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CH PRECISION 10 SERIES

A NEW ERA **IN AMPLIFICATION**



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JANUARY 2022

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COVER STORY

CH PRECISION L10 DUAL MONAURAL LINESTAGE PREAMPLIFIER AND M10 TWO-CHANNEL REFERENCE POWER AMPLIFIER

These ultra-sophisticated flagship electronics from the CH Precision offer a host of unprecedented features and usher in a new era of amplifier performance, says Robert Harley.

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THE ABSOLUTE SOUND'S 2021 PRODUCT OF THE YEAR AWARDS

This is the big one! We name the most outstanding products of 2021 in these, our most prestigious awards.





OVERALL PRODUCT OF THE YEAR



CH Precision L10 Dual Monaural Linestage Preamplifier and M10 Two-Channel Reference Power Amplifier

\$76,000 (two-chassis L10), \$132,000 (four-chassis dual monaural L10); \$104,000 (stereo M10), \$198,000 (per pair of M10 monoblocks)

These new flagship electronics from Swiss manufacturer CH Precision are simply unprecedented in set-up flexibility, control, and adaptability to different systems. The M10 is a two-chassis (power supply and audio electronics) stereo amplifier that outputs 300Wpc, but can be configured for monaural operation, passive bi-amping, active bi-amping, and bridged-mono mode for 1100W of output power. The L10 linestage can be had as a two-chassis affair, with the linestage electronics in one chassis and the power supply in the second. For the very well-heeled, the dual monaural version (as reviewed) consumes four chassis. The entire system can be set up and controlled via CH's outstanding app that runs on an Android device. The app includes, among many other features, the ability to fine-tune the amplifiers to your system by adjusting the ratio of global-to-local feedback, all from your listening seat.

All these features and flexibility wouldn't mean a thing if the L10 and M10 didn't deliver musically. On that count, the 10 Series offers extraordinary sonic performance and a level of musical engagement that must be experienced to be believed. Although the sound has a pristine clarity and crystalline transparency, the 10 Series never sounds even remotely analytical. The sound has a startling presence and immediacy without being forward. Its stunning resolution is more of the musical variety rather than flashy sonic fireworks. That resolution allows you to more clearly hear (and feel) the contribution and musical expression of every instrument. No matter the source, the 10 Series delivers a heightened sense of the musicians' commitment and intent. That's a hard thing to describe or to attribute to a specific sonic characteristic, but listening to music through the 10 Series is a revelatory experience. The 10 Series checks all the audiophile boxes—realistic timbres, expansive sense of space and depth, great speed, wide dynamic contrasts—but these electronics have an extra dose of musical magic that defies audiophile descriptors. For their advanced capabilities, flawless build-quality, and the transcendental musical experience they provide, the CH Precision L10 and M10 are awarded our highest honor, *The Absolute Sound's* Overall Product of the Year Award. (reviewed this issue)

A NEW AMPLIFIER



ERA IN IFICATION



**CH PRECISION L10 DUAL MONAURAL LINESTAGE PREAMPLIFIER AND
M10 TWO-CHANNEL REFERENCE POWER AMPLIFIER**

BY ROBERT HARLEY

A NEW ERA IN
AMPLIFICATION





THE NOT-TOO-DISTANT PAST, IT WAS AXIOMATIC THAT THE BEST-SOUNDING AUDIO COMPONENTS WERE THE SIMPLEST. FEATURES, CAPABILITIES, AND CONTROLS—BELLS AND WHISTLES—AT BEST DIVERTED SOME OF THE PRODUCT'S PRECIOUS PARTS BUDGET AWAY FROM WHAT MATTERED SONICALLY, AND AT WORST MUCKED UP THE AUDIO CIRCUITRY. THE RECIPE FOR GOOD SOUND WAS AN EXTREMELY SIMPLE SIGNAL PATH WITH AS FEW FEATURES AS POSSIBLE.

The new 10 Series of electronics from CH Precision has upended that calculus. These are by far the most flexible and capable audio products I've ever encountered, with a whole host of sophisticated features that I never even thought of possibly needing. Yet, they are also the most musically rewarding electronics I've heard, and in startlingly different ways from the usual criteria for judging sound quality.

The 10 Series is a collection of the Swiss company's new flagship offerings, commemorating the company's founding ten years ago. As of this writing, the 10 Series comprises the L10 Linestage Preamplifier and M10 Two-Channel Reference Power Amplifier. The L10 linestage is available in a stereo two-chassis version, with one chassis housing the audio electronics and one the power supplies. The Dual Monaural version reviewed here splits the audio electronics into left and right chassis with two corresponding power supplies, making for a four-box affair. CH Precision's modular design approach allows the stereo version to be converted to Dual Monaural after initial purchase. Similarly, the M10 Reference Two-Channel Power Amplifier can operate as a single stereo unit, in a pair as monoblocks, and in passive or active bi-amplification modes (more on this later). Each M10 is split into two chassis, one housing the power supply and the other the amplification circuitry. For those counting, that's eight chassis for a linestage and a pair of monoblock amplifiers weighing in collectively at 765 pounds. These are clearly no-holds-barred electronics.

The 10 Series products are housed in the familiar grey CH Precision cases, but with a straight, rather than a curved, front-panel flare. The four chassis of the L10 linestage each have a front-panel screen, but only the audio unit screens of the preamplifier chassis illuminate; the power supplies stay dark. This is also true of the M10 power amplifiers. This arrangement provides visual symmetry between all the chassis. The metalwork is unlike any I've seen or felt on an audio product. The metal is as smooth as glass, exuding a sense of exquisite refinement and understated elegance rather than superficial bling. After seeing, feeling, and operating the 10 Series, I have no doubts that these electronics are the pinnacle of build- and finish-quality, as they should be for their lofty asking prices. The two-chassis stereo L10 comes in at \$76,000, with the four-chassis Dual Monaural L10 topping out at a whopping \$132,000. The price for the four-chassis Dual Monaural version is less than double that of the stereo model because CH Precision's modular design allows one of the input boards on the stereo L10 to be removed and fitted in the additional chassis when upgrading from stereo to Dual Monaural. The M10 power amplifier starts at \$104,000 for a stereo unit, with a pair costing \$198,000. As with the L10, one of the stereo M10's input boards can be removed and fitted in the second M10, realizing some cost savings. If you opt to run the pair of M10s in active bi-amping mode, you'll need two

additional input cards at \$10,000 for the pair. Again, for those keeping count, the cost of the system as reviewed is an eye-popping \$340,000, which makes the 10 Series the most expensive electronics I've reviewed.

Starting with the L10, the two chassis that comprise one line-stage channel can be stacked atop one another with four titanium/polymer spikes that provide mechanical grounding. These spikes aren't the usual cone-like devices, but long, stout rods that thread through the entire chassis from the top. When stacking chassis, the lower chassis is fitted with "stacking caps" that accept the spikes from the upper chassis. Four magnetic discs are supplied with each chassis to cover the spike insertion points on the chassis top for a clean look.

The front panel's two-part concentric volume-control knob and display allow you to set up and control the L10. In the Dual Monaural version, the settings on one channel are automatically transmitted to the second channel. Among the set-up parameters are input impedance, global or local feedback, and direct-coupling or capacitor-coupling of the signal path. You can also invert the absolute polarity of each input independently, select the display color and brightness, set the gain of each input individually, determine a maximum start volume and a maximum overall volume limit, among many other features.

Although these adjustments can be accessed via the front-panel navigation controls, as mentioned, it's far easier to set up the L10 (and the M10) with the CH Precision app running on a tablet. The app also provides system control during daily use, with a volume control, source switching, a polarity-inversion switch, and a host of other features. My review samples were supplied with a small Samsung tablet that provides much easier and more intuitive access to all the functions of both the L10 and M10. (The tablet isn't supplied by CH Precision, but it's assumed that your dealer will include one with the sale.) Controlling the system with the tablet requires that the 10 Series products are connected to your local-area network with wired Ethernet, and the tablet is connected via Wi-Fi to the same network or to an entirely separate network dedicated to the 10 Series products. CH Precision's U.S. Brand Ambassador, Ralph Sorrentino, set up a separate network for the 10 Series so that there would be no conflict with my home network. This involved running an Ethernet cable to each component through a network switch and a Wi-Fi router. The Wi-Fi is purely to connect the tablet to the network.

The L10 is supplied with a small, simple, hand-held infrared remote control with just five buttons: power/mute, volume up, volume down, source up, and source down. Some may find the remote easier to use on a daily basis than the app. The app, however, has a nifty graphic volume-control wheel that responds to a finger swipe the way a mechanical volume wheel would. That is, you can make fine adjustments by keeping your finger on the virtual "wheel," or "spin" the "wheel" with a swipe for larger volume changes. If you have a line of sight from the listening seat to the L10, the hand-held remote is easier to use for simply controlling the volume and selecting sources. But for setup, or if you don't have that line of sight, the app is essential. Note that the hand-held remote and the app both lack a dedicated balance control; you can, however, adjust the left/right channel balance in the app by changing the gain (in 0.5dB increments) on one channel of the L10. This method of adjusting the balance isn't ideal, but CH Precision says that it is possible to implement a true balance control in the app with a software update. Adjusting one channel's gain in the app works fine for correcting a room-induced imbalance, or a phono-cartridge azimuth error, where you set and



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BLING.

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forget it. But if you like to fine-tune the balance from recording to recording, as I do, a balance control in the app would be preferable.

The control app also provides access to the M10 power amplifier's many configuration and set-up features. Among these is the ability to tailor the amplifier's operation for your particular system. The most fundamental setting is whether the M10 will operate as a stereo amplifier, or in one of two monaural configurations, or in one of two bi-amplification modes. If you buy one M10, there's no decision; it will operate as a stereo amplifier. When in stereo mode, the two-channel M10 outputs 300Wpc into 8 ohms.

Those two independent amplifier channels within each M10 can be configured for passive bi-amplification, with one amplifier channel powering the main speakers and the other channel driving a subwoofer (or the woofer section of a

full-range speaker that has two pairs of binding posts). In this mode, both the M10's channels are driven by a single output from your preamp. Alternately, the M10 can operate in *active* bi-amplification mode if you have an external active crossover. Here, the low-pass-filtered signal from the external crossover feeds a separate input on the M10 that drives the M10's second amplifier channel. This configuration requires installation of an additional input board in the M10 (a \$10,000 option for a pair of input boards). I operated the M10 in active bi-amplification mode for this review. One amplifier channel within the M10 drove one Wilson Chronosonic XVX, and the other channel within the same M10 powered one Wilson Subsonic subwoofer. A Wilson ActivXO external crossover fed this low-pass-filtered subwoofer signal to one input of each M10.

The M10 can be operated as a monaural amplifier in one of two ways. In the



WHEN STACKING CHASSIS, THE LOWER CHASSIS IS FITTED WITH “STACKING CAPS” THAT ACCEPT THE SPIKES FROM THE UPPER CHASSIS.

first method, only one of the amplifier channels within the M10 is used to power the loudspeaker, but the power supply, which is designed to power both of the amplifier's channels, supplies a single-amplifier channel. In this mode, the power-output rating remains at 300W into 8 ohms. The additional power-supply capacity in monaural mode slightly increases the power-output rating into 4 ohms and 2 ohms due to the power supply's increased current capacity when supplying just one amplifier channel.

Alternately, the two amplifier channels within each M10 can be bridged for mono operation. When bridged, the M10 can deliver a whopping 1100W into 8 ohms. One of the amplifier channels amplifies the positive half of the waveform, and the other channel amplifies the negative half. The speaker is connected between the two channels (forming the “bridge”) rather than between one channel and ground.

Operating the M10 as a monaural amplifier (not bridging) is recommended for low-impedance speakers that require a lot of current drive. Bridging is best for higher-impedance loudspeakers. (See the sidebar on amplifier bridging for details.) No matter what the operational mode, the M10 requires two 20A AC power cords per amplifier.

I've never encountered a power amplifier with the M10's configuration flexibility. The gain and input impedance can be adjusted to best match the preamplifier's output characteristics. The feedback can be adjusted from 100% global and 0%





THE 10 SERIES IS CHAMELEON-LIKE IN ITS TECHNICAL FUNCTION, AND ALSO IN ITS SONIC CHARACTER.

local to 0% global and 100% local in 1% increments. Previous CH precision amplifiers with this feature allowed you to change the feedback ratio in 10% increments. With the M10 and the app, you can sit in your listening seat, and in real-time adjust the feedback ratio in 1% steps. Feedback refers to the technique of taking part of a circuit's output signal and feeding it back to the input. Feedback makes the circuit more stable, widens the bandwidth, lowers distortion, and reduces output impedance. Global feedback takes the signal from after the very last amplifier stage and sends it to the input. Local feedback is a loop around a single amplifier stage. Each method has advantages and disadvantages, along with a different sound. Keep in mind that when using the M10 in a passive or active bi-amp mode, these parameters can be adjusted independently for each channel within one M10. For example, you could set more or less global feedback on the amplifier driving the woofer section of a multi-way speaker, or in my case the subwoofers. Similarly, the independent gain adjustment for each channel allows you to fine-tune the balance between the subwoofer and main speakers.

The M10's front-panel display can be configured to show the operating mode (bi-amp, for example) or a multicolored graphic power-output meter. When showing the operating mode, the display also shows the amplifier's operating temperature, feedback settings, mute status, absolute polarity, and if the low-pass filter is engaged. This low-pass filter will restrict the amplifier's native 500kHz bandwidth to 120kHz. Of course, you can adjust the

display color and brightness. When turning on the amplifier, the display shows a graphic representation of the power supply charging, and after turning the amplifier off, the display shows the power supply discharging. When powering up and down, the M10 is under software control that monitors the amplifier's conditions to be sure that all the circuits are operating properly before the amplifier is ready to play music.

Needless to say, the 10 Series offers the purchaser unprecedented flexibility in how the components can be configured. In addition to optimizing the performance in a given system, this flexibility also allows your system to change and evolve without requiring the purchase of new electronics. For example, if you operate an M10 in stereo mode and later decide to add subwoofers, you can purchase a second M10 and convert it into an active bi-amplified system. Or if you change speakers, the ability to select between mono and bridged operation lets you tailor the amplifier to that speaker. Finally, a new digital front end or phono cartridge may suggest a different setting of the global-vs.-local feedback setting.

The 10 Series is chameleon-like in its technical function, and also in its sonic character. The sidebar "Under the Hood" offers some technical details on the 10 Series' design and build.

LISTENING

The 10 Series was installed in my system by CH Precision's Ralph Sorrentino, and set-up maven Stirling Trayle. Stirling travels the world setting up and fine-tuning systems for individual customers, as well as contracting with manufacturers for setups at trade shows and in reviewer's systems. For 32 years I've witnessed a parade of the world's most skilled set-up people installing products in my system for review, but none equals Stirling's skill, knowledge, and unrelenting pursuit of the last measure of performance. The three-day installation required a complete tear-down and rebuild of the Critical Mass Systems Olympus equipment rack to add a third section that would accommodate the four chassis of the L10 and two chassis of the P1 phonostage. (Although I'm not reviewing the P1—you can find Jacob Heilbrunn's review of the P1 in Issue 297—CH Precision wanted



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me to hear an all-CH system.) The setup was long and involved, but at the end all three of us felt confident that Stirling had extracted the system's full performance potential. Purchasers of the 10 Series can expect the same level of service from their dealer.

The M10 is the first power amplifier I've had in my system that displays the output stage's operating temperature. It's well known that electronics sound better as they warm up, but I've never before been able to track a rise in temperature and correlate it with the amplifier's sound. The M10 has so much thermal mass that it takes several hours to reach an optimum temperature. When first turned on, the amplifier may be at 15°C, rising to 40°C after about two hours. The sound becomes smoother and more liquid as the temperature rises, but above about 47°C, an extra dose of magic kicks in, with the sound opening up and becoming even more natural. Many times I found myself several hours into a listening session with a plan to stop at a certain hour, but was compelled to continue listening not just because the 10 Series is so good, but also because the M10s entered another realm of performance as they heated up, making it virtually impossible to turn the sys-

tem off. The solution, I discovered, is to get the system fully, rather than partially, warmed up before a session.

The 10 Series electronics' overall sound was characterized by great precision, tremendous clarity, definition, and speed, wide and powerful dynamic swings, and a startling sense of presence. They have a colorless character that establishes the fundamental backdrop against which the music is projected. This colorlessness allows instrumental and vocal timbres to be realized with startling realism and life. The differences in timbre and texture between instruments, performers, and recordings were vividly portrayed by the 10 Series. All electronics have a characteristic signature that tends to overlay itself over the music, particularly in timbre. Some electronics are warmer sounding, some cooler; some slightly thin down tone color, while others make it denser and richer than life in a sometimes pleasant but not-quite-realistic way. (I'm reminded of Jonathan Valin's brilliant description of a certain brand of tube electronics as making the music sound like "bronzed baby shoes.") The CH Precision 10 Series is, in my experience, the most transparent and uncolored window on the musical performance I've heard. One way of recognizing this quality is the magnitude of the difference in timbre from one recording to the next. Each recording differs in tone-color density, clarity, and textural detail, resulting from different instruments, musicians, microphones, venues, and recording chains. The 10 Series reveals these differences with astounding precision, in the same way that a photograph printed on a perfectly white paper looks more realistic and vivid than if printed on paper with a slight color cast.

Despite its extremely high resolution and lack of intrinsic color, the 10 Series was anything but dry or analytical. Some electronics that are "ruthlessly revealing" and sound transparent at first listen fail to engage musically, often because tone colors are thinned and bleached, and transient details emphasized. The 10 Series' great triumph is combining a pristine clarity with the warmth and richness of



**THE CH ELECTRONICS ALSO HAVE
A NATURAL EASE AND FLOW THAT
MAKES MUSIC SOUND ORGANIC
RATHER THAN MECHANICAL.**

real musical instruments, provided that warmth and richness were captured in the recording. The CH electronics also have a natural ease and flow that makes music sound organic rather than mechanical, a quality that becomes more and more apparent as the M10 reaches its optimum operating temperature. Listen, for example, to the gorgeous timbral purity of the piano and violin on Mozart's Violin Sonata in G Major performed by Hillary Hahn and Cory Smythe in a stunning direct-to-disc recording on Deutsche Grammophon. The violin's sound is vibrant and lustrous, devoid of a metallic sheen or edge. With its rich sonority, the texture evokes a palpable impression of strings and wood. So often, solid-state electronics rob violins of the gossamer-like delicacy of the instrument's upper registers, instead imposing a patina of steely hardness. The CH electronics presented this quality without diminishing the instrument's brilliance. Similarly, the piano on this recording has great clarity and immediacy without sounding forward or excessively bright. The L10 and M10 offer a remarkable combination of clarity and warmth, often mutually exclusive qualities.

This 10 Series' ability to project a sense of presence—the impression of the instrument or voice existing in front of you—was simply sensational. The immediacy wasn't the result of a forward midrange or a dry rendering, but rather of the astonishing tangibility, stability, and three-dimensionality of instrumental and vocal images. Vocal entrances in a song



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SPECS & PRICING

L10 LINESTAGE

Inputs: Balanced on XLR jacks (x4), single-ended on RCA jacks (x2), single-ended on BNC jacks (x2)

Input impedance: 94k ohms or 600 ohms, selectable (balanced); 47k ohms or 300 ohms selectable (single-ended)

Outputs: Balanced on XLR jacks (x2), single-ended on RCA jacks (x1), single-ended on BNC jacks (x1)

Volume control range: +18dB to -100dB in 0.5dB steps

Bandwidth: DC-1MHz (-3dB)

THD+N: <0.0008% (22Hz-22kHz)

Output noise: -112dBu (balanced outputs); -115dBu (single-ended outputs)

Signal-to-noise ratio: 141dB

Feedback: 100% global and 0% local or 100% local and 0% global (user selectable)

Dimensions: 440mm x 133mm x 340mm (power supply and preamplifier chassis stacked, Stereo); two stacks for Dual Monaural operation

Weight: 23kg (power supply), 20kg (preamplifier) Stereo, doubled for Dual Monaural operation

Price: \$76,000 (Stereo, two-chassis); \$132,000 (Dual Monaural, four-chassis)

M10 POWER AMPLIFIER

Output power: 300Wpc into 8 ohms, 550Wpc into 4 ohms, 900Wpc into 2 ohms (stereo or bi-amp mode); 300W into 8 ohms, 600W into 4 ohms, 1000W into 2 ohms (monaural), 1600W into 1 ohm; 1100W into 8 ohms, 1700W into 4 ohms, 2500W into 2 ohms (bridged); all measured at 0.1% THD+N at 1kHz

Input impedance: 94k ohms or 600 ohms, selectable (balanced); 47k ohms or 300 ohms, selectable (single-ended)

Gain: 24dB (stereo, bi-amp, monaural); 30dB (bridged)

Bandwidth: DC-500kHz (-3dB) with input low-pass filter off; DC-120kHz (-3dB) with input low-pass filter on

THD+N: <0.01% with 100% local feedback; <0.002% with 100% global feedback. Both with 8 ohm load, 50Wrms into load, 22Hz-80kHz measurement window

IMD: <0.001% (SMPTE)

Output noise: <-95dBu (stereo, bi-amp, monaural); -92dBu (bridged)

Signal-to-noise ratio: >132dB (stereo, bi-amp, monaural); >135dB (bridged)

Gain trim: 0dB to -6dB in 0.5dB steps

Feedback: From 0% global (100% local) to 100% global (0% local) in 1% steps

Weight: 78kg (power supply), 53kg (amplifier)

Price: \$104,000 (\$198,000 per pair as mono-blocks); \$10,000 for two additional input boards required for active bi-amplification

CH PRECISION SARL

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Associated Equipment

Loudspeakers: Wilson Audio Chronosonic XVX with two Wilson Audio Subsonic subwoofers, Wilson ActivX0 crossover

Analog source: Basis Audio A.J. Conti Transcendence turntable with SuperArm 12.5 tonearm; Air Tight Opus cartridge; CH Precision P1 phonostage with X1 external power supply; DS Audio ST-50 stylus cleaner, Levin record brush

Digital source: Wadax Reference Server and Wadax Reference DAC (custom optical interface); UpTone Audio EtherREGEN Ethernet switch

AC Power: Shunyata Everest 8000 conditioner, Omega and Sigma NR V2 power cords; Shunyata AC outlets, five dedicated 20A lines wired with identical-length 10AWG

Support: Critical Mass Systems Olympus equipment racks and Olympus amplifier stands; CenterStage² isolation, Ayra Audio RevOpods isolation

Cables: AudioQuest WEL Signature interconnects and AudioQuest Dragon Zero and Dragon Bass loudspeaker cables

Accessories: Degritter ultrasonic LP cleaner; Chord Company GroundArray noise-reduction devices

Acoustics: Acoustic Geometry Pro Room Pack 12
Room: Purpose-built; Acoustic Sciences Corporation Iso-Wall System

were sometimes physically startling, even on familiar music. Listen to the innovative interpretation of the classic Bruce Springsteen song “Dancing in the Dark” by Canadian songwriter and singer Ruth Moody on her album *These Wilder Things*. Through the 10 Series, her vocal entrance creates the astonishing impression of a person suddenly appearing between the loudspeakers. Moreover, the 10 Series’ clarity and immediacy made lyrics sound as though there were more clearly articulated. I heard nuances of expression in even very familiar vocals, including Paul Simon’s on the track “Graceland” from his classic album, and Buddy Guy’s soulful lament on the raw acoustic guitar and vocal track “Done Got Old” from *Sweet Tea*.

These qualities imbued the music with a level of realism that I’ve never experienced before from reproduced music. Instruments and voices were seemingly brought to life, beautifully vibrant and expressive. The outlines of each image were precise and sharply defined, yet at the same time revealing of the space around them—that little halo of bloom that fosters the impression of an instrument in an acoustic. The illusion of each instrument existing independently in space, rather than being slightly congealed into a continuous fabric, was the best I’ve heard from any electronics.

This observation isn’t just some abstract intellectual exercise to be enjoyed for its own sake. Rather, it had profound musical consequences. The first is that the combination of presence and lack of congealing revealed more fully each instrument’s musical contribution. There was simply more music to hear, even in intimately familiar recordings, when each instrument was reproduced with such clarity and immediacy. Shifting one’s attention between instruments is often a zero-sum game; focusing on one instrument results in less awareness of the others’ contributions. But with the 10 Series, each instrument or section remained fully vivid in my awareness no matter where my attention was focused. The musical contribution of each member of the



**THE L10 AND M10 PAIR ALSO
EXHIBITED A MAJESTIC POWER AND
AUTHORITY ON LARGE-SCALE MUSIC.**

group was vividly apparent all the time. I heard this on recording after recording. I could use one of dozens of examples, but I'll cite the album *Like Minds* because each of the virtuoso musicians (Chick Corea, Gary Burton, Pat Metheny, Dave Holland, Roy Haynes) is virtually always playing something interesting and wonderful—Chick's comping during the vibraphone and guitar solos, Holland's inventive bass playing, and drummer Roy Haynes' seemingly endless well of rhythmic creativity. Listening to this familiar album through the 10 Series was a different experience because each player's musicianship was simultaneously brought to life with tremendous alacrity. There was always this fundamental character of hearing each instrument or section's musical line. The heightened awareness of the individual musical lines also conveyed a more powerful sense of the ensemble interacting with each other—the way Haynes punctuates a soloist's phrases on the snare, for example. The presentation was richer and denser, not just sonically but musically, in terms of conveying more of each player's expression. Large, complex music also benefited, such as the arrangements for the large wind band on the spectacular *John Williams at the Movies*.

The impression of hearing more of what the performers were doing is perhaps responsible for another of the 10 Series' great attributes—the expression of the musicians' intent. No matter the music, I felt a heightened sense of the musicians' commitment, particularly with live albums. Take, for example, the opening track from Diana Krall's *Live in Paris*. From the first note, the band comes in

swinging with an exuberant energy. Yes, you hear that energy through other electronics, but the 10 Series takes it a step higher, creating a *frisson* of excitement from sensing the band's unmistakable announcement in those first few bars that they came to play, and that you're about to go along for the ride. It's simply sensational and thrilling. Or take the great double live recording, Keith Jarrett's *My Foolish Heart*, recorded at the 2001 Montreux Jazz Festival with Gary Peacock and Jack DeJohnette. On the heartbreakingly beautiful title track, Jarrett's every subtlety of phrasing was rendered with tremendous

emotion, every note laden with meaning. I've heard this album on many systems, but have never felt such a deep connection to the performance as through the 10 Series. I also appreciated the connection and empathetic communication between Jarrett, Peacock, and DeJohnette, who had been playing as a group for 25 years at the time of this recording. Revealing this essence of music, the communication between artist and listener, is high-end audio's *raison d'être* and a quality that the L10 and M10 delivered with depth and conviction.

The L10 and M10 pair also exhibited

AMPLIFIER BRIDGING



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Some stereo power amplifiers can be “bridged” to function as monoblocks. *Bridging* configures a stereo amplifier to function as a more powerful single-channel amplifier. The amplifier will have a switch (usually on the rear panel) to convert it to bridged operation. Note that two bridged amplifiers are needed for stereo. If you have a stereo amplifier that can be bridged and you want more power, simply buy a second, identical amplifier and bridge the two for more total power. In theory, bridging results in a fourfold increase in output power. That's because bridging doubles the amplifier's maximum output voltage and, according to Ohm's law, quadruples the power. In practice, however, bridging roughly doubles an amplifier's power rating into a 4-ohm load, due to the amplifier's current-output limitations.

Bridging changes the amplifier's internal connections, so that one channel amplifies the positive half of the waveform and the other channel amplifies the negative half. The loudspeaker is connected as the “bridge” between the two amplifier channels, instead of between one channel's output and ground.

Bridging is most beneficial when the power amplifiers are asked to drive low-sensitivity, high-impedance (8-ohms nominal) loudspeakers. High-impedance speakers are driven more by voltage than by current. Conversely, low-impedance speakers demand more current from the power amplifier. Bridging doubles the amplifier's maximum output voltage, but quadruples its maximum current output (because two amplifier channels are now driving one loudspeaker). Moreover, connecting a 4-ohm speaker to a bridged power amplifier causes the amplifier to “see” a 2-ohm load, further stressing the amplifier's current capacity. The result can be amplifier overheating, which will either damage the amplifier, or activate its protection circuit and shut down the amplifier while music is playing.

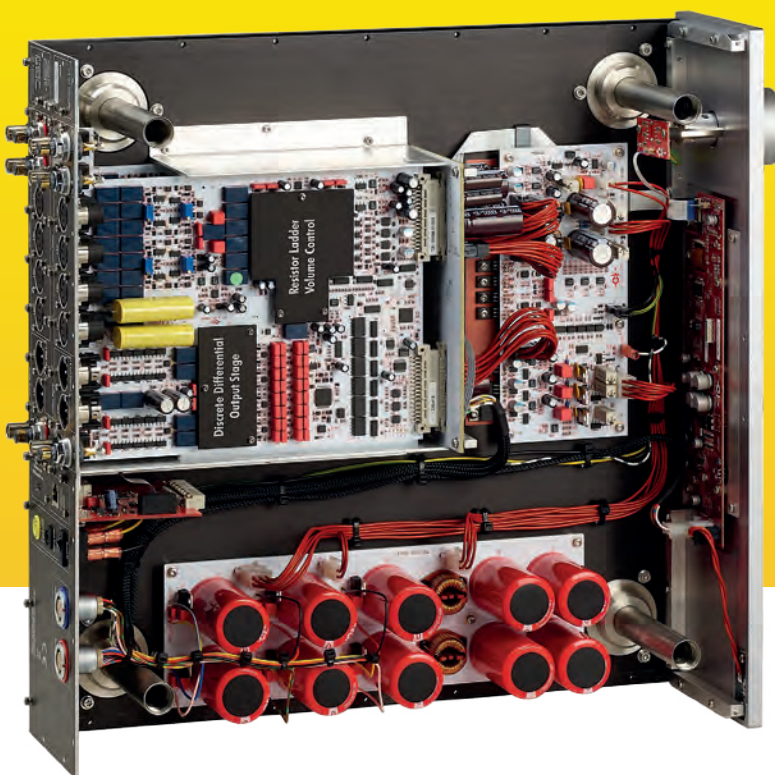
UNDER THE HOOD

The idea behind the 10 Series was to examine every aspect of CH Precision's existing circuits and design techniques, and then improve them where possible. The 10 Series isn't a blank-sheet, ground-up project, but rather an attempt to improve upon existing circuits, and to realize those circuits without any cost compromises.

The L10 is based on the L1 lineage, with fully discrete and complementary circuits from input to output. The direct-coupled circuit has a bandwidth of a whopping 1MHz. The volume control is right out of the L1, an R-2R resistor-ladder attenuator. Also out of the L1 is a DC detection and cancellation circuit that prevents DC from appearing at the output without the need for DC blocking capacitors or DC servos, each of which introduces its own problems. New for the L10 is a "diamond" input buffer that incorporates a circuit that automatically and continually compensates for drift and offset, resulting in more stable performance and immunity from temperature changes. Many of the passive components have been replaced with cost-no-object parts. Signal paths were made shorter where possible, and the circuit-board routing was reexamined. The L10 also benefits from a new power supply with better regulation and greater capacity. Finally, CH Precision added in the L10 the ability to select whether the feedback is global or local. The L1 already had exceptional measured performance, but the L10 has slightly lower noise and distortion. Even the L10's designers were reportedly surprised upon the first listen by how much better it sounded than the L1.

Similarly, the M10 builds on the company's M1.1 power amplifier with some new circuits and an all-out implementation. The M1.1 had a balanced input stage, but the amplifier was not fully balanced. The M10 is balanced from the input up to the output stage, and also benefits from a new input stage similar to that deployed in the L10. The M10's power supply is massively larger than that of the M1.1, with six times the reservoir capacitance for a total of one Farad. I don't think that I've ever described a power amplifier's reservoir capacitance in Farads rather than in microfarads (μF). Looking inside the power supply, I've never seen such massive filter caps. Forget "soda-can sized"; these are enormous cylinders bolted together through hefty bussbars. The M10 also allows adjustment between global and local feedback in 1% increments rather than in the 10% increments of the M1.1. This is a welcome feature because 1% differences below 10% are audible, and most systems will employ less than 10% global feedback.

As with all CH Precision amplifiers, the M10's output stage features a unique circuit that realizes stable bias current through the output transistors regardless of temperature or operating conditions. The company's ExactBias circuit automatically adjusts the bias to compensate for ambient temperature changes (slow shift) as well as short-term temperature changes caused by the demands of program material. Two extra pins on each output transistors allow the circuit to calculate the precise temperature inside the transistor and adjust the bias current accordingly. This technique keeps the transistor operating in its most linear (lowest-distortion) range.



a majestic power and authority on large-scale music. The sound had an effortless grandeur and sweep on the previously mentioned *John Williams at the Movies*, with crescendos by the low-brass section seemingly swelling with limitless power. The 10 Series scaled the dynamic heights and full-throated glory of Saint-Saëns Symphony No.3 (“Organ”) [Philadelphia Orchestra, Christoph Eschenbach, Ondine] with apparent ease. This grandeur was reinforced by the 10 Series’ spectacular soundstaging. When the M10s reach full temperature, the wall behind the speakers completely disappears to reveal the full scale of the recording venue. Moreover, the 10 Series paints an extremely precise and defined portrait of instruments within the recorded acoustic. The laser-like focus of individual instruments, the bloom of air around those instrumental images, and the vast halo surrounding them that is the hall combined to create a totally immersive experience.

The bass struck a perfect balance between articulation and weight. Electronics that tend toward the lean side often sound more agile, with greater transient fidelity and superior pitch definition, but lack weight, color, and body. At the other extreme, some amplifiers provide that weight and warmth, but at the expense of articulation, control, and clarity. In my room and with my loudspeakers, the 10 Series walked the fine line to reproduce the visceral thrill of bass weight and body with the musically satisfying rewards of bass definition, speed, and articulation. The bass could be big and full—Ray Brown’s instrument on *Soular Energy*, for example—yet was never thick or heavy. As I mentioned previously, the pair of M10s were configured for active bi-amping, with one amplifier channel within each M10 driving the Wilson Chronosonic XVX



THE BASS STRUCK A PERFECT BALANCE BETWEEN ARTICULATION AND WEIGHT.

and the other channel driving the Wilson Subsonic subwoofer. This configuration of driving main speakers and a subwoofer with a single amplifier made a big improvement to the coherence of the bass compared with using separate amplifiers. The low bass was better integrated with the midbass, with a more seamless sound.

For an amplifier priced in the top tier, the M10’s 300Wpc output-power rating is on the low side. In this price realm, a thousand watts isn’t uncommon. In practice, however, the M10 seemed to have no power limitations; I drove the Wilson XVXs to very high levels without a hint of strain, or any softening of the bass, weakening of dynamic impact, hardening of timbre, or soundstage congealing. At the very highest playback levels (and I tend to listen loud), the M10’s front-panel meters indicated an output power of 160Wpc. Keep in mind that a single M10 drove the XVX as well as the Subsonic subwoofer. As I’ve written before, a power amplifier’s output rating into 8 ohms is only part of the story. How much current the amplifier can deliver, indicated by its ability to increase its power as the impedance drops, has a large effect on the amplifier’s perceived power. The M10 is rated at 900Wpc into 2 ohms in stereo mode with both channels driven, and 1100W into 2 ohms when used as a monoblock, and 1100W into 8 ohms when bridged.

CONCLUSION

The new L10 Dual Monaural Linestage Preamplifier and M10 Two-Channel Reference Power Amplifier from CH Precision are a *tour de force* in contemporary electronic design. They offer unprecedented configuration versatility, extensive set-up features, the ability to sonically fine-tune the electronics to the system, and exemplary build-quality. The inclusion of the app to set up the system initially, and to control it on a day-to-day basis, is a big plus in the user experience.

Although the 10 Series pushes all the audiophile buttons, it exhibits some special qualities that go beyond the usual criteria for judging reproduced sound. These electronics create a stunning sense of presence and immediacy, bringing to vivid life instruments and voices. The clarity with which they do this is equally stunning. This quality creates an intimacy with the music that I found beguiling. Less tangibly, but perhaps more important musically, the 10 Series had an uncanny ability to reveal the intent and expression of the musicians. I know that’s a cliché, and that all electronics manufacturers claim that as their goal, but the 10 Series delivers on this promise like no other amplification I’ve heard. The result was an immediate and deep connection with the music every time I listened. The 10 Series encouraged me to revisit old favorites and uncover newfound expression, as well as to explore new music with a sense of discovery. Once in the listening seat, I found it hard to turn the system off.

The 10 Series’ price puts these electronics out of reach for all but a few music lovers. However, if you have the means, the room, and commensurate associated components, I suspect that you, too, will be as captivated as I am. **tas**