

# THE CUTTING EDGE



## CH Precision M1 Power Amplifier and L1 Linestage Preamplifier

Can You Hear Me Now?

Jonathan Valin

In Issue 239, our Alan Taffel rave-reviewed a 100W monoblock amplifier (the A1) and a DAC/preamp (the C1) from CH Precision, a Lausanne-based Swiss engineering firm founded by former Goldmund engineers Florian Cossy and Thierry Heeb, the “C” and the “H” of CH. (Not coincidentally, CH also happens to be the abbreviation, used on mail, the Internet, and license plates, for Switzerland—“Confoederatio Helvetica” being the country’s Latin moniker.) Comes now CH Precision’s M1 amplifier and L1 linestage preamplifier, both of which bear strong family resemblances to the products Alan reviewed. (Indeed, the M1 is rather like a doubled-up A1, with twice the power supply and, at 200W, twice the power.)

Like the A1, the M1 is what CH calls a modular amp in that it houses two identical amplifiers in a single chassis. The two amps inside a single M1 can be used together or apart. In monaural mode, which is how I ran my pair of M1s, one channel acts as a monoblock. Alternatively, both channels can be used to passively

or actively bi-amplify a signal, or be bridged for a substantial increase in monoblock power, or (when an M1 is equipped with a second analog input board) be configured to function independently, turning the amp into a stereo unit. (Alan tried a single A1, which offers precisely the same configurability as the M1, as a stereo amp and wrote that it gave him 95% of what two A1s offered when operated as monoblocks.)

Once again as with the A1, the M1 incorporates certain technologies that Cossy and Heeb first pioneered at Goldmund, most prominently high-speed/high-bandwidth circuitry and elaborate mass and constrained-layer damping of chassis and boards.

I’ve discussed high-speed/high-bandwidth circuits *in re* the world-class offerings of another Swiss company, Soulution. To refresh your memories, and to clear up a common misunderstanding, this speed or bandwidth (the two are essentially the same) has nothing to do with the megahertz frequencies that some of these amps and preamps can theoretically reproduce.

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To quote Cyrill Hammer, CEO of Soultion, "The [speed or] bandwidth is required solely to make the 'feedback loops' of solid-state designs work properly."

"Feedback loops," global and local (about which more in a moment), compare the amplified music signal at the output to the signal at the input, in order to correct any errors that may have crept in as the music made its way through the circuit. Since the music signal at the input is constantly changing, the time delay (called "propagation delay") of the amplifier or preamplifier's feedback loop must be zero or close to it; otherwise, the feedback loop will be comparing musical apples at the output to musical oranges at the input.

The way to achieve very low propagation delay times in solid-state amplifiers is via ultra-fast (i.e., ultra-high-bandwidth) circuits. In the Soultion amplifiers, for example, propagation delay in the voltage-amplification stage—where local negative feedback is highest (and bandwidth is 200MHz!)—is one to two *nanoseconds* (billionths of a second), a literal order of magnitude faster than the circuits of many big solid-state amps, where propagation delay is typically one to five *microseconds* (millionths of a second).

While Soultion amplifiers use considerable "local" negative feedback (as in the voltage-amplification stage I just mentioned) and very little (less than 3dB) global negative feedback, the amount of each is fixed. CH Precision's amps, both the M1 and the A1, give users the option of adjusting the ratio of local-

to-global negative feedback in ten-percent increments through a range that extends from 0% global feedback (the default position) to 100% global feedback. Gain is also adjustable in 0.5dB steps in a range up to 24dB, allowing users to better match the amplifiers to the sensitivity of their loudspeakers (and the size of their rooms).

Other novel technologies in the M1 include a circuit designed to keep bias current to the power transistors as constant and stable as possible. As I pointed out in my review of the superb Technical Brain TBP-Zero EX monoblock power amplifier, power-transistor bias current is highly dependent on the internal temperature of the output stage. CH Precision amps use a device called ThermalTrak (from OnSemiconductor) to precisely map this temperature. According to the company's literature, "a very special circuit [is] built around the output stage which [takes] into account both the temperatures of the heatsink and the transistors' dies, [allowing] the amplifier's output stage to keep its bias constant independently of the musical program and the room temperature." CH claims that this patent-pending circuit allows the M-1's Class AB circuit to outperform a pure Class A design with conventional bias compensation.

The M1's companion piece, the L1 linestage preamplifier, also uses high-speed, high-bandwidth circuitry, although the preamp's circuit runs in Class A rather than Class AB. Designed for ultimate transparency, the fully balanced L1 analog linestage (the C1 preamp that Alan reviewed incorporated a DAC) is said to

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## CH Precision M1 Power Amp and L1 Linestage Preamp - THE CUTTING EDGE

employ the shortest possible signal paths between input and output, ensuring very low noise and very high slew rates. Volume is controlled by a 20-bit R-2R ladder network, using tight tolerance, high-grade metal-film resistors that allow a 118dB range in 0.5dB steps.

Once again like the M1, the L1 is a modular design, comprising two identical preamp circuits in a single chassis. Like the M1, it can be used as a stereo preamp with eight inputs or, with the addition of a second L1 (and a set of monaural analog preamplifier boards for both units), as a mono preamp with 16 inputs. My L1 arrived with the optional, outboard X1 "ultra-low-noise" regulated power supply, which is said to increase transparency, speed, and musicality.

The L1 comes with one of the smallest remote controls I've seen—a metal block about the size of a Heath bar with five tiny, closely spaced buttons on it for on/off, volume up/down, and input forward/back. All other adjustments to the amp and preamp have to be made via the little pushbuttons on the faceplates of the amp and preamp chassis. Happily, both the M1 and L1 are equipped with large AMOLED displays, for reading out the menus and submenus you navigate via these tiny buttons.

Though Alan said, in his review of the A1/C1, that in his system he preferred using the amp with 40% global feedback (an adjustment that must be made via the display and pushbuttons just described), in my system (Magico M Projects/JL Audio Gotham subwoofers) I much preferred the default setting of zero

negative feedback, although I did increase the gain of the amplifier by 6dB to better accommodate the sensitivity of the M Pros.

So what does an M1/L1 sound like? In a word, realistic—with the right speakers and the right program material, sensationally so.

Seeing that I just got done anointing the Soultion Series 7 amps and preamps the new transistor champs, you're probably wondering how the two marques compare. Well, to be honest, they don't sound much alike in spite of their many technological similarities (ultra-high-bandwidth circuits, user-adjustable modular dual-monaural construction, mass and constrained-layer damping).

The new Series 7 Soultion amps and preamps are all about power, solidity, and dark, rich tone color. Pleasingly soft on top, realistically big on the bottom, they have (almost uniquely for transistor gear) a tube-like ability to reproduce the three-dimensional body and bloom of instruments and vocalists (this tube-like bloom has always been one of Soultion's calling cards), while at the same time delivering all the traditional solid-state virtues (speed, definition, slam) in spades, hearts, diamonds, and clubs.

The M1/L1 combo does not have this lifelike three-dimensional body and bloom. In imaging the CH Precision amp and preamp are more typically solid-state, meaning instruments are a bit flattened in depth and a bit constrained in bloom (rather, dare I say it, like instruments on digital recordings). Nor does the CH combo deliver quite the same slam and dense color in the bass and power range that the *sui generis* Soultion gear does, though



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# THE CUTTING EDGE - CH Precision M1 Power Amp and L1 Linestage Preamp

## SPECS & PRICING

### M1 Amplifier

**Type:** User-configurable two-channel solid-state power amplifier  
**Inputs:** One balanced (XLR); two single-ended (RCA and BNC)

**Input impedance:** Balanced, 94k ohms; single-ended, 47k ohms or 300 ohms  
**Input stage:** JFET, 24dB-range adjustable gain in 0.5dB steps

**Amplification stage:** Ultra-low noise, full discrete Class AB design with 6 pairs of complementary output transistors  
**Bias:** Patent-pending bias circuitry for constant bias operation

**Feedback:** User-adjustable local vs. global feedback ratio, from 0% to 100% in 10% steps

**Bandwidth:** DC to 450kHz (-3dB) at 1W into an 8-ohm resistive load

**Signal-to-noise ratio:** Better than 115dB in stereo and bi-amp modes; better than 118dB in bridge mode

**THD + noise:** Less than 0.1% with 0% global feedback; less than 0.01% with 100% global feedback

**Analog outputs:** Two pairs of Argento binding posts for loudspeakers connection

**Protection:** Non-intrusive DSP-based protection of the amplifier and connected loudspeakers; short-circuit protected; disconnected loudspeaker detected; over-temperature of the heatsink; over-temperature of the output transistors

**Transformer:** 2200VA toroidal transformer for output stages; 100VA separate toroidal transformer for input stages

**Power supply capacitors:** Two sets of 100,000uF/100V 4-pole capacitors

**Regulators:** Non-regulated symmetrical power supply for the power stages; eight local regulation stages for input/driver stages;

seven local regulation stages for the logic/display

**Display:** 480x272 pixels, 24-bit, color AMOLED

**Dimensions:** 17.3" x 10.5" x 17.3"

**Weight:** 165.35 lbs. (each)

**Price:** \$94,750/pr.

### L1 Preamplifier

**Type:** Dual-monaural, user-configurable, mono or stereo linestage preamplifier

**Inputs:** Eight stereo; eight or sixteen monaural

**Outputs:** Four Neutrik balanced XLR connectors, two WBT single-ended RCA connectors, two high-bandwidth coaxial BNC connectors  
**Volume control:** 20-bit R-2R ladder network with 118dB range in 0.5dB steps from -100dB to +18dB

**Analog signal path:** Pure Class A, fully symmetrical, discrete-transistor-based circuit with phase inversion and mono modes

**Input impedance:** Balanced, 100k ohms; RCA and BNC, 50k ohms

**Maximum input level:** Balanced (XLR), 16V RMS; single-ended (RCA and BNC), 8V RMS

**Frequency response:** DC to 1MHz

**THD + noise:** <0.001%, 1kHz, unity gain

**Display:** 480x272 pixel, 24-bit AMOLED

**Dimensions:** 17.3" x 5.2" x 17.3"

**Weight:** 44 lbs.

**Price:** \$32,975 (X-1 power supply, \$14,975)

### JV'S REFERENCE SYSTEM

**Loudspeakers:** Magico M Project, Raidho D-5, Raidho D-1, Avantgarde Zero 1, MartinLogan CLX, Magnepan .7, Magnepan 1.7, Magnepan 3.7, Magnepan 20.7, JL Audio Gotham subs

**Linestage preamps:** VAC Statement Line, Soulution 725, Audio Research Reference 10, Siltech SAGA System C1, Zanden 3100

**Phonostage preamps:** VAC Statement Phono, Audio Research Corporation Reference Phono 10, Constellation Audio Perseus, Innovative Cohesion Engineering Raptor, Soulution 725, Zanden 120, Audio Consulting Silver Rock Toroidal

**Power amplifiers:** VAC Statement 450iQ, Soulution 711, Siltech SAGA System V1/P1, Lamm ML2.2, Zanden 8120, Odyssey Audio Stratos

**Analog source:** Walker Audio Proscenium Black Diamond Mk V, TW Acoustic Black Knight, AMG Viella 12, Acoustic Signature Invictus

**Tape deck:** United Home Audio UHA-Q Phase 12 OPS

**Phono cartridges:** Clearaudio Goldfinger Statement, Air Tight Opus, Ortofon MC Anna, Ortofon MC A90, Benz LP S-MR

**Digital source:** Berkeley Alpha DAC 2

**Cable and interconnect:** Crystal Cable Absolute Dream, Synergistic Research Galileo LE, Ansuz Acoustics Diamond

**Power cords:** Crystal Cable Absolute Dream, Synergistic Research Galileo LE, Ansuz Acoustics Diamond

**Power conditioner:** Synergistic Research Galileo LE, Technical Brain

**Accessories:** Synergistic ART and HFT/FEQ system, Shakti Hallographs (6), Zanden room treatment, A/V Room Services Metu panels and traps, ASC Tube Traps, Critical Mass MAXXUM equipment and amp stands, Symposium Isis and Ultra equipment platforms, Symposium Rollerblocks and Fat Padz, Walker Prologue Reference equipment and amp stands, Walker Valid Points and Resonance Control discs, Clearaudio Double Matrix SE record cleaner, Synergistic Research RED Quantum fuses, HiFi-Tuning silver/gold fuses

it's certainly no slacker in the bottom end. (I'm guessing that the Soulution's seemingly inexhaustible switch-mode power supply and one million microfarads of capacitance are the reasons for this—the M1 uses a stout 2200VA linear power supply and a mere 200,000 microfarads of capacitance.)

On the other hand, the M1/L1 bests the Soulution in resolution, treble extension, and overall neutrality—by enough of a margin to make a marked sonic difference. Indeed, in these three respects the CH combo is highly reminiscent of Technical Brain's incredible amp and preamp, which were the highest resolution, highest transparency, and (once again with the right speakers and

the right source material) most realistic-sounding electronics I'd had in my system prior to Soulution. (CH's patent-pending bias-stabilization circuit—similar in principle to what TB does with its duplex temperature-compensation bias circuit—may be the reason for this sonic similarity.)

Indeed, the CH gear very nearly equals Technical Brain electronics in transparency and resolution thanks to a tonal balance that comes as close to colorlessly neutral as anything I've heard, tube or solid-state. Neither slightly darkish like Soulution nor slightly lightish like Technical Brain, the M1 and L1 open a window on the music (at least with vinyl sources, the Audio



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Consulting Silver Rock Toroidal phonostage, and the Magico M Project/JL Audio Gotham loudspeakers) that seems to take in... everything—simply incredible amounts of blur-free low-level (and high-level) detail.

For example, I must have heard *Kind of Blue* a thousand times, but I've never before heard the “wet” reeds buzzing in Trane's tenor and “Cannonball” Adderley's alto saxophone (on the *sotto voce* passages of “So What”) with the startling realism that the M1/L1 (and, to be fair, the Audio Consulting phonostage) bring to the transients, timbre, and articulation of these instruments. Ditto, in realism, for Dean Martin's voice, particularly on a closely miked, low-reverb number like “If You Were the Only Girl in the World” off *Dreaming with Dean*, where every little detail—from the breaths he takes to the spit in his mouth to the way he modulates or bends notes (or simply drifts off-key)—is reproduced with the clarity of a large-format-camera contact print. Double ditto for the individual voices of the strings, winds, brasses, and percussion of the Covent Garden orchestra in the wild climax of Rossini's *Semiramide* Overture from *Venice*. Triple ditto for the crack of Omar Hakim's snare and the literally subterranean pulse of Guy Fletcher's Yamaha DX-1 on *Brothers in Arms*.

Not only can you hear all these musical and instrumental details with utter clarity, you can hear engineering ones just as plainly. For instance, on the last-mentioned album, Dire Straits' *Brothers in Arms*, it was obvious from the wafer-thin flatness, dark timbre, and recession of Knopfler's voice that this was a digital recording—actually one of the first to be recorded on Sony's 24-track digital machine. (You can hear precisely the same flatness and recession on the vocals of Ry Cooder's great LP *Bop till You Drop*, the first digitally recorded pop album, taped five years earlier on a 32-track 3M machine.)

Whether some folks on our staff want to admit it or not, recovering this level of timbral and transient detail has a direct bearing on creating the illusion of the real thing. And the CH Precision electronics are superb at it. Of course, every album I just mentioned—Mobile Fidelity's 45rpm reissue of *Kind of Blue*, Analogue Productions' 45rpm reissue of *Dreaming with Dean*, Analogue Productions' yet-to-be-released reissue of *Venice*, and Mobile Fidelity's 45rpm reissue of *Brothers in Arms*, even Warner's original issue of *Bop till You Drop*—is a superb recording that will sound just as real (albeit in slightly different ways) on Soulution's new Series 7 gear or (from what Robert has told me) Constellation's latest Reference line. With less phenomenal recordings, results may vary. You see, the trouble with neutral is that it's, well, neutral. Though not cool and analytical (or anything like that, actually), the CH Precision duo in combination with the Magico M Pros won't sweeten up the strings and winds on *Witches' Brew* in quite the same way Soulution Series 7 gear in combination with the Raidho D-5s does, or slam through the floor on the bass/kickdrum of Michael Jackson's “Black and White” (from a 15ips dub of the mastertape of

*Dangerous*) with the pile-driver solidity of the Soulution/D-5 combo. In other words, this is not a quintessentially “as you like it” sound. If drama and beauty are your things—and I know they are—then the CH Precision electronics will deliver them, but not as consistently or as spectacularly as Soulution gear does.

On the other hand, if you want to hear Dean Martin or the Juilliard Quartet or the Chicago Symphony Orchestra or Ry Cooder and his crew sound so “there” they'll make you blink—if you want to hear what's on recordings (and how those recordings were miked, engineered, and mastered) reproduced with virtually no editorialization—then you really ought to listen to the M1 and the L1.

So what are my caveats? Well, I've already mentioned a couple. The Soulution 711/725 may not be as colorlessly neutral or as finely detailed as the M1/L1/Audio Consulting (this last could change, BTW, with the advent of Soulution's stand-alone 755 phonostage), but it's richer in tone color, more powerful in the mid-to-upper bass, every bit as fast and hard-hitting on transients, and a whole lot more bloomy and three-dimensional. Nor is the Soulution gear as iron-fistedly controlled as the CH Precision/Audio Consulting.

Alan, I think, liked this sense of precise control, in part because it clarifies rhythms. And so it does (along with everything else). But there is something to be said for the looser, freer-flowing energy of the Soulution (and of tube gear), which doesn't give you the vague sense that the brakes are being applied with a little too much pedal. There is no slop in the CH Precision presentation, but there's not a whole lot of give, either. And the sense of one note flowing into, rather than discretely following another is also a valid representation of the sound of music.

I don't want to hit this point too hard. The CH Precision M1 and L1 are reference-quality solid-state electronics—right alongside the Soulution Series 7 components. Each marque offers a different set of virtues, just as the Magico M Pro and the Raidho D-5 do. On certain days I prefer one to the other, and vice versa. But the bottom line is I wouldn't want to be without either. Happily, I don't have to be. You, on the other hand—or at least those of you with this kind of money, a comatose spouse, and no sense of shame when it comes to buying yourself toys—do. As this is not a decision I can make for you, you'll just have to make it for yourself. Have your chauffeur drive you to an audio store, listen, and decide. The truth is you can't go wrong either way. **tas**

