SEAS 1" SOFT DOME TWEETER AND REVISED CROSSOVER

**2014** SCM20SL UPDATED WITH NEW ATC MANUFACTURED SH25-76S 'S-SPEC' DUAL-SUSPENSION TWEETER AND REVISED CROSSOVER

In the late 90s and early 2000s, the recording industry was beginning to use higher resolution digital formats, with 96kHz & 192kHz PCM recordings becoming more common. Sony had developed DSD, a single bit digital audio format using a 2.8224 MHz sample frequency and also Super Audio CD (SACD) the physical media that DSD recordings would be delivered on. All these changes resulted in recordings with an extended high frequency bandwidth, and it was no coincidence that in 2002, ATC updated and improved the SCM20 again, with a move to a new 25mm/1" tweeter from Seas which, provided slightly lower coloration and extended the high frequency response.

Improvements to the SCM20 high frequency response were made again in 2014, with the arrival of ATC's in-house designed and built SH25-76S dual-suspension tweeter, developed by Billy Woodman and ATC's new engineer, Richard Newman. This 1"/25mm soft dome part had been in development for many years and improved the performance of the SCM20 and larger top-end models via lower distortion and an extended high frequency response. Significantly, it also marked the move to building the majority of high frequency drivers in-house, after many years of out-sourcing.

# 2024 SCM20ASL LIMITED EDITION RELEASED



# INTRODUCING THE SCM20ASL LE

The SCM20ASL Limited Edition is a 2-way active loudspeaker released to mark the beginning of ATC's 50th Anniversary year. This exclusive new model, limited to just 150 pairs, packs ATC's finest transducer engineering and active loudspeaker technology into a compact sealed cabinet, finished to exceptional standards in a stunning high-gloss blue lacquer. Complementing the cabinet, the front baffle is hand-upholstered in dark blue full-grain Napa leather by leather specialists, Eissmann Individual. To support the SCM20ASL LE, a limited run of ATC's new C4 Sub Mk2 have been produced with matching gloss blue cabinet

finish, leather upholstered baffle and silver anodised amp hardware. As a system, the speaker-subwoofer combination offers the low frequency response of a large 3-way speaker, but in a more flexible and room friendly package.

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.



# SCM20ASL LE TECHNOLOGY

## ACTIVE SYSTEM

Whilst excellent results are possible from passive systems, a multi-way loudspeaker system will only realise its true potential if implemented as an active design, due to the advantages displayed top right.

## AMPLIFIER

The SCM20ASL Limited Edition realises these advantages via its on-board ATC Amp-Pack, a 2-way amplifier module featuring balanced input, precision 2-way active crossovers and a pair of class A/B power amplifiers. The location of the amplifier module, in the rear panel of the loudspeaker cabinet, results in a very short connection to the loudspeaker drivers and outstanding low frequency speed and control.

Connection to the amplifier is made via XLR and balanced input circuitry is used for high noise rejection. To ensure the best match to the partnering source/pre-amplifier, the amplifier Input Sensitivity can be adjusted via a combination of switch and precision potentiometer. In addition, a low frequency shelf cut/boost allows the user to tailor the bass response to the room and/or taste.

A classic Linkwitz-Riley 2nd order active crossover is employed to integrate the audio to the two drive units. The crossover has the added benefit of an all-pass filter stage which allows the Phase response to be optimised through the crossover region, resulting in superior tonal balance and imaging vs the equivalent passive model.

The two power amps deliver 200W and 50W to the bass/mid and high frequency drivers, respectively. The Output stages are a class

A/B MOSFET design, and each amplifier is carefully optimised for its application. As with all of ATC's loudspeaker driver components, the amplifier is designed and manufactured at ATC's factory in the UK.

## BASS DRIVER

The magnetic characteristic of the steel used in the magnet assembly of a loudspeaker is inherently non-linear due to magnetic hysteresis. The magnetic field generated around the voice coil modulates the permanent magnetic field of the motor and the magnetic hysteresis of the steel results in a delayed return to the permanently magnetised state. This results in a distortion of the input signal in the loudspeaker causing audible colouration.

To counteract this problem, the bass driver fitted to the SCM20ASL Limited Edition employs ATC's Super Linear Magnetic System.

## 7 ADVANTAGES OF AN ACTIVE SYSTEM

**1 MORE ACCURATE CROSSOVERS DUE TO FIXED FILTER 'LOAD'**

**2 WIDER PRACTICAL CHOICE OF CROSSOVER TYPE/SHAPE DUE TO ACTIVE LINE LEVEL OPERATION**

**3 GREATER DYNAMIC RANGE DUE TO ELIMINATION OF PASSIVE CROSSOVER LOSSES**

**4 IDEALLY MATCHED AMPS AND MORE EFFICIENT USE**

**5 IMPROVED FREQUENCY RESPONSE AND STEREO MATCHING DUE TO SPEAKER-AMP SYSTEM CALIBRATION**

**6 BETTER DRIVER CONTROL DUE TO A MORE DIRECT CONNECTION TO THE DRIVERS WITH FAR LOWER ELECTRICAL RESISTANCE**

**7 LOWER INTER-MODULATION DISTORTION DUE TO AMPLIFIER REDUCED OPERATING BANDWIDTH**

Rings of Super Linear Magnet Material are added to the magnet assembly pole and front plate, adjacent to and concentric with the loudspeaker voice coil. The effect of the rings reduces 3rd harmonic distortion by between 10-15dB across the 100Hz to 3KHz frequency band. The addition of the SLMM produces a significant improvement in sound quality, reducing the level of distortion so dramatically as to reveal another layer of information to the listener. Ambient sounds and low-level effects that were previously masked are now clearly audible and create an enhanced sense of realism.

The driver motor features a 75mm/3" diameter voice coil, operating in ATC's favoured short-coil-long-gap (underhung) configuration. The large diameter increases coil surface area, in-turn increasing power handling, and reducing power compression. A long magnetic gap delivers +/-10mm of

linear excursion, ensuring exceptional bass reproduction.

## HIGH FREQUENCY DRIVER

On first inspection, the high frequency driver fitted to the SCM20ASL LE looks like many other 25mm soft dome tweeters, however, when we focus on the details, this device is far from ordinary and employs some unique features, inspired by the renowned ATC 75mm/3" mid-range.

The first is a dual suspension system whereby instead of supporting the voice coil (and dome) with a single suspension, the SH25-76S features dual-suspensions. One is level with the dome and visible from the outside of the part and the other is adjacent to the coil and hidden within the assembly. The spaced pair of suspensions offer superior stability to the common single suspension solution and

ensure very precise control of the dome-coil assembly, even at high drive levels. The increased control allows for a much narrower magnetic gap, increasing magnetic flux density which increases efficiency and high frequency extension.

Secondly, to maximise efficiency and reduce harmonic distortion to an absolute minimum, the SH25-76S features a very large N48M Neodymium magnet assembly, FEA optimised to achieve complete magnetic saturation of the iron pole and front plate, in the regions close to the voice coil.

These two special features in combination with exceptional production engineering and quality control result in a high frequency driver that perfectly translates every aspect of a recording, from a thunderous crescendo, to the minute detail of a gently plucked bow-string.



# SCM20ASL LE

## Features

Compact sealed cabinet finished in high-gloss blue with leather upholstered baffle

ATC on-board active 250W 'Amp Pack' module

2nd order Linkwitz-Riley active crossovers

2 x class A/B MOSFET amplifiers, 200W bass/mid & 50W high frequency

User adjustable Input Sensitivity & bass cut/lift controls

Matching subwoofer – C4 Sub Mk2 LE – available for extend bass response

Hand-built in England

6 year warranty



## Specifications

**Acoustic** Bass/Mid driver 1 x 150mm/6" SB75-150SL 8Ω High Frequency Driver 1 x 25mm/1" SH25-76S 6Ω Low Frequency Cut-off 55Hz (-6dB, anechoic) High Frequency Cut-off 25kHz (-6dB) Crossover Point 2.2kHz MaxSPL 108dB continuous, 114dB peak (per pair, IEC Weighted Pink Noise, 1m, anechoic) Sensitivity +4dBu rev 95dBC (Bass Boost 0dB, Input Sensitivity 1V, Pink noise).

**Electronic** Balanced Input 1 x Rear Panel Mounted Female XLR, pin 2 hot Input Sensitivity Control -6dB switchable, -6dB variable. Total adjustment 2.2dBu/1Vrms to 14.2dBu/4Vrms Bass Shelf -2dB to +3dB, switchable in 1dB steps Amplifier Type Grounded Source MOSFET, class A/B, convection cooled Output Power Bass 200W (8Ω), H.F. 50W (8Ω).

**Physical** Dimensions HxWxD 450x250x425mm 17 11/16" x 9 13/16" x 14 3/16" Weigh 27kgs/59.5lbs.

ATC reserve the right to change specifications without prior notice



# C4 SUB MK2 LE



## Specifications

**Acoustic Bass driver** 1 x SS75-314SC 8Ω **Low Frequency Cut-off** 22Hz (-6dB, half space, low pass filter set at 80Hz) **Low Pass Filters** 50Hz, 65Hz, 80Hz, 320Hz. (-6dB, 4th order Linkwitz Riley) **MaxSPL** 110dB continuous, 116dB peak (IEC Weighted Pink Noise, measured at 1m, half space, low pass filter set at 80Hz) **Sensitivity** +4dBu ref. 88dBc (single channel driven, measured at 1m, Gain +6dB, Level 0dB, pink noise, low pass filter set at 80Hz).

**Electronic Amplifier Type** Grounded Source MOSFET based Class A-B, convection cooled **Output Power** 300W in to 8Ω **Balanced Inputs** 2 x Rear Panel Mounted Female XLR, pin 2 hot **Balanced Outputs** 2 x Rear Panel Mounted Male XLR, pin 2 hot **Gain Control** 0, +6dB, +10dB **Level Control** 0dB -11dB in 1dB steps. Total range 21dB with use of Gain switch **Phase Control** 0-180° ref. Input **Polarity Control** In-Phase/Out-of-Phase ref. Input.

**Physical Dimensions** HxWxD 568x464x559mm 22<sup>3</sup>/<sub>16</sub>" x 18<sup>3</sup>/<sub>16</sub>" x 22" **Weight** 42kg / 92.6lbs.

ATC reserve the right to change specifications without prior notice

## Features

Sealed cabinet finished in high-gloss blue with leather upholstered baffle

Proprietary ATC sub-bass driver

On-board 300W MOSFET class A/B amplifier

Adjustable gain, low pass frequency, polarity and phase settings

Compatible with stereo, home cinema and AV applications

Hand-built in England

6 year warranty

# USER GUIDE

## SYSTEM INSTALLATION AND OPERATION



# SCM20ASL LE

## Product Description

The SCM20ASL Limited Edition is a compact 2-way high-performance active loudspeaker, featuring the ATC SB75-150SL Super Linear Bass/Mid driver and the ATC SH25-76S 'S-spec' Dual suspension tweeter. The bass driver operates in a 20-litre cabinet and the drivers are powered by a dedicated 2-way active Class A-B power amplifier, capable of delivering a combined 250W, to deliver exceptional clarity and dynamics.

This Limited Edition product is limited to just 150 pairs, all finished with a high gloss polyester lacquer in the ATC colour of Pantone 282c and featuring silver anodised metalwork and a hand wrapped Royal Blue leather baffle from German leather specialists Eissmann Individual.

## Room Interaction

The room in which a loudspeaker is placed can be thought of as a filter, altering the acoustic response at the listening position from that of the loudspeaker. The position of the loudspeaker in a room will influence how it interacts with the space and therefore is often critical to achieving the best performance at the listening position.

Speaker positioning is important because at low frequencies the room will have a strong influence due to

room modes/resonances. Room modes manifest themselves in an uneven distribution of acoustic energy within the room, which can lead to either too much or too little bass at the listening position. A room with a well-controlled low frequency response (controlled reverb time) will have a far smaller influence on the performance of the loudspeaker and will be less sensitive to positioning. Applying acoustic treatment in a domestic setting is not always possible or desirable but if considered it should be noted that, typically, a combination of resonant membrane traps and porous absorbers are needed to control the low frequency. The resonant membrane traps are effective at treating the low bass, typically below 80Hz and the porous absorbers frequencies above this. Porous absorbers such as those made from foams, fibreglass or rockwool are not effective at absorbing low bass energy without a very large air space between them and the wall behind which reduces useable space within a room.

To minimise problems a free-standing loudspeaker should be kept away from corners where possible. Avoid placing the loudspeaker mid-way between any two parallel walls. Where the loudspeaker is to be installed directly into a heavy, rigid non-absorbent wall (flush/soffit mounted), an increase in LF efficiency and LF extension should be expected. In-wall loudspeakers are in the

optimum position for exciting room modes between the mounting wall and the opposite wall. The requirement for adequate bass trapping in the rear wall in this instance can be even more critical.

## Loudspeaker Placement

Typically, best results come from mounting the speakers on suitable speaker stands. Stands should be heavy, rigid, and non-resonant. The stand height should be selected so that the speaker acoustic centre is at, or just above ear level (see diagram 1).

Position the loudspeakers so they form an equilateral triangle with the listening position (see diagram 2). With this layout, the distance between the loudspeakers will be equal to the distance from one speaker to the listening position.

DIAGRAM 1

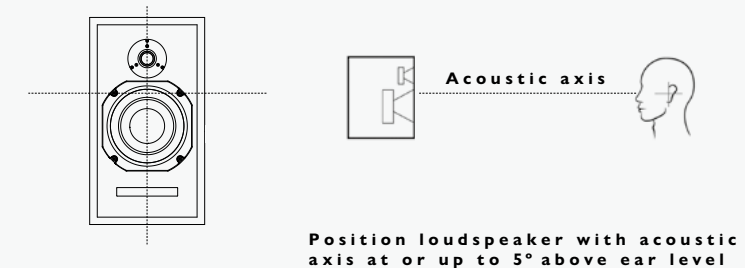
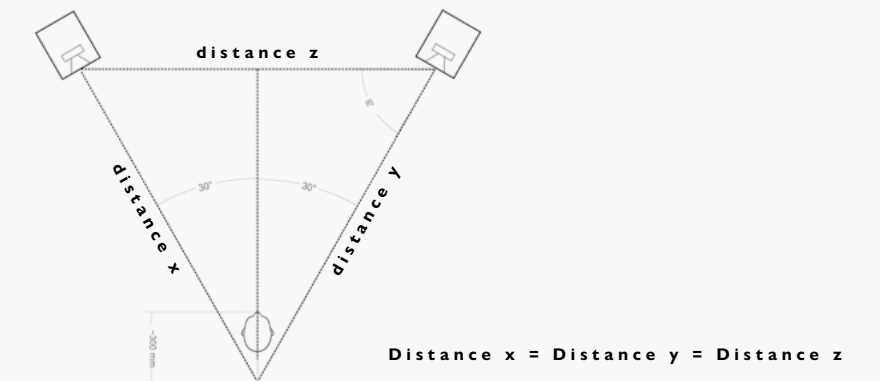


DIAGRAM 2





### SCM20ASL LE Cable Options

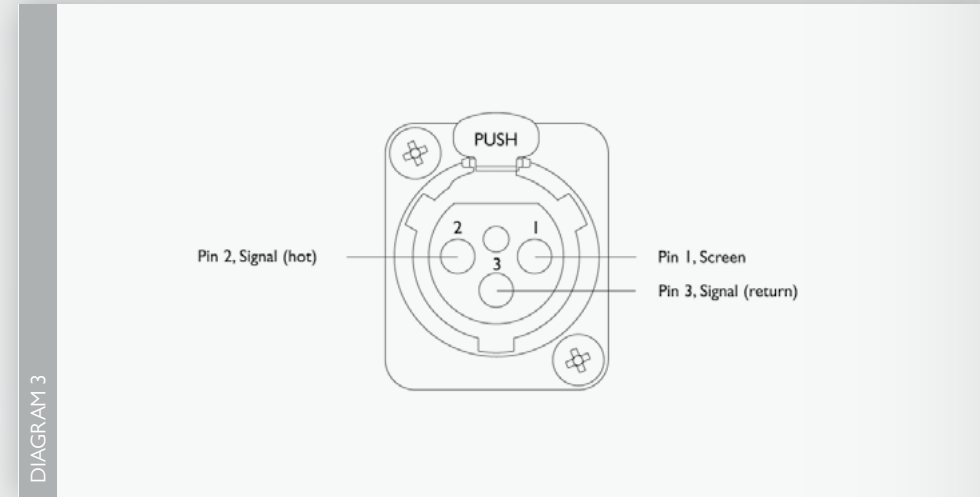
Two cable connections are required for each loudspeaker: one for mains power and one for the audio signal. The mains cable is specifically supplied to comply with local statutory safety requirements and alternatives should not be substituted. If you intend to use your loudspeakers in an alternative territory, 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

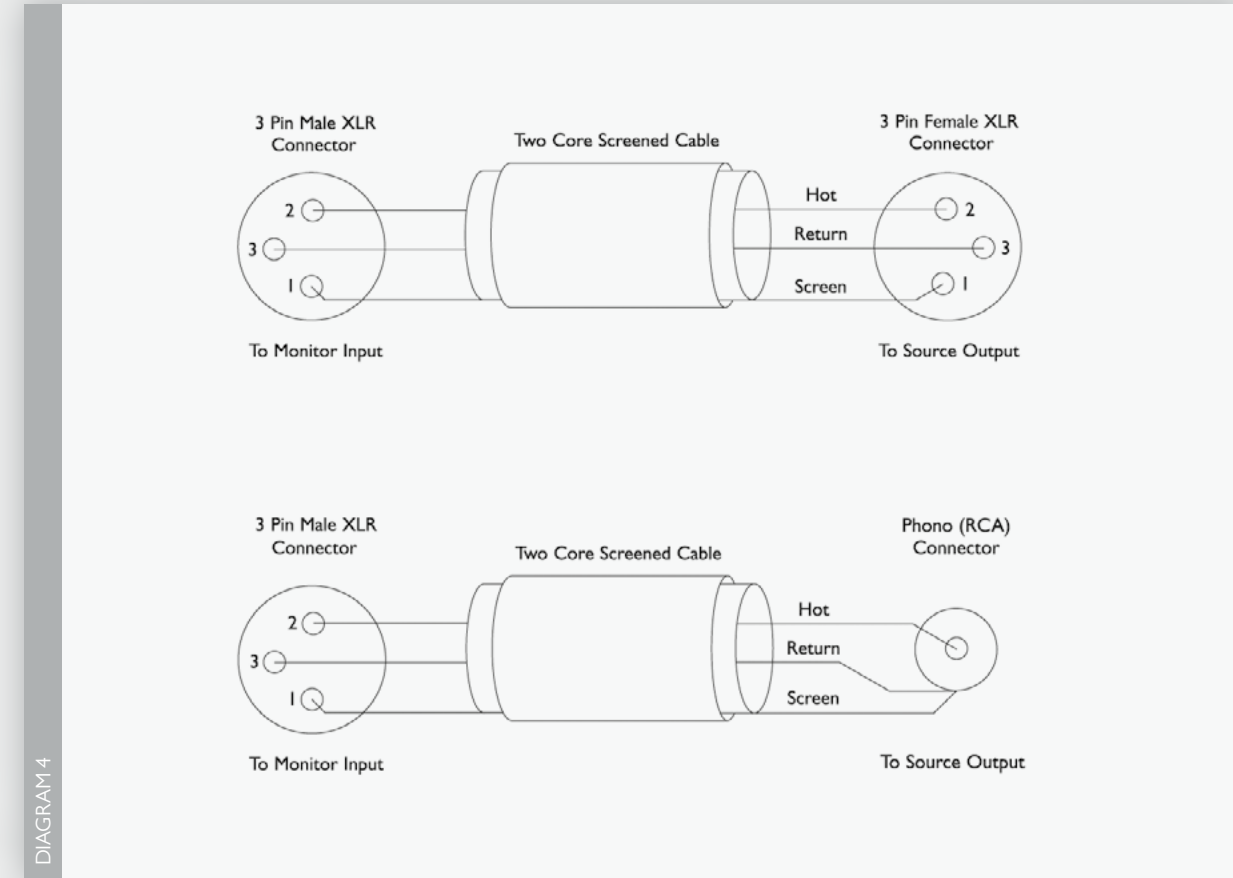
compromise the performance of your loudspeaker. The signal Input pin configuration is shown in diagram 3.

Balanced cable configuration is the preferred option, however unbalanced connection is possible. Diagram 4 illustrates 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 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.





### Power on/off

This button powers the loudspeaker on or off. When the switch is in the inward position the loudspeaker is powered on. When the switch is in the outward position the loudspeaker is powered off.

*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.*

### Bass Shelf

This control allows for a variable bass boost/cut from -2dB to +3dB in 1dB steps. This subtracts/adds more warmth and energy in the low frequency region. When used to boost it is at the expense of:

- Accurate transient reproduction
- Reduced headroom
- Increased distortion

*Note:* This adjustment should be used for fine tuning. Please try to achieve the best possible in-room bass response by first adjusting loudspeaker and listening position and room acoustic treatment if possible.

If the SCM20ASL LE are partnered with one or more C4 Sub Mk2 LE, ensure the control is set to 0dB.

### Input Sensitivity

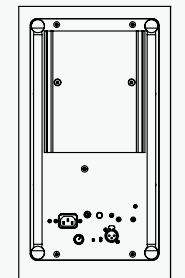
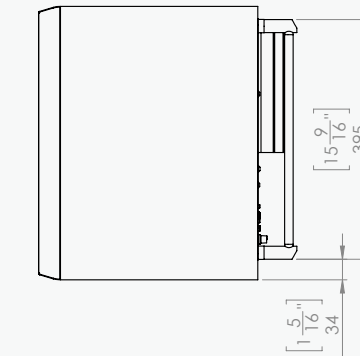
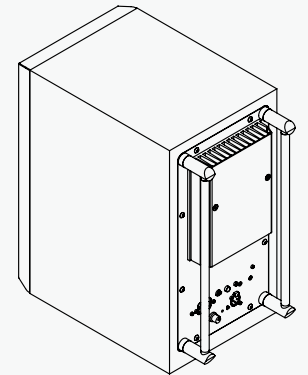
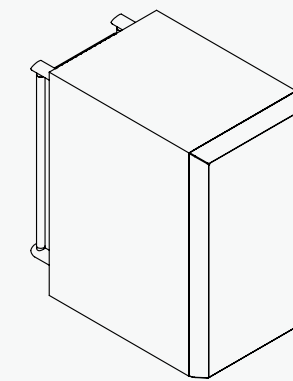
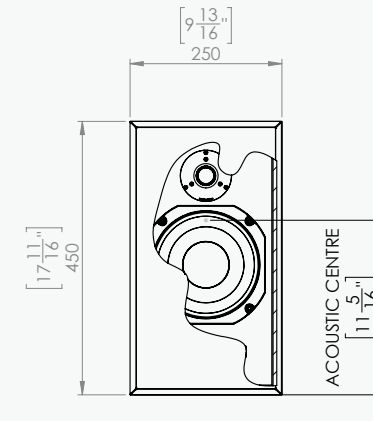
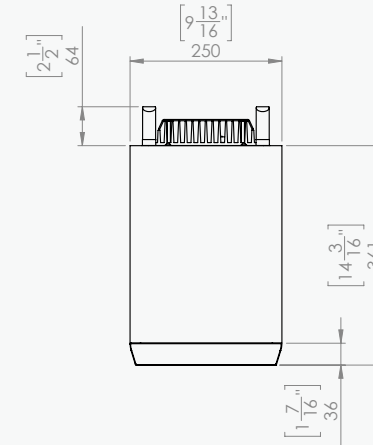
Switchable from 1V (+2dBu) to 2V (+8dBu) via the rear panel switch. For an additional continuous -6dB adjustment, the Input Sensitivity can also be adjusted by accessing the Trim pot through the panel. For source (driving) equipment with potentiometer based analogue level control, choose an Input Sensitivity that results in the desired average sound pressure level with the source level control at approximately 50%. For source (driving) equipment with a digital level control, choose an Input Sensitivity that results in the desired average sound pressure level with the level control at approximately 80%.

### Fault

Indicates a temporary or permanent amplifier fault. The Fault LED will illuminate if there is a DC fault on the amplifier or if the thermal limit of the heatsink is reached. In the rare case that the Fault LED illuminates, the loudspeaker should be switched off. Ensure the amplifier heatsink has adequate ventilation and after 45 minutes switch it back on. If the Fault LED remains illuminated the amplifier is registering a fault which should be investigated by an approved technician. Please contact your ATC dealer or distributor; details can be found at [www.atc.audio](http://www.atc.audio). If the Fault LED is no longer illuminated, the amplifier had shut down safely due to reaching high temperatures. Please reduce the system listening level or improve amplifier ventilation and continue to use the loudspeaker.

## SCM20ASL LE

WEIGHT – 27KGS/59.5LBS | DIMENSIONS – SEE DIAGRAM



# C4 SUB MK2 LE

## Product Description

The ATC C4 Sub Mk2 is a high-performance 12"/300mm active subwoofer, designed from the ground up to deliver the exceptional levels of performance required to partner ATC's active and passive loudspeaker range. Its performance and features make it ideally suited to use within stereo, multi-channel surround and immersive audio systems.

The sub features a sealed-box (infinite baffle) design, chosen for its balance of sub-bass extension and driver control. The cabinet is heavy and inert to minimise cabinet colouration.

The SS75-314SC driver employed has been meticulously optimised to reproduce the lowest 3 octaves of the audio band within the design of the C4 Sub Mk2 subwoofer system. It employs a short-coil operating in an exceptionally long magnetic gap to deliver high sound pressure levels with very low levels of distortion.

The C4 Sub Mk2's convection cooled amplifier is mounted in the rear of the cabinet. Two balanced Inputs

enable connection to mono or stereo sources.

A pair of buffered, un-filtered balanced Outputs provide connection to partnering active monitor loudspeakers, amplifiers or to daisy chain multiple subs. 21dB range of gain control, three low pass frequency settings, polarity switch and a 180 degree continuously variable Phase setting allow the user to optimise the subwoofer for use with a very wide range of partnering loudspeakers. The low pass filter can also be set to 'Off' (320Hz) should the user wish to use the C4 Sub Mk2 with external processing.

The amplifier features fault monitoring of amp panel temperature and power amplifier DC offset:- either fault condition is indicated via illumination of a single red LED mounted on the amp panel.

When in use, the subwoofer Output can be muted using a single latching footswitch connected via a 1/4"/6.35mm jack. The mute function does not affect the Outputs to the primary loudspeakers, only the Output from the sub itself. Additional subs can be muted using the same single footswitch via connection to the mute 'Thru' jack.

## Room Interaction

The room in which a loudspeaker is placed can be thought of as a filter, altering the acoustic response at the listening position from that of the loudspeaker. The position of the loudspeaker in a room will influence how it interacts with the space making it critical to achieving the best performance at the listening position.

Positioning is particularly relevant to subwoofers because at low frequencies the room will have a strong influence due to room modes/resonances. Room modes manifest themselves in an uneven distribution of acoustic energy within the room, which can lead to either too much or too little bass at the listening position. A room with a well-controlled low frequency response (reverb time) will have a far smaller influence on the performance of the subwoofer and will be less sensitive to subwoofer positioning. Applying acoustic treatment in a domestic setting is not always possible or desirable but if considered it should be noted that typically, a combination of resonant membrane traps and porous absorbers are needed to control the low frequency. The resonant

membrane traps are effective at treating the low bass, typically below 80Hz and the porous absorbers frequencies above this. Porous absorbers such as those made from foams, fibreglass or rockwool are not effective at absorbing low bass energy without a very large air space between them and the wall behind. For this reason, they are a poor choice of absorber for the subwoofer bandwidth.

To minimise problems a free-standing subwoofer should be kept away from corners where possible. Avoid placing the subwoofer mid-way between any two parallel walls.

## Subwoofer Placement

The C4 Sub Mk2 is supplied with 4 x steel spikes which can be fitted to the threaded holes in the base of the subwoofer. The spikes are optional and can be fitted to ensure the subwoofer is seated firmly when positioned on a soft carpeted floor. Without the spikes fitted, the subwoofer will sit on the 4 x fixed rubber feet, which is ideal for hardwood/concrete flooring.

Start with the subwoofer positioned next to one of the stereo monitors and at the same distance from the listening position. When installing two subwoofers, start with one by each of the stereo monitors. In most cases these guidelines will give the best results, however all rooms vary, and it is a good idea to experiment with both listening and speaker positions until a good compromise is reached. When working on optimising the positioning, only change one variable at a time. Positioning the subwoofer in the centre of the room, equidistant from the two side walls and between the left and right stereo pair must be avoided. In the majority of cases, this position will result in large irregularities in the frequency response.

Multiple subs will excite the room from multiple locations and will often give a more even in-room response. Also, a pair of subs can be placed with the same physical relationship to the pair of main speakers and the listener. Please see page 30 for recommendations on how to set the amplifier filters and level.

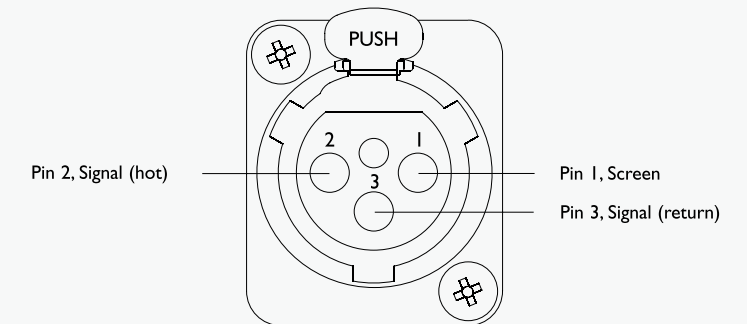
## Connection

Two or three cable connections are required for each subwoofer: one for mains power and one or two for the audio signal. The mains cable is specifically supplied to

comply with local statutory safety requirements and alternatives should not be substituted. If you intend to use your subwoofer in an alternative territory, please contact ATC for advice. Always earth the mains connection.

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 subwoofer. The signal Input pin configuration is shown in Diagram 5. If two signal connections are made to the subwoofer (i.e. a stereo pair) the left and right signals will be summed by the amplifier; increasing the effective input level to the amplifier stage by 6dB.

DIAGRAM 5



## Signal Cable Options

Balanced cable configuration is the preferred option, however unbalanced connection is possible. Diagrams 6 and 7 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.

DIAGRAM 6

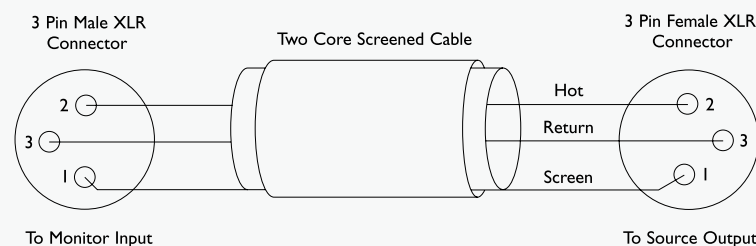
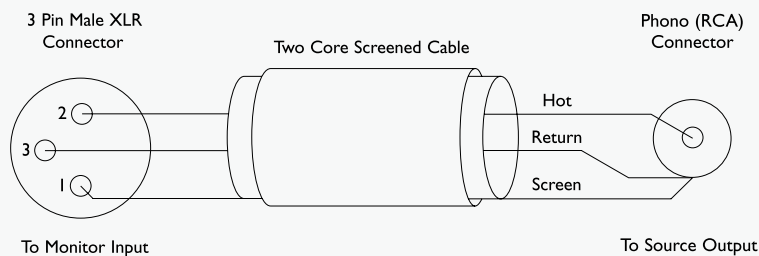


DIAGRAM 7



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.

## Power on/off

This button powers the subwoofer on or off. When the button is in the inward position, the loudspeaker is powered on. When the button is in the outward position, the subwoofer is powered off.

## Level and Gain

Sets the overall sensitivity of the subwoofer. Initially, the Level control should be set towards the centre of its range and only adjusted once the Frequency has been set. If one Input is connected, start with the Gain switch set at +6dB. If both Inputs are connected, start with the Gain switch set at 0dB.

An additional +10dB gain setting is included for situations where the preceding equipment can only deliver a low output level. Please note that increasing the gain does not increase the maximum acoustic output capability of the system.

Please refer to Page 14 – Product Specifications for information on system sensitivity.

## Polarity and Phase

Sets the overall polarity of the subwoofer and offers an adjustment of the Input/Output Phase. When set to + and 0° the subwoofer will radiate a positive acoustic pressure for a positive electrical signal at the Input. When set to – and 0° the subwoofer will radiate in the opposite polarity to the Input. The Phase control allows for fine adjustment of the Phase relationship between subwoofer and satellite speakers. This can be thought of as a delay, allowing for time alignment with other system elements and is useful when physical adjustment of loudspeaker/sub position is limited.

## Frequency

Varies the low pass crossover Frequency as indicated on the control panel. This is the fundamental parameter that defines the integration of the subwoofer with the satellites. The Frequency control should be set at, or slightly above the specified low frequency cut-off of the satellite speakers.

The 'open' setting applies a low pass filter at 320Hz. Select this setting if you will apply the sub low pass crossover filter via an external processor.

All filters are of the 4th order Linkwitz-Riley type.

## Outputs

Provides separately buffered and fully balanced Outputs with a signal identical to that at the corresponding Input terminals. The Output is unfiltered and unaltered in any way, and therefore it is possible to drive a stereo amplifier or pair of active loudspeakers from these terminals.

Likewise, it is also possible to drive a second C4 Sub Mk2 from these Outputs. This function allows for an unlimited number of C4 Sub Mk2s to be daisy chained together, one driving the next.

## Footswitch – Input and Thru

Facilitates remote muting of the subwoofer with the addition of a standard latching footswitch (not supplied). If the system includes more than one C4 Sub Mk2, a second subwoofer can be controlled from the Thru Output socket. This allows for all subwoofers in a system to be controlled simultaneously from one footswitch. The signal at the Output sockets is not affected.

## Fault

Indicates a temporary or permanent amplifier fault. The Fault LED will illuminate if there is a DC fault on the amplifier or if the thermal limit of the heatsink is reached. In the rare case that the Fault LED illuminates, the subwoofer should be switched off. Ensure the subwoofer heatsink has adequate ventilation and after 45 minutes switch it back on. If the Fault LED remains illuminated the amplifier is registering a fault which should be investigated by an approved technician. Please contact your ATC dealer or distributor, details can be found at [www.atc.audio](http://www.atc.audio). If the Fault LED is no longer illuminated, the amplifier had shut down safely due to reaching high temperatures. Please reduce the system listening level, subwoofer Level or improve amplifier ventilation and continue to use the subwoofer.

### Typical System Configurations

The C4 Sub Mk2 Limited Edition is designed to partner the SCM20ASL Limited Edition and as such will typically be used to extend and reinforce the LF performance of this stereo system. It may also be used as a discrete channel in multichannel surround/immersive systems.

### Bass Reinforcement/ Extension of System

Typically, a full-range stereo signal is driven into both Left and Right subwoofer Inputs. The subwoofer Outputs connect to and drive the main loudspeakers. Alternatively, the C4 Sub Mk2 and main loudspeakers can be driven independently from a suitable preamplifier/AV receiver. Example systems are shown in Diagrams 8, 9 and 10. All subwoofers can be controlled using the method described on page 27. All panel settings should be set independently for each subwoofer.

All ATC loudspeakers deliver significant low frequency output, more so with the larger monitors in the range, therefore there will always be some degree of acoustic overlap between the subwoofer and stereo loudspeakers in this configuration. Applying an external high pass filter to the main loudspeakers will introduce Phase shift in the main loudspeakers and should be

avoided where possible. Good results can be achieved through experimentation with the subwoofer Level, Frequency and Phase adjustment.

A selection of common wiring configurations are shown but other configurations exist, please contact your reseller or ATC for advice.

Diagram 8 – Typical Configuration – Stereo playback (Mono Sub). A preamplifier or AV receiver Output is connected to the L and R Inputs of the subwoofer. The subwoofer L and R Outputs are connected to the Input of the L and R main active loudspeakers. In this configuration the Gain switch is normally set to 0dB.

Diagram 9 – Typical Configuration – Stereo playback (Stereo Subs). A preamplifier or AV receiver Output is connected to a single Input on each subwoofer. The corresponding Output of each subwoofer is connected to the Input of the main active loudspeaker on that channel. In this configuration, the Gain switch is normally set to 0dB. Note that it is also possible to connect the preamplifier/AV receiver Output to both Left and Right channel Inputs on the subwoofer using a Y-Splitter cable. If connected in this way the 'spare' Output can be used to connect further subwoofers.

DIAGRAM 8 SUBWOOFER CONNECTED IN SERIES

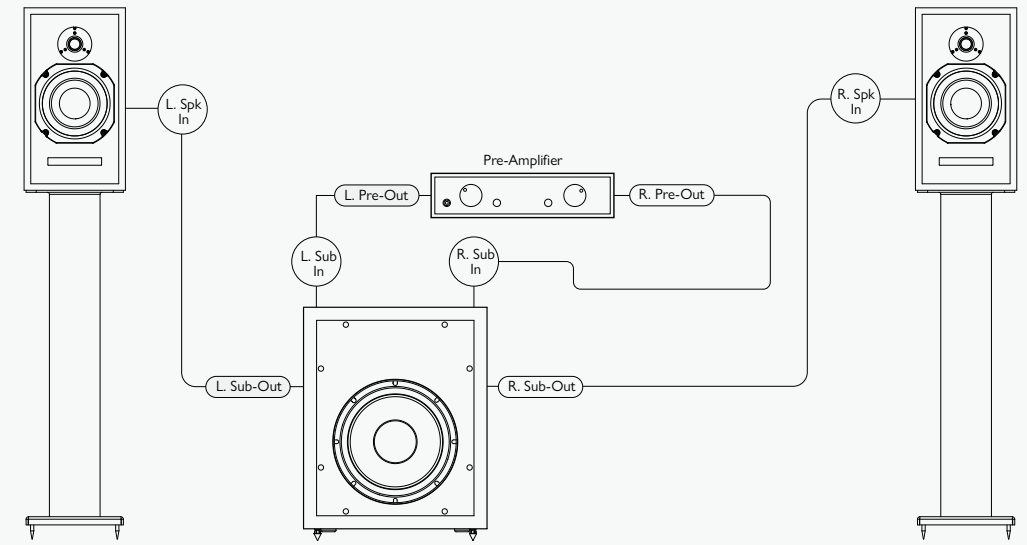


DIAGRAM 9 SUBWOOFERS CONNECTED IN SERIES

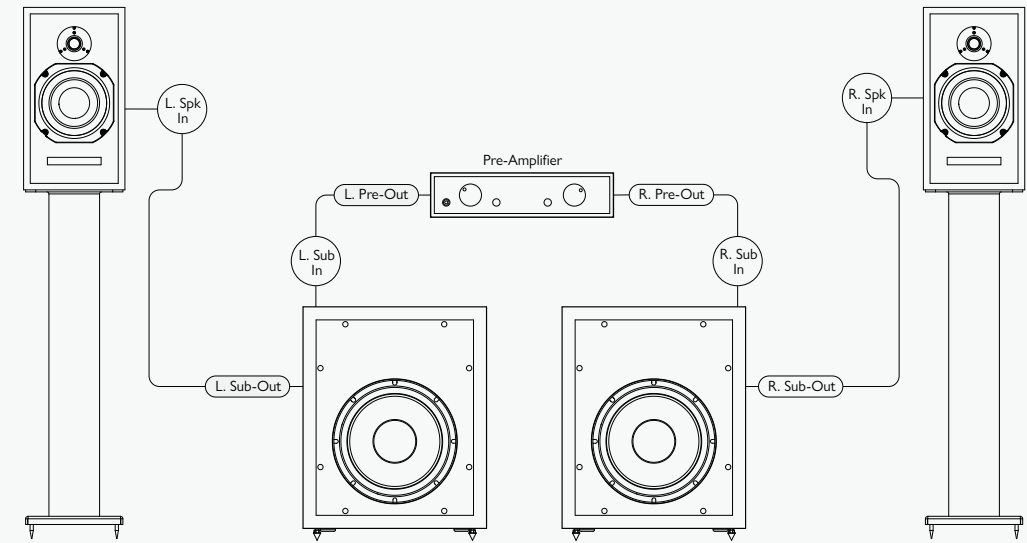




DIAGRAM 10 SUBWOOFER CONNECTED IN PARALLEL

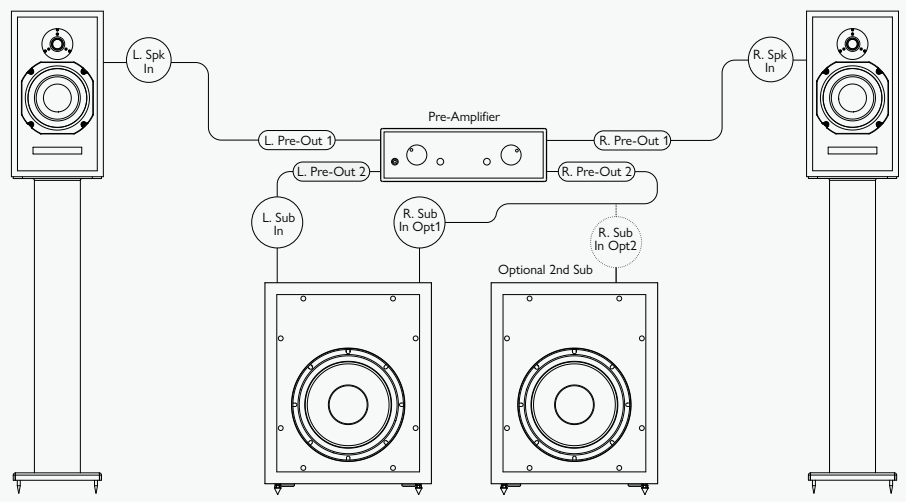


DIAGRAM 11	BASS REINFORCEMENT/ EXTENSION OF STEREO SYSTEM	C4 Sub Mk2 - recommended initial settings				
		FREQUENCY	LEVEL ADJUST FOR BEST BALANCE	GAIN SWITCH	PHASE ADJUST TO FINE TUNE	POLARITY
	SCM20ASL LE	65Hz	-6dB	0dB	0°	+

**Listening**

The ear and brain tend to interpret distorted sound as loudness and thus underestimate the actual level of undistorted sound. ATC subwoofers, like all ATC products, demonstrate 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.

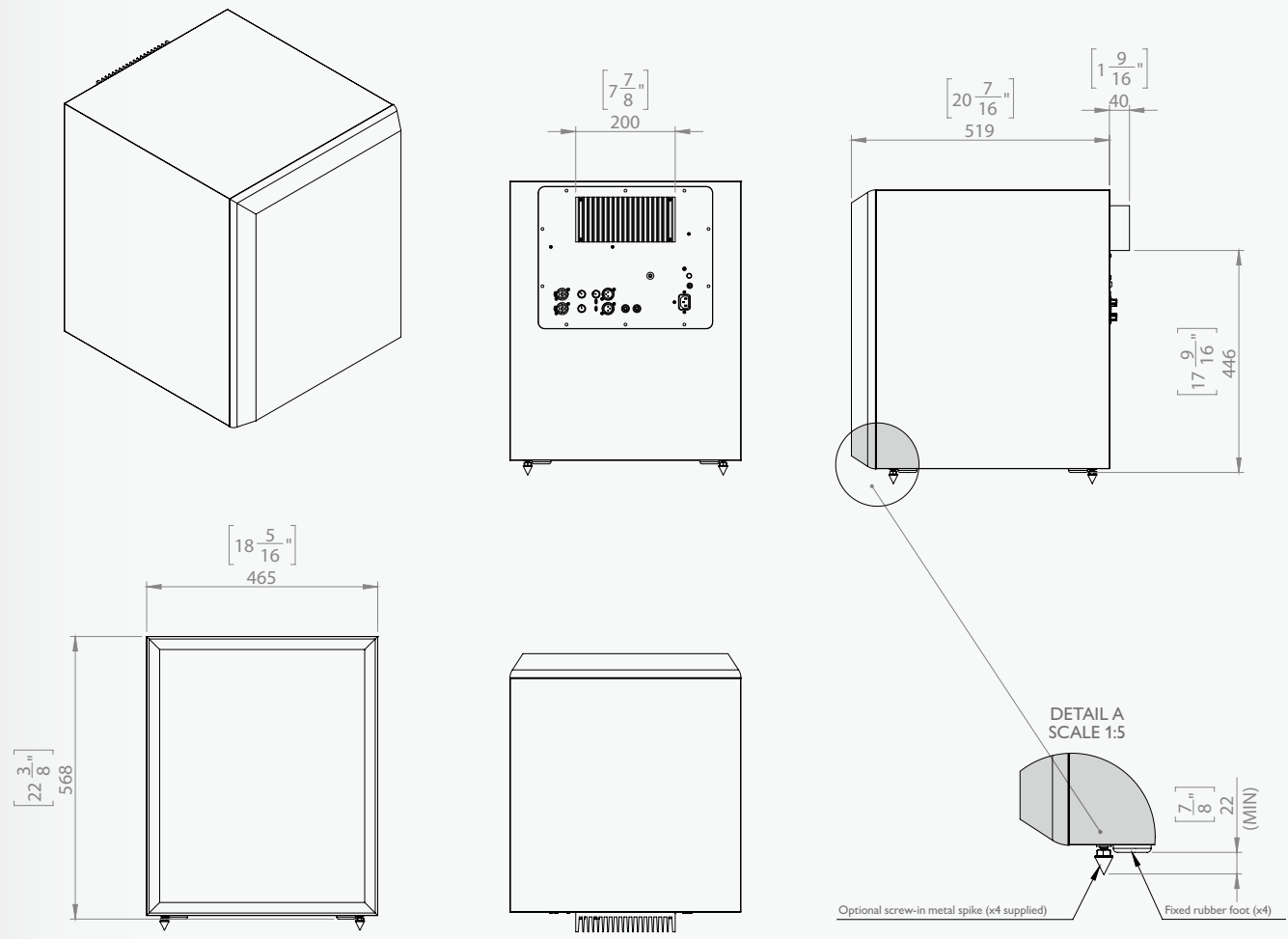
When a subwoofer is successfully integrated into a system it should become impossible to discern from the main loudspeakers. If the subwoofer is audible as a separate element, then it is likely the level is too high, the filter settings require adjustment, or the positioning can be improved.

Diagram 10 – 2.1 Configuration – The subwoofer is driven by a preamplifier/AV receiver with a second pre-amplifier Output or dedicated subwoofer Output. Additional subwoofers may be daisy chained using the subwoofer Outputs, or connected in a stereo configuration as shown.

The recommended initial settings are shown in Diagram 11.

C4 SUB MK2

WEIGHT – 42KG / 92.6LBS | DIMENSIONS – SEE DIAGRAM



## Care & 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 from the cabinet using a cloth slightly moistened with a non-abrasive household cleaner. Please avoid using any chemical cleaning or polishing agent on the leather surfaces as they may cause damage.

There are no components within the speakers 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. 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. ATC has every confidence in the quality of each product that it manufactures.

## Warranty

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 the Product Registration process, either by returning a completed Warranty Card to ATC or by registering the product at [www.atc.audio](http://www.atc.audio), 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.

## Contact


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IN THE  
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