WWW.HIFICRITIC.COM ISSN 1759-7919

HIFICRITIC

AUDIO REVIEW MAGAZINE £15 Vol8/No1 JAN - MARCH 2014

AFFORDABLE M-C CARTRIDGES
Chris Bryant tries out four relatively inexpensive m-c cartridges

NAIM'S LITTLE DAC
Naim's compact DAC-V1 might be aimed at computer users but it makes plenty of sense as a digital pre-amp too

ULTIMATE FACT
Martin Colloms' unvarnished review of PMC's Fact.12 loudspeaker

40 YEARS YOUNG
Linn celebrates the 40th anniversary of its timeless Sondek with this special 'fully loaded' record player

VALVE INTEGRATION
Audio Research has combined pre- and power amps in its new VSi75 integrated amplifier

THE Rs HAVE IT
Apollo-R, Saturn-R and Elicit-R: Rega's latest budget electronics investigated

REVIEWED THIS ISSUE: NAIM DAC-V1, PMC FACT.12, JPLAY, JCAT, LINN 40TH ANNIVERSARY SONDEK LP12, AUDIO RESEARCH VSi75, AUDIO-TECHNICA AT-F7, GOLDRING LEGACY SERIES, GOLDRING ELITE, ORTOFON QUINTET RED, AUDIO MUSIC R-S, REGA APOLLO-R, REGA SATURN-R, REGA ELICIT-R, NAIM NAIT, MUSICAL FIDELITY V90-HPA, MUSICAL FIDELITY V90-LPS

Ultimate Fact

WE'RE FRESH OUT OF 'FACT' JOKES, SO INSTEAD HERE'S MARTIN COLLOMS' UNVARNISHED REVIEW OF PMC'S FACT.12 LOUDSPEAKER.

"The overall design mission for this compact floorstander was to deliver higher performance overall: deeper more powerful and lower distortion bass and midrange, greater definition especially in the midrange, and better integration of the four-driver array, especially off-axis"

This tall slim loudspeaker is one of PMC's more costly designs. One surprise is that it's roughly twice the current price of the last *fact*-series model that we reviewed, the fine *fact.8* (covered by Paul Messenger and myself in *HIFICRITIC Vol4 No1* back in 2010).

That's surprising because this new three-way design is about the same size as the nominally two-way *fact.8*, and has an even lower sensitivity, albeit enhanced by some additional bass extension and loudness capability. Clearly the intention is superior sound quality and power handling, especially in the all important midrange.

This is where a substantial investment has gone into a new in-house soft dome midrange unit: a 50mm radiator of substantial power handling that also benefits from studio grade engineering. Historically, PMC used two different 75mm midrange drivers in its three-way designs – a Vifa-sourced example in some of its earlier domestically oriented models like the *EB1* as well as the professional *IB1S*, and an in-house example with a massive 216mm magnet used in the more advanced Pro models like the *IB2i*. PMC's ranges and drivers have continued to evolve, so the company now makes nearly all its own midrange dome drivers, in two sizes (50mm and 75mm), and with new faceplates developed with help from the National Physical Laboratory (NPL) (see later). The 75mm version was featured in the Pro-oriented *IB2SE* stand-mount, and our recent review (*Vol7 No4*) particularly noted the excellent midrange. The 50mm version was primarily developed to create the much slimmer floorstanders favoured by domestic users, such as this *fact.12* and the new *twenty.26* models.

Sticking to the facts and the published specifications, the *fact.12* stands a substantial 111cm high on strong 'ingot' chromed steel stabiliser floor supports, but is an exceptionally narrow 16.8cm wide (just six inches!) – just enough to accommodate the pair of 140mm frame bass drivers, and certainly an elegant solution for modern apartments. To achieve the required internal folded transmission line length, it's a significant 42cm deep.

Sensitivity is quoted at an unashamedly low 84dB, which is probably correct knowing PMC (many speaker makers cynically add 2 or 3dB). A nominal frequency response is given, with no amplitude limits, but convention implies typical -6dB rolloff points at 26Hz in the bass and 30kHz in the high treble.

With its 'folded' internal construction, the carefully tuned and terminated 'ATL' bass line is 3.3m long (almost double that used by the *fact.3* stand-mount). Low bass emerges at a pair of rectangular ports on the front near the base that are large enough to avoid blowing noises under high

MARTIN COLLOMS

power drive, covered by strong mesh grilles. Three pairs of input connections are available for tri-wiring or tri-amping if desired, but the speaker is supplied with these already linked by sensibly designed silver plated 'power strips' rather than inferior sounding brass rods. 4mm connectors may also be used with the silver plated 'four-way' terminals

Like the *fact.8*, the *'.12* has two three-way switches for adjusting bass and treble, to assist fine tuning of the tonal balance for variations in placement, systems, and in room acoustics. (Similar features are also found on more upmarket designs from Focal, Wilson and Sonus Faber, for example.)

The speaker might look slim but it's actually quite dense, thick cabinet walls and extensive bracing helping it reach 26kg (57lb). Neat full height grilles are retained by concealed neodymium magnets. Power handling is not quoted, but this sort of three-way will probably be good for 200W of unclipped music programme. The rated impedance is 8ohms, and again past experience this will not turn out to be the frequently encountered 4ohms rated as 8ohms. Finishes include the satin white lacquer of our samples, plus Graphite Stained Poplar, Tiger Ebony and Rich Walnut. Rubber caps can cover adjustable domed steel feet for delicate floors, or spikes may used with carpeted floorboards.

Technology

Oliver Thomas, the son of co-founder Peter, is playing an increasing role in the company's R&D. The development of a new midrange unit for this top model in the *fact* series provided the impetus for him to use a large area scanning laser interferometer located at the National Physical Laboratory. This instrument can analyse the uniformity of sound radiation from the drivers in the acoustic space beyond the front panel, and also reveal how well the audio signals are summing through the upper crossover region. This interactive development work was aimed at delivering better controlled integration in the space beyond the drivers, to improve subjective directivity and clarity.

The overall design mission for this compact floorstander was to deliver higher performance overall: deeper more powerful and lower distortion bass and midrange, greater definition especially in the midrange, and better integration of the four-driver array, especially off-axis. The 50mm midrange dome unit's front plate is contoured to improve the off-axis radiation pattern, while the back loading used allows it to cover an inherent 4.5 octaves from a low 300Hz to the upper limit of 5kHz. In practice it's neatly bounded by precise 24dB/octave (acoustic slope) crossover networks at 400Hz and 4kHz. The firm control generated by the chosen ATL bass loading parameters seems almost to lock the driver cones in position even under really high power. This excursion control allows the use of the two smaller than expected 140mm bass drivers operating in tandem and built onto heavy duty die-cast frames.

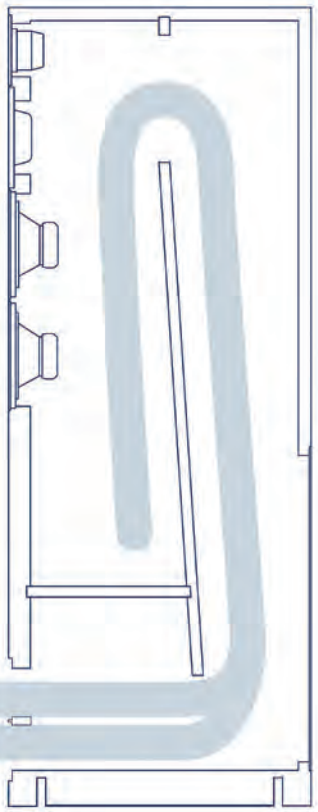
The pulp cones used in previous fact models are here replaced by coated, damped and heavier aluminium of great stiffness (pistonic in their working range) to resist the higher input powers. Tougher, geometrically tailored and laminated surrounds are also used, reflecting PMC's higher power studio monitor experience. As before a custom SEAS-sourced soft dome tweeter is fitted, a hybrid treble radiator with a Sonomex synthetic diaphragm that combines a 19mm dome with a 34mm active surround. The crossover network uses a mixture of component technologies, including air-cored inductors plus film capacitors for the high frequency sections, but it's not demonstrably populated with 'audiophile' parts. Designed-in from the start, the response adjustments are integral and definitively not an afterthought; the test results show that they are effective and do not significantly prejudice the overall performance.

Sound Quality

The speakers were initially placed where the Wilson Audio *Sophia 3*s had been, but the much narrower profile of the *fact.12*s and the resulting wider angle sound radiation meant that side wall contributions were more pronounced: some juggling of location and angling was required. At first the treble sounded just a tad 'zingy' and exposed, but this faded away as the installation was fine tuned and the system and loudspeaker settled in. The speakers were moved about 10cm inwards from the sidewalls and just 2cm forwards, and set square, facing straight ahead. This fixed things nicely, and it now demonstrated a fine soundstage, very good depth and transparency, and an even, extended frequency response.

It would be most unwise to underestimate this skinny loudspeaker. Despite the narrow frame it packs a powerful punch, certainly to rock band bass fundamental frequencies, and it has a good stab at orchestral bass drum as well, and at considerable loudness too. Close the eyes and it is easy to imagine a much larger and more costly design.

It demonstrated very good midrange articulation, like seeing through a clean window, with a notable absence of veiling and lots of micro detail, clearly providing information about the nature of crisp percussive sounds and how they were played. Perhaps



The System

System: D'Agostino *Momentum Stereo,* Naim *NAP300,* Audio Research *VSi75;* Naim *Supernait 2*, Audio Research *Reference 5 SE,* Townshend *Allegri* and Audio Music control units; Naim *UnitiServe* network server and S/PDIF source, Naim *NDS/555PS(DR)* streamer/DAC digital source; Linn *LP12*/Naim *ARO*/Koetsu *Urushi Vermilion*, Naim *Superline/Supercap DR* vinyl source; Wilson Audio *Sophia 3*, Quad *ESL63,* BBC*LS3/5a* speakers; Finite Elemente *Pagode Reference* racks; Cardas *Golden Reference*, Transparent *XLmm2,* Naim *NACA5,* Franco Serblin *Yter* cables.

unsurprising given its pedigree, it has much of the revealing qualities of a studio monitor. There is no sense of heaviness or overhang: piano has great harmonic richness and complexity, yet also sounded crisp and quick. Likewise marimba is free of bloom, specifically sounding amazingly fast and differentiated on Steve Reich's *Music for Mallet Instruments*, a piece that could have been written for it. It was equally expressive on plucked strings: guitar, banjo and mandolin were all considered really lifelike, with subtle and expressive decays.

The *fact.12* demonstrated open, vibrant, fast, percussive and well timed bass lines with satisfying extension – not quite as cleaned edged and fast decaying as a larger sealed box, but close. Too much bass, from unsuitable room placement or using an inappropriate bass control setting, definitely seemed to slow it up, as you might expect. I experimented with the bass and treble controls, and found them both effective and useful, to a degree where it is still worth adjusting the settings alongside fine tuning of listener and speaker locations and with 'toe in' or 'toe out'.

'Bass plus' would probably be right for larger open plan locations; 'bass minus' is maybe best for smaller rooms and those of solid construction. Brighter sounding rooms, cables, and electronics may well benefit from treble cut. I found the flat treble setting and 'minus' for the bass just right for a more upbeat sound.

While it might appear to be a price mismatch, the Naim *Supernait 2* was an excellent partner. It went plenty loud, with a crisp, articulate and detailed sound, kicking fine timing out of this line loaded loudspeaker. Conversely, the Audio Research *VSi75* sounded softer and more laid back, and while it certainly sounded delicately detailed and subtly expressive, it could not play as loudly. Consistently, and in all test combinations, these speakers created the sense of an open and natural acoustic in the listening room

Lab Results

Carefully weighing up the wide directivity and implied power response I found the sensitivity right on the 84dB specification – a low figure certainly, but assisted by the better than usual amplifier loading. Impedance averaged 6ohms with a low frequency dip to 5.2ohms and a harmless dip to 4.8ohms at 12kHz. The worst case combination of phase (red trace) and frequency was about 40degrees at 80Hz, which will be no problem in context. Complicated by the ATL bass loading, the nominal 'bass reflex' frequency is probably at a well damped 42Hz, while the impedance (blue trace) shows that the line remains active down to at least 20Hz. Under in-room conditions I felt that it actually sounded more like a sensitivity of 85dB, given the volume settings used.

It took power very well. I could not overload it with 150W of music drive, while the distortion tests showed first rate low frequency capability, sustaining 100W sine wave for short periods with outstanding control, again thanks to the firm acoustic loading exerted by the line on the bass drivers. Bass and treble cut lifts the average impedance by about an ohm, full bass and treble boost drops the impedance by an ohm in places, but the overall load value is maintained: clever stuff.

The master graph for frequency responses indicates that the largish treble unit is a little directional, and is very likely intentionally left a little hot on-axis at the highest frequencies. Thus the speaker is substantially flat from a low 40Hz up to 8kHz while the last treble octave then averages +3.5dB on-axis. However, on the straight ahead formation ideally employed for listening, the response is almost flat to 16kHz (+/-2dB). (This is effectively the 15º lateral response).

Above and below the axis, output shows only a modest dip of about 5dB at the nominal 4.3kHz crossover point, and is nicely symmetric. Very good results are seen in the lateral off-axis curves, thanks to that new midrange driver; the 15º result is near perfect, and while some loss of extreme treble is usual and inevitable, the primary tonal balance is extremely good up to 10kHz, so the energised room acoustic will have a natural timbre. And so it turned out: the 64-trace averaged spatial response across the listener region typically has close +/-4dB amplitude limits out to 10kHz, tapering

off thereafter as the tweeter directivity begins to dominate. Also the in-room bass is notably extended to at least 25 Hz, and sounded it, which is all most impressive.

The decay response shows a clear backdrop that is essentially linear phase, combined with a fast early decay. Good clearing is shown thereafter confirming the low coloration and fine clarity heard.

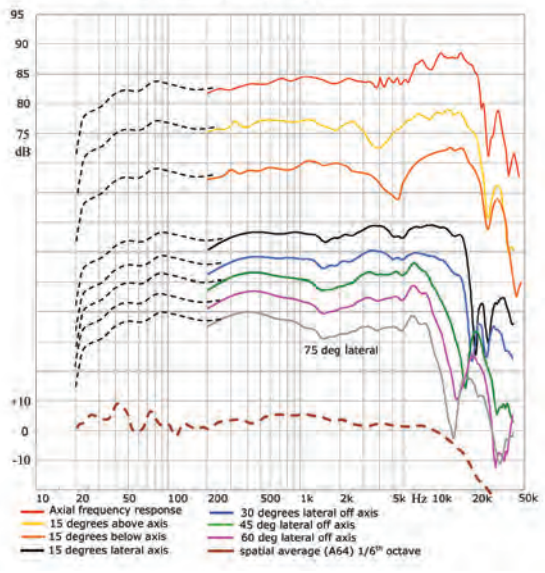
Conclusions

Our editor greatly admired the more boxy looking stand-mount *IB2SE* in late 2013, and I have been equally impressed by the *fact.12*, an ultra-slim floorstanding alternative at a broadly similar cost. So is the *fact.12* worth double the price of the similar size *fact.8*? Examining the data, no single parameter is twice as good, so do we have to rely on diminishing returns? Happily not, as the sum of the parts exceeds the individual contributions here, delivering a speaker that has faster, cleaner, deeper and more powerful bass; still better overall tonal balance; a crisp, transparent and focused midrange; and a sparkling, informative and spacious top end. Driver integration and power response are superior, as are image depth and stereo focus, leading to a very fine result. The modest sensitivity is more than made up for by truly excellent power handling and a relatively kind load impedance. However, the amazingly fast, subtle and articulate midrange, so genuinely informative of the sounds of real musical instruments, will remain in the memory, and taken overall wins this attractive and versatile speaker an Audio Excellence award.

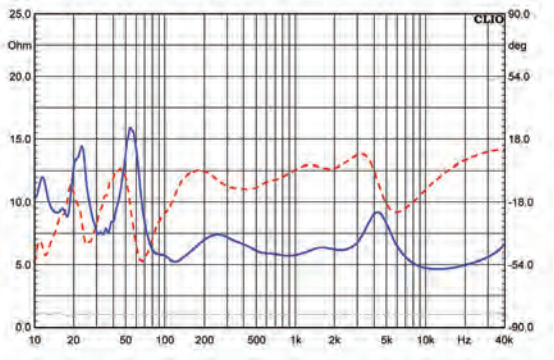
HIFICRITIC Loudspeaker laboratory measured test results

Make	PMC
Country	manufactured in the UK
Model	fact.12: wood composite build, moving-coil drivers, floorstanding, ATL loading
Size HxWxD, weight	111x16.8x42cm, 26kg (57lb)
Type	3-way: 2x14cm alloy/carbon bass, ATL-loaded; 5cm dome mid; 19-38mm ring dome treble
Sensitivity for 2.83V	84dB/W measured (2.83V 8ohm watt)
Amplifier loading	8ohms typical, 4.8ohm min: 'good loading'
Frequency response axial	40Hz to 12kHz +/- 3.0dB (listener axis) very good tolerance
Frequency response off- axis	Very good: see graphs and in-room response
Bass extension	33 Hz -6dB, (25Hz, -6dB in-room limit)
Max loudness, in room	107dBA for a stereo pair
Power rating (max, min)	200W, 30W
Placement	Free space, floor spike coupled

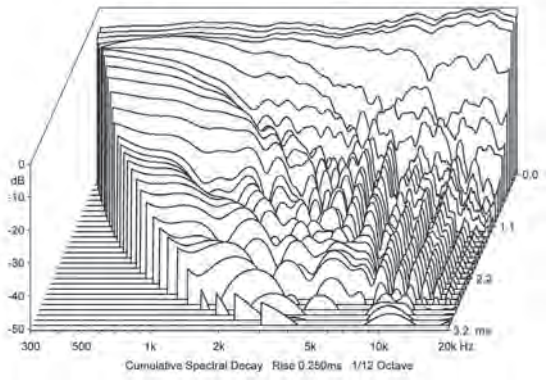
PMC fact. 12 Frequency Responses



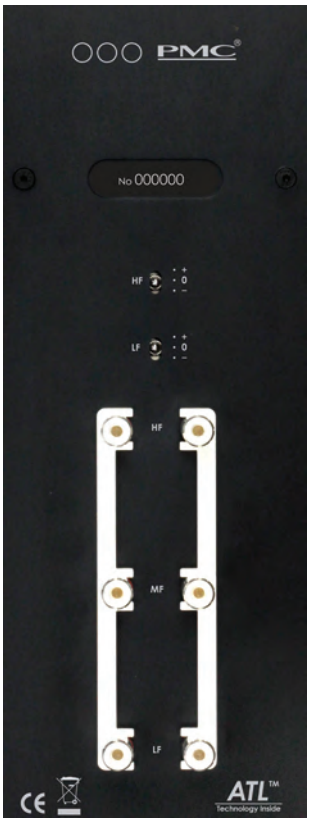
PMC fact. 12 Impedance (blue) and Phase Response v Frequency



PMC fact. 12 Waterfall Decay Response with Frequency



HIFICRITIC AUDIO EXCELLENCE



Contact:
PMC Loudspeakers
Tel: N/A (e-mail only)
www.pmc-speakers.com