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CABLE CONTROVERSIES PART 1

Martin Colloms begins the first of a multi-part investigation into the Physics and Sonics of hi-fi cables

KRELL 202 PRE-AMPLIFIER

Krell's brand new two-box pre-amplifier in the Evolution series gets the in depth CRITIC subjective and technical treatment

ARCAM SOLO ROUND ROBIN REVIEW

Four reviewers assess the Solo – will there be any common ground?

QUAD 2805

Martin Colloms gets to grips with the new 2805 and compares it with an original from 1985

HIGH QUALITY DOWNLOADING

Malcolm Steward looks at the options for downloading CD quality music

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Alvin Gold conducts in depth reviews of three mainstream CD players from leading UK brands

MUSIC & MORE

Krell EVO-202 pre-amplifier

MARTIN COLLOMS SCRUTINISES KRELL'S LATEST EVOLUTION PRE-AMPLIFIER
IN A FULL TECHNICAL AND SUBJECTIVE REVIEW



A year ago I assessed Krell's flagship *Evolution One* and *Two* audio components for *Hi-Fi News*, comprising a visually arresting array of no fewer than eight units, finished diamond milled bright alloy, and providing 400W per channel of stereo pre- and power amplification. Commenting that this pair represented Porsche *911 Turbo* pricing, results were nevertheless spectacularly good, achieving the top scores needed to justify Krell's reputation, their huge cost, and also the substantial design effort involved. In this instance, a variety of original techniques had been employed to deliver the required sonic results, while also meeting all the new regulations for harmonic noise production (which may leak out the mains cable into the street connection), and the use of recyclable materials (including the absence of lead in solder, components and board tinning).

The Krell component reviewed here is drawn from the next tier down. The two-box *202* line pre-amplifier carries the *EVO* logo, and is built to partner the 400W/ch *402* one-box stereo power amp. Both components carry UK prices of £13,000. The new construction and the imposition of the latest regulations make these designs more costly than their equivalent predecessors:

for example, the *402* is nearer in cost to a *FPB 700*, but actually replaces the *400cx*.

Dropping the number of boxes from four to two helps reduce the pre-amp's price down to £13,000 or thereabouts, in the Conrad Johnson *ACT Two* league, but the diamond milled finish remains (alongside a black anodised option). Whereas the *Evolution One* is double-mono in construction, the *EVO-202* is a stereo chassis partnered by a matching, stacking power supply. The umbilical power link is short so these two units must be kept close together unless another cable is made up. Locating the power unit on a separate platform might boost the sound quality, but it's probably not worth the trouble, as a shielding plate keeps induced hum out of the pre-amp above.

While the pre-amp is line level only, self-powered outboard vinyl cartridge stages are also available. Three types of line connections are accommodated: Krell's proprietary *CAST* is a balanced current drive interface with great immunity to cable variations; the balanced XLR type is the traditional voltage variety; and there's the traditional RCA-phono single-ended unbalanced option. (No slur is implied by the term unbalanced.)

MARTIN COLLOMS

A powerful microprocessor oversees all operations. The 152-step electronic volume control reads out in dB or plain numbers. Input sensitivities and channel balance are programmable, as is the custom naming of individual inputs. Display brightness is adjustable, and the volume control has variable rate sensing. Inputs comprise three single ended, two balanced and two *CAST*. There is also a tape monitor input and loop, plus absolute phase and mute controls. Outputs include 'theatre direct', variable XLR balanced, *CAST* and single-ended RCA-phono, plus tape. Any input format is automatically converted into any of the output formats.

Tech Talk

It all begins at the power supply, which features correction for mains distortion prior to a generous 170VA power toroid transformer and a 40,000uF reservoir capacity for the amplifying sections – larger than some smaller power amplifiers. The influence of power supplies is becoming better understood, and the *EVO 202* uses special discrete-component regulators with much higher performance than the usual integrated circuit types. The wide-bandwidth supply control amplifiers drive the five pairs of 40MHz/8 amp output transistors that feed the analogue circuits.

The amplifying circuits therefore operate with fast clean power lines. In stand-by, the full operating currents are maintained but the voltage is reduced to save power. A fast recovery to a good operating condition is assured.

All the amplifying circuits operate in class A mode, and are built using discrete components (no integrated circuits). Low noise and very wide bandwidths are achieved thanks to symmetrical, current-mode operation. Single-ended and balanced inputs pass through a complementary bi-polar buffer, which nulls common-mode signals and feeds current signals in balanced mode down the chain. No loop feedback is employed, and an intrinsic linearity of 0.007% is claimed without the need for global feedback. Top quality bifurcated gold-contact relays provide signal switching. The volume control has a 16-bit array of precision resistors, selected via solid-state switches, and designed to maintain a consistent performance across a wide range of volume settings. For *CAST* inputs and outputs, the signals remain in pure balanced current-mode throughout.

Sound Quality

Run in for 50 hours or so, and initially tried with a conrad johnson 350 SA power amp, the first impression

of significant brightness was coupled with some forward, moderately zingy high frequencies. The overall sound has a remarkably vibrant energy, and the explosive bass has a lean muscularity. Transient edges were sharpened, giving a hyper-real, exciting, attention-grabbing character. Very high resolution was also obvious, and considerable detail was apparent at all frequencies, with strong central focus, fine ambience and reverberation recovery, and depth rated better-than-good. The sound is moderately upbeat, with quite good rhythm and good timing, showing decent transient synchronicity over the whole frequency range. Initially, however, the total effect was also a little restless: certainly stimulating after a glass of red, but perhaps not quite so satisfying for longer, more introspective listening.

More than for most components, the *202* seemed quite critical of set up, and a series of adjustments to the system and its connections led to significant variations in sound quality. Similar sensitivity was also found with the conrad johnson *ACT-2*, indicating that really good products may also be highly strung.

At this quality level, small variations can have quite an effect. My equipment layout is designed to minimise cables lengths, and places the equipment stands central to and behind the loudspeakers. Although there is inevitably some acoustic and vibrational interaction between speakers and electronics, really subtle variations are nevertheless audible.

Through the almost accentuated clarity of the *EVO-202*, there was also a perceptible thickening in the lower midrange (below middle C) vocal lines. While not severe, its importance at this quality level was illustrated when by chance a magazine was (ill-advisedly) left on top of the preamplifier. I heard an immediate improvement in midrange clarity, marginally improved timing and greater soundstage depth. Such an observation should not be taken too seriously, since nearly all audio equipment shows similar acoustic coupling effects to a greater or lesser extent: in this case it was all the more obvious because of the *EVO 202*'s remarkable clarity. Experience with components like Naim's *CD555* and *CDS3* CD players, where exceptional attention has been paid to vibration isolation, has made it possible to recognise the subtle effects that acoustic feedback and vibration coupling can have on sound quality. Since the *202*'s top plate is noticeably resonant when tapped, there may well be some room for improvement here.

Recognising current EU regulations concerning harmonics drawn from the mains power connection, the power cables are not grounded and operate alongside



input filters in the equipment plus the special power supply input circuitry.

Checking the 202 for hum-free operation and negligible chassis currents, I had used a convenient off-the-shelf mains cable, and set the Conrad Johnson SA350 power to ground-lifted mode. I then installed the 202's manufacturer-supplied moulded-plug power cord. There's always some difference when this is done: sometimes barely perceptible, sometimes for the better, sometimes for the worse, sometimes just different. In this case the perceptible treble 'bleaching' and some of that projected hyper reality, described by one listener as comparable to solarisation with photographic images, was now significantly moderated. A further test with the good value DNM single strand power cable showed some further improvement. The difference heard was significant in the context of our high performance system, representing perhaps 5% of overall sound quality. No matter how good the supply regulation, the intrinsic rejection of line noise by symmetrical and balanced circuit configurations, and the new input filtering all exemplified in this sophisticated design, choice of mains cord may still materially affect the results.

The Krell 202 received an overall sound quality score of 70. Compared to the Conrad Johnson ACT 2 (a more specialised component limited to single-ended RCA phono inputs and outputs only), the Krell had tighter,

more focused bass, more obvious specific detail, and was clearly lighter in texture, more brilliant through the treble. While the ACT 2 has some mildly excessive 'sparkle', the Krell was more 'open' – perhaps too much so for some, but maybe just right for others. The Conrad Johnson perspectives were more distant and spacious, whereas the 202 gets you closer to the action. Whereas the Conrad Johnson excels in natural micro-dynamics and an upbeat, expressive tempo, it will need some tube maintenance every year or two, while the Krell will likely march on, more or less, forever.

Much as I like the Transparent XL Reference interconnect cables, particularly with Krell's FPB700cx, my preferred choice amongst many for the 202's single-ended phono connection was for the quieter, more introspective Cardas Golden Cross.

I now powered up Krell's partnering EVO-402 stereo power amplifier, primarily to investigate the performance via the latest CAST connection, using Transparent cables for both CAST and speaker connections; all mains cables were now standard Krell items.

Having experienced CAST connections over nearly a decade of development, I find the differences between this 'current mode' approach and the more usual voltage drive fascinating. Certainly CAST is supported by very good technical arguments: very wide bandwidth; immunity from cable length and resistance; excellent noise rejection;

and the suppression of subtle contact defects which may induce noise and distortion. It is thus likely to be more reliable over long periods.

However, each interconnection method has its own implications for cable and circuit practice and these inevitably affect sound quality. The latest *CAST* was true to form, sounding slightly detached yet with impressive transparency and liquidity, neutral in timbre, and with exceptional dynamic range. *CAST* delivers a most elegant sound with natural extended bass and really low overall coloration. Perhaps the variations in sound heard via the other inputs are really to do with artefacts of the cables used, though I still have a soft spot for the extra drive and rhythm which I find with single-ended phono interconnection. The *402* is scheduled for review in HiFi News. For the record, it complemented the *202* well, which I have not always found with earlier Krell pre-/power combinations.

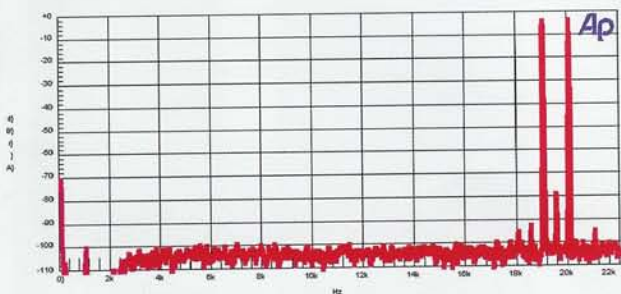
Lab Report

This two-box design places the preamplifier on top of its power supply, linked by a short power line umbilical. Temporarily swinging the pre-amp away during measurement confirmed negligible breakthrough hum from the supply transformers.

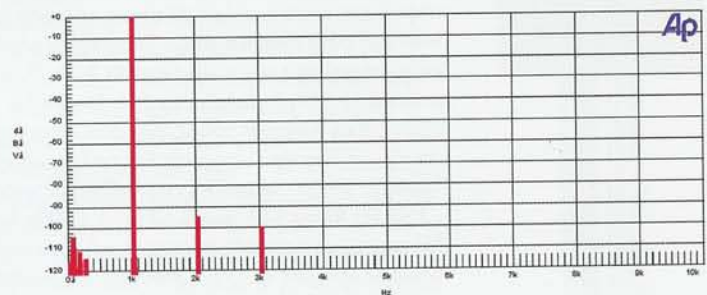
The *CAST* connection could not be measured directly, but on past experience it rates at least as well as the balanced interface, and there was no significant performance difference between the balanced and single ended connections, apart from the expected greater

PREAMPLIFIER TEST RESULTS			
Make	KRELL		Date:
Model: EVO 202	Ser. No. 1676050040		10/9/06
Distortion, THD inc noise	20Hz	1kHz	20kHz
At IHF 0.5V out, 0.5V line in	>-94 dB	>-98.5 dB	>-94 dB
At IHF 2.0V out, 2.0V line in	n/a	-96dB	n/a
Channel separation			
IHF. 0.5V	Aux	>110 dB	>110 dB
Frequency response (see text)			
IHF. 0.5V	Aux	0 dB	0 dB
Intermodulation Distortion			
19.5kHz/20.5kHz 1:1 0.5V output	1kHz difference tone		
Aux	-100 dB		
Signal to noise ratio			
IHF. 0.5V	Aux	98.6 dBA, 89.2dB CIR (1k)	
Input overload	SE	Line 7V 24dB IHF	
Channel Balance over volume range			
R ch is reference	at 0 dB	0.02 dB	
	at -20dB	0.02 dB	
	at -40dB	0.03 dB	
	at -60dB	0.04 dB	
Maximum output level (1% clip)			
	100k Ohm load	8 V SE, - V Bal	
	600 Ohm load	8 V SE, - V Bal	
Output impedance			
SE	22 Ohms		
Balanced	44 Ohms		
Input Data			
Aux input balanced	125 mV, 76.8 kohms		
Aux input single ended	125 mV, 38.4 ohms, 0.38 nF		
DC offset	Left 0.6 mV, Right 0.4 mV		
Size (two boxes, W x H x D)	438 x 95 x 470 mm		
Price	£13,500		

Krell 202 IM 0dB 19/20kHz



Krell 202 1v 1kHz distortion



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