



# SPL

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Power in a pocket handkerchief

### CH Precision I1

Separate components  
in a single box

### Rega Elex mk4

Musicality for everyone

### T&T

makes its rEVolution

### Johnnie Burn

The magician of movie sound



INTEGRATED AMPLIFIER / DAC

# CH PRECISION I1

*Vincent Guillemain*

Presented in VUmètre in 2022 with a tour of the headquarters and all the Series 1 products, followed by a review of its digital (D1.5 CD/SACD player transport, and C1.2 DAC/Controller) and analogue (P1 Phono) sources, Swiss hi-fi company CH Precision is back in the spotlight today with a little gem: the I1 all-in-one integrated amplifier. Much more than a conventional amplifier with an added digital card, the I1 uses a novel hybrid architecture, coupling a digital control and processing section with an analogue amplifier.

**ORIGIN**

Switzerland

**PRIE**

€ 36 750

**DIMENSIONS**

440 (17.3") x 133 (5.2") x 440 (17.3") mm

**WEIGHT**

33 kg (72.7 lbs)

**OPTIONAL CARDS**

Ethernet (UPnP/DLNA): € 6 400

Phono: € 4 400

USB: € 3 000

Clock (10 MHz): € 1 450

**OUTPUT POWER**

2 X 100 W RMS AT 8 Ω

2 X 175 W RMS INTO 4 Ω

**ANALOGUE INPUTS**

1 x XLR ; 1 x RCA

**DIGITAL INPUTS**

CH-Link HD; AES/EBU; S/PDIF coaxial;

TosLink optical

**SAMPLING RATE**

PCM: UP TO 24 BITS/384 KHZ

DSD: 1 BIT/2.8224 MHZ (DSD64); 5.6448 MHZ

(DSD128); 11.2896 MHZ (DSD256)

MQA: UP TO 24 BITS/352.8 - 384 KHZ

CH-LINK HD: UP TO 32 BITS/768 KHZ

**MAXIMUM INPUT LEVEL**

8 V RMS (XLR) ; 4 V RMS (RCA)

**INPUT IMPEDANCE**

94 KΩ OR 600 Ω (XLR), 47 KΩ OR 300 Ω (RCA)

**REMOTE CONTROLS**

Infrared as standard; Android app

In many ways, it is a perfect example of CH Precision applying software and digital technology to a specific technical challenge. Rather than receiving digital signals, converting them to analogue and then sending them to the analogue switches in the source selection and volume control circuitry, the I1 converts all incoming analogue sources to digital signals for switching, processing and even the fine stages of the clever hybrid volume control, before converting and amplifying in the analogue domain. It is a unique approach, but one that allows us to take advantage of CH Precision's operational flexibility and impeccable musical performance from a single chassis.

We are fortunate that in the land of precision watchmaking, engineers such as Florian Cossy and Thierry Heeb at CH Precision prefer to apply their talent for innovation to high-fidelity equipment. These two top-of-the-range audio consultants joined forces fifteen years ago, building their company on the shores of Lake Geneva, a few kilometers from Lausanne, where the famous École Polytechnique supplies many of CH's employees, starting with the CEO. The same atmosphere of serenity that surrounds the region's watchmakers, an environment in which quality and meticulous application are king, has enabled one of the world's best audio brands to grow and flourish.

CH Precision is not a company that relies on flashy cabinets or ostentatious branding. The technical purity that underpins the designs is reflected in the elegant simplicity of the shared cases, tailored to each product. The I1 is housed in the same ultra-rigid silver-grey aluminum case, supported by four wide stainless steel feet. It uses the same modular card cage construction, allowing owners to configure the unit to suit their own needs. Inside, you will find many of the same exclusive techniques and technologies used in other CH components. This is hardly

surprising, as this box contains much of the functionality found in the C1.2 DAC/controller, P1 phono stage and A1.5 amplifier, allowing listeners to enjoy the benefits of a CH-based system when space is at a premium. You will also find the same mechanical grounding system, using four composite aluminum-tempered polymer spikes that screw into the feet of the unit, draining vibrational energy and perfectly levelling your I1 and the same separate chassis and signal grounds, allowing you to optimize system grounding and noise levels.

### DIGITAL-ANALOG ARCHITECTURE

Inside the I1, space is dominated by the power supply, which is not surprising. The massive 1,200 VA toroidal transformer is centrally mounted and mechanically isolated on a steel plate resting on silent mounts, limiting mechanical vibrations reaching the chassis. The main power supply features high-speed diode bridge rectifiers and a total filtering capacity of 100,000uF. Independent control circuits then allow the digital and analogue power supplies to be completely separated.

The configurable nature of the I1 means that to fully appreciate its versatility and flexibility, you first need to look at the basic platform. In its simplest form, the I1 is equipped with four digital inputs, a pair of balanced XLR analogue inputs and two pairs of unbalanced RCA analogue inputs. There is also an Ethernet control card and two empty input slots, covered by blanking plates.

The digital input card is familiar from the C1.2 DAC and includes the proprietary HD CH-LINK input, capable of receiving native SACD or MQA digital data from the D1.5 player/transporter, an AES/EBU input on XLR, S/PDIF on RCA and optical Toslink. Each analogue input card is separated for the left and right channels in order to preserve the dual mono architecture of the analogue circuits. The left and right signals pass through the A-D



converters, then the dual-mono DAC cards, derived from those used in the D1.5. All source selection and processing functions are performed in the digital part, both in terms of music reproduction and system control. The I1 uses a control FPGA associated with the DSP, and each channel gets its own Wolfson WM8742 delta-sigma chip: there is simply no room in the I1's crowded interior for an R-2R implementation like the one used by the C1.2.

With so much depending on digital circuitry, the clock is vitally important. Perhaps it is also a good thing that it's a Swiss product! With its own dedicated power supply, this section is managed by two separate, high-precision, low-drift crystal oscillators (VCXOs), one operating at 22.5792 MHz for multiples of 44.1 kHz and the second at 24.576 MHz for multiples of 48 kHz, tuned to the incoming signal by a digital phase-locked loop, which monitors the frequency as closely as possible and reduces jitter to infinitesimal levels.

Using software to control the operational and functional aspects of the I1 allows CH to offer an unprecedented level of flexibility. As well as deciding which input to listen to and at what intensity, you can adjust the 800\*480-pixel HD AMOLED display, choosing a particular screen

color or setting different colors to reflect different types of incoming data (DSD, PCM, MQA) or analogue signals. It is also possible to set brightness levels and to name each input. The gain of each analogue input can be adjusted within a range of  $\pm 18\text{dB}$ , to equalize the levels of the sources. The overall feedback setting (and therefore the damping factor) of the amplifier can be varied in five steps from 0 to 100% - extremely useful when adapting the bottom end of your speakers to a less-than-perfect listening space. Every aspect of the I1's operation can be set or adjusted using the on-screen menus and by turning or pushing the dual-centering control knob. But connecting the I1 to your network via the Ethernet control port and the CH Control app will allow you to adjust every audio or functional parameter, from volume or balance to screen nuances, from absolute phase to mono or stereo, all from the screen of an Android device. The signals from the DACs are transmitted to the I1's amplifier via the volume control, which is often the weak point of any (pre-)amplifier. Unlike most digital volume controls, CH Precision has designed a hybrid solution with coarse 6dB steps in the analogue domain and finer graduation in the digital domain, minimizing any loss of resolution. This solution is as intelligent as it is efficient. The power amplifier itself is derived from the design of the original A1. A Class AB bipolar push-pull output

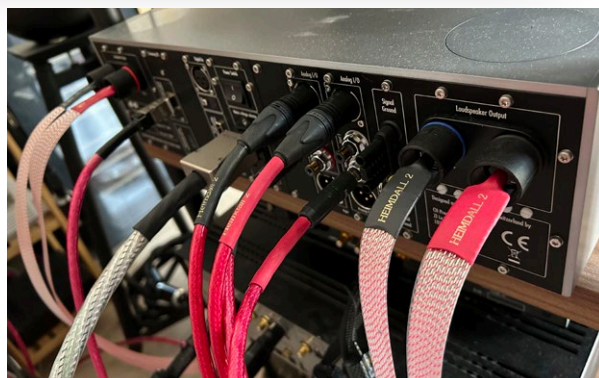


stage is regulated by patented ExactBias circuitry that precisely controls the bias current and operating conditions of the output devices under load, one of the secrets to the clarity and stability of CH sound. Separate output cards for the left and right channels are located on either side of the transformer, mounted on large heat sinks and rated at 100W per channel at 8 ohms and 175W at 4 ohms, capable of powering a wide range of loudspeakers. In addition to the speaker terminals, are also available a pair of balanced preamp outputs, allowing you to add a second amplifier (for extra power, to use the I1 as a high-quality digital preamplifier or, better still, to bi-amplify an existing system).

If you look closely, you may notice a small transformer just in front of the main transformer. At first glance, you might think that it's there to power a possible source of interference, such as the screen. In reality, it simply serves to maintain the temperature of the whole device more efficiently in standby mode. This is another example of performance improvement through sound engineering.

### A SWISS ARMY KNIFE THAT HOLDS ALL THE CARDS

By now we have realized that the I1 is a remarkably versatile and adjustable device... but that is before we even consider the options!



For many users, the first consideration will be the provision of a streaming input, for which the I1 offers two solutions. First, you can install a USB input card in place of one of the blanking plates. This card will read files up to 24-bit/384kHz in PCM and DSD256 (11.2896MHz), which is particularly useful if you want to access the I1 via an external streamer. But to maintain the single enclosure concept, CH Precision prefers to replace the Ethernet control card fitted as standard with their HD Streaming input card, equipped with an RJ45 Ethernet socket (for high-resolution file playback and system control) and a USB-A socket for firmware updates. In either configuration, it can be used for streaming or via a third-party UPnP/DLNA application such as Roon, MConnect or Audirvana.

For vinyl enthusiasts, the I1 offers something really special. A set of phono gain cards can be added to the analogue input cards. These allow you, via the menus or the Control App, to convert either, neither or both RCA inputs into a current-sensing MC input - the same approach used in the fabulous P1 phono stage. You might wonder why anyone would plug a record player into an input that is going to be converted to digital, but the results will surprise you, while access to the digital domain brings its own benefits to record playback. Like its big brother the P1, the I1 lets you switch between RIAA, e-RIAA, EMI, Columbia, Teldec/DGG and Decca EQ curves, transforming the performance of old pressings and revealing the treasure trove of second-hand vinyl records (particularly interesting to discover how good Deutsche Grammophon records can sound with the correct EQ).

And if that is not enough - remember that for CH, perfect is just the first step before more than perfect - you can add a Clock Sync card with a 50 or 75 ohm BNC input and two 75 ohm BNC outputs to optimize clock priorities between the I1 and a digital source like the D1.5 or, better still, add the external T1 Time reference clock, with frequencies from 44.1 kHz to 10 MHz. Finally, a last available input slot offers to add an additional digital input card, if needed.

### INSTALLATION

Our first experience with the I1 was at a retailer, using the superb Rockport Atria speakers. That was enough to impress us, but in their quest for perfection, CH Precision always insist that we test the equipment in-house for at least a month before giving our impressions. So, we placed the I1 in one of our listening rooms, with the brand-new T&T Nel Extrême Evo speakers, followed by the Jern 15H, Atohm GT1 and Closer Ogy speakers. As this multifunction amplifier is designed for space-saving systems, listening to a whole range of partner equipment

for almost six weeks enabled us to study every aspect of its performance, including the MC phono module and Ethernet card.

To test the performance of the phono input, we equipped our Kuzma Stabi S with several different cells, from the Hana ML to the Skyanalog P1-Green. Upon digital inputs, the CH streaming solution was compared with external streamers. Above all, we paid particular attention to the cables, since Nordost lent us two Valhalla 2 power cords for the occasion, which were ideal for integrating with our QB8 MkIII strip and the I1. At the same time, the fact that we had to test speaker, digital and Ethernet cables from the Heimdall 2 range for this issue enabled us to refine our listening in an entirely Nordost environment. However, using Esprit Eterna, Aura and Lumina cables highlighted other aspects of the I1.

Once connected to the mains, speakers, an audio network and a turntable - provided the phono cards are present and one of the RCA inputs has been switched- we were ready to power up the I1 via its rear switch. When we pressed the volume button, the little red CH logo LED bar, lit up in standby mode, goes out to make way for the information on the color screen, proof that it is really time to enjoy the music!

### THE SOUND

Perfectly pure? Purely perfect? These are the words that come to mind when listening to a CH Precision, and the 'little' I1 is no exception. The total absence of background noise and the slightest distortion asserts a purity at all times, ideal for music with natural instruments such as classical and jazz, but also perfectly suited to revealing the smallest nooks and crannies of pop or rock recordings. As the sound is uncluttered, the clarity can be further developed with the cables, those of the higher ranges, as in our tests, allowing the full width

of the spectrum to be deployed, right down to the taut bass with the same sensation as the mids and even the highs, which are neither harsh nor too clean, and above all never slobbery.

The Rhodes of the Doors or the latest Youn Sun Nah bring out their thousand colors, to an impressive level of purity, which we might prefer to be greasier if we move on to more aggressive bands, but with a rare subtlety of nuance. With the second and its particularly audiophile sound recording, we are reaching new heights here in terms of highlighting every moment, just like with Melody Gardot's latest albums, for which we still prefer the vinyl versions. If the II is already very impressive when it retrieves music from a network player connected via a coaxial cable, or from its streaming card, the latter having a slight tendency to favor the low-mediums, the most impressive source of this device is without doubt its phono section. Before describing these sensations, we must also praise the analogue inputs, integrated into an SACD player, with the FPGA doing the rest to redistribute the information to the amplification.

With the Nordost Valhalla 2 power cable upstream, the impression of holography takes on a superb realism, further enhanced by the dynamics of analogue playback, even if you know that after integrating the analogue inputs via the turntable's phono cables, the device reprocesses the signal by A/D conversion to transcribe everything in the digital domain! Without the slightest background noise or disturbance, the II's phono module takes analogue purity to levels rarely achieved. Here again, you may prefer more brutality, or even thickness, but it will be very difficult to find better, unless you pay a veritable fortune. In itself, this module is already a pure concentrate of P1, the brand's phono preamp, which can still be improved (we warned you) for the more than perfect P10!

## OUR CONCLUSION

After the sources, CH Precision now introduces us to its amplifiers, of which the II all-in-one is an exemplary compendium. Requiring only a single chassis, provided that at least the phono module or streaming card is added, this 2 x 100 W at 8 ohms amplifier is already capable of powering a large number of loudspeakers in perfect purity.

The finesse and subtlety of the II's details and colors make it almost possible to count the number of hands during the clapping of Nina Simone's 'Sinnerman', or to identify the slightest metering of a stick on the drums of any jazz band. These sensations are further heightened when listening to vinyl records, where the slightest dynamic deviation is reproduced, while the music is always perfectly pure. ■

