

# Wonder Audio Labs P1

## A phono amplifier with stratospherically high C/P ratio

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If you want to find a phono amplifier in the market that can match with cartridges with different internal impedances, it is not difficult at all. Basically, almost every phono amplifier in the market is capable of doing so. However, what are the choices of resistance are available in those phono amplifier?  $5\Omega$ ?  $10\Omega$ ?  $50\Omega$ ? In fact, most audiophiles experienced in vinyl playback know that a small change in the resistance value can make a big difference in tonal characteristics. For example,  $100\Omega$  and  $120\Omega$  already have a notable timbre difference. However, most of phono stages on the market, whether using DIP switch or pluggable resistors, cannot provide sufficient choices of resistance values for you to precisely adjust for the acoustics you want. On the other hand, the load capacitance also needs to be adjusted, but most of the phono stages on the market does not allow the user to adjust the capacitance, not to mention the range and fineness of adjustment.

Even if we forget about resistance and capacitance, the equalisation curve for vinyl playback is a critical factor. Basically, almost all the phono stages on the market support RIAA. However, there are some popular curves other than RIAA, such as Capitol, Columbia, FFRR, etc. Most of them support a handful of non-RIAA curves from major record labels. But then there is a problem. How many curves should a phono stage support to meet the requirements of those vinyl veteran? Although I am by no means a veteran, I have many mono recordings and many records from small European labels that did not follow the standard even many years after the RIAA curve standard was established in 1957. Some Soviet and Asian labels did not even adopt this standard until mid 70s. Today, there are some phono stages on the market that can playback these non-RIAA records with suitable EQ curves. But how many of them do they offer adequate choice of curves to the user and are they really convenient for use? For example, some phono stages place the DIP switches or resistor plugins in the bottom of the chassis or at the back, which is not easily accessible at all.



All I said above are really basic requirements of vinyl playback, aren't they? How comes there are so few products meeting these requirements? I once discussed this problem with Masaki Ashizawa, the CEO and chief designer of Kondo in Japan. He said, if these functions are fully implemented in a phono stage, it would be very challenging to keep the signal path pure and clean, and the acoustical performance will be impacted. Also, he believes that most of the vinyl collectors today play RIAA-compliant records, so it would be better not to implement other EQ curves. Of course, it is the thought of some individual manufacturers. In the past, I have tried one or two phono stages of different brands, all of which perfectly enable users to set the resistance and capacitance value. At the same time, turnover can be adjusted according to different production years. EMT JPA66 MKII R is a good example that allows these two parameters to configure appropriate equalisation curve with rolloff. Unfortunately, the price of this phono stage is not affordable to many audiophiles.

### **It finally appeared!**

After spending big paragraphs talking about the basics, I actually want to describe how amazed I was by the new P1 phono amplifier. It does not only meets my expectations on a phono stage, but also delivers great sound performance. Most importantly, the price tag is very affordable!



P1 is designed and produced by Wonder Audio Labs, a very young Hong Kong brand established in 2022. It was founded by William Tam, an audio expert with more than 30 years of experience, and Tom Tang, a professional electronic engineer. William Tam and Tom Tang know each other for many years. William Tam is an audiophile and has many years of experience in audio system tuning. He served as a chief audio consultant of several well-known audio brands.

From ideas to implementation, it took only 8 months for Wonder Audio Labs to bring P1 live. In fact, before all of these, William Tam sought for cooperation with some audio factories in Europe with his conceptual design, hoping to find one that could implement the design and mass produce.

However, not a single one thought that his concept was feasible. They thought that the tight coupling between hardware and software make it too challenging and too costly to implement. Even though there are many manufacturers who could provide support on hardware, very few have the capability to write software for the hardware at the same time. Even if they do, the development cost will be insanely high, which renders the concept of P1 infeasible. Instead of giving up his ideas, William Tam sought for a partner who could overcome all these challenges in Mainland China. His perseverance and courage finally paid off. He managed to convince his friend, Tom Tang, to implement both software and hardware for P1. Less than one year later, the first product from Wonder Audio Labs was officially launched.

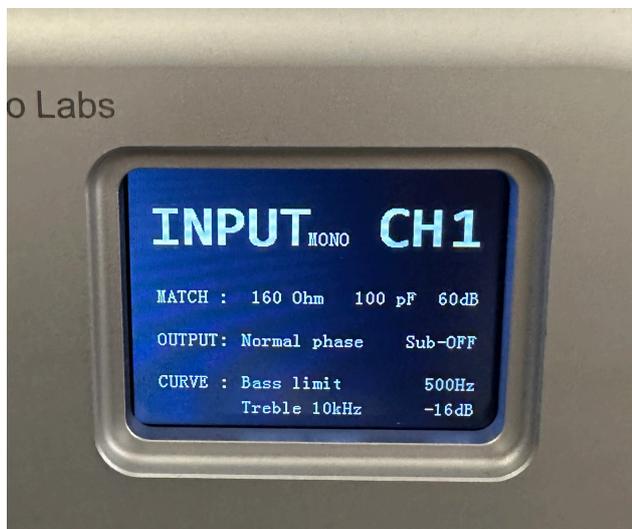
### **Uniqueness**

P1 is a phono amplifier with 3 sets of MC/MM phono inputs. It can match almost all MC and MM cartridges on this planet, and supports more than 100 different equalisation curves. Whether it is a modern stereo record or a non-RIAA curve mono or stereo record, P1 can play back without any issue.

The reason why P1 can match different cartridges is that it allows users to set 1010 different load impedance values (10Ω-1019Ω) and 32 different capacitance values (0μF-1800μF). At the same time, users can also adjust the phase and gain. MM cartridge gain includes 40dB, 45dB and 50dB, and MC cartridge gain includes 60dB, 65dB and 70dB. Moreover, for mildly warped records, P1 has an ultra-low frequency filtering function.

As for EQ, P1 provides an active RIAA standard curve, a passive RIAA standard curve and a user customisable EQ curve.

The main difference between active RIAA curve and passive RIAA curve is that the former is based on a feedback RIAA balanced circuit, which sounds dynamic and solid, while the latter is an attenuated passive circuit, with no negative feedback, which has low harmonic distortion in full frequency spectrum. The audible difference between two is very notable. Personally, I prefer passive RIAA curve, because the tone is relatively pure.



The user customisable EQ curve is mainly controlled by two values, one is "Turnover" and the other is "Treble 10kHz". Turnover is the frequency below which the record maker reduce the volume during manufacturing. RIAA's Turnover is 500Hz, 1953-1956 Decca FFRR's Turnover was 450Hz, and the early FFRR was 250Hz and 30Hz. Rolloff refers to how much the volume of the 10kHz high frequency needs to be reduced during replay. The rolloff of RIAA is -13.7dB, and the rolloff of Decca FFRR in 1953 is -11dB, and Mercury (until October 1954) is -12dB. For other equalisation curves before RIAA, you can find their Turnover and Rolloff values on the Internet.

### **A smart design**

The P1 panel has a 3.2-inch colour LCD screen, next to a switch, input selection, mono function and menu. On the right hand side, there is a clickable knob. The user can set the impedance, capacitance, gain, output phase, ultra-low frequency filtering and equalisation curve functions through the menu button and knob. You may wonder, how does P1 manage and handle these parameters? The answer is on a microcomputer in P1. The logic circuit is controlled through the software program to operate rows of relays and set different resistance, capacitance and EQ curve parameters. However, how does P1 prevent the noise of the computer from polluting the audio signal? In fact, I was worried about the same problem at first. But the designer told me that P1 has a very smart solution. During playback, this microcomputer is put in sleep and does not interfere with the analog amplification circuit at all. It only wakes up when the user clicks the menu button and perform configuration. When the user finishes configuration, the computer will go to sleep again after 20 seconds. This design allows the user to configure all the parameters and EQ curves, and keeps the amplification circuits free of interference from the computer during the playback. After all, this design would not have been implemented without the tight integration between software and hardware.

### **Patented design: SPBA**

P1 contains a patented design called Single Pole Balanced Amplifier (SPBA). The designer told me that it was originally developed for microphone amplification, which is suitable for amplifying weak signals. Its advantages are low distortion, high speed and low noise.

At present, most of the mature vacuum tube amplifiers on the market are signal amplification in the form of single-ended input and single-ended output, while SPBA is single-ended input and balanced output. Only two 12AU7/ECC82 vacuum tubes are used in each channel to make the bandwidth wider, and more even order harmonics are preserved in the amplification process. .

### **The devil is in the details**

When I listened P1 in my listening room for the first time, it already gave me a very positive impression. The modern appearance and smoothly polished chassis with no visible screw fit the machine well in an elegantly decorated sitting room.

After opening the chassis, you will see a very neat and organised layout. On the left is the AC transformer and input filter section, which are surrounded by metal plates to prevent electromagnetic waves from interfering with the analog amplification circuit. The main circuit board on the right is mainly divided into



several parts, including output phase, central processor logic control circuit, rectifier circuit, cartridge impedance and capacitance matching circuit, equalisation curve circuit and SPBA analog amplification circuit. The two silver cylinders on the upper right are replaceable MC transformers which are designed and developed by the factory and made of Mu alloy.

The entire internal wiring is made of pure silver wire, and the inductor filter is also made of pure silver. It is incredible to see such an extensive use of pure silver in a product of this price range!

P1 has three power supplies, which provide rectification and voltage stabilisation for digital logic circuits, analog amplifiers and vacuum tube amplifiers. It also has independent capacitor arrays to minimise mutual interference between them.

In order to reduce the adverse effects of resonance on the amplification circuit, the factory has put a lot of effort into two inconspicuous details. First, every electronic component under the hood, whether it is a resistor or a capacitor, must avoid direct contact with the circuit board. In other words, the resonance of the circuit board can only be transmitted to the component through the metal feet of the component. These metal feet are elastic and can convert vibration into other energy. In addition, every screw position that is used to fix the main circuit board to the case is semi-perforated. The purpose is similarly to convert vibration into other energy. Although I don't know how much these details improve the sound effect, but they reflect the designer's passion to pursue the best sound!

### **Acoustical performance**

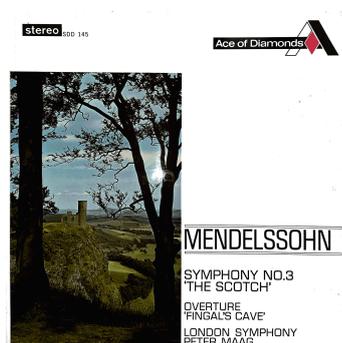
The audition environment for P1 is my home this time. Kondo GE-10i phono stage + SFz MC transformer was the reference combination. I replaced this combination with P1. In other words, my reference cartridge Kondo IO-M connected directly to P1 and use P1's built-in MC transformer.

As the RCA and XLR terminals on the back of the P1 are all Viborg products, it is logical for me to use Viborg's flagship pure silver power cord Kanas and their pure silver RCA interconnect cable. After listening to it, I found that the P1 and Viborg cables match very well. Later I learned from William Tam that during the

development process of P1, the factory actually used Viborg cables for sound tuning, so they match each other for good reasons.

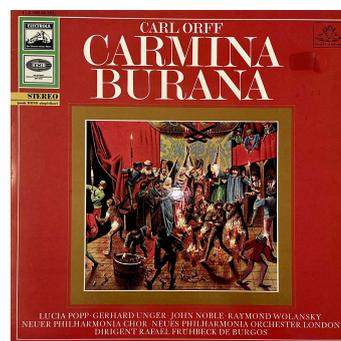


With this versatile phono stage, I played countless different types of music. I felt that the tone characteristics is very balanced and neutral, with sufficient extension at both ends of the frequency spectrum. I was very satisfied with both macro dynamic and micro dynamic performance. On this price level, I think P1 can completely beat all the opponents under RMB 50,000 that I have listened to. For example, I played the recording of Teresa Teng's "Last Concert". Audiophiles love the conversation between Teresa Teng and the audience the most. P1 will intoxicated you with Teresa Teng's voice. That unique voice, even if it is not singing, but just a conversation, is already a heavenly enjoyment for hearing. The P1's voice is very "human" and full of emotion. However, I have never heard anything like this with a phono stage under RMB 50,000 performance-wise.



The P1's analytical power and positioning are extraordinary. Because of this, I have a strong urge to dig out a lot of orchestral symphonies from my LP collection. The performance of the P1 did not disappoint me. The sound stage is deep and wide. The instrument positioning, the quietness of background, the outlines of audio images, etc. far exceed my expectations for a phono stage at this price level. When playing the Decca "Ace of Diamond" version of the Mendelssohn's Scottish Symphony (SDD145), it is easy to feel the combination of Kenneth Wilkinson and Kingsway Hall creates a broad and deep sound stage as well as rich reverberation of the spacious recording venue. P1 handles every part of the orchestra in an orderly and effortless manner, which shows how wide the bandwidth of this phono stage is and how fast the sound changes.

I increased the difficulty of the test by picking a relatively rare EMI recording of "Carmina Burana" (EMI C-065-00-053). This recording has outstanding sound effects and excellent performance, but it is very difficult to play. The sound of the choir is very challenging to handle, but the sound performance of P1 is 80% as good as that of Kondo GE-10i, which costs dozens of times more than the former. The projected chorus scene is as real as one in front of you. The music tension is gripping, and the climax section is amazing. My heart was pounding hard when the music reached the climax!



## The funnest part

If you have paid attention to my past articles about vinyl equipment testing, you may rarely see me using the Kondo IO-M cartridge. Although it produces great sound, it was too challenging for many phono preamps. Why? The internal resistance of this cartridge is only 1Ω and the output voltage is only 0.12mV. Aside from Kondo's phono amplifier + MC transformer, it is difficult to find a phono amplifier that matches it well. So I usually switch to a cartridge with higher internal resistance and higher voltage output, e.g., Acoustical Systems Palladian moving coil cartridge. As this time P1 has such a powerful phono cartridge matching capability, I immediately installed my IO-M cartridge to review its sound. The impedance of P1 can be adjusted to only 10Ω, so I slowly increased the resistance value from 10Ω, and paid attention to the change of the tonal balance. Finally, when adjusted to 160Ω, capacitance value 100μF, gain 60dB, with the preamp volume set to the ten o'clock position, I was able to achieve an optimal sound volume and balanced timbre without a lot of efforts. Since every time it takes only about 2-3 seconds to change the settings, I can hear the effect immediately without lifting or lowering the needle - very convenient and user friendly!

Another fun part of P1 is its ability to adjust the EQ curve for non-RIAA curve records. I chose a set of classic Decca discs, in which Carlos Kleiber's father, Erich Kleiber, led the Vienna Philharmonic and the Vienna State Opera Chorus to perform Mozart's "The Marriage of Figaro" (Decca LXT 5088, 5089, 5090, 5091). It is a mono recording in 1955. At that time, the mono recording technique was already very mature. Some hardcore vinyl enthusiasts even prefer the mono version to the 1959 stereo version, and I have a set of

British mono version on hand. Unfortunately, my Kondo GE-10i does not support non-RIAA curve records, so I haven't got a lot of opportunity to taste the true sound of this recording before. I once used EMT JA66 MKII R phono stage to replay this set of recordings. The sound was extraordinary. If it weren't for the price, I would have owned the phono stage. Now the P1 allows me to taste the power of this recording again. , and easily listened to the entire set of four records in one go. I was completely immersed in the music, forgetting that I was listening to a phono stage that cost less than HK\$30,000!

## Conclusion

After testing the P1, I feel that it is very suitable for certain types of audiophiles, and at the same time it is very unsuitable for some audiophiles. Let's talk about the "suitable" bit first: If you are a hardcore vinyl fan who owns many records of different eras and labels, as well as multiple cartridges of different types, P1 would be a very ideal choice. Even though I already own a top of the class phono stage, I would consider buying P1 for my own use.

What about the "unsuitable" bit? Simply speaking, for those who use Hi Fi as a tool to show off their wealth, or those who are only interested in famous brands, or those who care so much about second-hand value when selling it in the future, P1 might not be your cup of tea. .



## Reference equipment

Speaker: Wilson Audio Alexia (speaker cable: Siltech Crown Prince)  
Vinyl: JR Transrotor Tourbillon turntable, Acoustical Systems Axiom tonearm, Acoustical Systems Palladian cartridge, Kondo IO-M cartridge  
Phono stage: Kondo GE-10i (power cord: Kondo Avocado)  
Boost Cow: Kondo SFz (Ls-41 version)  
CD turntable: Esoteric K1 (power cord: Viborg Kanaz)  
Codec: Denafrips Terminator Plus 12th (Power Cord: Siltech Ruby Double Crown)  
Power amplifier: Jadis JA200 MkII (power cord: Shunyata Zi-Tron Sigma HC)  
Preamp: Kondo G-1000i (power cord: Siltech Ruby Double Crown)  
Floor box: Tripoint Troy, Entreq Olympus Ten  
Ground wire: Viborg sterling silver ground wire, Tripoint sterling silver ground wire  
Low frequency processing: PSI Audio AVAA  
Power processing: Isotek V5 Titan, Shunyata Hydra V-ray II

K1 → Denafrips Terminator Plus signal cable: Viborg Yamdrok  
Denafrips Terminator Plus 12th → Kondo G-1000i signal cable: Siltech Crown Princess  
Kondo G-1000i → JA200 MkII signal cable: Siltech Crown Princess  
Denafrips Terminator Plus 12th → K1: Viborg VD-602 BNC

