

ATC SCM25A

Three-way Active Monitors



Published in SOS May 2013

Printer-friendly version



Reviews : Monitors

These compact speakers from venerable UK manufacturers ATC aren't cheap — but does the quality on offer justify the asking price?

Hugh Robjohns

British manufacturers ATC — the Acoustic Transducer Company — will be celebrating their 40th year of building world-class loudspeakers (and drive units) next year, having been formed by Billy Woodman in 1974. The company's first product was a 12-inch bass driver that out-performed everything else available at that time in terms of high power handling and low distortion, and the now famous 75mm soft-dome mid-range driver, introduced two years later, has formed the centrepiece of most of the company's professional monitor range ever since.

The majority of ATC's professional monitoring products are fairly large three-way designs — and, having manhandled more than a few SCM50A and SCM100ASL monitors in my time, I can also add that they're heavy! However, the most recent product to be added to the professional portfolio is considerably smaller than its three-way siblings (although it is still surprisingly heavy). The SCM25A is ATC's first ever compact three-way active studio monitor, and we've been trying to get hold of a pair to review ever since its launch in 2009! Frustratingly for us, every pair made until now has had several paying customers arguing over who should get the next set, so it's not difficult to see why it's taken a while for a demo pair to be released to us!

The design aim for the SCM25A was to fill the obvious gap in the range between the small two-way SCM20ASL Pro and the large three-way SCM50/100/150ASL Pro models. However, it had to deliver the same quality as the larger three-way monitors and be usable in nearfield and midfield situations, which meant using a similar driver configuration. One specific additional constraint on the size was that the cabinet had to be suitable for rackmounting (via an optional kit) for OB truck applications, as well as usable on console meter bridges — the latter requirement leading to this being the first ATC 'landscape' cabinet. The resulting configuration, with the tweeter mounted above the mid-range dome and the bass driver positioned alongside, is already familiar from the popular Neumann/KH O300 monitor, although the SCM25A Pro is a little larger and a lot heavier than the O300! Unlike the KH's sealed cabinet design, though, this ATC monitor is ported, using the same low-Q, low-frequency tuning approach employed in its siblings.

Facts & Figures

The SCM25A's cabinet dimensions are a modest and manageable 264 x 430 x 264mm (WxHxD), but the cabinets weigh in at a surprising 30kg each. Moving these speakers around can be done single-handed, unlike the larger designs, but only with care and a straight back if you want to avoid a visit to the chiropractor. A large, flared port vent is located on the side panel adjacent to the woofer, which helps to keep the front baffle as small as possible, and a dense foam bung is provided to allow the cabinet to be transformed into a sealed design, if required (see 'Pass The Port' box).

The 164mm carbon-paper bass driver is a proprietary ATC design, and it is unique in ATC's professional monitor range in using a two-inch, rather than three-inch, voice coil. It does still



use ATC's preferred 'underhung' voice-coil design, however, which means that the coil winding is shorter than the magnetic gap in which it moves, to ensure that it always remains within a linear magnetic field throughout its normal excursion range.

The back panel is a sparse affair: the only sockets are a single XLR input and the IEC mains inlet, and the only controls are for bass fine-tuning and input sensitivity (accessed via the two small holes above the heat sink).

The mid-range unit is a variation of ATC's well-known three-inch soft-dome driver, this version having a smaller magnet/motor system than those employed in the larger monitors. The inevitable reduction in sensitivity doesn't matter, though, as it is still 6dB more sensitive than the bass driver used here, and well within the matching capability of the active crossover. The 25mm (one-inch) neodymium and ferrofluid-cooled tweeter uses a silk dome and is made by Vifa. This unit is also used in other ATC models, and mounted on a bespoke ATC faceplate.

Amplification and crossover electronics are integrated into the rear of the cabinet and are, again, a variation on the familiar design employed in ATC's larger three-way professional monitors. In this incarnation, the 'amp pack' is configured to provide 150W for the bass driver, 60W for the mid-range, and 25W for the tweeter (all RMS values). This MOSFET amplifier design was originally conceived by Tim Isaacs way back in 1985 and it has stood the test of time very well, operating in Class AB but delivering very low distortion levels normally only found in Class-A amplifiers. Cooling is entirely passive via convection from the large area of external heatsink fins. The crossover filters are set at 380Hz and 3.5kHz (exactly the same as the SCM50/100/150 models), and use critically damped fourth-order (24dB/octave) slopes. All-pass filters are employed to phase-align the output of the drivers through the crossover regions, optimising the tonal balance as well as the polar and power responses. FET-based limiting circuits protect the drivers from overload damage.

As a complete system, the SCM25A Pro loudspeaker's response is flat within a 2dB window from 74Hz to 17kHz, and the -6dB bandwidth limits are 47Hz and 22kHz — the low-end extension being an impressive achievement for a relatively small box like this, and only about half an octave higher than the much larger SCM50ASL Pro. The roll-off is relatively gentle, too, and this speaker can be considered a full-range monitor without needing the support of a subwoofer in most applications. Response matching between stereo pairs is within ± 0.5 dB.

One of the key strengths of all ATC monitors is their very wide horizontal dispersion — around ± 80 degrees — which bestows a very broad sweet spot and stereo imaging that remains superbly stable and well defined even when listening well off-axis. In the vertical plane, the dispersion is much tighter (± 10 degrees) as a result of the vertical array of mid- and high-frequency drivers. However, this is beneficial in minimising disturbing reflections from nearby surfaces (for example, a console). Naturally, the tonal quality does vary more as you move vertically in front of the speakers, so some care will be needed to optimise the positioning for environments in which people both sit and stand.

Maximum SPL from the SCM25As is 109dB at one metre, with the input sensitivity for full output variable over a 6dB range from +2.2dBu to +8.2dBu (1V and 2V). Balanced analogue audio is connected via a standard XLR socket, and the only rear-panel controls, other than the on-off switch, fuse and voltage selector, are for input sensitivity and a bass boost. Both are recessed screwdriver trimmers accessed through small holes. The bass control provides up to 3dB of boost at 40Hz.

▣^{top} In Use

The ideal layout for these speakers is to place them such that the tweeters are closer to the inner edges, as this provides the best imaging (and the frequency response is marginally better off-axis on the tweeter/mid-driver side because of edge-diffraction effects). This arrangement also places the ports on the outer sides of the cabinets, where they won't be obstructed by secondary reference speakers positioned on the inside. However, I also tried the monitors with the tweeters on the outside edges and found the performance barely altered and the sweet spot still extremely wide and stable, with precise imaging and beautifully natural portrayal of front-to-back perspectives.

Setting up the SCM25As is very simple, and all of my listening was performed with the bass boost set to its flat position and the port venting normally. The input sensitivity range is not as wide as many speakers, but the default setting worked perfectly well with the feeds from the various monitoring controllers I employed in different locations (Bryston SP1.7, Grace Design M902, Crookwood M1, and TC Electronic BMC2).

The instant impression is that despite their compact size, these monitors deliver a very well-balanced spectrum, with a surprisingly strong, extended and confident bass. The mid-range is nothing short of astonishing — superbly accurate, honest and dynamic — but then the ATC soft-dome mid-range driver has always been a major strength of the marque. The high end is detailed, open and airy, but not hyped or exaggerated in any way, and all three drive units integrate smoothly to deliver an impressive ensemble.

There is no doubting that the SCM25A is a professional monitor in the true sense of that term. Distortion is extremely low — never higher than 0.2 percent and well under one percent for all frequencies above 60Hz — and that provides a level of transparency that only the best can come close to matching. What this means, in practice, is that small changes to EQ or compression are very easily audible, and that weaknesses in source recordings (and equipment) stand out very clearly.

I auditioned a very wide range of material on the SCM25As, including commercial recordings of complex orchestral, choral and chamber works, simple instrumental and vocal quartets and duos, large and small-scale jazz, rock, R&B and pop recordings, and a wide range of material I've recorded myself. In every case, these monitors told the story exactly the way it was, revealing technical flaws and performance imperfections effortlessly and with perfect balance. Some 'monitors' seem to work well on rock music but are lifeless on classical, and others favour the opposite, but a real monitor should work properly and reliably with everything, and the SCM25s do.

One of the key advantages of three-way speakers is that each drive unit can be better optimised with fewer compromises, and that translates into mid-range reproduction that doesn't become veiled or modulated by high levels of bass, as it can in many two-way designs. No matter what I listened to, the mid-range clarity always shone out, allowing forensic analysis and precise adjustment of mixes, but without being tiring or overly clinical. In plain words, the accuracy and transparency of these monitors just makes it easier to hear what you are doing; there is no need for the forward, aggressive balance to which lesser designs resort to create the impression of detail. The bass end is also powerful, clean and natural, with far more weight and power than might have been thought possible from a cabinet of this size, and it doesn't all disappear at low listening levels, either, which is unusual for a ported design. However, the lack of LF distortion can catch out the unwary when mixing, as it tempts you into producing bass-heavy balances to generate the same kind of punch and grunt that typical two-way ported speakers produce.

There's no getting away from the fact that the SCM25A is an expensive monitor, but the accuracy and quality really does justify the price. This modestly sized monitor maintains the very high standards set by its larger siblings, but in a more compact format, and without giving much away in terms of bass extension. Very impressive — but only audition them if the funds are available in the bank... You won't want to go back to your old monitors afterwards! **SOS**

▲ Alternatives

Comparing the design styling, the KH O300 (and the imminent O310) looks to be a close competitor to the ATC model, but in fact both the price and sound-quality differentials are quite substantial. In fact, far more valid peers, on a price and performance basis, would include the Genelec 8260A (and 1037C), the KH O410, PSI Audio's A25M, Barefoot's MM27 and the PMC IB1SA. The last is a passive three-way speaker with a bolt-on amp pack, while the rest are all active three-way designs — and most are significantly larger than the SCM25.

▲ Pass The Port

Like all of the larger ATC monitor designs, the SCM25A employs a ported cabinet to optimise the loading of the bass driver. However, ported cabinets inherently have a resonant frequency, which is determined by the cabinet and port dimensions. Some speaker designers use this resonance deliberately to 'prop up' and artificially enhance the bass response, especially in small-cabinet designs. However, ATC don't use the port to extend the bass as such, but rather tune it to load the bass driver correctly to control its motion, with the primary aim of reducing distortion — although some gentle low-frequency extension is a handy side-effect.

In technical terms, the difference is that the port resonance in ATC designs is well damped, with a relatively low Q of around 0.5, giving a fairly gentle and natural-sounding bass roll-off with very good extension. In contrast, most ported speakers are designed with more aggressive port tuning, Q values of 0.7 or higher being quite typical. These higher values reduce the port damping, allowing the resonant energy to enhance the low end, often giving the impression of a more powerful, 'thumpy' bass response. The down side is a much steeper roll-off which actually reduces the total bass extension quite dramatically.

SCM25As are provided with dense foam bungs which can be placed in the ports, if desired, to convert the cabinet to a sealed format. This option is included mainly for applications where the speaker is rackmounted and the port can't work correctly anyway. Installing the bung eliminates the port function, altering the bass alignment, and this results in a very slightly reduced bass output below 110Hz (-1.5dB at 80Hz). However, because sealed cabinets have a slower roll-off rate than ported cabinets, the bass extension below 40Hz is actually enhanced slightly (+1dB). Sealed cabinets enjoy better LF phase accuracy than ported cabinets (although the difference here is quite subtle), but the resulting sub-optimal bass driver loading also reduces the power handling and increases distortion slightly. Most of my listening was performed with the ports venting normally.

▲ ATC Vs KH?

Inevitably, given its size, shape, and design, the SCM25A will be compared by some to the Neumann/KH O300 and, indeed, there are some shared qualities because of the use of a three-way configuration and compact, landscape cabinet. However, this isn't really a fair comparison, since you can buy a five-channel surround set of O300s for the price of a stereo pair of the ATCs!

In technical terms the SCM25A can play louder without incurring the wrath of the bass driver's limiter (although the new Neumann/KH O310 may well give it a closer race), and the crossover tuning allows the ATC mid-range dome to do a lot more of the work than in the O300 — and the ATC's mid-range really is something very special indeed.

I am a big fan of the O300 and think it is a remarkable monitor for the price, but I am also the first to concede that the SCM25A is playing in a whole different league.

Published in SOS May 2013