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## & Record Review

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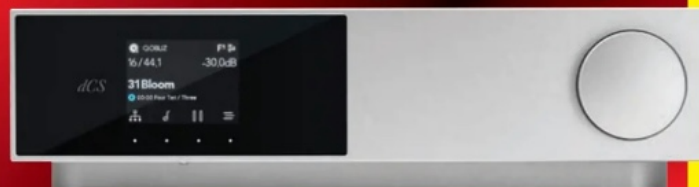


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# CH Precision L1/M1.1

From the pen of the designer behind the turn-of-the-millennium Anagram upsampler tech comes not one but two complete series of high-end digital/analogue components  
 Review: **Mark Craven** Lab: **Paul Miller**

Since launching in 2009, CH Precision, based in Prévèrenge in Switzerland, has carved itself a niche in hi-fi's high-end. Moreover, although a product inventory spanning just two ranges, the 10 Series and 1 Series, might suggest some form of boutique minimalism, its design approach shows plenty of modern, technically innovative thinking. How so? The L1 preamplifier and M1.1 power amp on test here both offer user-tuning of their performance via a custom smartphone app...

CH Precision was founded by Florian Cossy and Thierry Heeb, who both worked at Goldmund in the 1990s before setting up Anagram Technologies in 2001, a digital audio-focused OEM specialising in D/A conversion and upsampling. Its modules have been used by Talk Electronics [HFN Mar '08], Soullution [HFN Oct '11], Cambridge Audio [HFN Aug '12] and others. By the end of the decade the duo had begun designing their own hardware, and the first CH Precision product, the D1 CD/SACD transport, landed in 2010.

## SWOOP DU JOUR

That unit has since been replaced by the D1.5 in the manufacturer's 1 Series of 'classic components', where it's joined by the £49,500 M1.1 power amplifier and £30,000 L1 'dual monoaural line-stage' preamp. Also in the range are the A1.5 power amp (£34,200), the P1 phono stage (£27,200), the I1 integrated (£33,400), and the C1.2 DAC/controller (£31,300).

To the latter can be added a T1 10MHz clock, for £22,100, while the series' X1 external power supply (£15,300) is an option for the DAC, transport and preamps. A similar product selection is offered by the company's flagship 10 Series, with the expected uptick in pricing.

**RIGHT:** Separate L/R differential inputs with programmable gain [top right] feed power amp with six pairs of big, five-pin Motorola devices per side [on each heatsink]. PSU includes 2.4kVA toroidal transformer [centre] and 2x 120,000µF/80V reservoir caps [red, left]

Both the L1 and M1.1 are full-size components, 440mm wide and 440mm deep, and – with their fascias sporting an identical swooping curve – styled to match. The machined aluminium chassis are offered in a natural silver finish, or the new 'Anthracite' of our review pair. This can appear to have a blueish tint – similar, in a way, to the 'flip-flop' paint finish made famous by TVR cars.

The amps are designed to be stacked, but this isn't just a case of placing the 20kg L1 atop the 71kg M1.1 using its pre-fitted feet. Instead, CH Precision's 'composite grounding spikes', which combine hardened titanium tips with long polymer posts, are installed through the feet from above, by removing a cap on the top of the unit to reveal a shaft below [see pics, p38 and 41]. Once the spikes are in place

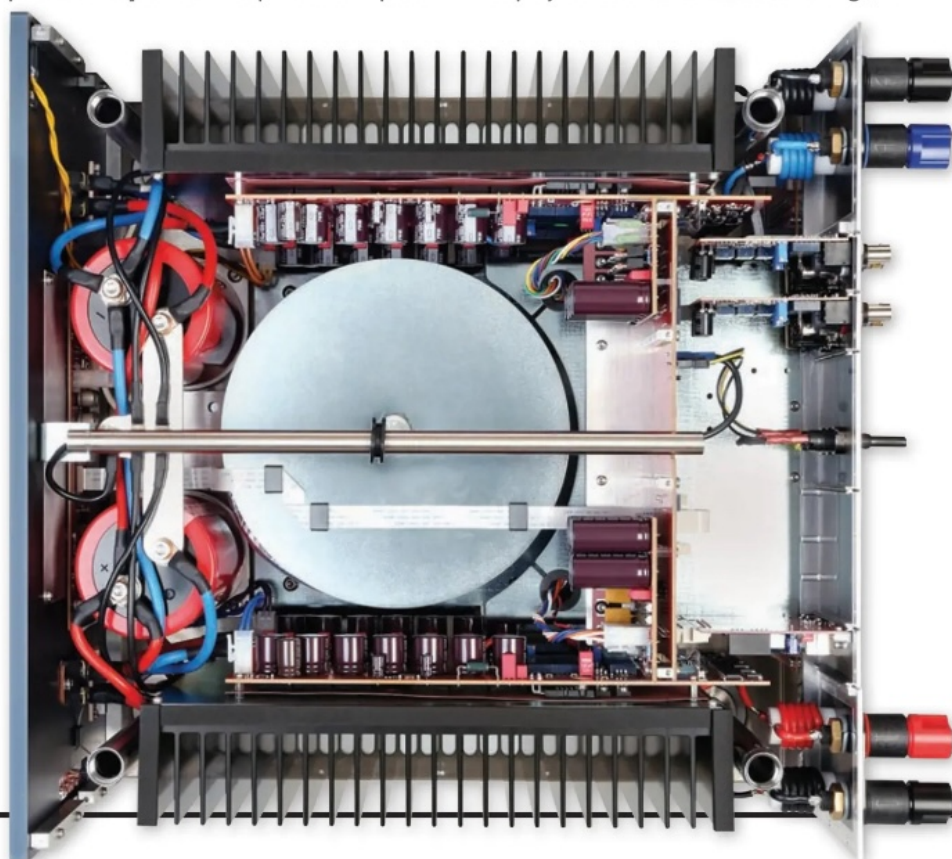
a secondary 'stacking cover' can be fitted that's specifically designed to locate with the spikes fitted to the unit above.

## TWIST OR TAP

CH Precision's preamp is an all-analogue, line-level design, but generously connected with four sets of balanced XLR inputs, plus RCA and BNC pairs, and outputs on XLR (x2), BNC and RCA. Also on the rear panel are a mains input and connection for the outboard X1 PSU, a (firmware) USB port, signal and digital ground posts, and Ethernet – the L1's network connectivity, like that of its sibling power amp, allows control and setup to be handled via CH Precision's Control app [see boxout, p40].

The front of the L1 houses an OLED display that switches between a large, ➔

'Uniquely, the L1 preamp offers a (source) DC offset calibration'







'The L1 preamp and M1.1 power amp both offer user-tuning of their performance via an app...'

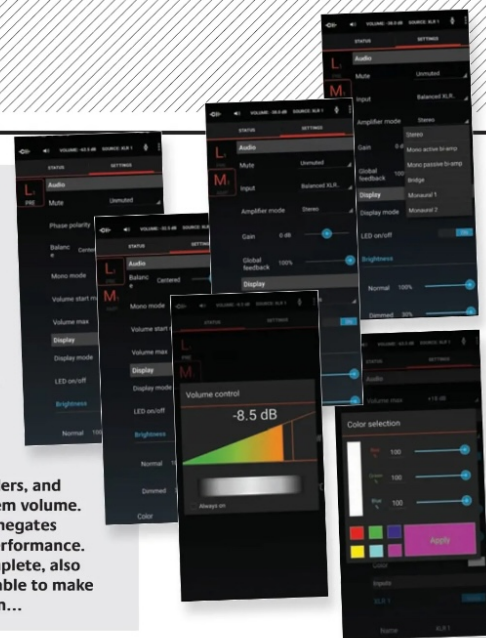
## PRE/POWER AMPLIFIERS

### NETWORK CONTROL

While Ethernet connections on pre/power amps are typically reserved for firmware updates/system monitoring, here they allow the L1 and M1.1 to be driven by CH Precision's Control app, alongside other components. At present the software only runs on Android devices, a by-product of the brand's desire to do everything 'in-house', but an iOS iteration is now in the pipeline.

The app is quick to find connected hardware, and the interface makes it simple to switch between devices. For the M1.1, settings include global feedback [see PM's boxout, p42], amplifier 'mode' and gain. The 'Status' screen mirrors that of the amp's display, showing operating temperature, real-time power output [but see Lab Report, p43], selected input and feedback setting. Options for the L1 include input renaming/hiding, gain and impedance, channel balance, start/max volume, and more. You can even alter the colour of the display text, via RGBCMY sliders, and set your phone/tablet's physical volume keys to control the system volume.

CH Precision says the galvanic isolation of its network boards negates any impact their operation might have on the L1/M1.1's sonic performance. Moreover, it says removing the Ethernet cable, once setup is complete, also disables the network circuit. Do that, though, and you won't be able to make any on-the-fly changes from the comfort of your listening position...



colourful volume graphic and a screen showing the selected source and settings. Changes to these can be made through the app or, alternatively, by push/twist operation of the amp's large rotary control, which also handles volume through a software-driven R-2R ladder network.

### OFFSET AND MATCH

One setting only accessible through the front panel is DC offset calibration, which can be assigned to any of the preamp's inputs. Here, the L1 measures the DC offset of the complete circuit, including connected source and cable, and uses DSP

(which we're told is not in the signal path) to optimise the input to match. Calibrating and 'offsetting' any DC present on the L1's inputs is also important in order to prevent any slight audible 'clicking' as the R-2R volume relays are switched on the fly.

While the amp includes plenty of peripheral circuitry for its monitoring, calibration and correction facilities, as seen in our lid-off pic [p41], the audio path itself is – to quote PM – 'both elegant and short'. The R-2R volume control operates in current mode, after a bipolar input buffer, followed by an I-to-V stage. Extra gain is only applied after the volume section if this is selected by the user via the configuration menu. The differential (balanced) preamp output buffer is also unity gain.

The M1.1 power amp, which has pairs of balanced XLR, RCA and BNC inputs, apes the P1 by mixing its analogue Class

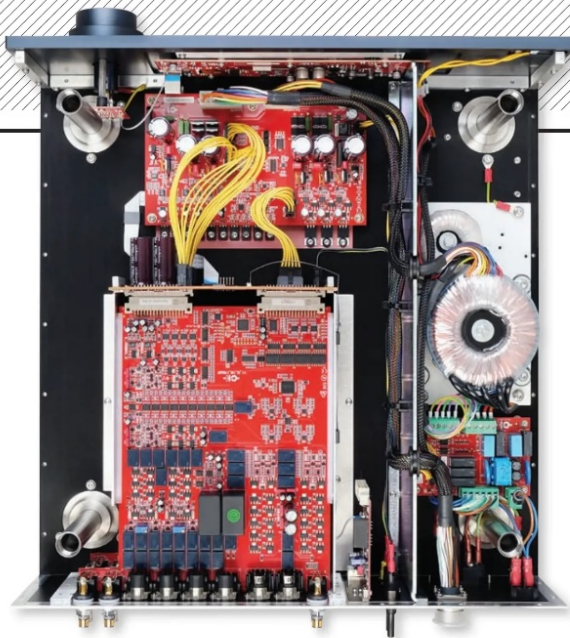
AB amplification with digital control and monitoring circuitry, plus network connection. One of the tasks of its 'digital engine' is automatic bias adjustment, CH Precision claiming this optimises performance at different operating temperatures (making 'warm-up' less important) and input signals. It also governs the M1.1's user-definable global feedback setting [see PM's boxout, p42]. Separate mains inlets are provided, one for the analogue amplification, the other for the comms and control electronics.

### FOUR IN ONE

Additional claims for the amp include 'incredibly short' signal paths and 'exacting component choices'. This would include the custom-made low-ESR reservoir capacitors downstream of the M1.1's massive 2.4kVA toroidal transformer,







and the bypass capacitors used with the six pairs of bipolar transistors per channel. Power output is (conservatively) rated at 2x200W/8ohm and 2x350W/4ohm [see PM's Lab Report, p43].

CH Precision describes the M1.1 as 'four amplifiers in one – at least in conceptual terms'. Outside of a standard two-channel power amp, it can be set to monoaural mode, wherein its power supply is devoted to only one of its output stages, or bridged mode, where the two output stages are combined into a single channel. Lastly, 'bi-amp stereo' allows a single input to be differently configured (in terms of gain and feedback) for the two outputs. The speaker terminals, from Danish specialist Argento, are chunky affairs with removable stoppers that reveal 4mm sockets. Spade connectors, meanwhile, slot into a groove at the base, to be then tightened for a snug fit.

**SWEET STREAK**  
If you view the L1 and M1.1 as meticulously engineered high-end components, but with a streak of fun and modernity running through them, this impression will be reinforced during listening. Smooth and sweet are words that can be used to describe elements

**ABOVE:** Inside L1 showing linear PSU [right], multiple regulation [top], logic and R-2R volume on separate (L above R) preamp PCBs [lower left]. Threaded tubes in each corner host custom 'feet' of their performance, though not to be applied as a catch all. There's an upbeat, sparkling, dynamic demeanour that makes them sound as contemporary as they look.

#### FLOW FACTOR

In the HFN Listening Room, the L1 was housed on the resident Artesania Audio rack and fed by dCS's Varèse DAC [HFN Feb '25] into its balanced XLR input. Cabling, from Transparent, was employed to hook it up to the M1.1. Making use

of the network connection on both components meant changing the preamp volume, and the power amp's global feedback, was easily done via app and smartphone. More time-consuming was the L1's input calibration routine, but this is a five-minute step worth taking. Playing Avi Kaplan's 'The Summit' single [Sequoia Summit Records; 44.1kHz/24-bit] and switching between 'calibrated' and 'uncalibrated' XLR inputs, revealed marginal, but clear, improvements: the jingling percussion that flits

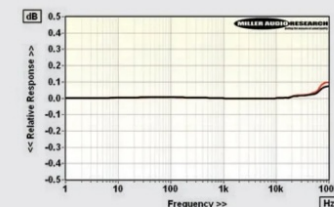
*'I had reached Goldilocks levels of crisp treble detail'*

## LAB REPORT

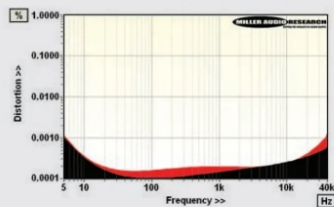
### CH PRECISION L1

With no integrated DAC or phono stage on board – CH Precision offers the partnering C1.2 and P1 to service digital and vinyl sources, respectively – the L1 remains a fully analogue, balanced line preamplifier. The volume control 'number' reflects absolute gain, so '0.0dB' is just that: a 1V input realises a 1V output. Relay clicks are audible when advancing the volume rotary above 0.0dB, above +6.0dB and above +12.0dB, indicating additional R-2R gain blocks being switched into service, but the accuracy of all steps, above and below 0.0dB, is spectacularly precise. From 0.0dB to the maximum +18.0dB volume setting (a gain of 1:7.95), the  $\pm 0.5$ dB steps are accurate to within  $\pm 0.02$ dB. Similarly, from 0.0dB down to  $-90.0$ dB (a total of 180x0.5dB steps) the maximum error is just  $\pm 0.01$ dB, slackening off slightly to  $\pm 0.03$ dB over the final 9dB to  $-99.0$ dB. This represents a tolerance of  $\pm 0.03$ dB and a channel balance accuracy of  $\pm 0.01$ dB over a full 117.5dB dynamic range. Remarkable...

The L1's maximum balanced output is a very healthy 22.1V from a flat 26ohm source impedance (20Hz-100kHz) while the input overload threshold is  $>14$ V. The frequency response is unaffected by volume position, being flat to within  $\pm 0.01$ dB from 1Hz to 20kHz and 'rising' to  $+0.07$ dB/100kHz [see Graph 1]. Noise is exceptionally low ( $-101.3$ dBV or 8.6 $\mu$ V, unwt'd, 20Hz-20kHz) and the A-wtd S/N correspondingly very wide at 103.2dB (re. 0dBV) while distortion easily bests the  $<0.001\%$ /1kHz spec. with a very low 0.00014-0.00035% (20Hz-20kHz, re. 0dBV). There is necessarily some minute change in THD with gain and output level, but the minimum distortion achievable typically occurs over a 3-6V output at 0.00009-0.00015% [re. 20Hz-20kHz; see black trace, Graph 2 below]. PM



**ABOVE:** Balanced line freq. response at 0dBV (1Hz-100kHz, vol setting +6.0dB). Left, black; right, red



**ABOVE:** Distortion versus extended 5Hz-40kHz frequency (Balanced in/out; 0dBV, red; 12dBV, black)

### HI-FI NEWS SPECIFICATIONS

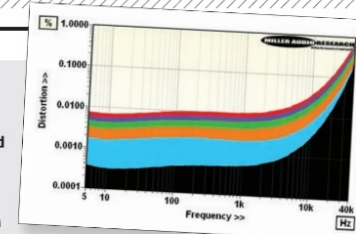
Maximum output (<1% THD, 47kohm)	22.1Vrms (Balanced)
Maximum input level (<1% THD)	>14Vrms (Balanced)
Output impedance (20Hz-100kHz)	26.3-26.5ohm (Balanced)
Freq. response (20Hz-20kHz/100kHz)	+0.00dB to +0.01dB/+0.07dB
Input sensitivity (re. 0dBV)	126mV (Balanced, max gain)
A-wtd S/N ratio (re. 0dBV)	103.2dB
Distortion (20Hz-20kHz, re. 0dBV)	0.00014-0.00035%
Power consumption	50W (1W standby)
Dimensions (WHD) / Weight (total)	440x133x440mm / 20kg

## PRE/POWER AMPLIFIERS

### FETTLING WITH FEEDBACK

Of all the features on offer in this innovative pre/power combo – including the L1's input DC offset calibration – the ability to adapt the M1.1's applied feedback on the fly is arguably the most useful for optimising your system's performance. While a range of 100% to 0% feedback is offered, the latter does not really mean 'zero compensation'. In practice there is always sufficient nested feedback to manage the bandwidth, gain and stability of the M1.1's input and output stages. Nevertheless the notional '100%' global feedback setting necessarily delivers the lowest distortion versus frequency [black trace, inset Graph], the lowest output impedance (0.012-0.035ohm, 20kHz-20kHz) and the least variation in frequency response against big swings in loudspeaker load.

Switching to 80% feedback [cyan] increases distortion from 0.0003-0.015% to 0.0017-0.028% (20Hz-20kHz/10W) and the output impedance to 0.03-0.055ohm while 60% [orange] gives 0.003-0.05% and 0.05-0.072ohm, respectively. Note that the Graph has a logarithmic Y axis so the differences in distortion appear less significant with the lowest levels of feedback. In fact there is a regular increase in THD with each 20% reduction in feedback. So at 40% [green] the M1.1 incurs 0.005-0.075% distortion, 20% [purple] has 0.006-0.09% and 0% global feedback [red] brings 0.0075-0.12% (all re 20Hz-20kHz, 10W/8ohm). '0%' feedback also sees the M1.1's output impedance increase to 0.11-0.126ohm, offering ~10x less damping than at 100% feedback. All this feeds into the overall system sound. PM



around the backing singers appeared even better defined, and it all seemed to flow a little more gracefully.

### HIGH FLYERS

As you'd expect from an amplifier of its class, the M1.1 is thrillingly powerful in subjective terms, able to pin you to your seat with a room-filling output and propelling the partnering speakers to dig deep into the low octaves. But where this

might be the selling point of any big-ticket separates system, it was the CH Precision amps' higher-frequency handling that also caught my attention. The L1/M1.1 combo's upper-band detail and clarity was brilliantly apparent in the picked acoustic guitar and delicate percussion of Fink's 'Trouble's What You're In', from *Wheels Turn Beneath My Feet* [Ninja Tune; Qobuz CD res. download]. The 'air' around these elements, as they echoed in the surrounds

of Islington's Union Chapel, was palpable. Mesmerising, even, thanks to the L1/M1.1's sheer purity and insight.

In combination with Wilson Audio's Alexx Vfx speakers, I had reached Goldilocks levels of treble detail – crisp to the point

of brilliance, just right. Taylor Swift's vocals on the polished production of 'Blank Space' [1989 (Taylor's Version), Republic Records; 48kHz/24-bit] were dispatched with clarity, nuance and no trace of sibilance.

Santana's 'Black Magic Woman/Gypsy Queen', from 1970's *Abraxas* [Columbia; 176.4kHz/24-bit], raised the noise floor a little, reminding me that other tracks were showcasing quiet, black backgrounds. But beyond this, its groove-laden funk offered much to admire – the rat-a-tat percussion, the well-rounded, tightly gripped basslines, the transient bite. It was as if the amps had no constraints on them and were giving equal weighting to every element. And that makes for fun listening.

### BURNING BEATS

I've heard Stevie Ray Vaughan & Double Trouble's 'Tin Pan Alley...' [Couldn't Stand The Weather, Epic; 176.4kHz/24-bit] many times, but rarely has this slow-burning blues track sounded quite so atmospheric as it did here, with the lead guitar licks and rimshots of the opening minutes arriving out of nowhere and resonating into the distance. Later, the deliberately ear-opening transients ('I heard a pistol shoot!') came and went in a flash.

CH Precision's global feedback setting is a powerful tool, as the difference between 0% and 100% is instantly obvious in a way that, say, making



**LEFT:** Dual mains inlets feed amplification [left] and control, display and standby electronics [right]. Balanced (XLR) and unbalanced (RCA and BNC) inputs are joined by Argento speaker binding posts (with labelling for bridge mode operation), plus Ethernet and USB (firmware) sockets

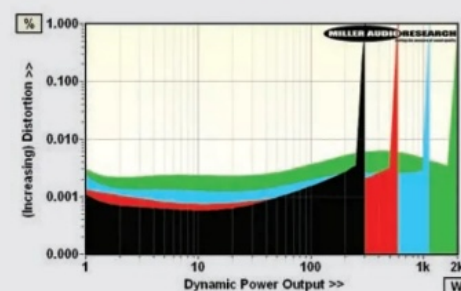


## LAB REPORT

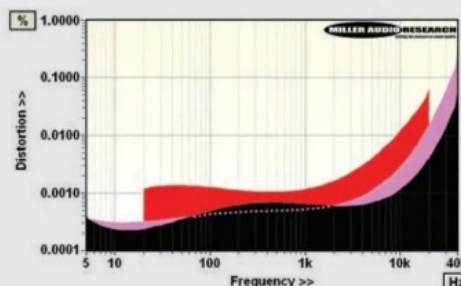
### CH PRECISION M1.1

From switch-on followed by a one-hour 'burn-in', the M1.1's temperature indication increased from 26°C to 51°C – this is the temperature of the output devices on the heatsink – while the output distortion was maintained at an unchanging 0.00045% (all re. 1kHz/10W/8ohm). This was with 'global feedback' set to the maximum 100% [see boxout, p42] where distortion gently increases from 0.0004% to 0.0028% from 1W to the rated 200W/8ohm at 1kHz and 0.004% to 0.07% from 1-100W at 20kHz [see Graph 2]. In practice, the M1.1 comfortably exceeds its 200W spec., delivering 2x275W/8ohm and 2x505W/4ohm with enough in the tank to support 301W, 595W, 1.14kW and 2.03kW (45A) into 8, 4, 2 and 1ohm loads, respectively, under dynamic conditions [see Graph 1]. Note that the M1.1's power display over-estimates by a factor of x4 (so 10W reads as 41W and 100W as 410W) but is fairly accurate when reporting on these dynamic, music-like, signals (<1% THD at 1kHz/10msec).

Either way, this sophisticated power amplifier is very tolerant of low impedance or 'difficult' loudspeaker loads while its low 0.012-0.035ohm output impedance holds the response to +0.0/-0.14dB into 8ohm, +0.0/-0.18dB into 4ohm and +0.0/-0.25dB into 2ohm (all re. 20Hz-20kHz). Wideband, the response has -1dB limits at sub-1Hz and up to 80kHz into 8ohm. In the default '0.0dB' setting, overall gain is +23.75dB, requiring 2.6V from a balanced (XLR) source to raise the rated 200W/8ohm. Meanwhile, in common with the L1 preamp, noise is also fabulously low and the A-wtd S/N ratio very wide at 92dB (re. 0dBW). Finally, stereo separation is good to 100dB through the midrange and 80dB at 20kHz. PM



ABOVE: Dynamic power output versus distortion into 8ohm (black), 4ohm (red), 2ohm (blue) and 1ohm (green) speaker loads. Maximum current is 45.0A



ABOVE: Distortion versus frequency versus power output (1W/8ohm, black; 10W, pink; 100W, red)

### HI-FI NEWS SPECIFICATIONS

Power output (<1% THD, 8/4ohm)	275W / 505W
Dynamic power (<1% THD, 8/4/2/1ohm)	301W/595W/1.14kW/2.03kW
Output imp. (20Hz-20kHz/100kHz)	0.012-0.035ohm / 0.285ohm
Freq. resp. (20Hz-20kHz/100kHz)	+0.0dB to -0.14dB/-1.35dB
Input sensitivity (for 0dBW/200W)	185mV / 2650mV
A-wtd S/N ratio (re. 0dBW/200W)	91.9dB / 114.9dB
Distortion (20Hz-20kHz, 10W/8ohm)	0.0003-0.016%
Power consumption (Idle/Rated o/p)	135W / 690W (1W standby)
Dimensions (WHD) / Weight (each)	440x266x440mm / 71kg



**ABOVE:** Pictured in the new Anthracite finish, the L1 preamplifier's front-panel display shows volume, plus operational status and settings. Menus are driven by volume rotary, or CH Control app [p40]

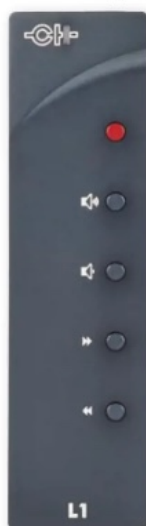
a filter change on a DAC might not be. Opt for maximum feedback and the minimised distortion combines with a tightening of the lower frequencies to lend a leaner, more compact feel to the sound. Better, in my opinion, to switch the M1.1 to 0% or 10%, as this loosens up the low octaves, pleasantly. Christel Alsos's 'If You Knew Me Now' [At That Time Of The Night, Sony Music; 44.1kHz/24-bit] has a deep, slow rhythm that sounded grander, more organic, with the amp's feedback setting curtailed.

Put this pre/power system in charge of a full orchestral performance and its resolution,

dynamism, textural subtlety and unflustered power come to the fore. Richard Strauss's 'An Alpine Symphony', played by the Vienna Philharmonic under André Previn [Telarc CD-08211], begins in measured style with the low brass of I.Nacht, where the amps found layers and detail amid the distant sounds, and maintained their grip as the weight and scale of the orchestra grew.

This recording presents a far-off view, so for once the CH amps weren't impressing me with their forward projection, but the rearward depth of the stage afforded every player space.

**LEFT:** Partnering alloy remote offers control over standby, volume and input selection – for everything else you need access to the configuration menu



Once the thunderous timpani and startling brasses of Ill.Der Anstieg arrived, the immediacy of the system had me dumbfounded. So too, did its portrayal of John Williams' 'Theme From Jurassic Park' [20th Anniversary Edition, Geffen; 192kHz/24-bit], where the quivering of woodwinds and glassy tone of harp strings were beautifully rendered before swells of cello took hold. Pushing the volume high didn't result in congestion or a hardening of the sound – the presentation was larger, richer and more exciting.

### SQUAWK 'N' AWE

Rarely, in fact, did these amplifiers appear out of their comfort zone.

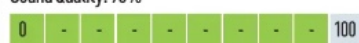
Searching for 'Breadfan', from Welsh power trio Budgie, and landing on a thin, muddled live recording [Live Flight; Qobuz CD res.

download], the amps treated it with something close to disdain, giving no attempt to make it listenable. Yet finding the original studio recording on the *Rock Legends* compilation [SPEC2206] had them blowing away the cobwebs with their lightning-fast attack on the track's celebrated riffs. And, yes, the central breakdown section still sounded phasey, woozy and completely engrossing. ☺

### HI-FI NEWS VERDICT

Meticulously engineered, and with a build quality to evoke intense feelings of pride of ownership, these CH Precision amplifiers are a knockout. The Swiss marque's forward-thinking approach gives the listener slick control over both pre and power models, plus welcome fine-tuning of a performance that marries power, drive, resolution and finesse. Say 'hello' to high-end hi-fi, 21st century-style.

Sound Quality: 90%



'This slow-burning blues track has rarely sounded so atmospheric'