
Discovery 2 User Manual

Introduction

Thank you for purchasing an Origin Live Discovery 2 MM/MC phono stage. It is our sincere desire that this high-end audio component will give you many years of unparalleled listening enjoyment.

Before connecting your phono stage to a system we highly recommend that you read all of this manual in order to become familiar with the units controls and most importantly, specific warnings and cautions that should be observed. Throughout this manual handy tips have been included that should help to ensure that the phono stage is set up optimally and able to give you the most transparent and engaging sound possible.

Please read this first

WARNING :-

Do not plug the phono stage PSU module into an AC socket if the indicated voltage on the back is not a close match to the mains voltage where it is to be used. Many countries especially in Europe and other parts of the world use 220-240V. The Discovery 2 PSU module must only be used in these regions if 230V is indicated with a black dot. In Canada, the USA and remaining parts of the world 100-120V is typical therefore the Discovery 2 PSU module should only be used if 115V is indicated.

WARNING :-

Never disassemble the phono stage modules. There are no user serviceable parts inside but there is potentially dangerous mains voltage in the power supply that can cause serious injuries or death.

WARNING :-

The Protective Earth connection to the mains supply is required for safety reasons because

mains voltage is present in the PSU module. The Earth wire in the mains lead must never therefore be disconnected or 'lifted'. The protective Earth however is not connected to the phono stage 0V/Ground connections which offers complete control over earth loop management. Please note that the 0V/Ground connections may be connected to mains Earth through other parts of the system.

WARNING :-

Never connect the Discovery 2 phono stage directly to a power amplifier. The unit has no direct control over the output volume and the high gain is extremely likely to cause an acoustic feedback loop that can easily destroy the drive units in speakers. Always connect the unit to a device with a volume control and always power the system on with the volume reduced to a low level.

WARNING :-

Always mute the amplifier, completely turn down the master volume control or better still turn off the main power amplifier when performing any operations that involve changes to the Discovery 2 phono stage cabling. Make sure that the tonearm ground wire is in good contact with the ground post and that it is mated squarely and cleanly.

WARNING :-

The AC power cable supplied with the phono stage is good but upgradable. Many audio enthusiasts agree that further sonic improvements can be obtained by using cables with specialist materials, components and features used in their construction. As long as the replacement cable is fully wired to include a PE (Protective Earth) connection there is no reason not to use such a cable. Please see your local Origin Live dealer or distributor for advice and recommendations.

WARNING :-

In the unlikely event of a fault developing with the phono stage or power supply module contact

your dealer or distributor where you will receive expert advice.

Useful Tip :-

Ideally there should be only one connection to Earth from a common point. If multiple Earth connections exist then earth loops can occur if current flows around such loops. This sometimes results in audible mains hum at 50/60Hz or even harmonics of these frequencies. If mains hum is heard when playing vinyl the best approach is to try and identify the source of the ground loop and break it at a sensible point that does not compromise the safe operation of the entire system. If in doubt, seek professional assistance.

Getting Started

Unpacking

The Discovery 2 phono stage is supplied with the following items: -

1. MM/MC phono stage module
2. PSU module
3. DC interconnect cable (0.5m)
4. AC power cable (230V/115V suitable for regional use)
5. This operations manual

If any of these items is missing or if the mains cable is not suitable for the intended country of use then please contact the distributor or supplier from where it was purchased for a suitable replacement.

Setting Up

Useful Tip :-

It is recommended that the other Hi-Fi system components are powered off during setup as this will avoid all kinds of potential mistakes causing unwanted noise, hum or damage whilst cables are being plugged in.

Firstly, find a good stable location to place the PSU and phono stage modules. A high quality Hi-Fi stand or shelf as part of a dedicated Hi-Fi installation is preferable.

Carefully place each unit side by side or the phono stage on top of the PSU module.

Useful Tip :-

The clearance between units when placed on top of each other is small and the feet will compress a little under the weight of the PSU module possibly making contact between the front panels. It is recommended therefore that if vertical stacking is preferred, the phono stage module should be placed on top of the PSU module.

Looking from the rear of the phono stage unit to the left, connect the earth wire to the binding post. It can be difficult to turn the Earth nut with larger phono cables already plugged in therefore this should be done first.

Useful Tip :-

If a bare earth wire is used, make sure it is wrapped around the binding post thread in a clockwise direction looking from the rear and that no exposed wire is left hanging out that could make a short to other connectors.

Useful Tip :-

Only hand tighten the nut making sure the wire is securely gripped. Do not use spanners or other tools.

Plug the cartridge phono cables into the phono stage module. These are the left most phono connectors looking from the back of the unit marked as INPUT.

Now plug in the phono interconnect cable between to the phono stage module and the systems pre-amplifier. There are two sets of outputs marked POS and NEG. The POS output is the audio signal in true positive phase in relation to the cartridge output signal whereas the NEG signal is the same audio signal in opposite phase. Both can be used to send the audio signal to two different pre-amplifiers or they can be combined and used as a differential output where the pre-amplifier uses balanced inputs.

Useful Tip :-

A specialist cable may be required in order to connect the differential output signals to the pre-amplifier. Many pre-amplifiers require XLR connections for differential signals whereas other require DIN or a pair of phono connectors.

Finally, plug the DC power connector between the PSU module and the phono stage module. The cable is a mini-XLR type and positively clicks in place with arrows or alignment indicators facing upwards. It may be necessary to hold onto the

phono stage or PSU module when making the DC power connection because the force required is likely to move the modules.

Useful Tip :-

In order to unplug the DC power cable the button on the chassis connector of the PSU module will need to be pressed in to release it. Similarly, in order to unplug the DC power cable from the phono stage module the button on the cable connector will need to be pressed in to release it. Do not pull on these cables without depressing the button or else damage to the cable may occur.

Applying Power

Assuming all signal cables have been connected turn on the phono stage using the switch at the back of the PSU module (Rocker up is off and rocker down is on). The 'green' light at the rear of the PSU module should light immediately and the 'blue' LED at the front of the phono stage module should also light.

Warm Up Indication

The Discovery 2 phono stage is in a cold state when first powered up. Many audio enthusiasts believe that sensitive electronics need to be warmed up before the ultimate sound quality can be heard therefore whenever power is first applied to the phono stage the 'blue' LED at the front left will flash approximately once every 5 seconds for an hour. This is the minimum amount of time required for the electronic components to warm up and settle down thermally.

Front Panel Adjustments

The Discovery 2 phono stage has 3 front panel controls that adapt the units configuration to suit a wide variety of available MM and MC cartridges. These adjustments, whilst intentionally subtle in some cases can have a significant influence on the clarity and separation of sounds heard in music so it is highly recommended to take time to explore them and not just settle on the first combination

set even though it will sound exceptional right away.

Input Loading

The Discovery 2 phono stage has a 5 position impedance switch. The impedance switch controls the electrical 'load' placed on the cartridges coils. For moving magnet cartridges the impedance is usually very high with 47,000 ohms (47K) being common. For moving coil cartridges the load impedance is usually very low with 400 ohms being quite typical.

Useful Tip :-

The manufacturers of moving coil cartridges may specify a range of possible loading values that can be quite wide, for example, from 100 ohms to 1000 ohms for just a single cartridge. It is therefore recommended that the best value should be determined by experimentation over a number of hours once the phono stage has fully warmed up (usually more than 1 hour). When a manufacturer recommends a particular impedance value that does not match any of the ones available on the Discovery 2 phono stage it is recommended to start with the closest setting to the recommended value and then experiment away from that value; increasing the impedance initially. The audible effects of different impedance values can often be system dependent and subtle but can also result in surprising discoveries. The key is to take time when making the final selection playing a number of tracks to compare against each change of input impedance and possibly repeat the same test over a number of days.

Switch Positions

1. MM (47K ohms) - most moving magnet cartridges
2. 100 (ohms) - very low impedance moving coil cartridges
3. 240 (ohms) - low impedance moving coil cartridges
4. 400 (ohms) - typical impedance moving coil cartridges

5. 820 (ohms) - higher impedance moving coil cartridges

Useful Tip :-

As a general rule of electronics engineering the input impedance loading value should be at least 10 times the output impedance of the cartridges coil. This is not a hard and fast rule as the effects of changing impedance may be subtle and subjective suiting one system combination more than another. It is however a good starting point if there are no specific recommendations from the manufacturer or their recommended range is very wide.

Input Gain

The Discovery 2 phono stage has a 3 position gain switch. The least sensitive range is marked as 2.5. It indicates that for a given input signal of 2.5mV (peak to peak) the output signal will be 1.0V (peak to peak), which is suitable for most line level pre amplifiers or power amplifiers with a volume control.

Switch Positions

- 2.5mV - Suitable for most moving magnet or very high output moving coil cartridges
- 1.0mV - Suitable for low output moving magnet or high output moving coil cartridges
- 0.25mV - Suitable for most low output moving coil cartridges

Subsonic Filter

The Discovery 2 phono stage has a built in subsonic filter. The filter gently reduces low frequency effects such as record warp, needle drops, low frequency feedback, bearing noise and DC offsets that can all cause excessive speaker cone movement. A filter can be desirable because these effects if present can unnecessarily heat amplifiers and speaker coils causing dynamic range compression and potential damage in extreme cases. Some audio enthusiasts disapprove

of the use of such filters therefore it can be turned on or off with a push button switch. When it is turned on a 'blue' light next to the subsonic button is lit.

Useful Tip :-

The subsonic filter has absolutely no measurable effect above 35Hz. Very few vinyl records contain significant audio this low because it is often removed by the master disk cutter operator to prevent adjacent tracks from colliding with each other or excessive movement from creating needle jumps. It's effect therefore is sufficiently subtle that in almost all situations it should have no impact upon the sound of the audio being heard. It has most effect below 5Hz, which is inaudible to human ears and where excessive displacement of speaker cones can cause damage.

Setup is complete

Congratulations, now that the Discovery 2 phono stage has been connected and setup all that is left to do is to sit back, relax and enjoy your favourite music whilst exploring new insights and depths previously hidden.

Troubleshooting

No sound is produced

Check that the PSU module has been turned on

When the PSU module is on a green LED underneath the DC power outlet at the back of the PSU module lights up. If the LED is not lit then check the switch is in the on position (rocker down) and that the cable is fitted correctly with mains present. Finally, try a different lead that is known to work.

Check that the preamp stage has power

When the preamp is powered on a blue LED on the left of the front panel is lit. If this is not lit but the PSU module is powered on check that the interconnecting DC cable has been fitted correctly and the connectors have been pushed in and locked into position.

(Troubleshooting is a work in progress)