

PHONO PREAMP REVIEWS

B.M.C. Phono MCCI phono preamplifier

By Michael Fremer • Posted: Aug 26, 2013 • Published: Jun 1, 2013



In July 2008 I reviewed the intriguing Phono 2Ci moving-magnet/moving-coil phono preamplifier from Aqvox Audio Devices. Though it then cost only \$1400, the Phono 2Ci's current-input circuitry represented a high-tech departure from the typical voltage-gain circuits used by almost everyone else. Although keeping its retail price so low resulted in some sonic compromises, it sounded remarkable, and tough to beat at the price.

The Aqvox's designer was a hired gun: Carlos Candeias. Now he's back, this time with the Phono MCCI balanced phono preamplifier (\$3890), another current-input design, and this time with his own brand. Candeias founded B.M.C. Audio GmbH in 2009, to design (in Germany), build (in China), and market (worldwide) his creations, including the Audio Amplifier C1 integrated amplifier, which I reviewed in the May 2012 issue.

The Phono MCCI is built to a far higher, more complex standard than the Aqvox, and is MC only. Like the other B.M.C.

electronic components, it sports a large, round something at the center of its front panel. On the C1, that something is a power meter; on the Phono MCCI, it's a big On/Off switch. The user can adjust little on the MCCI, so the controls are simple: On/Off, Mute, front-panel Dim—that's it. Well, not exactly. A plethora of internal jumpers is found inside; more about them shortly.

The basic difference between the Phono MCCI and virtually all other phono preamps is its current-injection input, which takes advantage of an MC cartridge's very low impedance, its inherent current-generating capabilities, and its balanced, floating-ground architecture.

Instead of a traditional voltage-gain stage, the Phono MCCI's input stage is a current-to-voltage converter. According to the Candeias, the cartridge directly injects its current into a system of "balanced DC currents," creating an amplified output voltage. The resulting amplified voltage is claimed to be made "directly of the original cartridge's current" with virtually no loss, and certainly less loss than is claimed for any voltage-gain circuit.

While a few other designers of phono preamplifiers have used a similar idea, Candeias claims that they use an op-amp or similar circuit to simulate, via a feedback loop, the required low-impedance input.

The CI circuit is different

The B.M.C. Phono MCCI's Current Injection input circuit uses a variation of a common-base or grounded-base topology often used in microphone preamplifiers, where the input is applied to the emitter of a bipolar transistor. This sort of circuit turns out to be equally useful for MC cartridges and is said to produce ultrawide bandwidth and very little noise.

Because the an MC cartridge's source impedance and the phono preamplifier's input impedance determine the current produced, cartridges with a surprisingly wide range of voltage outputs can be used. While a high-output MC generates a higher voltage, its higher impedance results in reduced current output. So despite wide variations in voltage output among MC

cartridges, the Phono MCCI's input stage can deal with many of them, including high-output MCs with outputs similar to those of typical MM cartridges.

The Phono MCCI's entire signal chain consists of two very short, fully balanced gain stages with zero feedback. Because the second gain stage sees a relatively high voltage from the current-to-voltage stage, it's easier to correctly implement than one required to deal with the ultralow MC cartridge voltage output. And because there's no global-feedback loop, RIAA equalization is accomplished passively in two stages decoupled from one another. The first pole is in the current-to-voltage stage, while the second is part of the second voltage-gain stage.

Carlos Candeias claims that this sort of circuit has the advantages of passive and active equalization, minus the disadvantages of either. You can choose either the standard RIAA equalization curve or the controversial Neumann-corrected version preferred by Candeias, though not by John Atkinson and others (footnote 1).

The Phono MCCI's output stage is a fully balanced, Load Effect Free (LEF), single-ended, class-A design similar to what Candeias uses in his B.M.C. C1 integrated amplifier. The claimed advantage of the circuit, when applied to a single-ended class-A design, is that it avoids distortion by allowing the transistors to work only within their linear operating range.

The class-A balanced circuit is said to widely reject even-order distortion, and Candeias claims that because it presents the power supply with a consistent load, the musical signal does not modulate the power supply. In addition, the balanced design rejects common-mode power-supply disturbances. Because the input uses current instead of an MC cartridge's ultralow voltage, the input impedance is very low, less than 3 ohms. There is no need, therefore to damp the cartridge's ultrasonic resonance with energy-destroying resistors in parallel with the input.

The Phono MCCI's high-quality parts include: 10 ultralow-noise transistors in parallel for each "functional group"; "balanced-current" capacitors; inductance-free polystyrene capacitors; thin-film metal resistors with 0.5% tolerance; fully gold-plated, four-layer printed circuit boards; and a shield of copper-plated iron.

The insides of the Phono MCCI look impressive by any standard, but particularly for the price. And inside is where you'll have to go to find the various jumpers that let you select among three levels of gain (Low, High, and Very High, standard or Neumann RIAA, a subsonic filter, and Low End Corrections consisting of Linear, Bass Boost, and Bass Boost and Warmer Sound. More about these below.

Mono cartridges with common grounds need not apply, RCA-to-XLR adapters not recommended

While all of these design features sound ideal, we don't live in an ideal world. I can't speak to the possible technical disadvantages of a current-injection circuit, but the practical ones became apparent as soon as I opened the B.M.C. Phono MCCI's owner's manual.

The manual is clumsily translated from the German, with syntax sure to flummox many. It would be relatively easy to rewrite for easier comprehension and better flow; and given the many danger cautions given, clarity is of utmost importance. The main caution is that you must maintain "ground free" connections from your turntable. The shield must not be connected to any of the four cartridge wires. That means that Rega Research turntables (and Rega's separate tonearms) will need the ground connection broken between the arm and the cartridge's blue "earth" pin.

Footnote 1: For a thorough discussion of this, see Keith Howard's "[Cut and Thrust: RIAA LP Equalization](#)" in the March 2009 issue. Even if your eyes begin to glaze over, stay with it until you get to the sidebar on the so-called "Neumann 4th pole," which is easier to understand. (If I can understand it, anyone can.)

Read more at <http://www.stereophile.com/content/bmc-phonomcci-phonopreamplifier#tG723JXHGB2U6oCc.9>

The Phono MCCI uses XLR jacks on its rear panel; while you can use an RCA-to-XLR adapter, Carlos Candeias doesn't recommend it: Such adapters can produce noise, and you must ascertain with a voltmeter that pin 1 of the XLR isn't connected to any of the four cartridge leads. Use an adapter if you must, but according to the manual, if you do, you won't get all of the Phono MCCI's sonic benefits, especially low noise.

The ideal phono cable to be used with the Phono MCCI is a twisted-pair cable with *shielding* connected to XLR pin 1. An unshielded cable can be used, but it must be a noise-rejecting twisted pair. In the manual, a page full of drawings of "dangerous connections" shows you what you must *never* do—including using a cartridge with a common ground. The manual doesn't specify what might happen if you don't stick to the rules, but based on the wording and the caution graphics, expect smoke signals.

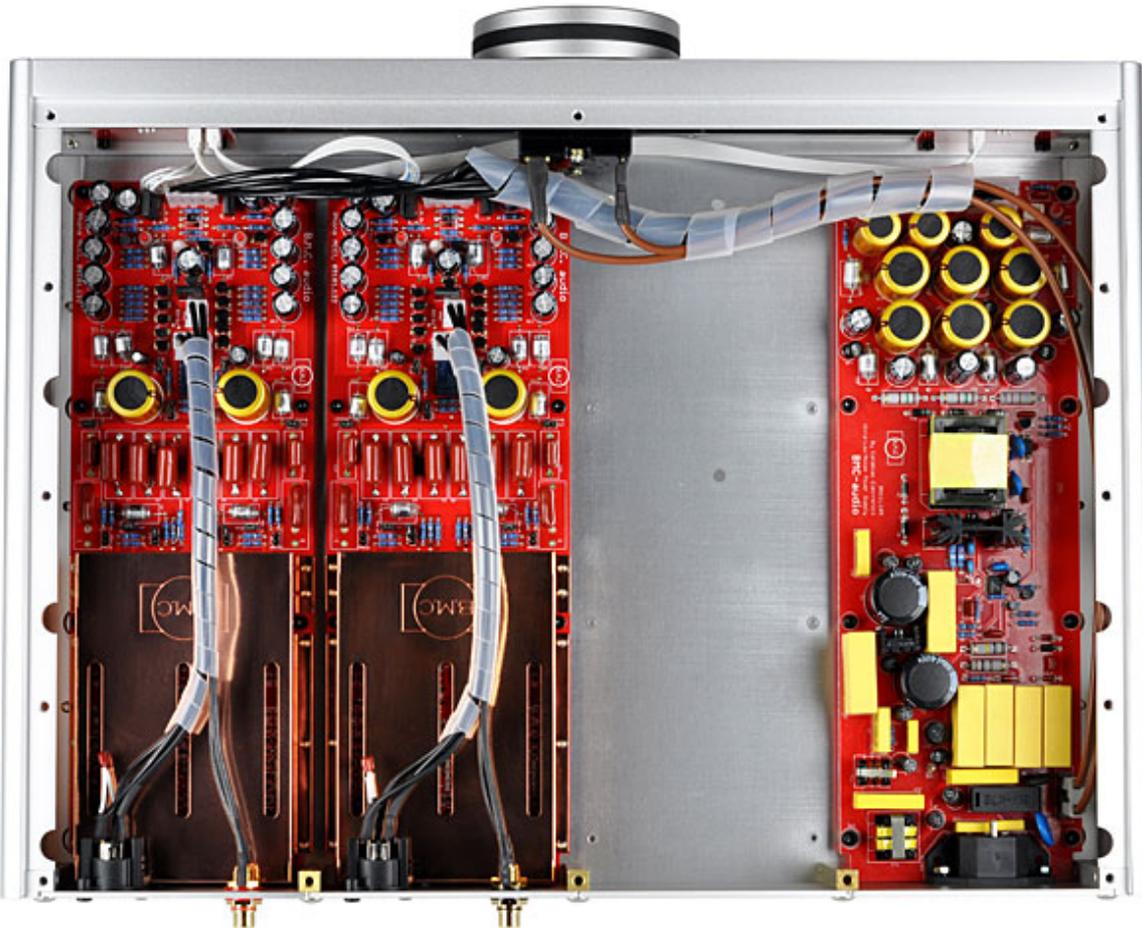
Which cartridges work and which don't

Carlos Candeias says that "almost every MC cartridge as well as most high output MCs (with low coil inductance)" will work with his Phono MCCI, but that those with high generator efficiency will work best.

The familiar Ohm's law formula of $I=V/R$, where I is current, V is voltage, and R is resistance (in this case, the cartridge's internal resistance), tells you how much current is available from a given cartridge into the MCCI's <3 ohm input (almost a short circuit). Cartridges with the highest current will work best with the Phono MCCI. Those include the models by veteran cartridge designer Y. Matsudaira: the My Sonic Labs Eminent, the Air Tight PC series, and, especially, the super-low-inductance Haniwa HCTR01. Other good matches are Lyra's Atlas, Delos, and Kleos, as well as Ortofon's A90 and MC Anna, and Dynavector's Te Kaitora Rua. Benz Micro and van den Hul cartridges with much higher internal impedances are

not good matches.

image: <http://www.stereophile.com/images/613bnc.2.jpg>



I had on hand an Ortofon A90 and MC Anna, as well as a Lyra Atlas and a Haniwa HCTR01 "green dot," the last a super-low-impedance (0.8 ohm) design. Unfortunately for me, my Kuzma 4Point and Continuum Audio Labs Cobra tonearms are hardwired from cartridge clips to RCA plugs. Fortunately, the Kuzma is double-wired, with a second run of wire from the cartridge clips to a set of RCA jacks in a junction box. Candeias supplied me with a set of high-quality, twisted-pair, shielded, RCA-plug-to-XLR-jack cables, which was ideal.

Lyra Atlas: I began with the Lyra Atlas (\$9500), which outputs 0.56mV and, more important, has an internal impedance of only 4.2 ohms. I left the B.M.C. Phono MCCI's internal jumpers at their factory settings. The owner's manual doesn't offer a clue about what those settings are, though it does say that opening the case and adjusting the jumpers is for "professionals only." If you buy an MCCI, I suggest you declare yourself a professional, then proceed with caution: If you have to reset the

jumpers, first disconnect the MCCI from the wall.

The first record up was a new vinyl edition of Cassandra Wilson's *Belly of the Sun*, originally released on CD in 2002 (2 LPs, Blue Note/Pure Pleasure BST 35072). Wally Heider's Remote 2 truck was rolled to the heart of the Mississippi Delta—not far from the crossroads where, as legend has it, Robert Johnson sold his soul to the devil—and parked next to the Clarksdale, Mississippi, train station, where the record was made. Cassandra Wilson produced the album herself—she wanted to get the atmosphere on tape, and engineer Danny Kopelson obliged. The humidity seeps from the grooves. The picture is rich, warm, organic, and remarkably three-dimensional. I'd already played this new edition a few times through the reference Ypsilon VPS-100 phono preamp, so the sound was familiar.

It quickly became clear that the B.M.C. Phono MCCI phono preamp was amazing—an adjective I rarely use. Its transparency, three-dimensionality, and overall ease of purpose (try measuring *that*) startled me. This was special. But in one way it sounded smothered, as if the otherwise free-flowing presentation was being pressed against a glass wall that prevented its full expression. Either that, or this was it, and it wasn't going to get any better. That would have been a shame.

Maybe the Phono MCCI's gain was set to High or Very High . . . ? That's what I hoped. I declared myself a professional and removed the top panel. Inside, hidden among the components on each of the two identical circuit boards, were multiple sets of tiny jumpers. The drawing in the manual does not in any way resemble the Phono MCCI's actual interior, and the sets of jumpers were labeled "CN," for reason or reasons unknown. Fortunately, the jumpers themselves were clearly labeled on the circuit board.

I buy JA's argument against the Neumann constant—he feels it corrects something that doesn't require correcting—so I switched MCCI from Neumann to RIAA, its gain jumpers from High to Low, left its Subsonic filter and Warmth jumpers Off (more bass was not needed), and buttoned it back up.

That did it. Now the MCCI was breathing on its own. This relatively moderately priced phono preamp had one of the purest, most artifact-free sounds I've heard at any price. It obliterated the tube/transistor divide by producing liquidity and harmonic richness along with warmth, speed, drive, three-dimensionality, and pitch-"black" backgrounds.

Former Blue Note head Bruce Lundvall, an executive producer of *Belly of the Sun*, lives within walking distance of me. I wish he could hear Wilson, accompanied by "Boogaloo" Ames on piano, sing "Darkness on the Delta" through this system with the B.M.C. Phono MCCI. With the lights out, it was remarkably lifelike. The ambience behind the piano effortlessly set up the walls of a three-dimensional space in which Wilson appeared, with no microphone, no anything between me and her.

Kubotek Haniwa HCTR01 "green dot": The Phono MCCI produced equally superb sound with the Ortofon A90 (\$4200), but the cartridge that best suited the B.M.C. was the Kubotek Haniwa HCTR01 "green dot" (\$5000). I wrote about an earlier iteration of the HCTR01 in my November 2011 column; thanks to its coil having very few turns of wire, it offers ultralow internal impedance (<0.8 ohm) and inductance ($<1.3\mu\text{H}$), yet manages to output 0.35mV —not that voltage matters with the Phono MCCI.

The phono cable must have very low resistance, and the "green dot"'s specs, even lower than the standard HCTR01's, mean that it will sound best when used with Kubotek's HEQA02 phono preamp, which is specifically designed for it. The combination sells for \$12,000.

The Kubotek preamp's electromagnetic damping, together with the cartridge's low-mass motor allow the green-spotted HCTR01 to track at an unprecedented 1gm or less. Used with a normal phono preamp (if it provides a good match), the HCTR01 can track between an equally unprecedented 1 and 1.5gm. The combination of HCTR01 and HEQA02 produced the promised sound and tracking abilities (I'll devote more space to them at www.analogplanet.com), but the preamp was somewhat noisy, and while I couldn't hear any hiss while music

was playing, it somewhat decreased the aural "blackness" between notes and events. Overall, I thought the combination was sonically somewhat compromised. The HCTR01 cartridge, I felt, might be capable of more.

With its current injection input, the B.M.C. Phono MCCI would seem to be the perfect partner for the Haniwa, and it was. Background noise was virtually eliminated, the feeling of three-dimensionality was intensified, the dynamics were increased, the bass was faster, tighter, and extended lower, transients were more lightning-fast and ultraprecise, and the high-frequency extension seemed unlimited and subjectively linear. Haniwa's promises seemed fully realized—the HCTR01 tracked accurately at 1.4gm.

rks for pipe organ by Franck and Widor, recorded in 1957 in St. Thomas Church, in New York City (LP, Mercury Living Presence SR 90169). WOW! The B.M.C.-Haniwa combo produced an enormous three-dimensional space that was tall, deep, and wide, within which was a diffuse-sounding, air-gushing *monster* capable of subterraneanly low fundamentals that were surprisingly cleanly rendered, and distinctly heard and felt within the vast atmospheric expanse. As the 15-minute side rolled on, I just kept saying "Wow!"

In preparation for an interview with veteran recording engineer Ken Scott, I listened to various editions of David Bowie's *Hunky Dory*, which Scott produced and later remixed, as well as to *The Beatles*, which Scott worked on and discusses in detail in his book, *Abbey RoadNW8 to Ziggy StardustW1: Off the Record with the Beatles, Bowie, Elton & So Much More*, cowritten with Bobby Owsinski. A pressing of *Hunky Dory* from 1997 (LP, EMI Centennial Edition 7 91843 1) sounded clean, detailed, and perhaps slightly more bass-heavy on bottom and brighter on top than I'm used to—but I think a heavy EQ hand top and bottom was involved that this preamp-cartridge combo fully revealed rather than created. Rykodisc's pressing on clear green vinyl, which says "DIGITALLY MASTERED" on the front and "AAA" on the back, DMM mastered by Ken Perry at K-Disc, sounded as hard and annoying on top as ever, while the

late-'70s Japanese reissue, perhaps slightly softened by being mastered from a tape copy, still sounded the most pleasing overall. (I could never find a quiet Dynaflex American pressing, so I've given up.) No surprises.

Conclusions

B.M.C.'s Phono MCCI is exceptional, and easily among the best, if not *the* best, MC phono preamps available today at any price. Its sound was startlingly good, and in some ways seemed to surpass that of virtually every other phono preamp I've heard, especially in terms of transparency, and of not imposing its own strong character, or any character, on the music.

The only "weak" suit I could find was the MCCI's utter neutrality and lack of identifying character. It was analytical without being antiseptic. If you want warm and sweet, it's not for you; but if you want to know what your cartridge is really doing and what the record it's decoding actually sounds like, I think you'll find that the Phono MCCI will clear a direct path to both without adding any brightness or hardness or edge.

I'm not suggesting the MCCI is in the same league as the Ypsilon VPS-100, Boulder 2008, or other top phono preamplifiers that I've heard. It skimps somewhat on instrumental textures and timbres; and the bass, while very well extended, doesn't exhibit the control and stability those manage.

The B.M.C. must be matched with the right cartridge, and it probably won't appeal to those who like soft, warm, and forgiving imposed on the signal. But if you're prepared to hear the good news *and* the bad from your favorite LPs, the Phono MCCI will tell the whole story.

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Sidebar 1: Specifications

Description: Solid-state, current-mode moving-coil phono preamplifier. Frequency response: RIAA ± 0.25 dB. Subsonic filter: -6 dB at 10Hz. Input impedance: < 3 ohms. Gain: see text. Output impedance: 100 ohms. Maximum output voltage: 8.4V (1% THD). THD at 1kHz, 4V: 0.025%. THD at 1kHz, 2V: 0.007%. S/N Ratio: > 80 dB (no reference level quoted). Power consumption: 18–20W.

Dimensions: . 17.1" (435mm) x 3.6" (91mm) H x 13.8" (350mm) D. Weight: (8kg).

Price: \$3890.

Serial number of review samples: Not noted (auditioning); PH101 1014101 (measurements).

Manufacturer: B.M.C. Audio GmbH, Van-der-Reis-Weg 9, D-59590 Geseke, Germany. Tel: (49) (0)29-42/92-99-75-90.

Read more at <http://www.stereophile.com/content/bmc-phonomcci-phono-preamplifier-specifications#Dzr8XgwEG8TAcyyU.99>